Mobile Health in Two Populations: Addressing Chronic Disease Management Through Text Messaging

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&

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Value of text messaging in homeless

Lit Review
- Access to technology in homeless populations (2012)

Survey
- Veterans who are homeless (2013)

Pilot
- Pilot texting study 2014
- Small RCT Boston's homeless 2017

Application example in Veterans

- Hep C treatment breakthrough

- 100,000 veterans treated

- Connect with harder to reach veterans who have HCV

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Appointment reminders by text message in a safety net health care system: a pragmatic investigation - Fischer et al. 2017 eGEMS

- Kept appointments –   HIGHER RATES
- Cancelled appts. –   LOWER RATES
- No shows –   LOWER RATES

- Other studies: immunization rates, pre-natal care, well-baby care.

Homelessness in the US

- 2016 point-in-time count:

   549,928 people

2016 Annual Homeless Assessment Report (AHAR)

Access and use of IT
in homeless populations

Technology access among homeless persons – systematic literature review

- Mobile phone ownership: 44% to 62%;
- Computer ownership: 24% to 40%;
- Computer access and use: 47%to 55%;
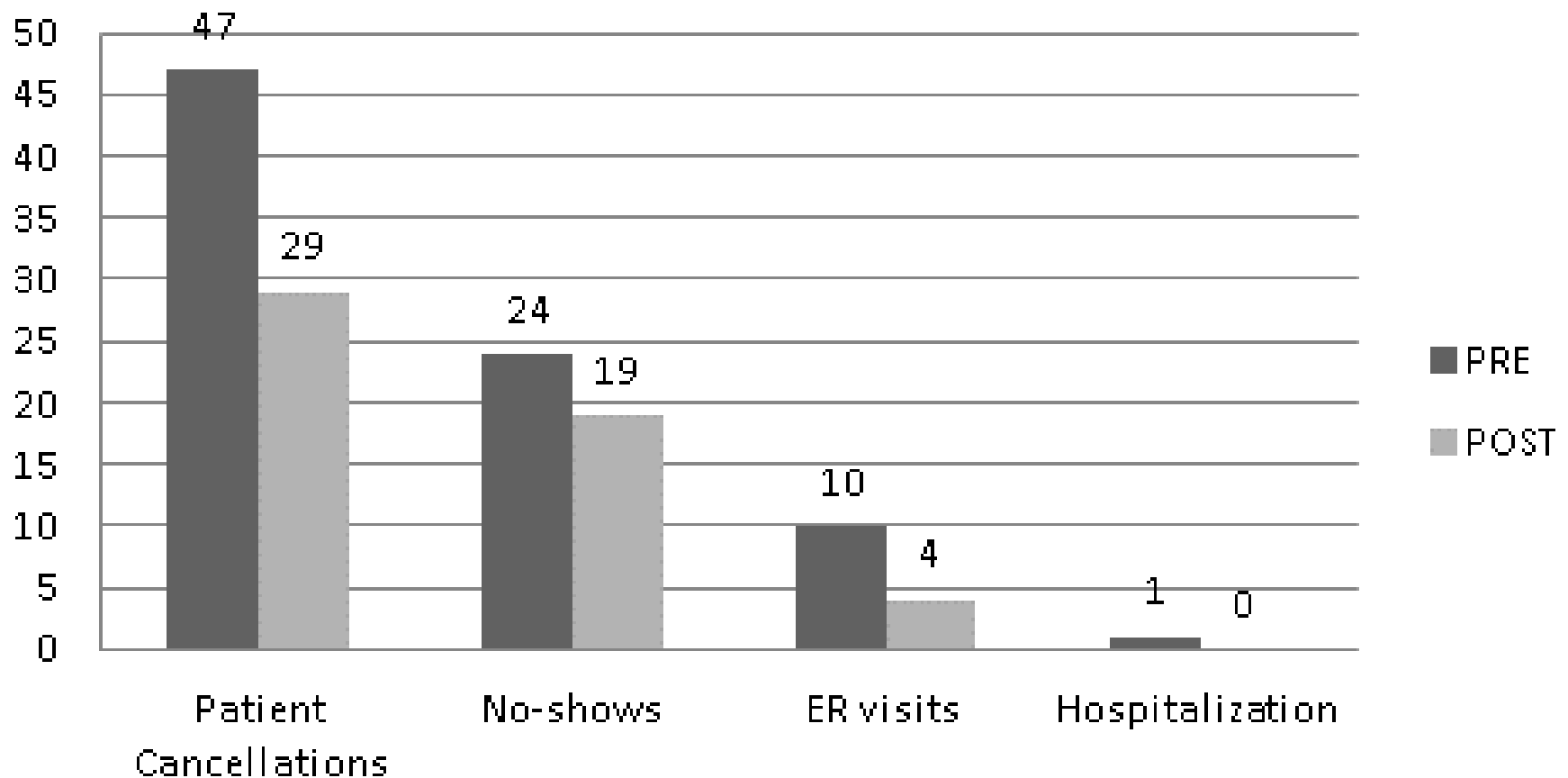- Internet use: 19% to 84%.

Access to and use of Technology:
Veterans Experiencing Homelessness (n=106)

McInnes et al 2014 Telemedicine and eHealth
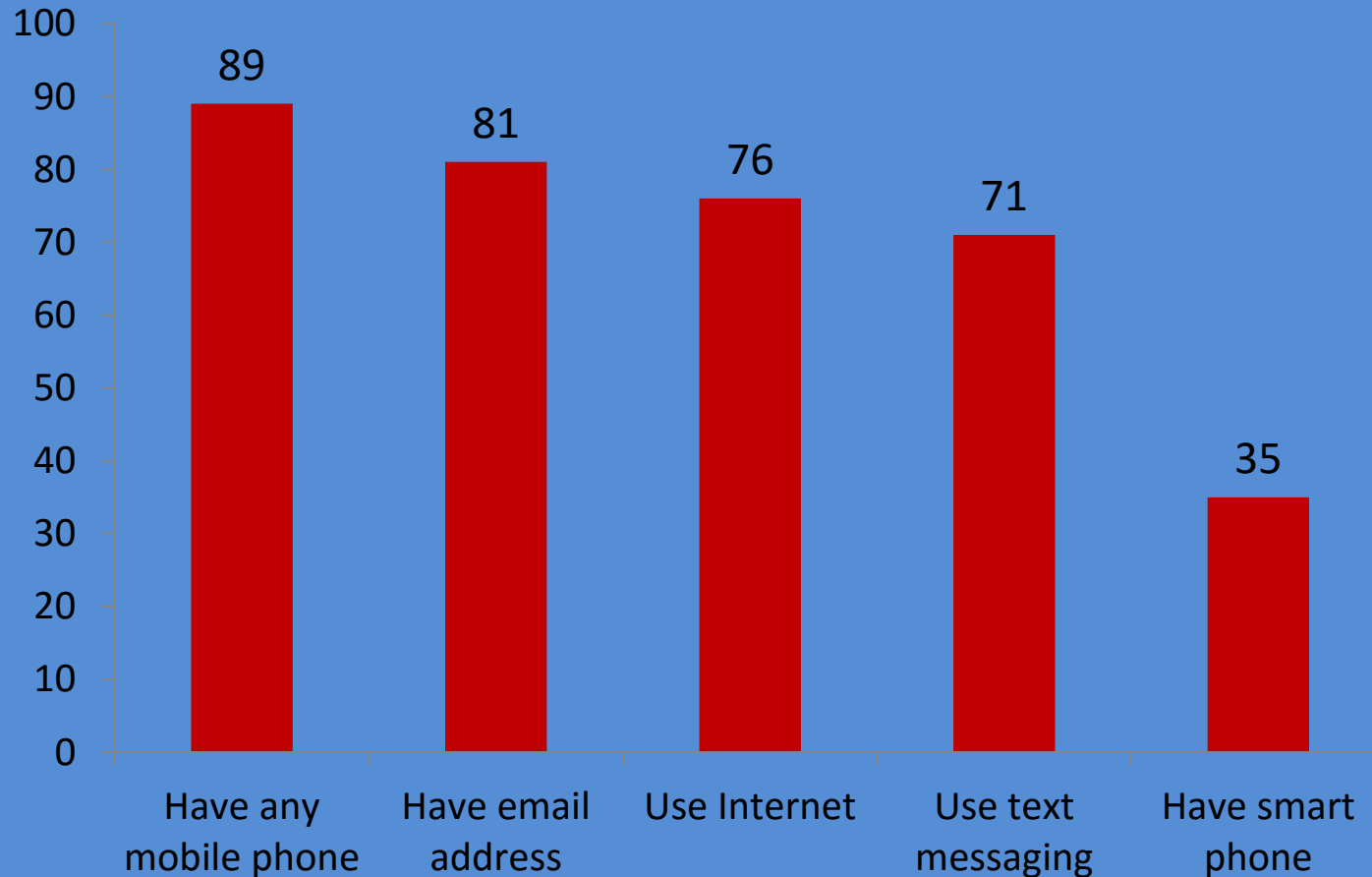
20 Veterans, Homeless Health Clinic

Figure. Utilization Changes after Texting Intervention

Veteran views on text messages

Well you have something solid in front of you. You don't have to write it down. You can save it and it's there. I mean you have all your information right there.

[I wouldn't want cell phone reminders]...not with what it costs me.

McInnes et al. 2015 PeerJ

# Ongoing project with Boston Health Care for the Homeless Program

"hot-spotter"

- High utilizing population
- Texts for:
  - visit reminders
  - medication-taking
  - mood monitoring
- Patient advisory panel
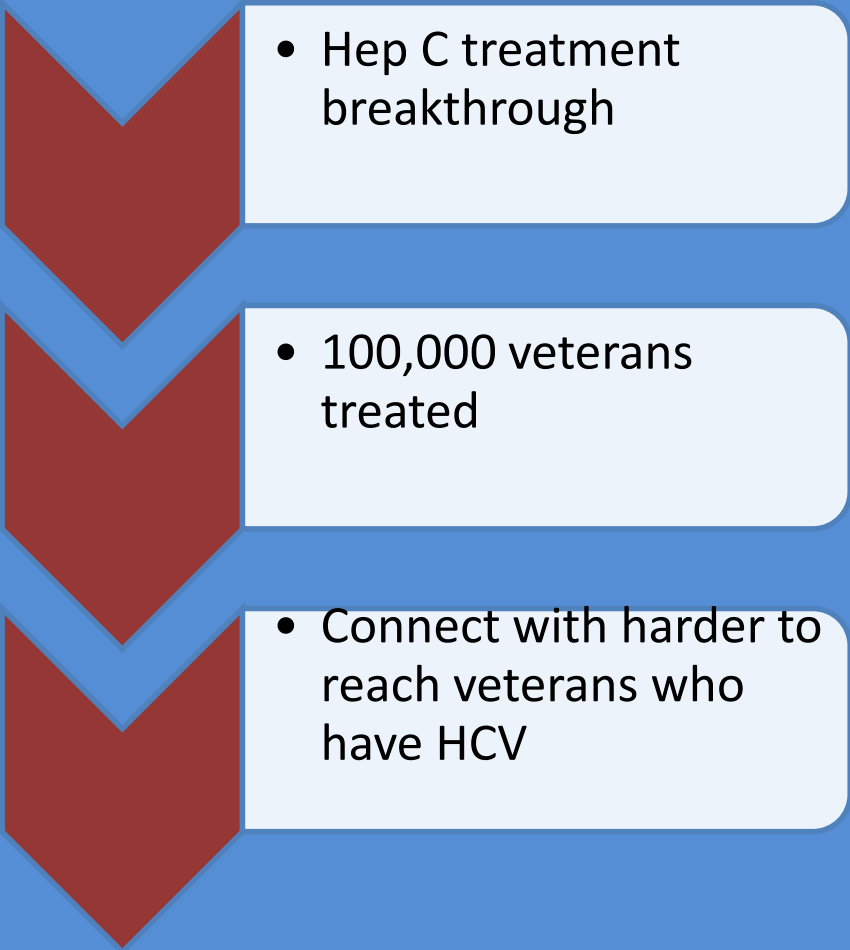- Up to 60 patients
- Randomized trial

$3.5 million

THE NEW YORKER

Photograph by Phillip Toledano, 2011

Health and Public Health Impact

- Disease management
- Quality of life
- Reduce costs
- Scalable
- "Spillover" benefits
  - Technology
  - Housing
  - Employment
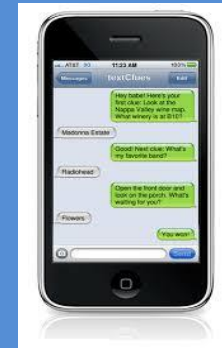
Application example in Veterans

- Hep C treatment breakthrough

- 100,000 veterans treated

- Connect with harder to reach veterans who have HCV

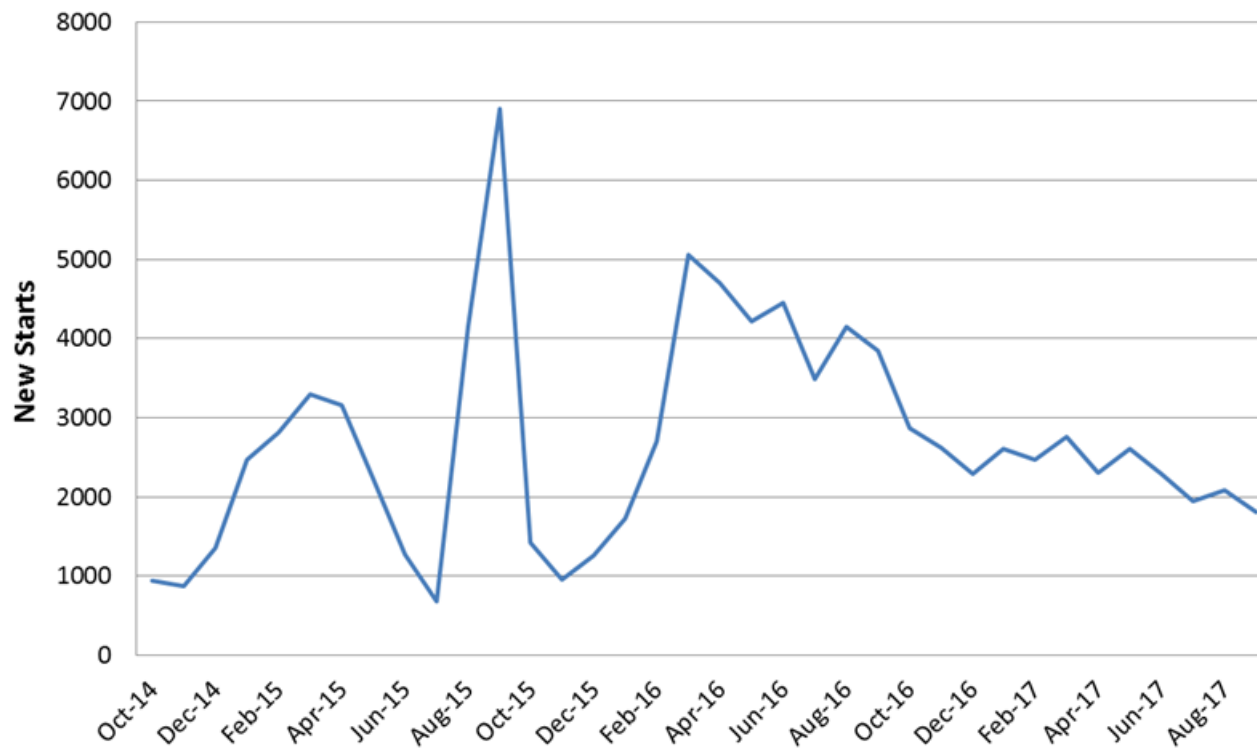# Veterans
&
Hepatitis C

QUIZ: Who are these two women?

15

I AM
READY
TO BE
HEPATITIS
CURED

In clinical studies, **96-99%** of
patients who had **no prior**

VA New HCV Treatment Starts by Month, FY15-17

Florence Nightingale ("Flo")

Annie K Fox ("Annie")

Annie Text Messaging System Hepatitis C Protocol

- Designed to support patients through the Hep-C treatment process
  - Medication-taking
  - Appointment-keeping
  - Labs completed

Annie Hep C Protocol:

- Daily medication reminder
- Reminders for lab work
- Hep C appointment reminders
- Motivational/educational texts

Hi, it's Annie here. Please don't forget to take your HepC medication today. Kindly, let us know if you have by replying "Med Yes" or "Med No"

If no veteran response in 45 minutes

Hi, it's Annie again. I haven't heard from you. Did you remember to take your HepC medication today? Please reply Med Yes or Med No, like this: Med Yes.

Med No

Ok, thanks for letting us know. Please remember it is important to take your HepC meds every day. If you have any questions, please call 206-2xx-4xxx.

Evaluation design - Hybrid

- 4 sites receiving Augmented Implementation
- 3 sites receiving Usual Implementation
- 2 control sites (without Annie)

- Quantitative (from 8 week intervention period)
  – Surveys
  – Medical records
  – Annie database logs

- Qualitative (at end of intervention period)
  – Semi-structured interviews with Veterans & Clinicians

Augmented vs. Usual Implementation

- 4 VA facilities receiving multi-component <u>augmented</u> implementation strategy
  - Group web-based training
  - Helpline
  - Toolkit
  - Assistance tailoring hep C text message protocol
  - Facilitation – by phone and onsite

- 3 VA facilities receiving <u>standard</u> Annie implementation
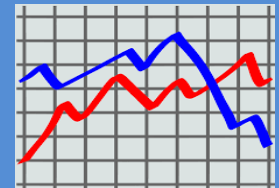 - - Group web-based training
  - - Helpline

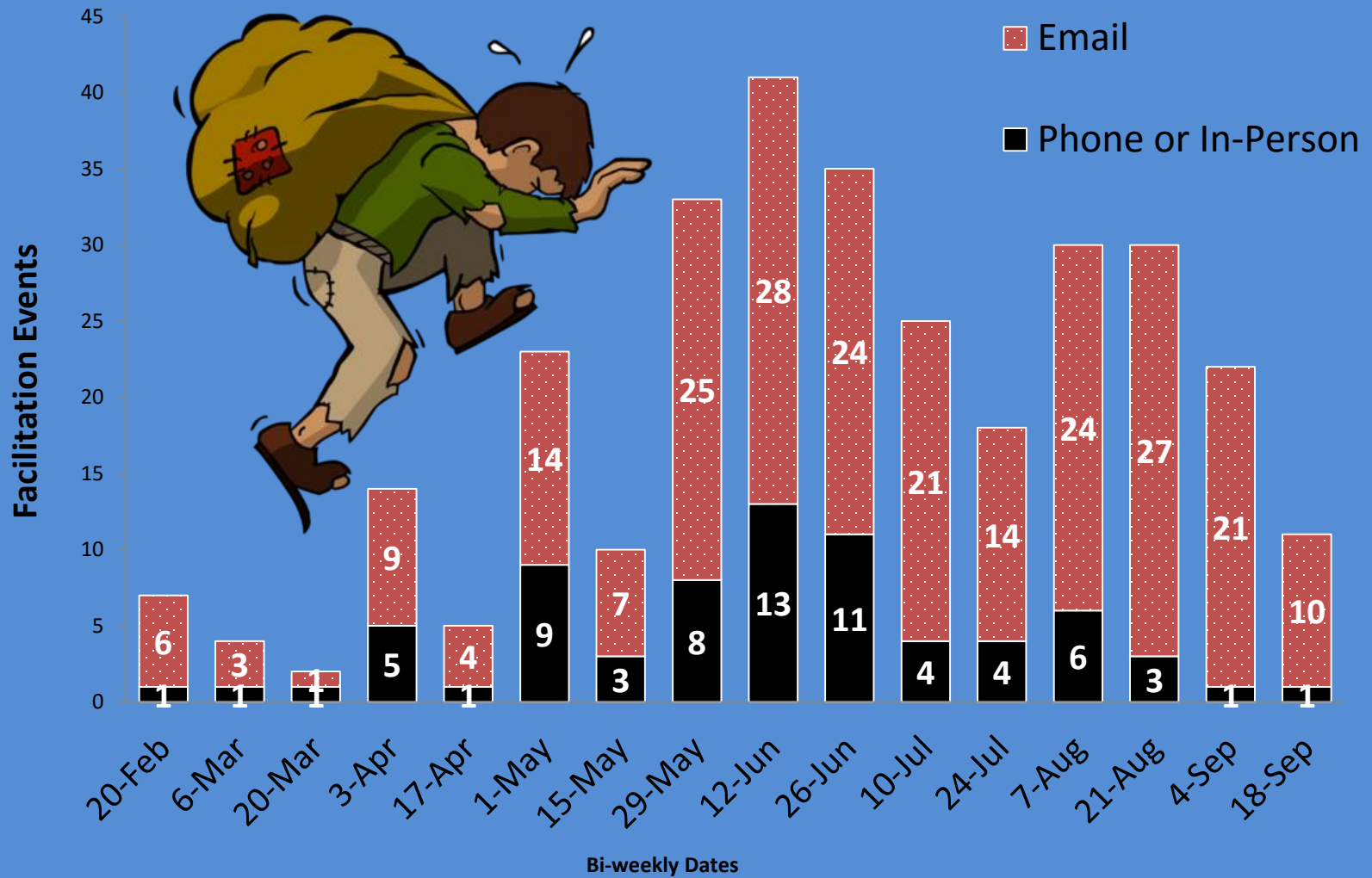Toolkit used in the augmented implementation strategy

Your Toolkit
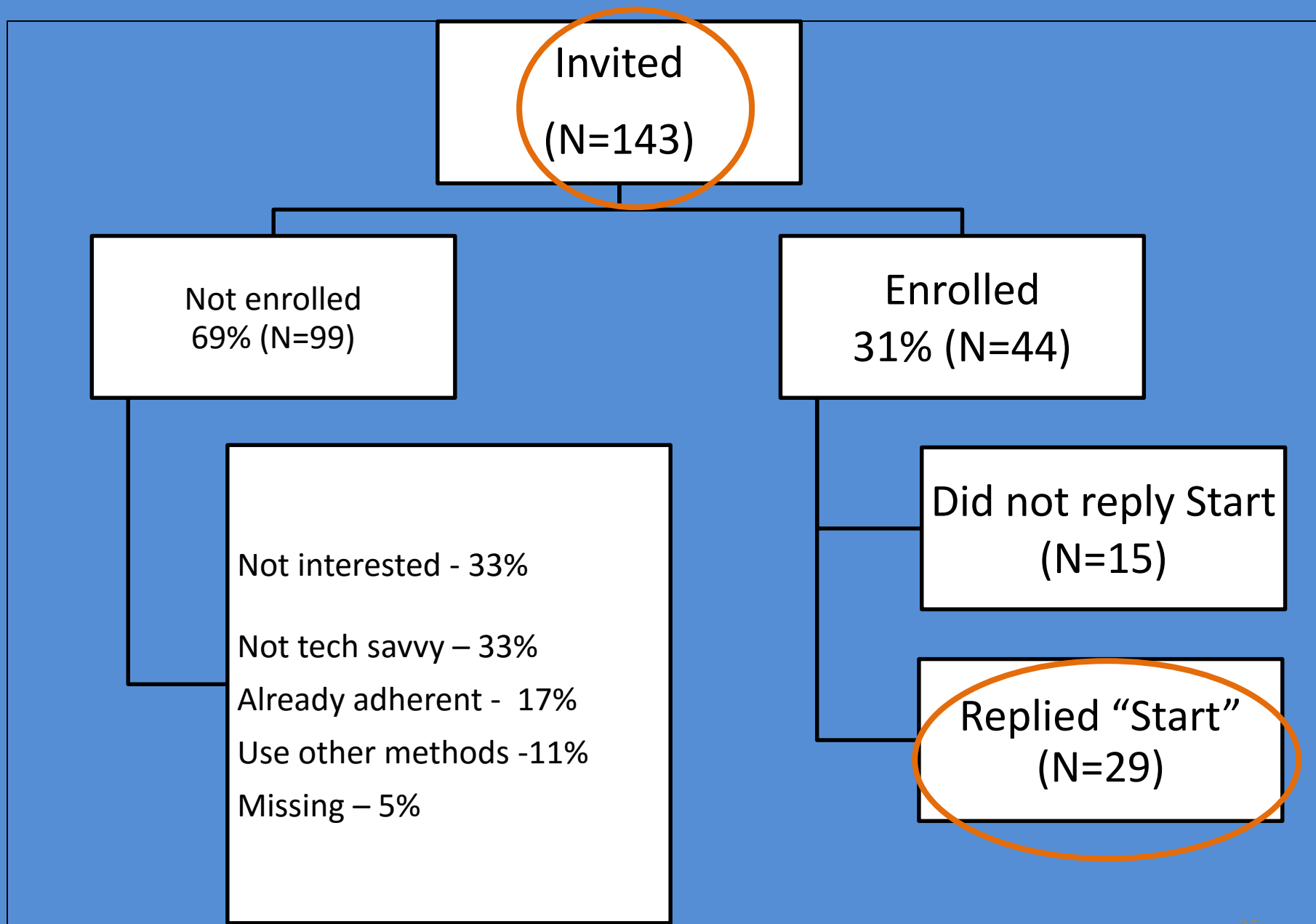For Clinics and Hospitals
Starting to Use
Annie
A Text Messaging System
For Patient Self-Management

Hard work to implement

```
Invited
(N=143)

Not enrolled          Enrolled
69% (N=99)            31% (N=44)

Not interested - 33%                Did not reply Start
                                    (N=15)
Not tech savvy – 33%

Already adherent -  17%

Use other methods -11%              Replied "Start"
                                    (N=29)
Missing – 5%
```
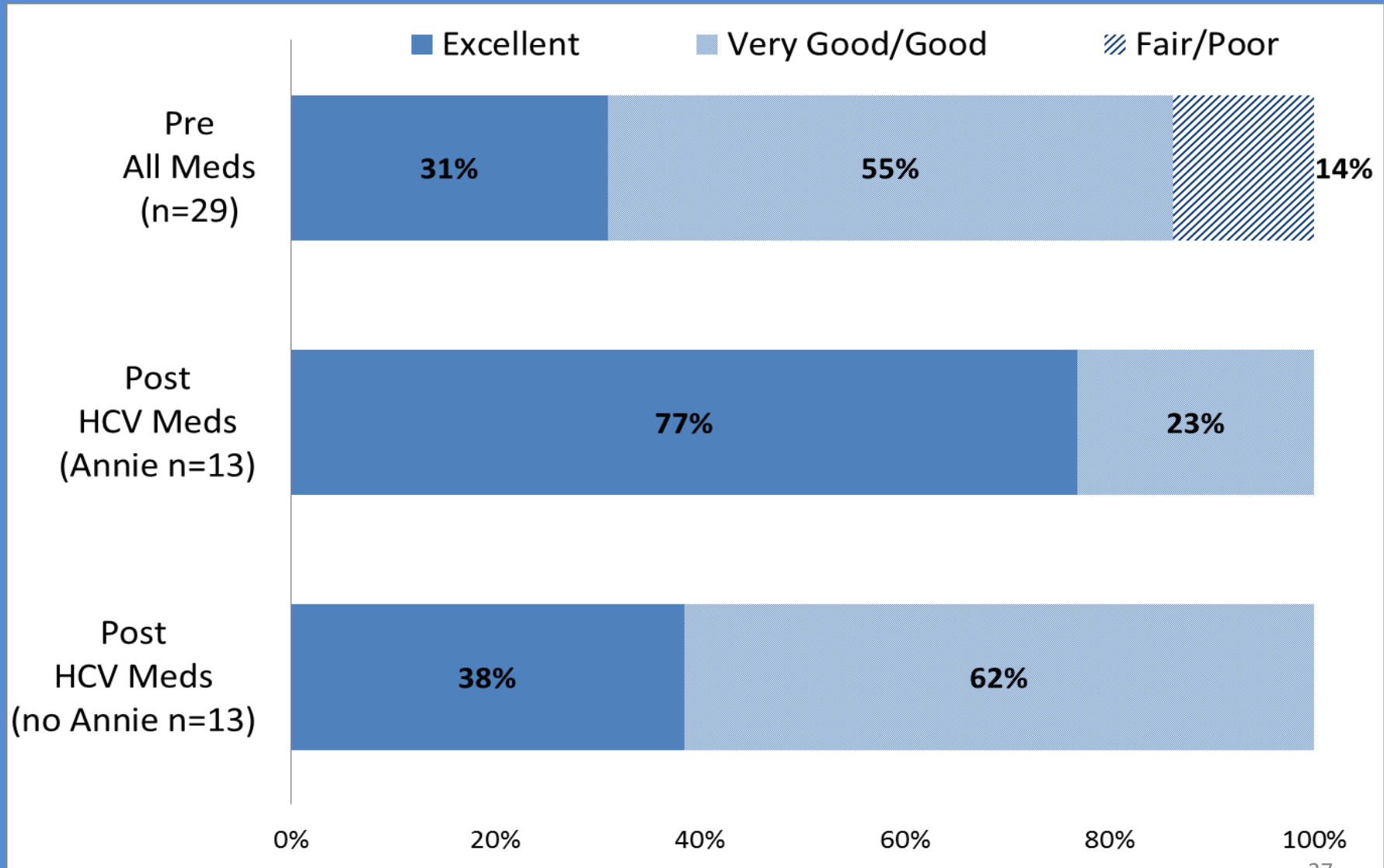
1. Is Annie effective at improving disease self-management?

2. Does augmented implementation improve adoption and spread of Annie?

(Q1. Improve self-management?)
Self-report adherence – Pre vs Post

Legend: Excellent | Very Good/Good | Fair/Poor

- Pre All Meds (n=29): Excellent 31%, Very Good/Good 55%, Fair/Poor 14%
- Post HCV Meds (Annie n=13): Excellent 77%, Very Good/Good 23%
- Post HCV Meds (no Annie n=13): Excellent 38%, Very Good/Good 62%

(Q2. Augmented Annie effective?)

Adoption higher at augmented sites (vs usual)

- **Uptake of Annie was greater at AI sites,** among patients invited to use it

- At AI sites 23% started using Annie
- At UI sites 18% started using Annie

Summary

- Cell phones prevalent in homeless and other vulnerable populations
- Text messaging can contribute to access to care and health management
- Implementation is hard
  - Patient factors
  - Provider factors

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CHOIR
Center for Healthcare Organization and Implementation Research

VA | **U.S. Department of Veterans Affairs**
Veterans Health Administration
Edith Nourse Rogers Memorial Veterans Hospital

Fischer, eGEMS 2017

- **ALL VISITS, PRIMARY AND SPECIALTY CARE (n = 650,872)**

- Kept/Attended*   56,630   379,092 66.1%
- Cancelled*   10,266   106,586 18.6%

- No Show   10,887   87,411   15.3%

Reasons for declining Annie (n=99 Veterans)

Claim high adherence	Annie would duplicate other supports	Don't text, not tech savvy	Burdensome and little interest
• **I already take my medication every day and get to my appointments** • **I am very regimented person** • **I do pretty good with taking my meds**	• I have good reminder systems • I have a good memory, I don't need that • I think the pillbox will work better • I'll mark the dates on my calendar	• I barely know how to call people on my phone • I don't know how to text • I have flip phone without text messages • I don't check my text messages • I have limited texts on my cell plan • Don't have my cell phone at work • Costs money to get texts	• Don't want to have to respond to messages • Feels it would be overwhelming • I'm not interested • No time for responding to text messages