

# Targeting Zero Non-Attendance in Healthcare Clinics

Ka C. CHAN<sup>a,1</sup> and David B. CHAN<sup>b</sup>

<sup>a</sup> *Department of Computer Science & Computer Engineering, La Trobe University  
Bendigo, Australia*

<sup>b</sup> *Faculty of Medicine, The University of New South Wales  
Sydney, Australia*

**Abstract.** Non-attendance represents a significant cost to many health systems, resulting in inefficiency, wasted resources, poorer service delivery and lengthened waiting queues. Past studies have considered extensively the reasons for non-attendance and have generally concluded that the use of reminder systems is effective. Despite this, there will always be a certain level of non-attendance arising from unforeseeable and unpreventable circumstances, such as illness or accidents, leading to unfilled appointments. This paper reviews current approaches to the non-attendance problem, and presents a high-level approach to fill last minute appointments arising out of unforeseeable non-attendance. However, no single approach will work for all clinics and implementation of these ideas must occur at a local level. These approaches include use of social networks, such as Twitter and Facebook, as a communication tool in order to notify prospective patients when last-minute appointments become available. In addition, tele-consultation using video-conferencing technologies would be suitable for certain last-minute appointments where travel time would otherwise be inhibiting. Developments of new and innovative technologies and the increasing power of social media, means that zero non-attendance is now an achievable target. We hope that this will lead to more evidence-based evaluations from the implementation of these strategies in various settings at a local level.

**Keywords.** Non-attendance, appointments, reminder systems, short message service, SMS, social networking, Facebook, Twitter, Skype, VoIP

## Introduction

Non-attendance is a common phenomenon in all types of health clinics and typifies an inefficiency which can be reduced [1]. It represents a significant cost to many organisations, both private clinics and the public system, as well as leading to wasted time, resources, and potentiating poorer service delivery through lengthened waiting queues. Reasons for non-attendance have been widely investigated [2-4], and the most common reasons reported include patients forgetting, clerical errors and patient symptoms being resolved.

Reminder systems through mail, telephone or SMS have all been shown to be a simple and effective method of reducing non-attendance [5-9]. Both telephone and SMS methods can be equally effective [8]. SMS reminders substantially increase

---

<sup>1</sup> Corresponding Author: Ka Ching. Chan, Department of Computer Science and Computer Engineering, La Trobe University, Bendigo, Victoria 3552, Australia; E-mail: ka.chan@latrobe.edu.au

attendance rates of clinic appointments and can result in improved health outcomes [10]. Telephone and postal reminders are particularly effective if received within a day of scheduled appointments [11]. Systematic review of 33 independent studies pertaining to telephone, SMS or automated telephone reminders found that all but one reported a benefit from sending reminders and suggested a weighted mean relative change of 34% from the baseline non-attendance rate [12]. Automated reminders were less effective than manual phone calls (29% versus 39% improvement from baseline non-attendance rate) and there appeared to be no difference in non-attendance rate whether the reminder preceded the appointment by a day or a week [12].

However, there exist other reasons for non-attendance such as illness, accidents, car breakdowns [4] or very late cancellations. These situations give rise to a level of non-attendance which cannot be completely eradicated by reminder systems alone, nor by traditional rescheduling as the clinic is informed at a time too close to the actual appointment. This paper proposes the use of social media networks such as Twitter and Facebook as a communication tool to find replacement patients at very short notice, in order to fill empty appointment slots created by last minute non-attendance.

## **1. Reducing Non-Attendance with the Traditional Reminder Approach**

The traditional reminder process has been effective, eradicating 40 to 50 percent of non-attendance [2, 3]. Despite variations in the way these systems have been designed and reported in literature, they follow the same fundamental processes as summarized in Figure 1.

Reminder systems have taken various approaches, including manual or automated telephone calls, SMS, emails and letters. It is reported that timing of reminders—a day, two days, or a week in advance, has little impact on attendance rates [12]. Many of these systems are automated and upon reminder, most clinics assume that patients confirm by default and contact the clinic only if a cancellation or rescheduling is required. When cancellations or rescheduling occurs, secretaries or administrators need to find another patient to fill the time slot. Despite being time and labour intensive, this is nonetheless a worthwhile process in improving overall clinic efficiency.

Reminder systems reduce non-attendance arising out of forgotten appointments or where there are other issues or commitments known to the patient in advance. It reinforces the need for patients to contact the clinic if they decide not to attend, allowing for rescheduling to occur. However, reminder systems are unable to address non-attendance due to last-minute events such as illness, accidents or misadventure, or whenever patients fail to inform the clinic. As such, there will invariably be a level of non-attendance and unfilled time slots which traditional reminder systems are unable to eradicate.

## **2. Strategies Targeting Zero Non-Attendance**

As reminders cannot address non-attendances of a last minute nature, zero non-attendance is unachievable without a complementary approach. In the past, where last minute appointments became available, no action was taken. Practical and effective ways to notify prospective patients about the availability were not available, hence it

was not possible to fill those appointments and targeting zero non-attendance was perhaps unreasonable and unachievable.

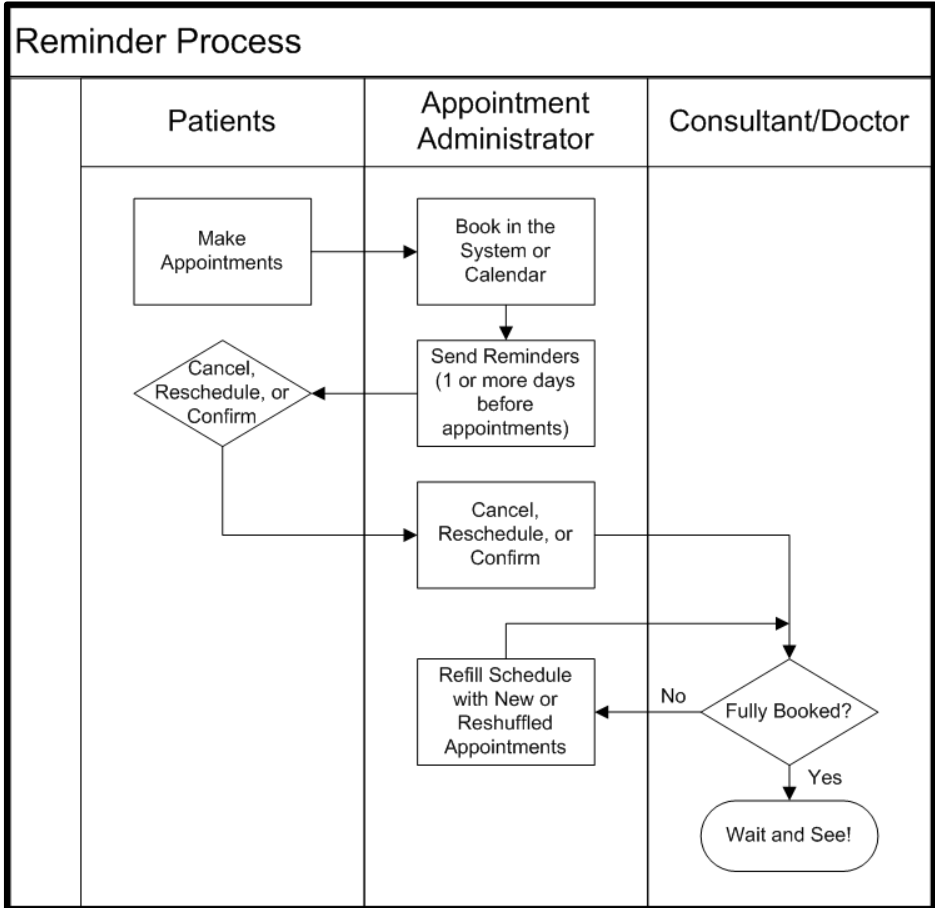


Figure 1. Traditional reminder process flowchart.

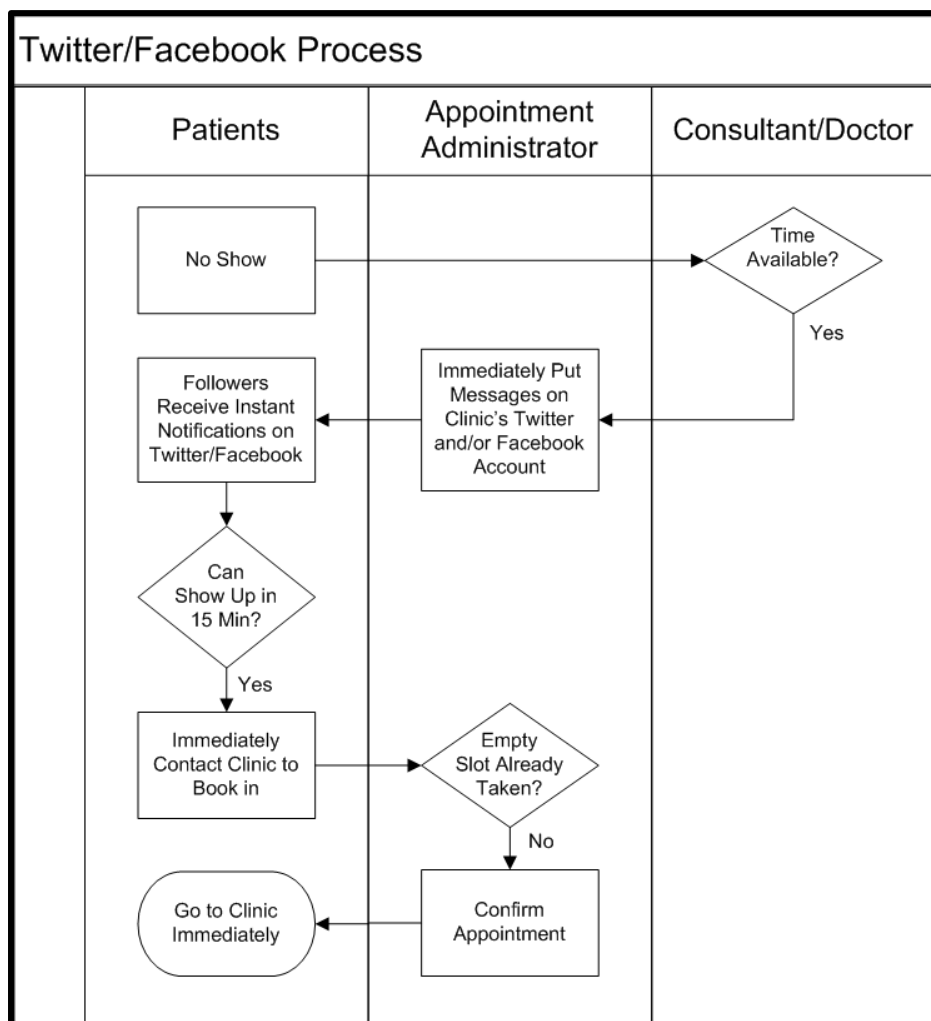
The beginning of the 21st century has been marked by the influence of social media and development of improved internet infrastructure such as the National Broadband Network (NBN) in Australia. With these technologies, we believe that zero non-attendance is achievable and propose a few strategies which may be considered for implementation at a local level.

2.1. Social Media as an Effective Communication Tool

Social media networks such as Twitter and Facebook allow for free, instantaneous communication to a large audience. Twitter is an online microblogging service, launched in July 2006, that allows users to send (‘tweet’) messages of up to 140 characters to an audience of ‘followers’. Facebook, launched in February 2004, is a more extensive social networking service that offers functionalities including personal

and business profiles, announcements ('statuses'), connecting with friends, exchange of messages, sharing of photos, timelines of events and various user groups. Many users use Twitter and Facebook on both mobile devices as well as tablets, laptops and PCs, and are notified when a message is posted.

Communicating last-minute availabilities to prospective patients is the initial and fundamental step in filling appointment vacancies. Twitter and/or Facebook announcements provide an effective platform for doing so, initiating a process whereby patients can then contact the clinic directly to take up the offer (see Figure 2). Clinics should establish a social media presence and encourage patients interested in earlier appointments to subscribe to their updates. This may also appeal to new patients, those hoping to get same day appointments, walk-in patients and those without prior bookings. When an established appointment is cancelled, it is often easier to find a 'new replacement' patient than to reschedule other established appointments.



**Figure 2.** Twitter/Facebook Process Flowchart.

Existing systems aim to ensure that bookings are full in advance and to maximize attendances. As a complementary approach where non-attendance occurs, social media may provide a platform for notifying prospective patients, making it possible to fill appointments at very short notice.

### *2.2. Skype as a Tele-Consultation Tool*

Tele-consultations hold potential for appointments at short notice as it involves no travel time, ideal for situations where a physical presence is not necessary, such as reporting to a patient that laboratory results are clear. Skype is one free and widely used internet video conferencing service. FaceTime is another alternative.

The use of Skype for clinical telehealth is not a new idea. A recent systematic review [13] found many case reports and small studies, without firm evidence for or against the use of Skype in a clinical context. It was reported that risks and benefits were not clear. We envisage that poor internet security may result in the compromise of patient confidentiality. However, this concern can be addressed by higher cost secure VoIP systems which are available on the market.

### *2.3. Overbooking as a Strategy Based on Previous Statistics*

Overbooking has been minimally discussed in literature, but may be considered useful under certain circumstances depending on the nature of the clinic. In theory, overbooking increases waiting time but reduces unfilled appointments. Such a strategy may be unacceptable in a clinic with long appointment times. However, overbooking may be a useful consideration in a setting where there are multiple healthcare providers serving patients simultaneously, short appointments and high rates of non-attendance, such as a blood donation clinic or during the flu season.

## **3. Non-Attendance is a Local Problem**

‘Local systems are needed to address local problems.’<sup>[14]</sup>

No single solution will work across all circumstances and clinics of different natures require different approaches. Whilst we have provided a number of strategies which may help reduce non-attendance and improve efficiency, implementation will ultimately be left to the individual clinics who best understand the local practices, patient characteristics and demands.

These strategies will be more effective for some clinics than others. For example, the social media approach may be ideal for a university health clinic, where there are a large number of students within close proximity of the clinic and a high level of social media uptake. Similarly, clinics in a regional centre such as Bendigo may find this approach useful. As the third largest city in Victoria, Australia, Bendigo has a population of 100 000 [15], and travel time from one end of the city to the other is approximately 10 minutes.

## 4. Conclusion

It is well established that the traditional reminder system, whilst effective, cannot achieve zero non-attendance alone. This paper proposes the use of social media, tele-consultations and overbooking as complementary strategies which may help achieve this goal. These cost-effective tools are simple to implement, can be locally managed and embrace technology widely used and accepted by the general public.

Without implementation, the effectiveness of these strategies cannot be assessed. Data for statistical analysis needs to be collected and evaluated. At a local level, clinics will have to develop individualized operating procedures and will play an invaluable role in improving current approaches. Zero non-attendance will never be achieved if not targeted, and if availabilities cannot be filled at short notice. However, with the increasing availability of new technologies, improvements in infrastructure and influence of social media, we believe that zero non-attendance is an achievable target.

## References

- [1] George A, Rubin G. Non-attendance in general practice: a systematic review and its implications for access to primary health care. *Family Practice*. 2003 April 1, 2003;20(2):178-84.
- [2] Hogan A, Mc Cormack O, Traynor O, Winter D. Potential impact of text message reminders on non-attendance at outpatient clinics. *Irish Journal of Medical Science*. 2008;177(4):355-8.
- [3] Potamitis T, Chell PB, Jones HS, Murray PI. Non-attendance at ophthalmology outpatient clinics. *Journal of the Royal Society of Medicine*. 1994;87(10):591-3.
- [4] Verbov J. Why 100 patients failed to keep an outpatient appointment-audit in a dermatology department. *Journal of the Royal Society of Medicine*. 1992;85(5):277-8.
- [5] Geraghty M, Glynn F, Amin M, Kinsella J. Patient mobile telephone 'text' reminder: a novel way to reduce non-attendance at the ENT out-patient clinic. *The Journal of Laryngology & Otology*. 2008;122(03):296-8.
- [6] Downer SR, Meara JG, Da Costa AC, Sethuraman K. SMS text messaging improves outpatient attendance. *Australian Health Review*. 2006;30(3):389-96.
- [7] Leong KC, Chen WS, Leong KW, Mastura I, Mimi O, Sheikh MA, et al. The use of text messaging to improve attendance in primary care: a randomized controlled trial. *Family Practice*. 2006;23(6):699-705.
- [8] Chen Z-w, Fang L-z, Chen L-y, Dai H-l. Comparison of an SMS text messaging and phone reminder to improve attendance at a health promotion centre: A randomized controlled trial. *Journal of Zhejiang University - Science B*. 2008;9(1):34-8.
- [9] Koshy E, Car J, Majeed A. Effectiveness of mobile-phone short message service (SMS) reminders for ophthalmology outpatient appointments: Observational study. *BioMed Central Ltd.*; 2008.
- [10] Guy R, Hocking J, Wand H, Stott S, Ali H, Kaldor J. How Effective Are Short Message Service Reminders at Increasing Clinic Attendance? A Meta-Analysis and Systematic Review. *Health Services Research*. 2012;47(2):614-32.
- [11] Henderson R. Encouraging Attendance at Outpatient Appointments: Can We Do More? *Scottish Medical Journal*. 2008;53(1):9-12.
- [12] Hasvold PE, Wootton R. Use of telephone and SMS reminders to improve attendance at hospital appointments: a systematic review. *Journal of Telemedicine and Telecare*. 2011;17(7):358-64.
- [13] Armfield NR, Gray LC, Smith AC. Clinical use of Skype: a review of the evidence base. *Journal of Telemedicine and Telecare*. 2012;18(3):125-7.
- [14] Sharp DJ, Hamilton W. Non-attendance at general practices and outpatient clinics. *BMJ*. 2001;323(7321):1081-2.
- [15] City of Greater Bendigo. Population and characteristics. [http://www.bendigo.vic.gov.au/About\\_us/About\\_Bendigo/Population\\_and\\_characteristics](http://www.bendigo.vic.gov.au/About_us/About_Bendigo/Population_and_characteristics), February 2012 (last accessed 04-08-2012).