

SWAT 247: Optimising the timing of text message invitations to maximise uptake to the BEST4 Screening Trial and the capsule sponge test

Objective of this SWAT

This SWAT will evaluate the impact of sending the text message invitation to the capsule sponge test appointment at different times of day on different days of the week (e.g. 10:30am Monday vs 10:30am Tuesday vs 10:30am Wednesday vs 10:30am Thursday).

The primary objectives are to evaluate (a) BEST4 Screening Trial appointment booking by timing of the invitation, in those offered a capsule sponge test; and (b) appointment attendance by timing of the invitation, in those offered a capsule sponge test.

The secondary objective is to determine the need for a reminder text message by timing of the first invitation text message, in those invited.

An exploratory objective is to evaluate whether results to evaluate the primary objectives may differ by subgroups defined by demographic, clinical or psychological factors.

Additional SWAT Details

Primary Study Area: Recruitment

Secondary Study Area: Barriers and facilitators; EDI; Incentives and engagement; Prompts

Who does the SWAT intervention target: Participants

Estimated resources needed to conduct the SWAT: Low

Estimated cost of the SWAT (£):

Findings from Implementation of this SWAT

Reference(s) to publications of these findings:

Primary Outcome Findings:

Cost:

Background

Recruiting participants to trials can be challenging with nearly 50% of trials extending recruitment or failing to meet targets.[1-3] Poor recruitment risks underpowered trials, delaying or missing clinically meaningful findings, raising ethical concerns, and increasing costs.

The BEST4 Platform is adopting a novel, cost-effective recruitment strategy by using text messages to invite potential participants to enrol online in the Heartburn Health bioresource. This approach will allow us to cost-effectively invite sufficient people to the Platform with broad eligibility criteria to ensure inclusivity. However, patient and public involvement (PPI) contributors have highlighted potential barriers, including trust in the text message, remembering to respond, and understanding the information. Pilot data suggests uptake may be lower than expected.

A randomly selected subset of Heartburn Health participants will be offered a capsule sponge test as part of the BEST4 Screening Trial, which aims to assess whether screening with this test can reduce oesophageal cancer mortality. Achieving high uptake is essential for trial power. Incorporating wording that targets certain behaviour change techniques and modifying the timing of the invitations and reminders to ease friction in the booking process may encourage uptake of the test and ensure the trial can achieve its aims.

We would like to optimise our invitation and enrolment strategy using Studies Within a Trial (SWATs). A SWAT is an established methodology of embedding an evaluation of an intervention in a host trial to improve some part of the trial process.[4] We will use an adaptive trial design [4,5] and interventions will be informed by the Theoretical Domains Framework and developed using behaviour change techniques.[6-8] By running sequential SWATs, we can continuously test and optimise our recruitment strategy, incorporating the most effective interventions over time.

Host Trial Population: Adults

Host Trial Condition Area: Gastrointestinal

Interventions and Comparators

Intervention 1: BEST4 appointment invitation text message sent on different days of the week

Intervention 2: BEST4 appointment invitation text message sent at different times of the day

Method for Allocating to Intervention or Comparator: Randomisation

Outcome Measures

Primary Outcomes: Proportion of people booking an appointment, in those offered a capsule sponge test; proportion of people attending a capsule sponge appointment, in those offered a capsule sponge test.

Secondary Outcomes: Proportion of participants receiving reminder text messages, in those offered a capsule sponge test.

Analysis Plans

The interventions will be compared using the “Response surface estimation” approach.

Each timing SWAT is designed to (1) ensure operational requirements are met (e.g. SMS are delivered in a timely fashion), while (2) generating data to help understand the effect of timing (both time of day and day of week) on engagement, and (3) maximising uptake to BEST4 booking.

Plan: An important difference between the timing and content SWATs is that we will always need to send multiple batches of invitations during several days of the week. For example, even if Thursday has the highest response rate to invitation text messages, capacity constraints mean that we will still need to send text messages on other days in order to send the complete list of invitation text messages. Therefore, analysis will focus on measuring effects of time of day and day of week on engagement, in order to help maximise uptake to BEST4 booking given operational constraints. That is, we aim to estimate the “response surface” of our endpoints as a function of time of day, day of week, and other timing factors.

Sample size: Sample size is fixed by operational requirements. Analysis of each timing intervention will use randomisation between timing strategies to learn about causal effects. For individual randomisation, timing intervention options for batches within each list will be based on judgement by the BEST4 team, primarily based on operational requirements, and by considering data to date. For cluster-randomised evaluations, options for timing between clusters will also be based on judgement based on data accrued and operational requirements.

Exploratory analysis: Analysis will continually explore the effect of day of week and time of day across all SWATs, by fitting statistical models as data are generated.

Cost estimation: Costs per intervention strategy will also be estimated. Primary and secondary outcomes will be expressed in financial terms, as cost per invite divided by the outcome variable.

Possible Problems in Implementing This SWAT

Some participants (e.g., those with low technological literacy, first languages other than those used for the text messages) may engage differently with the text message interventions, affecting uptake. Also, technical delivery issues (e.g., delivery failures, spam filters) may occur and affect the results (e.g. messages not received or opened).

References Cited in This Outline

1. McDonald AM, et al. What influences recruitment to randomised controlled trials? A review of trials funded by two UK funding agencies. *Trials* 2006; 7: 9.

2. Sully BGO, Julious SA, Nicholl J. A reinvestigation of recruitment to randomised, controlled, multicenter trials: A review of trials funded by two UK funding agencies. *Trials* 2013; 14: 166.

3. Walters SJ, et al. Recruitment and retention of participants in randomised controlled trials: a review of trials funded and published by the United Kingdom Health Technology Assessment Programme. *BMJ Open* 2017; 7: 15276.
4. Treweek S, et al. Trial Forge Guidance 1: What is a Study Within A Trial (SWAT)? *Trials* 2018; 19: 139.
5. Pallmann P, et al. Adaptive designs in clinical trials: Why use them, and how to run and report them. *BMC Medicine* 2018; 16: 29.
6. Gillies K, et al. Systematic Techniques to Enhance rEtention in Randomised controlled trials: The STEER study protocol. *Trials* 2018; 19: 197.
7. Carey RN, et al. Behavior Change Techniques and Their Mechanisms of Action: A Synthesis of Links Described in Published Intervention Literature. *Annals of Behavioral Medicine* 2018; 53: 693-707.
8. Cane J, O'Connor D, Michie S. Validation of the Theoretical Domains Framework for Use in Behaviour Change and Implementation Research. *Implementation Science* 2012; 7: 37.

References to This SWAT

Source of This SWAT

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