IT Technologies to Reduce the Rate of Missed Appointments in the Outpatients

Humberto MANDIROLA1,abc, Sebastian GUILLENb, Pablo LAGUZZIb

a Buenos Aires University, Argentina
b BIOCOM Argentina
c HL7 Argentina

Abstract. The percentage of missed appointments for outpatients in many institutions in Argentina ranges from 15 to 30%. By applying information technologies it can be considerably reduced. Medical missed appointments have a high incidence in administrative and care cost and a negative impact over efficiency in ambulatory care, so it is very important to take steps to reduce their frequency. Twenty percent of missed appointments considerably increases waiting times in the assignment of new appointments. In this work we measure the efficiency of the appointment confirmation methodology using three different vectors: Emails sent to patients, phone calls made to patients by an operator and SMS sent to patients. In our study, phone calls and SMS reduced missed appointments in a significant way compared to the Control Group (p<0.001), it cannot be said the same in the case of reminders of appointments with emails.

Keywords: Reminder, Information Technology, SMS, telephone, appointment-reminder.

Introduction

The percentage of missed appointments for outpatients in many institutions in Argentina ranges from 15 to 30% according to different sources. Information technologies (IT) constitute a big help to diminish missed appointments impact for physician offices. Failure to attend has big incidence in cost and efficiency in ambulatory attention not only in the first visit but also in complementary studies so it is very important to measure it and to take steps to reduce its frequency. Many medical centers, considering this cost and the overall impact on quality, implemented different technologies efficiently as the so called “personalized appointment reminder”, this is the case of missed appointments reduction from 11.6% to 4.7% in the breathing functional studio at St Joseph Hospital. They didn’t find significant differences in missed appointments between reminders through direct conversation vs. a message left in an answering machine [1], [5], [6], so in this way it can be proved that a message is an important means to avoid missed appointments. Standards like HL7 can be used to interoperable between systems in an automatic way [2]. A technology which has been proved to be very efficient and less expensive is

1 Corresponding Author. Humberto Mandirola, email: hmandirola@biocom.com
sending a SMS message, such is the case of the work at the Royal Children’s Hospital, Melbourne, Victoria; this group compared two series of patients, one was reminded by a phone call and the other by SMS. The first group reduced missed appointments 12% to 16% and the other 19% to 39% [3]. Percentage of missed appointments does not only affect productivity of the institution but also the opportunities of timely diagnosis [4]. Twenty-five percent of missed appointments increases considerably waiting times for assignment of new appointments.

We measured the efficiency of the appointments confirmation methodology using 3 different vectors: Emails sent to patient, phone calls made to patient by an operator, and sending a SMS.

1. Methods

This study was made with the appointments data base of a Pediatric Private Hospital in Buenos Aires city. This Hospital has 160 beds and an average of 6000 monthly appointments. It applies modern schedule software which, through HL7, connects with the patient reminder application.

We analyzed the whole sample of 800 encounters, data obtained at random from ambulatory appointments in January 2011. We made this selection of studied patients with a simple software program. This program chose a number at random which was looked up in the ID of appointments made in the data base. Once a patient was chosen, he/she was excluded from the data base in a new search so as not to be chosen again. This program completed 4 lists of 200 patients classified according to different criteria:

Group 1: It is the control group, patients with a given appointment without any reminder method in a normal form. Group 2: the system automatically sent an email to patients. The notification was made by electronic mail through the patient appointment reminder module 72 hours before the assigned appointment. In this group 5 patients were excluded from this study because their emails had been rejected. Group 3: In this group patients were called by phone operators, 72 hours before the assigned appointment, without distinguishing if the message was received by the patient, a relative or an answering machine. In this group 7 patients were excluded because of wrong telephone numbers. Group 4: the system automatically sent SMS. We used a conventional Movistar SIM chip module of standard mobile phone system and a GSM modem which was connected to a computer with the appointment confirmation module through a USB port. The patient appointment reminder module automatically sent a SMS, 72 hours before the assigned appointment, through an asynchrony transference using AT commands to activate the GSM modem. In this group 4 patients were excluded because their telephone numbers were wrong and for that reason the SMS could not be sent.

2. Results

In control group we obtained 71 % attendance and 29 % absent (142 patients over 200, i.e. 58 absent), in email reminders it reached 80% attendance and 20 % absent (156 patients over 195, i.e. 39 absent), in the case of phone reminders we obtained 88% attendance and 12 % absent (169 patients over 193, i.e. 24 absent). The best attendance
was obtained in the case of SMS reminders with a 90% attendance and 10 % absent (176 patients over 196, i.e. 20 absent).

3. Discussion

Medical missed appointments have a high incidence in administrative cost, care cost and efficiency in ambulatory attention not only in physician offices but also in complemental studies, so it is very important to measure them and to take steps to reduce them. In this work we measure the efficiency of appointment confirmation methodology using three different vectors: Email sent to patient, phone call made to patient by an operator and sending a SMS to patient. From the analysis of data obtained we reached the following results: We registered a significant difference ($p<0.001$) when we compared control group with patients who were reminded by phone or SMS. This difference is not significant ($p=0.049$) when we compare the control group (patients without any reminder) with patients reminded by email. $P$ values were obtained by the Student’s $t$-test. Mobile phone is a very popular devise which has become part of everyone’s life. Using it for different health-care related actions is a valid option even better than other means of communication. To reduce waiting times for new appointments the tendency is to contract new professionals but this could be avoided if we succeed in diminishing missed appointments and in making more efficient and productive the staff in outpatient physician offices. This is not the first study examining the effect of communication tools as phone, emails and SMS on missed medical appointments. In our study, though SMS reminders are more effective than phone call reminders, this difference is not significantly high. However in other studies other groups registered a significant difference in favor of SMS [4]. Patients who received a reminder through email, phone or SMS tended to keep their appointments. Similar studies were obtained by other investigators: Haynes y Sweeney’s studies (2006) [1]. They showed appointment reminders reduced missed appointments rate from 11,7% to 4% [6].

References