AN INVESTIGATION OF IMPLEMENTED APPOINTMENT REMINDER SYSTEMS

by

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Library Approval and Release

An Investigation of Implemented Appointment Reminder Systems

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ABSTRACT

Background: As we know, patients that do not keep appointments or "no-shows" are a part of what a health care provider must contend with. This causes complications like loss of available appointment time, productivity, and efficiency of the work place. In an effort to minimize no-show rates, practitioners use many appointment reminder systems today. The goal of our research is to determine the most efficient appointment reminder system(s) to reduce the rate of no-shows. *Methods*: A survey containing questions about patient appointment reminder systems and no-show rates will be sent to optometric practices throughout the state of Michigan. Optometric practices will be polled with this survey with the expected n of 75. *Results*: We will be measuring the type(s) of appointment reminder system(s) used in each practice, such as personal phone call, automated phone call, postcard, text message, email, and letter in the mail. In addition to determining the system(s) implemented by the office we will collect data regarding their no-show rate. We will then compare each type of appointment reminder to their respective no-show rate to determine the efficacy of each system. This will help to reveal the most efficient manner of reminding patients of their upcoming appointment. *Conclusions*: This research will help practitioners increase the efficiency of communicating with their patients, thus resulting in a more productive practice.

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CHAPTER 1

INTRODUCTION OF APPOINTMENT REMINDER SYSTEMS

In order to practice as a successful medical professional, there must be effective forms of communication with patients. Whether it is to remind the patient of their upcoming examination or to instruct the patient about when and how to administer prescription medications, a communication system must be established that not only works for the doctor but for the patient as well. There are many different methods of communication that are being explored, especially with today's technological advances. Traditional reminders utilized in the past have been the use of personal phone calls, postcards, and letters. Ever expanding technology has recently allowed professionals to communicate through automated phone calls, emails, and text messages. In examining communication techniques found in practices today, professionals may be finding that these methods of communication are not equally effective.

Patients who do not keep scheduled appointments have been an issue that has plagued professionals for as long as practitioners began taking appointments. Although a practice may have a full day of appointments scheduled, this does not suggest that a full day of patients will be seen. The per-patient average revenue is a reflection of what is lost each time a patient does not keep an appointment[1]. Not only does the practitioner lose revenue from the patient that did not come to the office, but an appointment slot that could have been filled by another patient was also lost. This is the reason so much effort has been put forth to discover new ways to remind patients of their appointments in order to

reduce the rate of no-shows. The purpose of this investigation is to help determine the most effective reminder system(s) to produce the lowest possible no show rate.

CHAPTER 2

METHODS OF INVESTIGATION

In order to determine the most effective appointment reminder system, a survey was anonymously conducted of optometric practices throughout Michigan. The survey was electronically sent to members of the Michigan Optometric Association. The practitioners were asked what type of appointment reminder system(s) were currently utilized in the practice. The options given in the survey were email, text message, personal phone call, automated phone call, postcard, letter, any other type of reminder, and no reminder. The next question asked how far in advance they sent out the reminder referred to in question one. They were then asked if they send a second reminder; and, if yes, what type of reminder was sent and when it was sent in relationship to the scheduled appointment. The practitioners then indicated what type of community their practice is located in, either rural, urban, or suburban. They were then asked what the no show rate of patients in the practice is and the rate of patients who call to reschedule an appointment that cannot be kept after receiving a reminder. The practitioners then indicated if there is any type of penalty for patients who do not keep their appointment at the practice. Finally, surveyed optometrists were asked if they have any additional comments or tips for other practitioners to help reduce their no show rates. An example of the survey that was sent to the optometrists is included in Appendix A.

CHAPTER 3

RESULTS

Of the optometrists that were surveyed, 62 different practice locations responded. While the majority of the practices surveyed were in Michigan, making up 54 of the 62 results, there were 8 responses from other states. These states included Washington, Maryland, Arizona, Georgia, Florida, Kentucky, and Tennessee. Of the practices that replied, 31 of the 62 reported being located in a suburban area, 25 in a rural area, and 6 in an urban area. 21 of the 62 locations that replied utilize only one type of appointment reminder system, while the other 41 locations utilize multiple types of reminders. The most commonly used type of appointment reminder system was the personal phone call, followed by postcard, email, text message, automated phone call, and letter in the mail respectively. A graphical representation of the data can be seen in Figure 1 below.

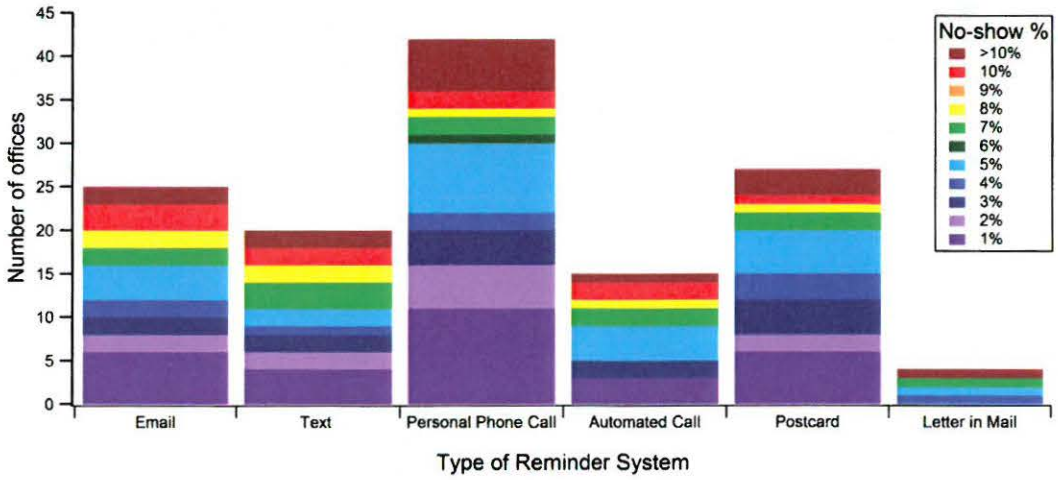

Figure 1. Distribution of the number of offices implementing each type of reminder system and the number of offices with each no show rate for the given reminder systems.

When the appointment reminder system was a personal phone call the most commonly used time frame to place the call was one day prior to the scheduled appointment (63%), with the second most common being 2-3 days prior to the appointment (24%). For the appointment reminder by postcard, the majority were sent out more than 2 weeks in advanced (54%), followed by two weeks in advanced (25%). Emails were most commonly sent out 2-3 days in advanced (44%), followed by one day (20%), and then followed by one week prior (12%). Text messages were sent most commonly 1 day in advance (65%), then 2-3 days in advanced (30%). Automated phone calls were made either 1 day in advanced or 2-3 days in advanced by the practices (43.75% for each). Letters sent by mail were sent 4-6 days in advance (50%) with 2 weeks prior and more than 2 weeks prior both being the next most common timeframe used (25% for each). 43 of the 62 locations reported having a no show rate of 5% or less (14 locations with 5%, 5 with 4%, 6 with 3%, 7 with 2%, and 11 with 1%). The majority of practices have more than 5% of their patients call to reschedule the appointment they are unable to keep after receiving the reminder.

89 percent of the locations surveyed do not have a penalty for patients that do not keep their appointments. Of the 11 percent that did have penalties, the practices used some type of monetary fine or restricted the patient's options for making appointments, or used both. One practice charges a flat fee of $25 and another charges $20 to the patient while yet another charges $50 after given one "free" no show. Instead of a monetary penalty, one office only allows the patient to walk in for appointment rather than schedule ahead and another practice does not allow the patient to schedule any Saturday appointments and must make the appointments for a weekday in person. One practice allows patients to have up to three no shows, but then is dropped as a patient from the

practice. A tally of no shows for each patient is kept at one practice and if they become too numerous (specific number not provided during the study) the patient is required to pay for the examination at the time of scheduling the appointment. One of the surveyed practices uses a $25 no show fee, but the patient is allowed to explain the situation causing the missed appointment and get the fee waived one time only. If the patient in that practice no shows three times they are only allowed to walk in for appointments.

In order to determine if each type of appointment reminder system affects the rate of no shows in a practice compared to the other methods of reminder, a statistical analysis of the results was performed by doing a Chi Square test. The test is the most appropriate way to analyze this data set since the samples were collected at random and the data values are categorical. In order to analyze the data using a Chi Square test, the data was grouped into a table, as seen below in Figure 2. The observed data with row and column totals were then used to calculate the expected values as seen in Figure 3 below. The observed and expected values were then used to calculate Chi Square, giving the value of 14.289. In order to reject the null hypothesis with an alpha level of significance of 0.05 with 25 degrees of freedom, the Chi Square value would have to be greater than 37.652. Given that the chi square value was only 14.289, this means that the null hypothesis was not rejected, signifying that each type of appointment reminder system did not influence the no show rate compared to the other methods of reminder.

	1-2%	3-4%	5-6%	7-8%	9-10%	>10	TOTAL
Email	8	4	4	4	3	2	25
Text	6	3	2	5	2	2	20
Personal phone call	16	6	9	3	2	6	42
Automated call	3	2	4	3	2	1	15
Post card	8	7	5	3	1	3	27
Letter	0	1	1	1	0	1	4
TOTAL	41	23	25	19	10	15	133

Figure 2. Observed values for Chi Square analysis

	1-2%	3-4%	5-6%	7-8%	9-10%	>10
Email	7.71	4.32	4.70	3.57	1.88	2.82
Text	6.17	3.46	3.76	2.86	1.50	2.26
Personal phone call	12.90	7.26	7.89	6.00	3.16	4.74
Automated call	4.62	2.59	2.82	2.14	1.13	1.69
Post card	8.32	4.67	5.08	3.86	2.03	3.05
Letter	1.23	0.69	0.75	0.57	0.30	0.45

Figure 3. Calculated expected values for Chi Square analysis

In effort to further analyze the data, a Chi Square analysis was run on the results comparing no show rates from one to 5 percent and greater than 5 percent to see if there was any statistical difference in the appointment reminder systems using the lower no show rates. The no show rate of five percent was chosen arbitrarily, given that there is no widely accepted value for a no show rate within a practice. However, after the test was run there was still no statistical difference between the types of reminder systems. Another Chi Square analysis was run between only the three most popular appointment reminder systems used, personal phone call, email, and post card. Despite only using the three most frequently employed systems, there was still no statistically significant difference between the groups of data.

CHAPTER 4

CONCLUSION

Every medical practitioner must have an efficient way of reminding patients of their upcoming appointments. In this study of this sample population, the results demonstrated that regardless of the type of appointment reminder system that was used, there was no effect on the rate of no shows within these practices. This information is important to medical professionals in that they may be able to use any reminder system without being concerned that the method they use is not the most efficient means of minimizing no show rates. Among physicians, the average no show rate is 5-7%, but can range up to 60%. That is why it is so important to remind patients of their appointments to maximize proper patient care and office efficiency.

Some of the practices that were surveyed gave advice they thought would be helpful to other practitioners in efforts to reduce their no show rates. Many of the practices suggested using multiple types of appointment reminder systems. One pointed out that certain types of appointment reminders work better for different age groups. For example, text messages and emails tend to work better for younger age groups while a personal phone call is preferred by more elderly patients. Many of the practices suggested using multiple reminders and to remind the patients multiple times in order to help them keep their appointments. One of the common themes was also to keep the reminders personal, with many suggesting that they feel a personal phone call is the best reminder type. Another way suggested to help patients keep appointments was to have them schedule their next appointment before leaving the office at the end of the current appointment. Some recommend making sure to always confirm the appointment the day before, while another

proposes calling two days before the scheduled appointments. Given the wide variety of comments and advice, it is clear that there is no single correct way to reduce no show rates that has proven to be successful.

Although there was no statistical difference between the various types of appointment reminders in the results of this study, there are ways to modify the survey in the future to further investigate the use of appointment reminder systems. This study had a small sample size (62 responses), which could account for the lack of statistical significance between the data sets. In the future, the survey could be expanded to more than just optometrists practicing in Michigan and could be sent out as a regional or national survey. This broader sample size may yield different and more statistically significant results with respect to reducing the rate of no shows. Another aspect that could be addressed in future studies is what types of insurance are accepted to see if that affects the rate of no shows in the practice. One of practices that was surveyed suggested that in order to reduce the no show rate to not accept patients who used Medicaid as their primary insurance. At that location it has been shown that patients with Medicaid insurance are more likely to miss their scheduled appointments than other patients with other insurances. The amount of time that patients have been with a certain practice could also have an effect on the rate of no shows. For example, patients that have been at a practice longer are less likely to miss scheduled appointments, whereas newer patients are less likely to be as loyal. Patients could also be included in the study to determine which method they prefer to be contacted by for their appointments. With these possible alterations to the survey, future studies may find a correlation present between the types of reminder systems and the rate of no shows within a practice that was not observed in this study.

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APPENDIX A

SAMPLE OF SURVEY

1.) What is the method of scheduled appointment reminder used at your office? (If more than one sent, circle all that apply)

- Email
- Text
- Personal phone call
- Automated phone call
- Post card
- Letter in the mail
- None

2.) How many days before the scheduled appointment is the reminder sent out? (If more than one sent, circle/list all that apply)

- 1 day prior
- 2-3 days prior
- 4-6 days prior
- 1 week prior
- 2 weeks prior

3.) Do you send out a second reminder?

yes/no

4.) If yes, how many days before the scheduled appointment?

- 1 day prior
- 2-3 days prior
- 4-6 days prior
- 1 week prior
- 2 weeks prior

5.) What type of reminder is used for the second reminder?

- Email
- Text
- Personal phone call
- Automated phone call
- Post card
- Letter in the mail
- None

6.) What community type is your office located in?

- Rural
- Urban
- Suburban

7.) What is the percentage of patient no-shows for scheduled appointments at your office?

- 1-10%
- >10%

8.) What is the percentage of patients that call and reschedule after the appointment reminder?

- 1-5%
- >5%

9.) Does your office have a penalty for no-show patients?

- Yes
- No

10.) Comments? Tips to colleagues to reduce the number of no-shows?

APPENDIX B

IRB APPROVAL LETTER

FERRIS STATE UNIVERSITY

Institutional Review Board for Human Subjects in Research
Office of Academic Research, 220 Ferris Drive, PHR 308 · Big Rapids, MI 49307

Date: October 23, 2015

To: Dr. Dean Luplow, Jaye Smith and Gabrielle McGuire
From: Dr. Gregory Wellman, IRB Chair
Re: IRB Application #151005 (*An Investigation of Implemented Appointment Reminder Systems)*

The Ferris State University Institutional Review Board (IRB) has reviewed your application for using human subjects in the study, "*An Investigation of Implemented Appointment Reminder Systems*" (#151005) and determined that it meets Federal Regulations *Exempt-category 1C*. This approval has an expiration date of three years from the date of this letter. **As such, you may collect data according to the procedures outlined in your application until October 23, 2018**. Should additional time be needed to conduct your approved study, a request for extension must be submitted to the IRB a month prior to its expiration.

Your protocol has been assigned project number (#151005) which you should refer to in future correspondence involving this same research procedure. Approval mandates that you follow all University policy and procedures, in addition to applicable governmental regulations. Approval applies only to the activities described in the protocol submission; should revisions need to be made, all materials must be approved by the IRB prior to initiation. In addition, the IRB must be made aware of any serious and unexpected and/or unanticipated adverse events as well as complaints and non-compliance issues.

This project has been granted a waiver of consent documentation; signatures of participants need not be collected. Although not documented, informed consent is a process beginning with a description of the study and participant rights, with the assurance of participant understanding. Informed consent must be provided, even when documentation is waived, and continue throughout the study via a dialogue between the researcher and research participant.

As mandated by Title 45 Code of Federal Regulations, Part 46 (45 CFR 46) the IRB requires submission of annual reviews during the life of the research project and a Final Report Form upon study completion. Thank you for your compliance with these guidelines and best wishes for a successful research endeavor. Please let us know if the IRB can be of any future assistance.

Regards,

[redacted]

Fer[redacted] Review Board
Office of Academic Research, Academic Affairs