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Appointment Reminder System Benchmark Study

Anthony Rawlinson

ARawlinson3@patriots.uttyler.edu

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Appointment Reminder System Benchmark Study

Anthony Rawlinson

The University of Texas at Tyler School of Nursing

In Partial Fulfillment of

NURS: Capstone

Dr. Colleen Marzilli

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Executive Summary

The average appointment “no-show” rate is 23% across 105 studies (Dantas et al., 2018). These “no-shows” cost an estimated 150 billion dollars a year to the American healthcare industry (Ruiz-Hernandez et al., 2020). Previous estimates place the cost of one no-show event at a primary office in the range of \$125 to \$274 (Aysola et al., 2020). These missed appointments not only cause a loss in office revenue, but also harm the patients missing the appointment (Marbough et al., 2020). Some of the repercussions patients suffer from are longer wait times for appointments, higher Emergency Room (ER) admission rates, and discontinued care processes (Marbough et al., 2020). Missed appointments also create dissatisfaction in patients, disruption in continuity of healthcare services, and impedes the identification and treatment of diseases (Ullah et al., 2018).

Decreasing “no-shows” is essential to boost revenue, patient satisfaction, and decrease patient harm. When Kumthekar & Johnson (2018) conducted their pilot survey prior to their study the most common reason for missed appointments was that the patient forgot about the appointment. To fix any problem it is essential to find the root cause. Though not all patients are missing their appointments due to forgetting, adding a text or call appointment reminder system to the primary care office will help solve this problem.

With the addition of the appointment reminder system, it is to be expected that “no-shows” and missed appointments will decrease. The decrease in “no-shows” will decrease wasted time at the primary care practice. Revenue should improve due to the decrease in abrupt open appointment slots. The increased revenue will be over what is needed to cover the cost of the appointment reminder system.

Appointment Reminder System Benchmark Study

As the inflation rate soars to an all-time high, it is in the best interest of every company and/or health care facility to become more efficient in their management practices. Primary care offices are not immune to revenue loss. Some of this revenue loss can be avoided with little effort. Primary care visits give patients the opportunity to be assessed and receive treatment before their chronic condition and/or illness turns into an emergency. The percentage of patients who “do-not-attend”, “no-show”, or miss their primary care appointments is surprisingly high. Different methods have been utilized to boost appointment attendance. This Benchmark Capstone Study plans to provide the evidence that missed primary care appointments can be significantly reduced with the addition of an automated phone call and/or SMS/text message appointment reminder.

1. Rationale for the Project

The negative impacts of “no show” and missed appointments are tremendous. These negative impacts include negative health outcomes, increased healthcare cost, decreased provider productivity, reduction in revenue for primary care offices, underutilization of medical resources, increased emergency department utilization, and increased hospitalizations (Anisi et al., 2018). Repeated missed appointments were associated with a significant increase in premature all-cause mortality rates (McQueenie et al., 2020). There is substantial evidence that missed appointments have a negative effect on the patient, the provider, the primary care office, and the community. Primary care physicians, Physician Assistance (PA), and Family Nurse Practitioners (FNP) can assess, identify, and treat a multitude of illnesses and/or disease processes. As healthcare providers we have the duty to take action to prevent our patients from being harmed.

In 2018 in the United States, approximately 95% of Americans had some form of mobile phone (Langford et al., 2019). By reminding patients of their upcoming appointment, it prevents them from forgetting or gives them the opportunity to cancel the appointment. Early appointment cancellations allow for the primary care office to move appointments around or fill the time slot. By filling this time slot with another patient, it boosts efficiency and gives another patient an opportunity. Feeling these voids in the schedule increases office revenue and provider productivity. Lagman et al., (2020) found an estimated savings of approximately \$79,200 a year when a phone call reminder system was introduced to an outpatient palliative medicine clinic.

2. Literature Synthesis in Support of the Change

The national “no-show” average is reported to be 19% for primary care offices (Crocker et al., 2021). Alharbi (2019) found that “no-shows” cause significant loss of time, money, and patient satisfaction. These “no-show” appointments lead to both a reduction in patient access to care and provider productivity (Lagman et al., 2021). For revenue loss reference, Triemstra & Lowery (2018) found that missed appointments had an annual billing loss of \$170,100 and reimbursement loss of \$51,289, at the Adolescent and Young Adult Medicine Clinic at Helen DeVos Children’s Hospital (HVCH) in Grand Rapids. This estimated \$221,389.00 loss is worth every attempt to recoup.

As noted, missed appointments are linked to a wide array of repercussions for the patient’s health. Williamson et al., (2021) notes that there is an association with increased missed general practice appointments and greatly increased mortality risk. Furthermore, Anisi et al., (2018) noted that other negative health impacts of missing medical appointments are poor general health outcomes and the prevention or delays in provisional treatments. When looking at some specific illnesses we see in a study performed by Cronin et al., (2019) that patients who suffer from sickle cell disease and missed appointments had a significantly higher rate of

hospitalization. Pediatric epilepsy patients who miss their neurological specialist appointments visit the emergency department and are hospitalized significantly more than their counterparts (Bailey et al., 2021).

It has been established that “no-shows” cause revenue loss, loss of time, decreased patient satisfaction, and serious health repercussions for patient’s health. The proposal is to introduce a Short Message Service (SMS)/text message or recorded phone call appointment reminder service to confront the “no-shows” and missed appointments. Notification systems significantly reduce missed appointments (Davis, 2021). For reference, Drabkin et al., 2019, found a reduction of “no-shows” by 66.31% after introducing pre-appointment phone call notifications. Utilizing the findings from Triemstra & Lowery (2018) of an annual loss of \$221,389.00 in billing and reimbursement, a 66.31% reduction in “no-shows” would yield a revenue recoup of \$146,803.05 a year with the addition of pre-appointment phone calls.

3. Stakeholders

The stakeholders in the implementation of phone call or SMS/text message appointment reminder are every staff member, office managers, physicians, FNPs, PAs, and primary care office patients. Key stakeholders will be staff members, office managers, physicians, FNPS, and PAs. These key stakeholders will need to be informed and involved in the change process for the change to be successful (Penner, 2017). When presenting the change, office managers and physicians will be the main audience members to make the financial decision to go forward with purchasing a phone call/SMS/text message reminders system. Special attention will be focused on the financial benefits of decreasing “no-shows” when speaking with office managers and physicians. Office managers and physicians will also be interested in the boost in productivity due to empty slots being filled earlier due to the increased cancellations instead of “no-shows” that occurs with the implementations of such systems. When speaking with staff members the

usability of the system will be the focus. Stakeholder resistance to change can frequently result from a misconception regarding the time and effort needed to implement the practice change (Melnyk & Fineout-Overholt, 2018).

4. Implementation of the system

After the successful acceptance of the project by key stakeholders' implementation will need to be conducted by teaching registration and nursing staff how to enter information into the reminder system. Consents to participate in the reminder system will be created for patients to sign. Consents will include the patient's willingness to receive SMS/text message or call reminders, a recommendation to put a safe passcode on their phone, information regarding unsecure WIFI and hacking. Staff will also be taught what information is needed and that written consents need to be filled for each patient wishing to participate in the pre-appointment call or SMS/text notification system. The project leader will teach all staff how to utilize the system and provide staff with contact information for troubleshooting issues that may arise with the system.

As the project leader a simple randomization method to select the control group of patients who are not participating in the SMS/text message or call reminder system will be used. Inclusion criteria will include patients with primary care appointments in the study timeframe, patients with working telephone number, and patients must be adults (age equal to or greater than 18 years old). Exclusion criteria will include urgent care appointments, pediatric patients (<18 years old), and patients without a phone number. The intervention group will include all patients who meet the inclusion criteria and elect to participate in the SMS/text message or call reminder system. As noted, a simple randomized method will be utilized to select an equal number of patients to be in the control group who are not participating in the reminder system. All participants will be asked for consent to include their data. An excel sheet will be utilized to list

the control and intervention participants. By listing these participants, it allows staff to refer to the list in case a cancellation or “no-show” occurs, so the staff know if the scheduled patient is involved in the study/project. If the patient is involved in the project the occurrence can be added to a separate Microsoft excel where data is being collected, see Appendix A.

5. Timetable

Week one will consist of gathering research regarding appointment reminder systems and companies that offer the services. A minimum of 3 companies will be chosen to present to the primary care offices stakeholders. It will also be necessary to gather research to support the change and develop a presentation to present to stakeholders. Only peer reviewed publish journal articles will be utilized to support the project and present it to stakeholders. Search engines like EBSCOHost, PubMed, and Academic Search Complete will be used to search key words like “SMS”, “text message”, “call”, “appointment”, “adherence”, “reminder system”, and “no-show”. Articles use will be restricted to articles published no earlier than 2018. Key findings amongst the research will be the cost of reminder systems, revenue loss from “no-shows”, loss in productivity, revenue savings after the implementation of the project, patient health repercussions for not attending scheduled appointments, and national rate of missed appointments.

After research has been gathered during the first week, the second week will consist of preparing a slideshow presentation, poster presentation, and speaker notes to present to the stakeholders. Highlights of the presentation will include outcomes of multiple studies, current reminder system cost and statistics, reminder system HIPPA compliance, reminder system usability, and the economic impact of reminder systems on the office. At the end of week 2 evidence will be presented to all stakeholders and any questions will be answered. A separate

meeting will be scheduled the same day or the day after with key stakeholders to make decisions on what service will be utilized for the call and SMS/text message reminder system.

Week three will be dedicated to educating front line staff, including nurses and registration/office staff. This education will be focused on how to enter information into the appointment reminder system. Week four will be dedicated to informing the staff about consents that are needed for the patients to participate in the selected system. At the end of week 4, the intervention group will be counted and an equal number of patients who either did not choose to participate in the appointment reminders system or did not get the opportunity will be randomly selected. All participants selected will have at minimum one appointment scheduled over the next 8 weeks. Over Week 4, registration/office staff and nursing staff will be entering patient information into the new system as they opt in and sign consents.

Week 5 will be the initiation of the appointment reminder system into action. The project manager will be onsite during week 5 to help navigate any hurdles that may occur. Ongoing data collection will be utilized during the project. Staff will have shared access to a Microsoft excel spreadsheet where they will enter any “no-shows” or cancellations for the day. The spreadsheet will have two rows titled intervention group and control group, see Appendix A. There will also be three columns titled cancelled, “no-show”, and scheduled, see Appendix A. During weeks 6 through 13, the project manager will be onsite from 1200 to 1800 every Friday to collect data from the week before and answer any questions. Collection will include reviewing appointments scheduled, “no-show” incidents, and cancellations of previous selected participants. The process of verifying the data every week will decrease errors in the project results. During these collection times the project manager will also be available to staff for questions or concerns with the project.

At close of business on the 13th week the project will conclude. On the last day of the 13th week, which will be a Friday, the project manager will recollect the data of appointments scheduled, “no-show” incidents, and cancellations that occurred over the past 8 weeks. This data will be compared to the ongoing data to check for any errors that may have occurred.

Week fourteen will consist of data analysis using statistically sound methods. Raw numbers, percentages, and absolute risk reduction will be utilized for the stakeholder presentation. A two-by-two table will also be given to reveal number by number presentation to stakeholders. At the end of week fourteen it will be necessary to schedule a meeting with all stakeholders to present the results of the project. The meeting will be scheduled for Friday of week 15.

Week fifteen will include designing a highly visual appealing slide show presentation and poster presentation. The presentation will contain the number of appointments made, number of “no-shows”, and number of cancelled appointments for the intervention and control group. The poster will include a bar diagram and a two-by-two table to make results easily digestible for stakeholders. An estimate of office revenue gained comparing the control vs the intervention group will also be presented. See Appendix B “Timetable Graphic” for a timetable graphic.

6. Data Collection Methods

Data collection will be ongoing throughout the project. Two shared Microsoft Excel sheets will be utilized by staff member to conduct ongoing data collection. One Microsoft Excel sheet will contain the names of patients included in the study and separated by control and intervention group. The second Microsoft Excel sheet will be separated into two groups titled intervention group and control group. Three categories will be made titled cancelled, “no-show”, and scheduled. See Appendix A “Data Example” for a hypothetical example of the data collection that would take

place. Every Friday the project manager will recollect the data from 1200 to 1800. This data recollection decreases the chances for errors in data collection. It should be noted that no patient identifying information will be removed from the primary care office. The results of the data will be an account for the number of cancelled appointments and “no-shows” for the intervention group and control group.

7. Cost and Benefits of an Appointment Reminder System

Reducing missed appointments or “no-shows” is directly correlated to increased revenue for the primary care office. As noted previously, estimates place the cost of one “no-show” event at a primary office in the range of \$125 to \$274 (Aysola et al., 2020). Appointment Reminder is an appointment reminders service that is HIPAA compliant (Appointment Reminder, 2022). Pricing for 3200 reminders per month is \$149, this is the highest cost plan offered by Appointment Reminder (Appointment Reminder, 2022). Apptoto is another appointment reminder service that is HIPAA compliant (Apptoto, 2022). Apptoto’s most expensive plan, that offers 4,000 auto phone call messages or SMS messages, is \$249 a month. Office Ally is yet another service that is HIPAA compliant (Office Ally, 2022). Office Ally offers 3500 reminders a month for \$149.95, which is the highest cost plan (Office Ally, 2022). Considering these three services most expensive plans, if the appointment reminder service improved the attendance and prevented two appointments from being missed the office would cover the cost of the service. Clinics report huge financial saving after the implementation of an automated SMS-reminder system, these clinics attribute this savings to a decrease in missed appointment rates and the relatively low cost of SMS reminders (Schwebel & Larimer, 2018).

Reducing missed appointments is also vital to patients’ health. Patients who suffer from type II diabetes who miss their scheduled appointments regularly are 24%-64% more likely to have poorer glycemic outcomes when compared to patient’s who did not miss their appointments

regularly (Sun et al., 2021). In pregnant and postpartum women Basu et al. (2021), found that patients with missed medical appointments had significantly higher odds of experiencing posttraumatic stress, anxiety, depression, and loneliness. Missed appointments harm patients' health and increase the likelihood of the patient being admitted to the emergency room (Marbough et al., 2020). While not all missed appointments can be avoided by adding an appointment reminder, if one patient is kept out of the emergency room due to their improved appointment adherence then the service is worth the price.

9. Overall Discussion

Forgetfulness was found to be one of the main reasons for missed appointments (Parsons et al., 2021). The appointment “no-show” rate across 105 studies was found to be 23% (Dantas et al., 2018). This is close to 1 in 4 patients that are not showing for their appointments. The cost of a reminder system is covered if it improves attendance by 2 appointments a month.

Appointments that are lost to “no-shows” cause a reduction in primary care office revenue (Anisi et al., 2018). Furthermore, appointment reminders increase early cancellation (Berliner et al., 2020). Early cancellation creates the opportunity for physicians to fill that appointment slot with another patient. By getting advanced notice of a cancellation and filling the open appointment slot the office is recouping some of what would have been lost revenue, increasing productivity, and giving another patient the opportunity to be seen. Increased “no-show” and missed appointments result in negative outcomes for patients (Anisi et al., 2018). These patients also have increased emergency department utilization (Anisi et al., 2018). This increased emergency department utilization equates to a higher cost to the patient.

Recommendations/Conclusion

It is recommended that any outpatient healthcare provider offer a SMS and/or phone call reminder to their patient population. The service should be offered in multiple languages.

Appointment notifications are useful in a wide array of services. From psychiatric services to surgical services the use of a reminder system will boost productivity. When selecting the appointment reminder system, it is imperative to consider the companies HIPAA compliance.

The current practice of having no notification system leaves a correctable process in place that increases the likelihood of negative patient outcomes. Notification systems significantly reduce missed appointments (Davis, 2021). These recovered appointments increase revenue and office productivity.

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Appendix A

Data Example

	Cancelled	"No-Show"	Scheduled
Intervention Group	3	2	10
Control Group	1	5	10

Appendix B

Timetable Graphic

