

Personalized Patient Data and Behavioral Nudges to Improve Adherence to Chronic Cardiovascular Medications (The Nudge Study)

Michael Ho, MD, PhD

Adjoint Professor of Medicine, University of Colorado School of Medicine
Kaiser Permanente Colorado






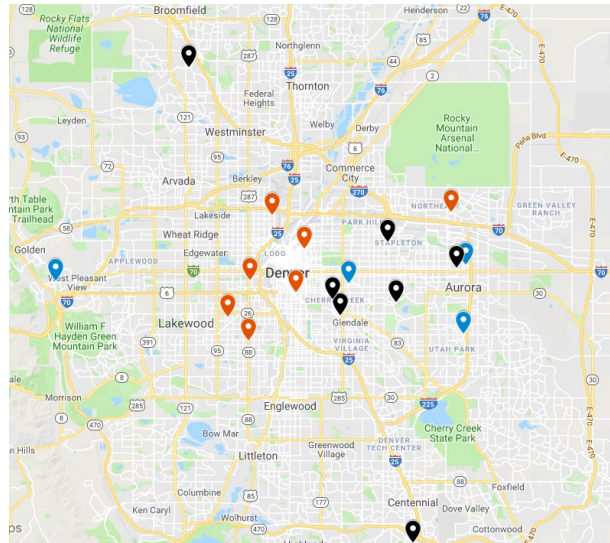
Objective

- Conduct a pragmatic patient-level randomized intervention across 3 HCS to improve adherence to chronic CV medications.
 - Primary outcome: Medication adherence defined by the proportion of days covered (PDC) using pharmacy refill data.
 - Secondary outcomes:
 - Intermediate clinical measures (e.g., BP control)
 - CV clinical events (e.g., hospitalizations)
 - Healthcare utilization
 - Costs



Study setting

-  Denver Health Clinics
-  VA Eastern Colorado HCS Clinics
-  UCHealth Clinics



Patient population

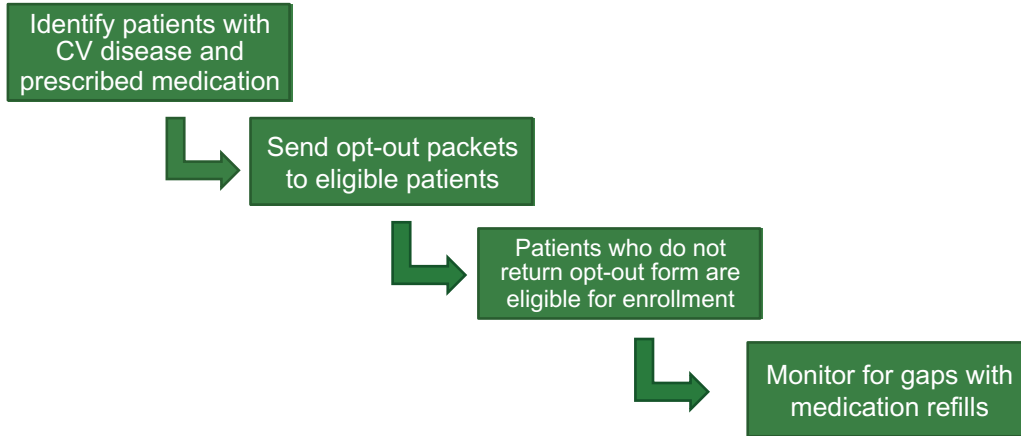
- Adult patients diagnosed with ≥ 1 condition of interest and prescribed ≥ 1 medication of interest

Condition	Classes of medications
Hypertension	Beta-blockers (B-blockers), Calcium Channel Blocker (CCB), Angiotensin converting enzyme inhibitors (ACEi), Angiotensin Receptor Blockers (ARB), Thiazide diuretic
Hyperlipidemia	HMG CoA reductase inhibitor (Statins)
Diabetes	Alpha-glucosidase inhibitors, Biguanides, DPP-4 inhibitors, Sodium glucose transport inhibitor, Meglitinides, Sulfonylureas, Thiazolidinediones, and statins
Coronary artery disease	PGY-2 inhibitor (Clopidogrel, Ticagrelor, Prasugrel, Ticlopidine), B-blockers, ACEi or ARB and statins
Atrial fibrillation	Direct oral anticoagulants, B-blockers, CCB

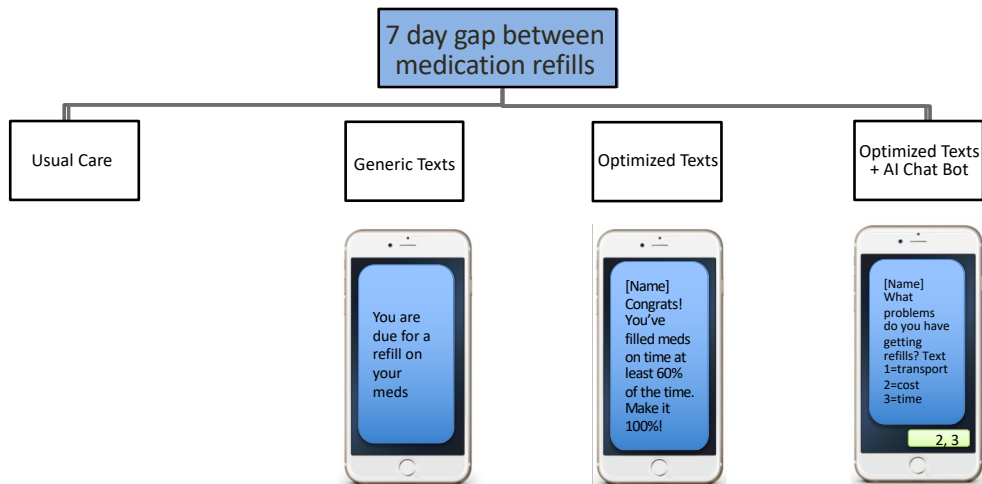
- English or Spanish-speaking



Opt-out study design



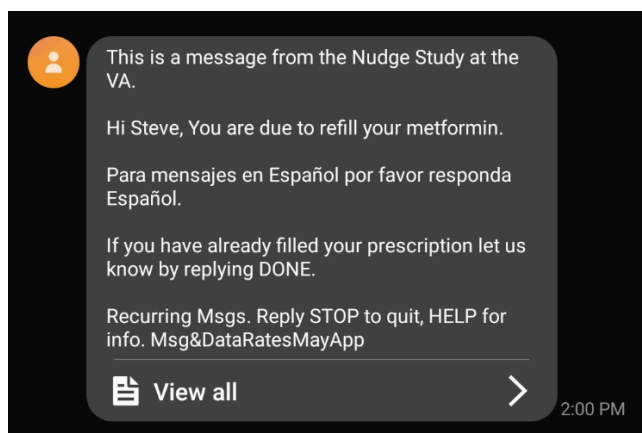
Intervention arms



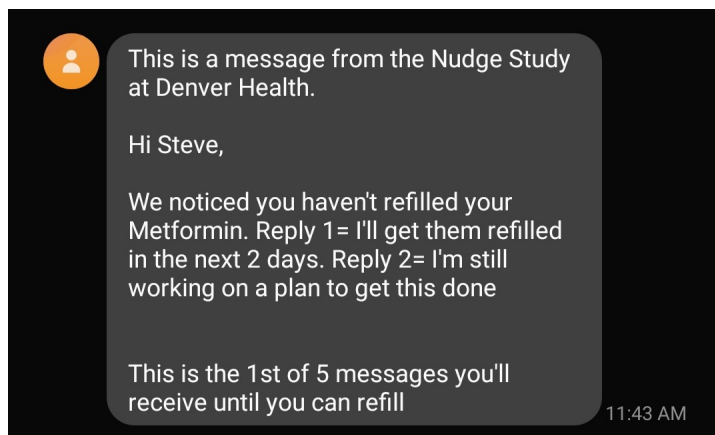
Types of nudges employed in this study

- Social Norms: Others like you are performing this behavior
 - Examples—testimonials *"People like Joseph have had success in remembering to pick up his meds by making it a habit to drive by his pharmacy on the way home from work"*
- Behavioral Commitments: Making a stated intention to take action
 - Example--*"Will you mention to a family member your intention to refill your medications today?"*
- Narrative stories: Evoking emotional connection
 - Example—*"Marta has committed to her daughter that she will stay on top of her refills so she'll be around longer for her grandkids!"*

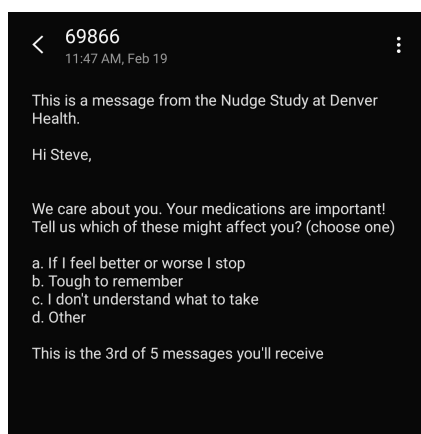
Sample generic message



Sample optimized message



Sample optimized + AI chatbot message



Barriers/challenges

- Unable to confirm patient receipt of text messages and/or patient comprehension
- Possibility of switching numbers or losing cell service, particularly at the end of the month
- Growing burden of text messages in general
- Competing hospital/health system priorities
- Data integration (e.g., Surescripts pharmacy data)

Solutions/lessons learned

- Stakeholder (i.e., patient, providers and health systems) engagement is critical
- Persistence and adaptability (particularly when COVID occurred) is key
- Creating multi-disciplinary and engaged teams to solve study issues