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Main Article

Patient mobile telephone 'text' reminder: a novel way to reduce non-attendance at the ENT out-patient clinic

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Abstract

Background: Non-attendance at out-patient clinics is a seemingly intractable problem, estimated to cost £65 (€97) per incident. This results in under-utilisation of resources and prolonged waiting lists. In an effort to reduce out-patient clinic non-attendance, our ENT department, in conjunction with the information and communication technology department, instigated the use of a mobile telephone short message service ('text') reminder, to be sent out to each patient three days prior to their out-patient clinic appointment.

Objective: To audit non-attendance rates at ENT out-patient clinics following the introduction of a text reminder system.

Study design: Retrospective review.

Methods: Non-attendance at our institution's ENT out-patient clinics was audited, following introduction of a text message reminder system in August 2003. Rates of non-attendance were compared for the text message reminder group and a historical control group.

Results: Before the introduction of the text message reminder system, the mean rate of non-attendance was 33.6 per cent. Following the introduction of the system, the mean rate of non-attendance reduced to 22 per cent.

Conclusion: Sending text message reminders is a simple and cost-effective way to improve non-attendance at ENT out-patient clinics.

Key words: Outpatients; Patient Non-Compliance; Otolaryngology; Mobile Phones; Ireland

Introduction

Out-patient departments lie at a critical interface between primary care and acute hospital services. Increasing pressure to ensure efficient and effective healthcare delivery has resulted in out-patient departments investigating ways to minimise the number of patients failing to attend their scheduled clinic appointment. These include reminder letters, telephone calls and automated voicemails.

Patients' failure to attend their out-patient appointments has a significant effect on the efficient running of a hospital. It results in the under-utilisation of both medical and non-medical resources. There is a worse outcome for those who non-attend, and a loss of continuity of care.[1]

The most common reason for non-attendance involves confusion over the date, time and location of the appointment.[2,3] All of these problems are amenable to reduction through reminder systems. Previous non-attendance was found to be the strongest predictor of future failure to attend;[4] it is therefore important to curtail this behaviour from the outset. Waiting times are also extended as non-attenders are given repeat appointments.[5]

Methods introduced to reduce non-attendance have included reminder letters, personalised telephone calls, automated telephone calls and awareness campaigns.[6–8] These have previously been shown to reduce rates of non-attendance at geriatric out-patient clinics. The cost-effectiveness of telephone reminder systems has been questioned due to their labour-intensive nature, compared with a mobile telephone short message service ('text') reminder service.[9] With the emergence of text messaging and novel technology, it is now possible to send group text messages, with little maintenance of the actual software required.

We investigated the effect of a mobile telephone text reminder service on non-attendance rates at our ENT out-patient clinics.

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Materials and methods

This study was performed at the Adelaide, Meath and National Children's Hospital, Tallaght, a tertiary referral hospital in Dublin, Ireland. Ethics committee approval was not required, as it was hospital policy to send reminder letters to patients regarding their out-patient appointment.

The study concentrated on those patients attending ENT out-patient clinics. The mobile telephone text reminder system was introduced in August 2003. Patients attending out-patient clinics had their mobile telephone numbers recorded into the hospital patient information management system. A historical control group consisted of patients not sent a reminder text. From August 2003 to August 2006, patient data were extracted from the hospital patient information management system, and non-attendance rates were compared for the group sent text reminders and the historical control group.

Relevant patient information was obtained from the hospital patient information management system three days before the patient's out-patient appointment. This information included the patient's mobile telephone number, and the date, time and location of the out-patients appointment. These data were uploaded onto the mobile telephone reminder system (Xiam Technologies, South County Business Park, Leopardstown Dublin 18, Ireland line), a computer program which automatically sent text reminders to the relevant mobile telephone numbers obtained from the hospital patient information management system.

The text reminder read as follows: date of appointment, time of appointment, clinic name and clinic code. The reminder message was sent three days before the out-patient appointment. This reduced the risk of patients forgetting about the text reminder.

For each month from August 2003 to August 2006, patient attendance data were extracted from the hospital patient information management system. Non-attendance rates for those sent a text reminder were recorded. We also studied the effect of text reminders on non-attendance rate according to patient demographics and geographical location. A risk ratio analysis was undertaken to establish the relationship between a text message being sent and the likelihood of attendance.

Statistical analysis was performed using Microsoft Excel 2003 software. Patient attendance rates were extracted from the hospital patient information management system. Non-attendance rates in the historical control group were compared with those in the text reminder group. A two-sample proportion *t*-test was used, using a significance level of $p < 0.05$.

Results

The text reminder group consisted of 3981 patients. The mean non-attendance rate in this group was 22 per cent (range, 21.9–22.2 per cent). The historical control group consisted of 4985 patients, and had a mean non-attendance rate of 33.6 per cent (range, 32.1–34.8 per cent) ($p < 0.001$). Odds ratio calculation showed that those who received a text reminder were more likely to attend their appointment (odds ratio = 1.5). A comparison between those living inside and outside the hospital's catchment area demonstrated no statistical effect of patients' address on non-attendance rates ($p = 0.71$).

Analysis of a subgroup of patients between the ages of zero and 80 years showed a mean non-attendance rate of 29.4 per cent in the historical control group, compared with 19.5 per cent in the text reminder group ($p = 0001$; $z = 1.96$).

Discussion

This study investigated the effect of mobile telephone text reminders on non-attendance rates at our ENT out-patient clinics. Text (short message service) messaging is a method of communication which allows one person with a mobile telephone to send another a message. This method of communication is less intrusive than the traditional telephone call.

In Ireland in 2005, over 5 billion text messages were sent.[10] The current study shows that text reminders are an effective means of reducing out-patient clinic non-attendance. Non-attendance rates in the text reminder group and the control group were 33.6 and 22 per cent, respectively. Notably, the text reminder had the greatest effect in those patients aged between zero and 30 years. This is especially important; it has been previously noted that younger patients are more likely to non-attend.[2]

With the ever increasing financial constraints on hospitals, it was important that the text reminder system be cost-effective. The Xiam software program used by the hospital information, communication and technology department had an initial set-up cost of approximately €1000. The cost per text reminder was six cents. The estimated cost per non-attendance episode was £65 (€97).[11] The number of patients required to attend the clinic in order for the system to cover its operating costs was 12. On the basis of this study, the estimated number of patients attending as a result of the text reminder service was 120 per annum. This resulted in a saving of approximately €10 000 per annum for the hospital. The costs of diagnostic tests etcetera for those patients who attended are not included in this costing. Previously, telephone reminders had been used, with good results;[8] however, the text reminder system was more cost-effective. This text reminder saving is secondary to the time consumption and direct labour costs associated with phoning individual patients.

The above results may have a significant impact on the choice of reminder system used in primary care. With increasing patient loads and demands for efficiency, a text reminder system will undoubtedly bring future benefits. In Ireland, mobile telephone penetrance rates were 106 per cent by the end of June 2006.[10] The potential benefits of a text reminder system are highlighted by the number of people now using mobile telephone technology.

A potential disadvantage of the system was that 2–3 per cent of people failed to receive their text

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reminder as a result of incorrect data entry. However, this problem has also been encountered in alternate methods of patient reminder systems, such as reminder telephone calls and reminder letters (due to changes of address).[12] In addition, patients with mobile telephones are more likely to change their contact number, and this may be a potential pitfall of this system.

New patients referred to the out-patient clinic generally do not have their mobile telephone numbers included in the referral letter. This could be improved by an education and awareness campaign targetting general practitioners, in order to promote the inclusion of patients' mobile telephone numbers within out-patients referral letters. However, it is important to recognise that out-patients attendance rates will never be 100 per cent, as clinics must compete with other patient interests which patients may prioritise.[13] Our current text reminder system could be improved if patients had the ability to send a reply text to cancel or defer their appointment.

- **Patient failure to attend out-patient appointments has a significant effect on the efficient running of a hospital**
- **Increasing pressure to ensure efficient and effective healthcare delivery has resulted in out-patient departments investigating ways to minimise the number of patients failing to attend their scheduled clinic appointments**
- **Short message service ('text') reminders have a role to play in reducing non-attendance at out-patient clinics. This system is more cost-effective and time-efficient than other, more traditional reminder systems currently available**

Conclusion

Text reminders have a role to play in reducing non-attendance at out-patient clinics. This system is more cost-effective and time-efficient than the other, more traditional reminder systems currently available.

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