Informing Low-acuity Emergency Department Patients of Non-emergent Healthcare Resources Following Discharge to Decrease Emergency Department Utilization

(NCT 06350266)

Study Protocol with Statistical Analysis Plan

July 25, 2024

Study Protocol

Background

The goal of this campaign is to reduce unnecessary emergency department (ED) visits/encourage patients with low acuity visits to follow up with an appropriate provider and/or to seek care outside of the ED in the future. In this campaign, patients will be assigned to receive or not receive outreach following ED discharge that is aligned with the goal. Outreach will occur via a text message, as well as information added to the patient's after visit summary (AVS), and will include one or more calls to action that make patients aware of other Geisinger resources and avenues through which they can seek care outside of the ED. These may include, but are not limited to, walk-in urgent care, virtual urgent care, primary care provider (PCP) appointments, and/or other ways in which to contact Geisinger. The study will assess whether ED use differs across patients in different outreach conditions. It will also examine whether patients followed through on the message-specific calls to action in the messages differently across conditions.

Objectives

The study will involve randomized assignment of patients to different versions of outreach, including a treatment arm that encourages patients in non-emergent situations to call their primary care provider's office first and, if unavailable, to try urgent care (or other options, as described next). Patients with a Geisinger PCP are also provided with the appropriate contact number for their PCP, given hyperlinks to Geisinger's urgent care website, and encouraged to consider other same-day care options via a hyperlink to Geisinger's corresponding website. Patients without a Geisinger PCP are encouraged to consider Geisinger's virtual (telehealth) care, with a corresponding hyperlink. Both SMS text messages (at 1 day, 22 days, and 50 days post-discharge) and AVS (printed or available via patient portal upon discharge) will be used for active outreach. The control arm will receive the current standard system outreach and AVS. Data will be analyzed to determine which version is most effective at reducing ED use.

Design

This study is a randomized controlled trial with two study arms. Patients will be randomized to receive or not receive SMS texts and a modified AVS upon ED discharge.

Methods

At the time of an eligible patient's discharge from the ED, that patient will be assigned to one of the following study arms, based on which of several ranges of randomized numbers that patient was originally assigned in their electronic chart:

1. **Current standard practice (control arm):** Patients in this arm will receive the current standard AVS and whatever typical system outreach occurs.
2. **Same-day care alternatives (treatment arm):** Patients in this arm will receive suggestions for non-ED alternatives for same-day care.
    a. Those with a Geisinger PCP will also be provided with:
        i. PCP contact number
        ii. Hyperlink to Geisinger's urgent care website
        iii. Hyperlink to Geisinger website detailing same-day care options

b. Those without a Geisinger PCP will also be provided with a hyperlink to Geisinger's virtual care option.

Power Analysis

With 5,524 patients, we would have 80% power to detect a 3.0% absolute decrease in ED visits between active and control arms, with two-tailed alpha of .15, assuming a 41% baseline rate of subsequent ED visits within 120 days. The target effect size and number of patients are largely informed by practical considerations regarding the acceptable duration of the intervention (approximately 6 months), with an effect deemed useful if achieved.

Project Status

The intervention launched on April 25, 2024, but no data have been analyzed as of the time this document was uploaded.

Patients without GHP insurance who received or would have received their first message between 5/14/24 and 6/6/24 (*N* = 662) will be removed from the analysis due to unexpected message filtering and restrictions imposed by one of the cell service carriers.

Because of the unforeseen analysis exclusions, we will collect data from an additional 662 patients. Our updated target sample size is 6,186.

Statistical Analysis Plan

Planned Analyses

Primary Outcome: *ED visit [Time Frame: within 120 days following day of discharge]*

Question: Does outreach decrease ED visits when including information about same-day care?

Analysis (Confirmatory): We will test the hypothesis that SMS text plus AVS outreach decreases the likelihood patients will visit the ED in the 120 days following day of discharge. We will run an OLS regression including a categorical predictor variable coding for experimental arm (0 = control arm, 1 = treatment arm).

Other Pre-specified Outcomes

We will run the analysis described above on the following additional outcomes:

1. PCP appointment scheduled

   PCP appointment scheduled (yes/no)

   [Time Frame: within 60 days following day of discharge]

2. PCP visit

   PCP appointment attended (yes/no)

[Time Frame: within 60 days following day of discharge]

3. Telehealth appointment scheduled

   Telehealth appointment scheduled (yes/no)

   [Time Frame: within 60 days following day of discharge]

4. Telehealth appointment attended

   Telehealth appointment attended (yes/no)

   [Time Frame: within 60 days following day of discharge]

5. Urgent care visit

   Urgent care appointment attended (yes/no)

   [Time Frame: within 60 days following day of discharge]

6. Call made to PCP

   Record of patient call to PCP (yes/no)

   [Time Frame: within 60 days following day of discharge]

7. Any of the suggested actions taken

   PCP called or visited, urgent care visited, telehealth appointment attended, or PCP or telehealth appointment scheduled (yes/no)

   [Time Frame: within 60 days following day of discharge]

Analysis Notes

Recent work suggests that OLS regressions are appropriate in randomized experiments with binary outcome variables such as ours (Gomila, 2021).

Reference

Gomila, R. (2021). Logistic or linear? Estimating causal effects of experimental treatments on binary outcomes using regression analysis. *Journal of Experimental Psychology: General*, *150*(4), 700-709. https://doi.org/10.1037/xge0000920