SWAT 44: Timing of text message prompts to increase trial participant response to postal questionnaires

Objective of this SWAT
To evaluate whether SMS text messages sent as pre- or post-notification reminders improve questionnaire response rates during the follow-up for a randomised trial.

Study area: Retention, Follow-up
Sample type: Participants, Patients
Estimated funding level needed: Very Low

Background
Short messaging service (SMS) text messaging ('text messaging') is a simple, cost effective and ubiquitous form of modern communication. A Cochrane Review of strategies to improve retention in trials [1] found that while the majority of recruitment interventions focus on postal return of questionnaires, three trials involved the use of text messages [2-4]. Research on text messages have shown them to be feasible and effective for improving recruitment and response rates in trials [3-6]. However, evidence is lacking as to the best timing of when to send participant messages to gain the optimal response. Recent trials have compared the timings of notification to determine whether no reminder, pre-notification (messages sent on the day the questionnaires were posted) or post-notification (four days after questionnaires were sent) reminders were more effective for improving questionnaire response rates or times [7,8]. The evidence from these trials was inconclusive using different comparators for each notification type, but post-notification compared to pre-notification appeared to improve response rates and time to response. Further evidence from different patient populations is required to validate and clarify these findings.

This SWAT is being embedded in the UK FROST trial of treatments for frozen shoulder, which is comparing early structured physiotherapy versus manipulation under anaesthesia versus manipulation under anaesthesia with arthroscopic capsular release (ISRCTN48804508). It uses similar methods to three previous text messaging trials [7] to facilitate a meta-analysis of the results.

Interventions and comparators
Intervention 1: Pre-notification: text messages will be sent on the day the questionnaires are posted to participants with the mailing out letter at 3 months follow-up. The message will read: 'UK FROST Trial: You will receive a questionnaire in the post in a few days. Your answers are important; so please help by returning it as soon as you can. Thanks.'
Intervention 2: Post-notification: text messages will be sent four days after the questionnaires are sent with the mailing out letter at 3 months follow-up. The message will read: 'UK FROST Trial: You should have received a questionnaire in the post by now. Your answers are important; so please help by returning it as soon as you can. Thanks'

Index Type: Method of Follow-up

Method for allocating to intervention or comparator
Randomisation

Outcome measures
Primary: Proportion of participants who return a valid questionnaire at the 3 months follow-up. A valid questionnaire is defined as one containing a completed response for at least the primary outcome questionnaire (The Oxford Shoulder Score).
Secondary: 1) Time to questionnaire return (number of days between the questionnaire being mailed to participants and it being recorded as returned)
2) Proportion of patients requiring at least one return reminder notice (a letter at 2 and 4 weeks and a telephone call 6 weeks following non-return).

Analysis plans
For the primary outcome, the difference in proportions will be calculated with 95% confidence interval, and the Chi Square test will be used to assess statistical significance. Additionally, a

logistic regression adjusting for age, gender and UK FROST treatment allocation will be performed and the effect of text message intervention reported. Return rates will be compared descriptively to those who were followed up at 3 months before the embedded trial was initiated.

The secondary outcome of time to questionnaire return will be assessed by a Kaplan Meier curve and the text message interventions compared by log rank test. Cox regression will be applied adjusting for age, gender and UK FROST treatment allocation, and the effect of the intervention reported. Questionnaire return times will be censored at three months (91 days) for the time to event analyses. The requirement for any questionnaire return reminder will be analysed in the same way as the primary outcome.

Analyses will be undertaken on an intention-to-treat basis, using two-sided statistical significance at the 5% level.

For the meta-analysis, systematic reviews of ways to reduce trial attrition will be checked for other embedded trials of text messaging interventions and forward citation searching will be used to identify studies published since the review [1,7]. The findings from similar studies for the proportion of patients who returned a valid questionnaire will then be pooled using odds ratios and a random effects model using the method of DerSimonian and Laird, with the estimate of heterogeneity taken from the Mantel-Haenszel model. Heterogeneity will be identified and measured using the I2 statistic. A second model will pool adjusted odds ratios from each study using a generic inverse variance meta-analysis approach. For the time to event analysis, log hazard ratios and their standard errors will be extracted from each study and pooled using a generic inverse variance meta-analysis approach. Data permitting, both unadjusted and adjusted analyses will be undertaken for the time to event outcome.

Possible problems in implementing this SWAT

Additional strategies to improve retention may be introduced if there are poor retention rates. The effect of the text message intervention may be diminished if additional strategies are introduced.

References

1. Brueton VC, Tierney J, Stenning S, et al. Strategies to improve retention in randomised trials. Cochrane Database of Systematic Reviews 2013; (12): MR000032.
2. Severi E, Free C, Knight R, et al. Two controlled trials to increase participant retention in a randomized controlled trial of mobile phone-based smoking cessation support in the United Kingdom. Clinical Trials 2011; 8(5): 654-60.
3. Man MS, Tilbrook HE, Jayakody S, et al. Electronic reminders did not improve postal questionnaire response rates or response times: a randomized controlled trial. Journal of Clinical Epidemiology 2011; 64(9): 1001-4.
4. Ashby R, Turner G, Cross B, et al. A randomized trial of electronic reminders showed a reduction in the time to respond to postal questionnaires. Journal of Clinical Epidemiology 2011;64(2): 208-12.
5. Free C, Hoile E, Robertson S, Knight R. Three controlled trials of interventions to increase recruitment to a randomized controlled trial of mobile phone based smoking cessation support. Clinical Trials 2010; 7(3): 265-73.
6. Clark L, Ronaldson S, Dyson L, et al. Electronic prompts significantly increase response rates to postal questionnaires: a randomized trial within a randomized trial and meta-analysis. Journal of Clinical Epidemiology 2015; 68(12): 1446-50.
7. Keding A, Brabyn S, MacPherson H, et al. Text message reminders to improve questionnaire response rates in RCTs: findings from three randomised sub-studies. Trials 2015; 16(Suppl 2): P103.
8. Keding A, Brabyn S, MacPherson H, et al. Text message reminders to improve questionnaire response rates. Journal of Clinical Epidemiology 2016; pii: S0895-4356(16)30149-4 [epublication ahead of print: 15 June 2016]

Publications or presentations of this SWAT design

Examples of the implementation of this SWAT

People to show as the source of this idea: A. Hughes-Morley, S. Brealey, A. Keding, D. Torgerson, C. Hewitt, M. Bailey, A. Rangan
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