



REACH

The REACH Program: A Tailored SMS Intervention for Supporting Type 2 Diabetes Self-management

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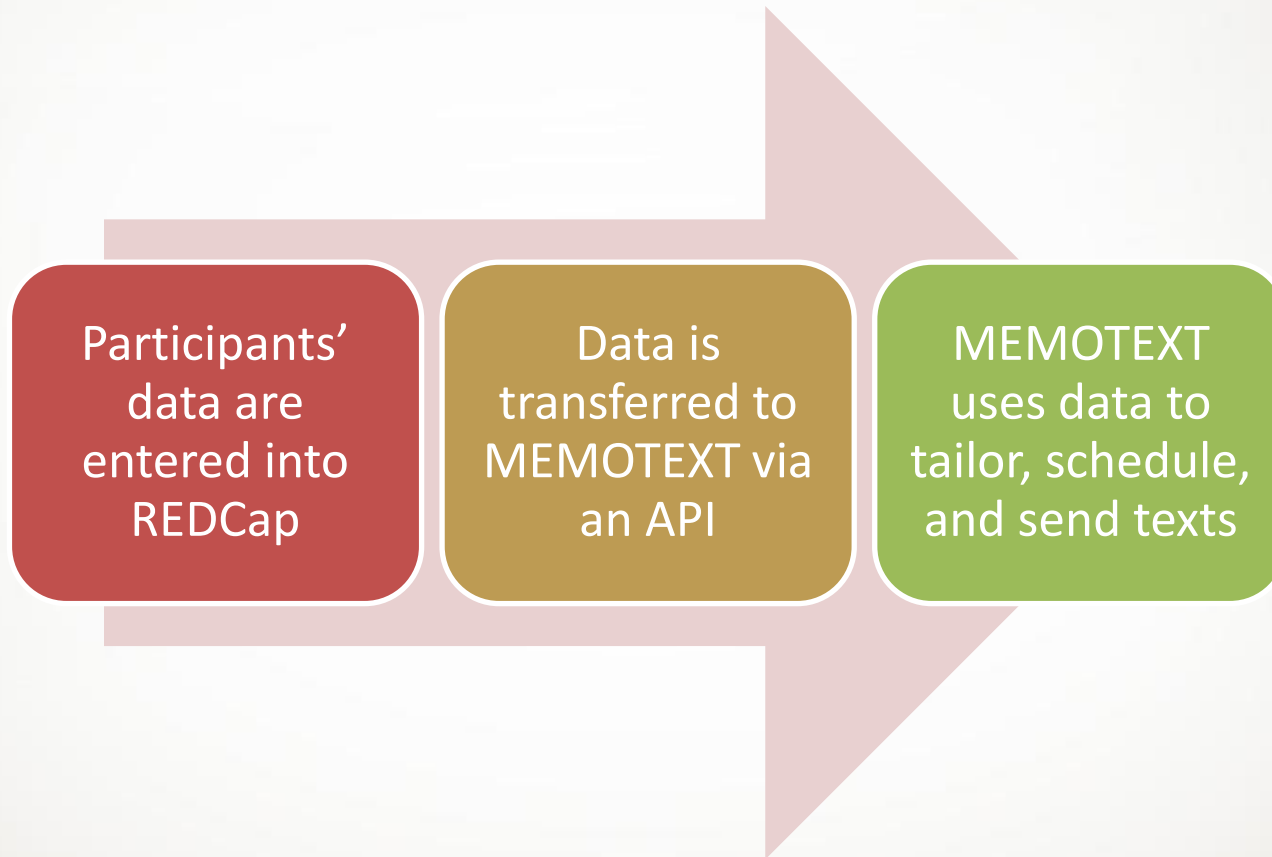
Background

- Medication nonadherence is a big problem
- Patients with overlapping disadvantages face more barriers to adherence
- Evidence is growing for the efficacy of texting interventions to improve adherence
- REACH study sought to address some gaps in this research:
 - Underserved, diverse patients
 - Long-term study
 - Implementation potential in safety net settings

REACH Intervention

- **R**apid **E**ducation/**E**ncouragement **A**nd **C**ommunications for **H**ealth text messaging intervention
 - Individually-tailored, theory-based, and designed to support patients' self-care, adherence and improve HbA1c
 - No Internet access required
 - Content specific to each patient's barriers to adherence
 - Supports self-monitoring of daily medication taking behavior; gives feedback on progress

REACH Functionality





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REACH Text Content

REACH (Rapid Education/Encouragement And Communications for Health)

Even if you don't think it is helping you now, your future health depends on taking your medicines every day.

If it's hard to take your medicine in front of others, start with just a close friend or family member. As you get used to it, you'll feel better about it.

Some companies offer discount coupons for their medicines. Ask your pharmacist or clinic whether you qualify for them.

Skipping meals when taking glyburide (Micronase, Diabeta, Glynase) may cause low blood sugar. Call the REACH Helpline or your clinic if you have questions.

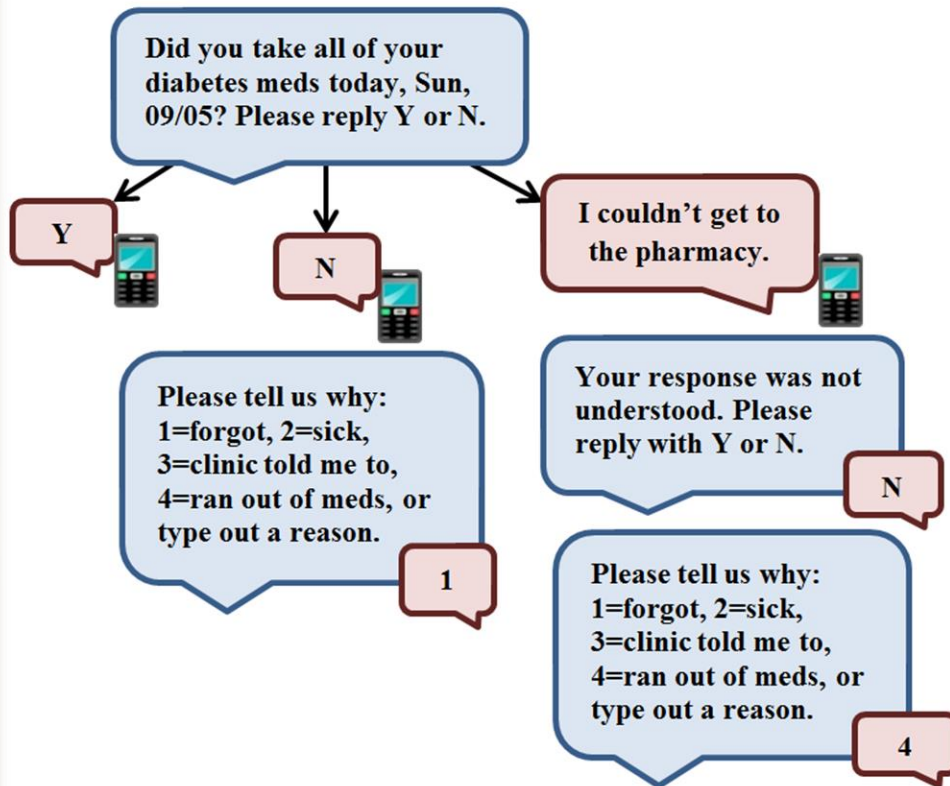
Hungry? Try a snack of celery with a tablespoon of peanut butter. It will have very little impact on your glucose and help keep you from feeling hungry.

If the idea of exercising feels like too big of a step, set small goals that will challenge you and move you forward. Small steps can add up!

A blood glucose level of 130 or less is perfect before meals.



REACH Text Content



You took your diabetes meds 6 days last week. You're on the right track to better health! Go for every day next week!

You took your diabetes meds 3 days last week. Think about what you can do next week to improve, and make it happen!

You took your diabetes meds 5 days last week. You're doing well, but you can still do better! Challenge yourself!



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REACH RCT

Population: adults with type 2 diabetes recruited from community health centers & VUMC primary care clinics

Primary Outcomes (patient-level): A1c, medication adherence, and other self-care behaviors

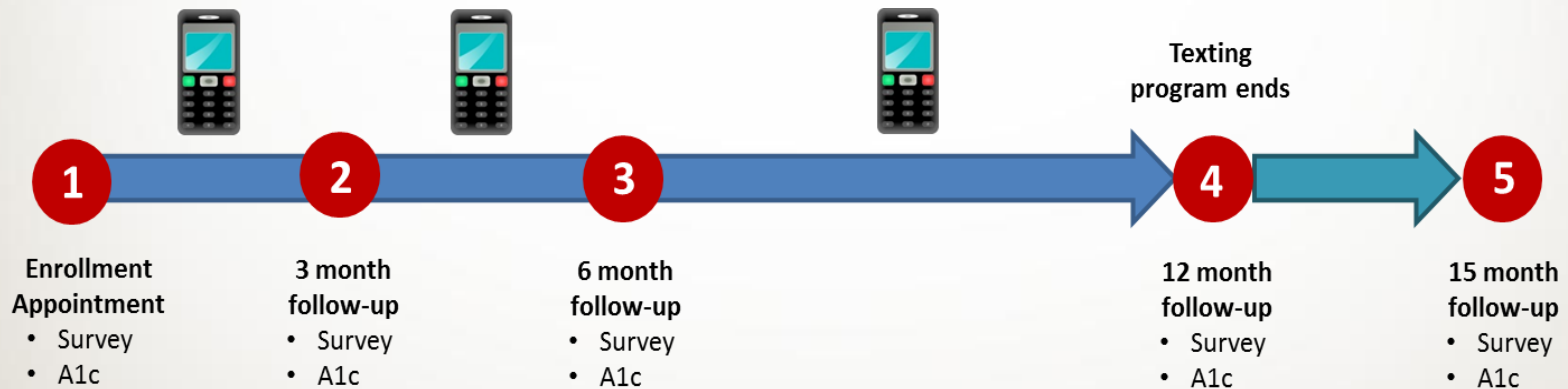
Exploratory Outcomes (clinic-level): barriers and facilitators to implementation

REACH RCT



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Control	REACH
<ul style="list-style-type: none">• Free A1c tests & results via text• Access to Helpline	<ul style="list-style-type: none">• Free A1c tests & results via text• Access to Helpline• Daily self-care text messages



Patient Characteristics

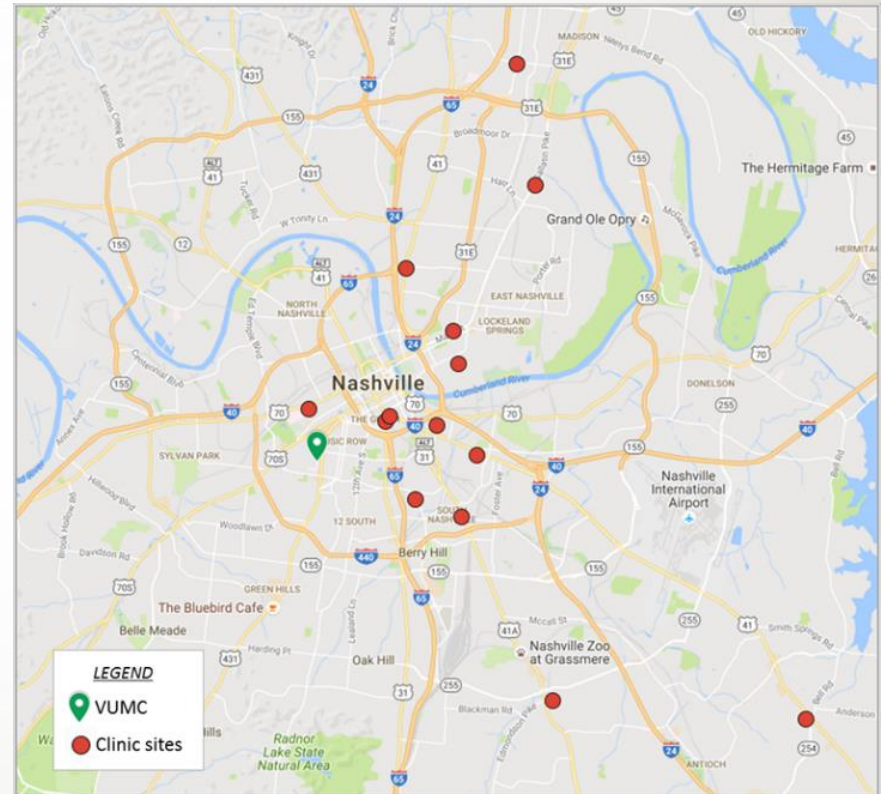


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N=512 adults with type 2 diabetes

- 45% recruited from community health centers
- 53% racial/ethnic minority
- 56% annual household incomes <\$35,000
- 49% underinsured (25% uninsured)
- >12% homeless
- Average HbA1c 8.6% (SD 1.8%)
 - 34% baseline HbA1c \geq 9.0%

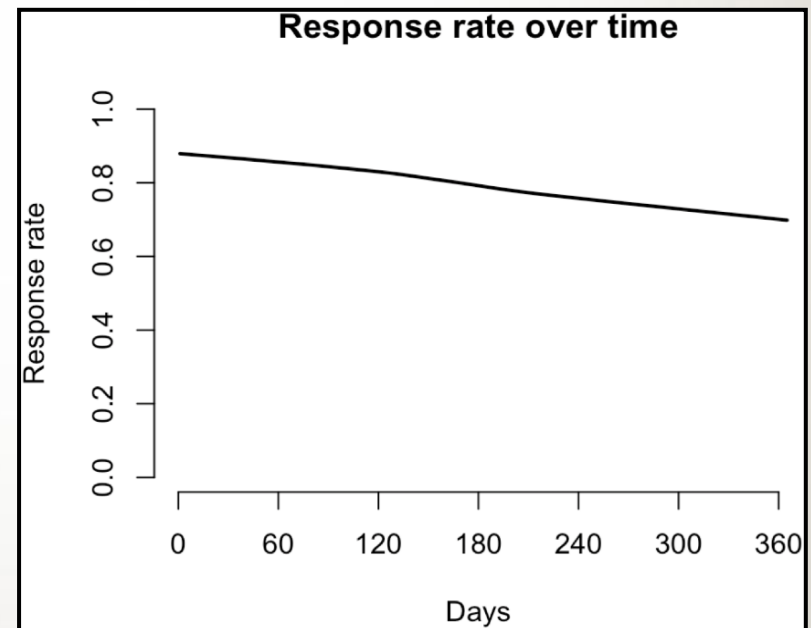
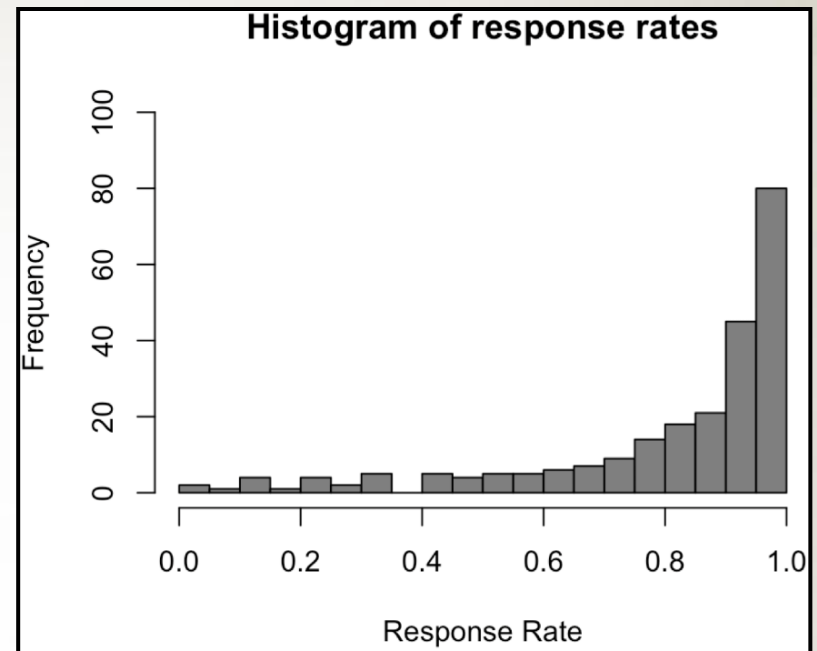
Retained >90% at each follow-up



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Engagement

- The median response rate to text messages was 91% [IQR: 75, 97%] over 12 months
- Engagement did not differ by age, education, income, health literacy, or numeracy.
- Black race, worse baseline medication adherence and A1c were associated with lower engagement, but effects were small
- After 6 months, participants had the option to receive fewer texts for the subsequent 6 months.
 - Nearly half chose to continue receiving daily texts for the full 12 months.

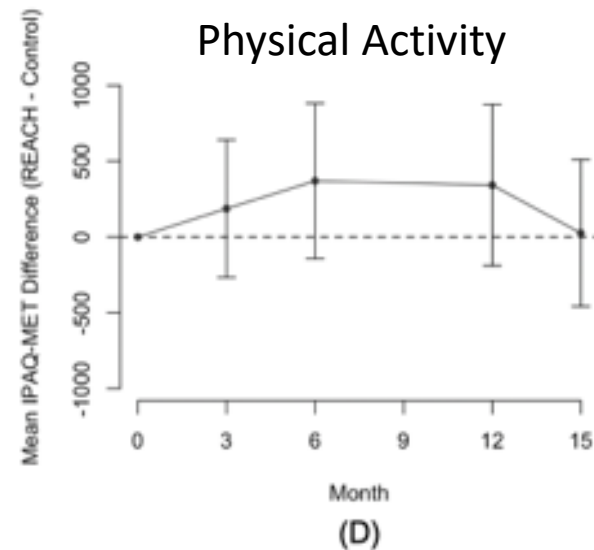
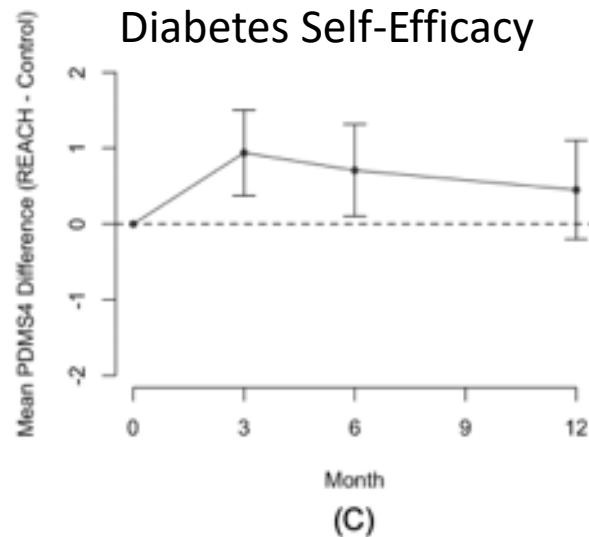
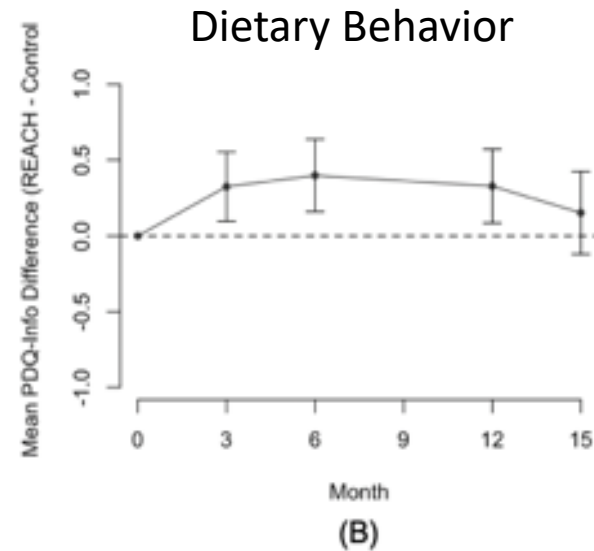
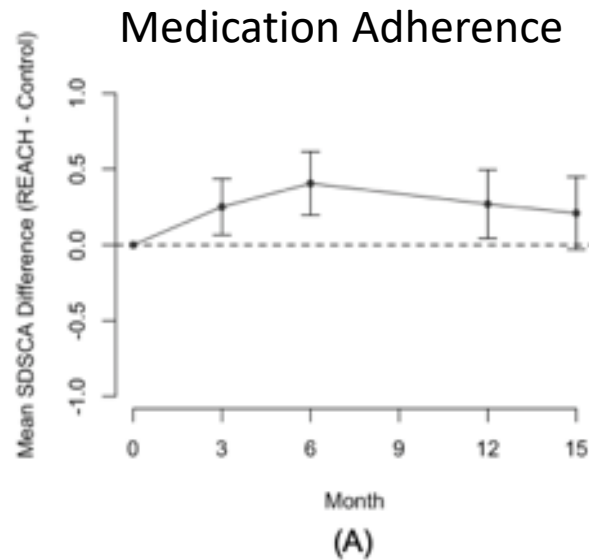


REACH effects

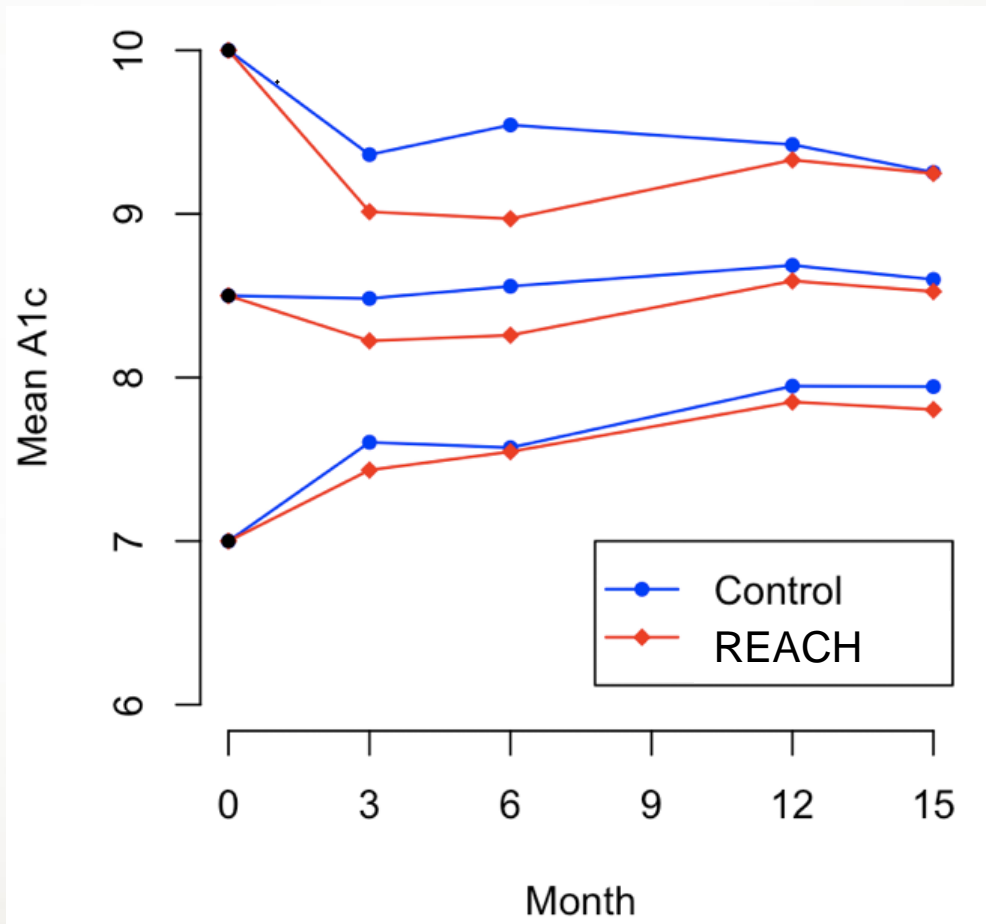


All behavioral outcomes and A1c showed a similar pattern of effects, early effects growing through 6-months then diminishing at 12 & 15 months

REACH effects on self-care behaviors



Estimated REACH effect on mean A1c by condition and separated by individuals with baseline A1c of 7.0%, 8.5%, and 10.0%



Implementation Potential in Safety Net Settings



Patient participants (n=36)

- REACH enhanced awareness about nonadherence, increased accountability, and a sense of being cared about
- 94% thought their clinic should offer REACH; 92% said they would sign up again if REACH were offered as part of clinical care
- Stressed importance of clinics' involvement and endorsement for widespread adoption

Clinic staff (n=12)

- 50% clinic administrators, 25% clinicians, and 25% were both
- REACH met patients' needs and aligned with organizational goals
- Appreciated program was individualized, automated, and relied on texting
- If implemented, two things critical for success:
 - Ease of integrating REACH into workflows
 - Addressing training/turnover



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RCT Recap

- The REACH Study had excellent long-term retention and intervention engagement among diverse adults with type 2 diabetes.
- REACH improved clinical and behavioral outcomes; however, we did not find evidence for sustained effects at 15 months for any outcome.
- Patients and clinic staff shared positive perceptions of implementing REACH.
- **Concluded: Robust, tailored mHealth programs are ideal for engaging disadvantaged patients in self-care, but other components likely needed to sustain effects.**



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Next Steps

- It's unclear *how* clinics should offer mHealth programs to maximize benefit
- mHealth as a supplement requires fewer processes/resources, but integration with clinical care may lead to larger or more sustained effects on patient outcomes
- Underlying tension: Patients want clinicians engaged with mHealth whereas clinicians have concerns about time constraints



Comparative Effectiveness Implementation Study

- 12 clinics will be randomized to mHealth or mHealth plus integration
- All clinics are community health clinics → safety net settings serving uninsured/underinsured people with diabetes
- All clinics will:
 - Work with us to develop strategies and options for implementation
 - Receive access to a clinician dashboard for helping manage REACH and the processes
 - Offer REACH to their patients with type 2 diabetes

Comparative Effectiveness Implementation Study

Clinic Processes for Implementation

mHealth as a supplement

Identify and inform eligible patients

Sign-up/enroll patients

Update content to patients' adherence barriers/prescribed meds

Troubleshoot technical issues

mHealth plus clinical integration

All processes for mHealth plus:

Clinical Integration

- View patient data generated by texts
- Act on patient data generated by texts:
 - Provide education, refills, or medication changes between visits
 - Identify patients in needs of available clinical services (clinical pharmacists, dieticians)

Comparative Effectiveness Implementation Study

Main questions

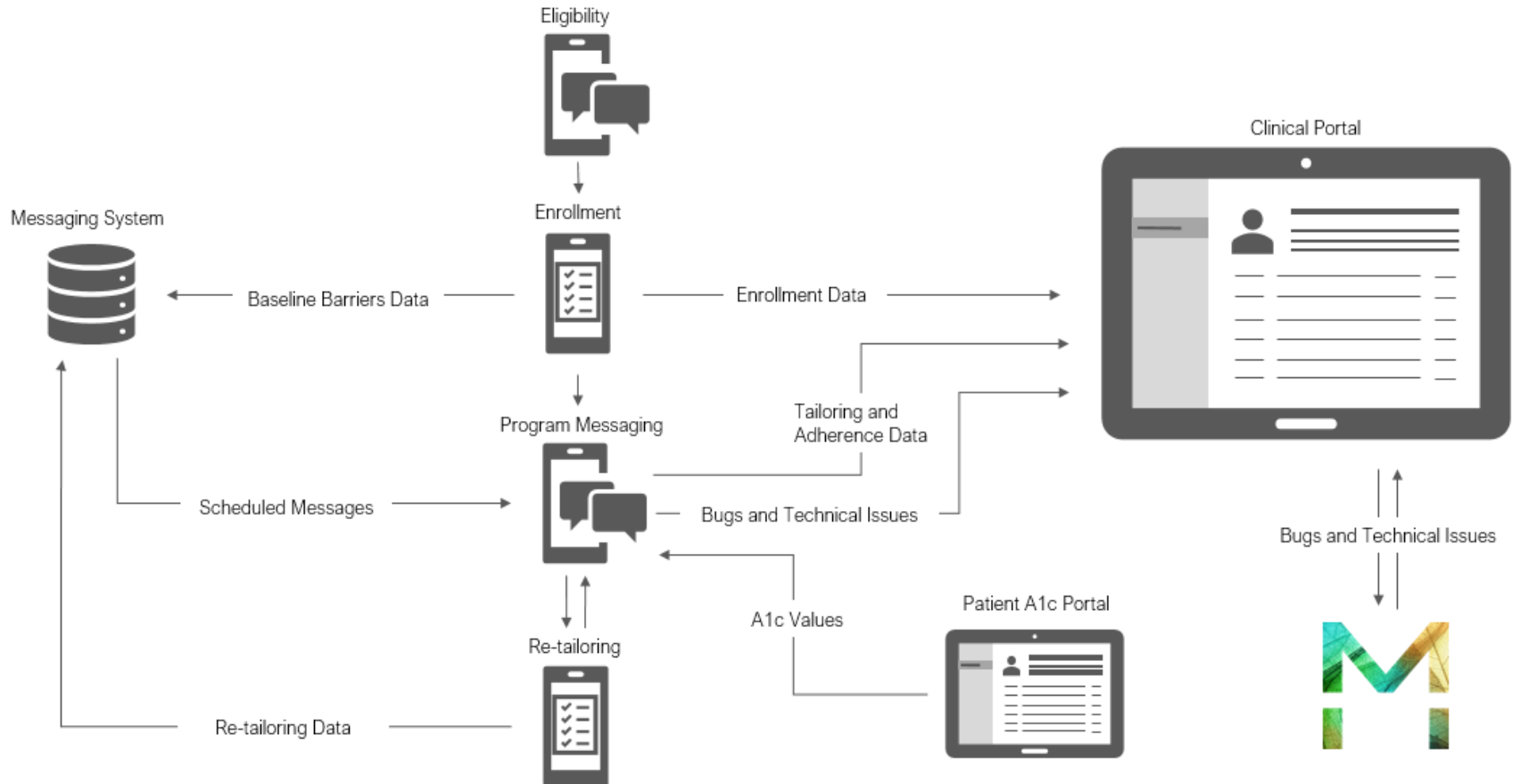
- What are the most successful strategies for implementing mHealth in community health clinics?
- Does integrating mHealth with clinical care have benefits for patients beyond offering mHealth as a supplement to care?
- Can/do community health clinics sustain the program after the active implementation period?

Outcomes

- Patient: A1c, uptake, engagement
- Clinic: costs and time, adoption, acceptability, and sustaining the program



Overview of Automated Patient Facing & Clinic Monitoring Loop



Summary

- Text messaging programs engage vulnerable patients, improve patient outcomes in the short-term, and have strong potential for implementation
- Combining automated support with action from the clinical care team may be necessary to sustain effects
- There is no lack of proven mHealth solutions but a lack of implementation
 - Understanding how to implement mHealth will help ensure our interventions have broader reach
 - Partnering with community health clinics and those who serve diverse patients is critical to maximize benefit and reduce disparities

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Thank You!
Questions?



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