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Running Head: REDUCE NO-SHOWS & CANCEL

Reducing No-shows and Late Cancellations in Primary Care:

A Quality Improvement Project

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### Abstract

No-shows and late cancellations are a challenge across medical practices, resulting in costly, fragmented care. Many patients do not understand the impact that not showing or cancelling an appointment less than 48 hours prior to a visit can have. While reminding the patient of the appointment has been a known tactic to improve patient's attendance, the most effective mode of the reminder can vary significantly across patient populations. Just as critical as reminding the patient of the appointment is to ensure they understand the purpose of the visit along with showing respect for their time and any competing priorities. This quality improvement initiative aimed to reduce the no-show rate of 21.4% and late cancellation rate of 21.1% for the MassHealth population by 5%. Learning from previous studies, a hybrid approach to meet this population's needs included a 7-day reminder call with a Patient Engagement Coordinator (PEC) and a 2-day automated reminder. During the 7-day reminder call the PEC identified barriers to attending the appointment through concrete planning and motivational interviewing strategies. Appointments were rescheduled as needed, additional information was provided to solidify shared goals for the visit, and patient's time/obligations were validated. The intervention resulted in positive feedback from the majority of patients and revealed concrete planning prompts to be a very effective communication form. The post-intervention data analysis revealed both the no-show and late cancellation results were reduced for the MassHealth population. Due to data and confounding variable limitations this study is recommended to be a basis for future investigation as the principal investigators enter into the next pilot phase of this model.

***Keywords: no-show, late cancel, access to care, primary care, population health, reminder outreach, patient engagement***

Reducing No-shows and Late Cancellations in Primary Care:  
A Quality Improvement Project

Access to primary care has been a core focus of initiatives like Patient Centered Medical Home for more than a decade, but looking beyond access comes patient engagement in utilizing that access which is an integral component of a successful Accountable Care Organization (ACO). Primary care practices (herein referred to as practice(s)) participate in multiple ACOs across payer groups and are held responsible for the patient health outcomes in addition to quality and cost. Engaging patients to become active participants in their healthcare is a multifaceted challenge and, without it, the organization suffers negative consequences including costly no-shows and late cancellations. No-shows and late cancellations not only impact the patient's health status but they impede the ability to function as a highly-reliable ACO.

**Problem Description**

The ACO of interest for this quality improvement initiative is one regional system within the practice's MassHealth ACO, which serves 14,000 MassHealth patients in the Merrimack Valley of Massachusetts. MassHealth is synonymous to the Medicaid payer-group in Massachusetts. A top priority in year 1 of the ACO launch was seeing patients for their annual visit. Recognizing the challenges in completing the visit due to high no-show rates, there is a need to engage patients in a more dynamic way than has occurred in the past, especially in the MassHealth population that has a no-show rate of 21.4%. Late cancellations defined as appointments canceled less than 48 hours prior to the visit are also a primary issue in the MassHealth population (rate of 21.1%) and the across all patients of the practice.

Currently the process to facilitate a completed visit includes two automated outreaches (5 days and 2 days pre-visit), either by phone call or text to confirm the scheduled appointment and

to remind of confirmed appointments. The initial automated outreach attempts to confirm the appointment. If this is confirmed then the next outreach at 2 days pre-visit will be a simple reminder. If the first attempt failed to confirm the appointment (the patient did not select “yes” via prompt) then a confirmation is again attempted. In some cases, those visits that are never confirmed by either automated attempt will have an outreach the day prior by a phone room staff member. While there is evidence that supports the use of automated reminders, there are complexities and conflicting evidence of whether automation versus live team member outreach is the most cost effective or as an engagement strategy.

No-show rates and late cancellations are evidence that current practices are not effective. Looking at the specific data points from the automated call and text vendor (Televox®), it is evident that for the majority of outreaches there is no response from the patient. Table 1 is a summary of vendor provided data points. A sample of 5 day and 2 day outreaches is also included in the appendix (See Appendix A).

Table 1				
<i>Summary of Canceled &amp; Confirmed Appointments from Automated Phone Call &amp; Text Message</i>				
	% of patients who <b>CANCELED</b>		% of patients who <b>CONFIRMED</b>	
# of days prior to visit attempt was made	5	2	5	2
Automated <b>phone</b> call	2.6%	0.6%	16.9%	15.7%
Automated <b>text message</b>	3.6%	1.8%	38.2%	12.8%

Financial implications of the no-show and late cancellations were also analyzed in assessing the scope of this problem. In a 4-week sample, over 200 no-shows and over 300 late cancellations occurred in internal medicine (adult primary care) and more than 100 no-shows and

100 late cancellations in pediatrics. The combined financial loss projected for those 4 weeks was \$387,000. Considering that the MassHealth ACO population comprises approximately 26% of the regional systems 59,500 patients, it is reasonable to attribute \$100,600 of that loss to this population of interest.

No-show and late cancellation rates at the project location are 13% and 5% respectively (payer-blind). Percentages vastly increase for one of the most vulnerable populations, MassHealth: 21.4% and 21.1%. A 4-week analysis of no-shows/late cancels equated to \$387,000 for internal medicine and pediatrics. This suggests an annual loss of over \$5M. No-shows and late cancels also impede *effective capacity*, this refers to patient access for engaged patients who would present to the visit were timeslots available. (Dantas, Fleck, Oliveira, & Hamacher, 2018).

Recognizing that major drivers of no-shows and late cancellations are patient choice and modeled behaviors based on past experience/exposure, this quality improvement initiative approached reminding and rescheduling patient appointments in a systematic fashion (frequency and mode) that incorporated social considerations and engagement tactics to positively influence patient accountability. The metrics for positive patient accountability are: presenting to visits and/or giving sufficient notice of cancelation. Review of the literature and recognition of local factors driving this problem led to a hybrid approach of both automated reminders and competent clinical staff addressing barriers, educating patients and facilitating active engagement/accountability of patients.

The priority areas discovered during the gap analysis include: addressing patient's understanding of the appointment purpose, ensuring patient's do not have insurmountable barriers to attend the appointment, confirm that the patient plans to attend the appointment and

will notify the office if this plan changes. Themes from qualitative analysis of discussions with stakeholders revealed the problem was linked to:

- Lack of ability to confirm the appointment through use of technology
- Most appointments canceled less than 48 hours in advance or not canceled at all resulting in a no-show
- Patient's lack of accountability of impact to themselves, the provider, and practice when no-showing or canceling late
- An opportunity to engage patients in understanding the appointment value and partnering to overcome barriers

These themes were confirmed by quantitative data collected from EMR, scheduling, Televox, and financial reports. In order to move from the current state approach to the future state vision requires new staff members to be specially trained and competent in patient engagement tactics, including recognition of culture and social determinants of health.

### **Available Knowledge**

Literature was identified by searching the electronic databases PubMed, CINAHL, and Medline from their inception through October 2018. Hand searching for additional gray literature from reference lists of included articles yielded additional, non-duplicative studies that supported this initiative's purpose and plan. Outreach to the Population Health Center for existing efforts to reduce no-shows and late cancellations in our network did not result in additional non-duplicative studies. Various terms and synonyms for no-shows ("no shows", "no-shows", "missed appointments"), late cancellations ("cancel", "cancellations", "late", "delayed"), primary care ("primary care", "primary care provider", "PCP", "primary care practice") and ambulatory care ("ambulatory care", "ambulatory", "ambulatory practice") were searched. The

studies including findings within the adult population of primary care where an intervention was implemented to reduce no-shows and/or late cancellations were included in the literature review for their relevance to this project's site and pilot population (13 articles) while those solely specific to pediatrics and specialty were excluded. Interventions that placed a financial burden on patients (no-show fee) or dismissed them from the practice due to no-shows, were also excluded as they contradict the mission of this site. Furthermore, studies that focused on dynamic or advanced access scheduling were excluded at this time because that will be a goal/priority for 2019 practice redesign.

After synthesizing the literature, common predictors of no-show rates identified across different specialties, interventions and research areas, and population profiles align to the general demographics of the practice's MassHealth ACO population. Age, socioeconomic status, psychosocial problems, and payer (Medicaid) were primary predictors of no-show rates; younger adults within lower socioeconomic standing who have depression or another mental health diagnosis, receiving Medicaid as their primary insurance (Lacy, Paulman, Reuter & Lovejoy, 2004; Miller, Chae, Peterson & Ko, 2015; Moscrop, Siskind, & Stevens, 2012; Parikh et al., 2010). All of these drivers are common characteristics of the MassHealth ACO which is Medicaid funding. An additional primary predictor is the number of days between scheduling the appointment and the date of the visit, which we also observed a range in our population with the average being 63 days.

No-show behavior has also shown predictive power in downstream care, including an increased likelihood to inappropriately use acute services (i.e. Emergency room for non-emergent needs), decreased likelihood to complete preventative screening, and poor control of chronic diseases (Bowser, Utz, Glick, & Harmon, 2010; Hwang, et al., 2015; Nguyen & DeJesus,



2010). Year 2 of the MassHealth ACO will have a significant focus on utilization and preventative care; therefore, intervening and improving the no-show rate through behavior change could have further positive impacts than considered at first pass.

### **Predictive Factors of No-Show Behavior**

#### **Age**

Across the literature adults under the age of 65 years old had an increased likelihood to no-show than those over 65 (Dantas et al., 2018; Kheirkhah, et al., 2016, Torres, et al., 2015; Miller et al., 2015; Parikh et al., 2010). The results ubiquitously showed an inversely proportional relationship between age and no-show rate. One study also quantified this proportion through linear regression modeling, finding that with every year increase in age the no-show rate decreased by 2.4% (Parikh et al., 2010). Age was also found to be a factor in the mode of reminders, where automated reminders were more effective in reducing no-show rates than a staff reminder for patients aged 18-44 years; whereas staff had better success for those patients aged 45-100 years (Parikh et al., 2010).

#### **Health literacy and patient understanding**

Multiple studies recognized the patient's understanding as a predictor of no-shows, specifically in these areas: the appointment purpose, treatments to be conducted, impact to practice if no-showing or canceling. Lacy and colleagues (2004) captured the patient perceptions on no-shows which revealed patients feel a level of disrespect in their own values and schedules that perpetuates lack of accountability to attend the appointment. This same study found from patient surveys that a reminder is perceived as a way to respect the patient's time/schedule and thus can be mutually beneficial. Enhancing health literacy and patient comfort with the visit and

the system have been core drivers to reduce no-shows (Dumontier et al., 2013; Johnson, Mold, & Pontius, 2007; Shah et al., 2016).

### **Socioeconomic status**

A proxy for socioeconomic status in this review was the Medicaid insurance class. Some studies did look specifically at income and one showed an increased risk of missing an appointment when low income (Miller et al., 2015). Multiple studies identified Medicaid as a key factor linked to a higher prevalence of no-shows compared to other insurance classes including Medicare (Dantas et al., 2018; Miller et al., 2015; Parikh et al., 2010; Shah et al., 2016).

### **Psychosocial problems**

According to a detailed meta-analysis conducted by Boswer and colleagues (2010) investigating the link between depression and diabetic patients who miss appointments, 44 percent of the articles reviewed presented depression as a leading factor driving the high rates of no-shows. This same analysis also found other psychological conditions as a core contributor to missing appointments and highlighted the patient's "absence of belief that keeping the appointment would make a difference" (Bowser et al., 2010). Another study found that younger adults, less than 35 years old, who had a mental health episode in the past and a subsequent one within the next year of their appointment were more likely to no-show than those who were newly diagnosed and attending their first follow-up appointment or undiagnosed (Moscrop, Siskind & Stevens, 2011).

### **Days between scheduling and appointment**

While variations in the median wait time and what is the ideal timeframe between scheduling an appointment and the visit date exist in the literature, all findings universally

recognize an extended duration as increasing the likelihood of a no-show (Dantas et al., 2017; Lacy et al., 2004; Parikh et al., 2010; Torres et al., 2015). Parikh and colleagues reported the following lead time increments with increases in no-show rates: 0-7 days (9%), 8-27 days (14%), 28-50 days (21%), and 51-254 days (27%). The same research revealed that for patients who did present to their visit that the median lead time was 23 days as opposed to 40 days for patients who did not attend the visit. As mentioned in an earlier category, an extended wait time to see your provider also leads to dissatisfaction and perceived disrespect in patients, as well as increasing anxiety of the treatment/visit with each passing day, both of which drive no-shows (Lacy et al., 2004).

### **Interventions to Reduce No-shows and Cancellations**

Interventions to reduce no-shows are vast across the literature while very few studies address cancellations and improving the notification time. The majority of no-show interventions focus on patient reminders. Second to reminders are enhanced scheduling processes but as mentioned previously those interventions were eliminated from this review due to the project sites operating plans at this time.

#### **Reminders – automated, live, phone, text**

Collectively the research shows that patient reminders are valuable and effective in reducing no-shows. There is lack of consensus on the ideal mode of reminders as mailings, automated and live calls, and text messages have all been widely implemented without research specifically into the most effective approach. As described earlier, age can be a factor in which mode to consider (Parikh et al., 2010). Of all the studies reviewed, those with the highest reductions in patient activation utilized mechanisms of intentions prompts and concrete planning (Milkman et al., 2011; Shah et al., 2016). Milkman and colleagues (2011) sought to improve the

vaccination rate for patients at higher risk for flu related complications and tested the theory of intentions prompts by instructing their patients through mailed notifications to select a time/date for vaccination and to record this. The instructions varied in the different groups and the researchers found the more concrete and specific the prompts, the more likely those patients were to present for their vaccination. Shah and colleagues (2016) also tested concrete planning by prompting one of their research groups to think about their activities on the day of their scheduled appointment during the staff's confirmation call; they asked direct questions to identify competing priorities and assist the patient's in planning their day. The study group with this sort of engagement reduced the no-show rates at a statistically significant rate compared to those with an automated phone call reminder. The group with the staff outreach and concrete planning also were more likely to cancel/reschedule their appointment with a greater lead time.

From this review, the major interconnected themes were: predictive factors of no-show behavior and interventions to reduce no-shows and cancellations. In all of the studies it did not appear that a sole, independent intervention was the most successful but that additional, intentional factors also support the success of a principal intervention.

### **Rationale**

The theoretical model for this project was Nola Pender's Health Promotion Model (HPM). Pender (2011) highlights the impact that health care providers can have on patient's commitment to a plan and health promoting behavior as an integral interpersonal influence over the duration of a person's life. Personal feelings of support and perceived value in the outcomes of participating in a plan, can strongly increase adherence and engagement. If competing demands are imminent or another path of action is more appealing, the likelihood of engaging and committing to a plan decrease. Clinicians can assist in overcoming barriers or demands and enhance the shared value of healthy behavior with the right skill and patient-provider

relationship. Recognition of the situational influences that formulate from the external environment, such as social determinants, can also have a direct effect on plan commitment and health behavior so clinicians must be aware of those in the patient's environment.

(Pender, 2011)

The Institute for Healthcare Improvement's (IHI) *Model for Improvement* was the guiding framework for the design of this process improvement initiative. The Model for Improvement operationalizes pilots using the Plan-Do-Study-Act (PDSA) framework. The PDSA framework for repeated cycles of rapid change, specifically the improvement ramp, provides a comprehensive structure of successive change processes. By design the insight gained from the completion of one cycle drove the initiation of the next, allowing the change to occur and adapt over time, incorporating lessons learned with each cycle.

Integrating clinicians that have primary care experience as medical assistants with competency in social determinants of health, high risk patient populations, and motivational interviewing techniques to engage patients in their care aligns with the recommendations and major findings of the drivers behind no-shows and late cancellations: patient understanding of appointment, support and respect for patient's time, physical barriers to attending visit (I.e. transportation), and scheduling too far in advance. Through review of the literature, local evidence, and identification of opportunities, this initiative sought to activate patients by recognizing the barriers to presenting at the primary care office as scheduled, highlighting the goals of the visit, and reminding in a systematic way of the appointment date and time. The systematic reminder model developed introduces a 7-day confirmation phone call by the engagement coordinator to the existing 2-day reminder text or automated call based on patient's identified preference.

During that 7-day confirmation discussion the appointment may be rescheduled if needed (i.e. scheduled too far in advance and availability has shifted) or barriers addressed such as transportation. The additional skills of the Patient Engagement Coordinators (PECs) facilitate presentation at the visit beyond a typical reminder and engagement approaches may be unique to each coordinator and/or the patient scenario/profile despite undergoing the same competency trainings; thus, this is important qualitative information to gather and track for ongoing improvement while less quantifiable than the structured pattern of patient contact frequency (7-days and 2-days prior).

### **Specific Aims**

The global aim of this initiative was to increase patient accountability and active participation in their health by attending routine and follow-up primary care appointments. Based upon the success of this pilot implementation, the methodology will be adapted/enhanced and ultimately spread across all populations. In order to achieve this goal, a specific aim was defined for the pilot: to reduce both the no-show and late cancellation rates by 5% from baseline for a cohort of patients (MassHealth, low risk behavioral health) with the facilitation of Patient Engagement Coordinators (PECs) by December 12, 2018.

## **Methods**

### **Context**

The organization where this project was conducted provides primary care, pediatrics, and multi-specialty system across 5 different locations in the Merrimack Valley of Massachusetts. The pilot was restricted to adult internal medicine at the 5 locations: Lawrence, Haverhill (2 sites), Andover, and Newburyport. Approximately 59,500 active primary care patients seek care across the locations, comprising 130,000 visits annually. The organization has a high share of Medicare and Medicaid patients: 41% commercial, 31% Medicare, 26% Medicaid (MassHealth

ACO). There are over 100 providers spanning the sites and levels of care (56 MDs/DOs and 58 NPs/PAs) with an additional 335 employees both clinical and non-clinical.

Approximately 14,000 patients are attributed to the practice by MassHealth as part of the ACO. Of those, 563 have been identified as low risk behavioral health and served as the pilot population in alignment with research suggesting this population is at increased likelihood to no-show (i.e. Medicaid, psychosocial conditions). The patients range from age 18-63 years, 409 are females and 154 males. 360 patients had no emergency room visits in last 12 months, while 203 did.

### **Interventions**

To reduce no-shows and late cancellations, 7-day reminder phone calls were initiated by the PECs. While the literature supported this timeframe, the communication method during the call was equally important according to other successful studies.

Daily the PECs receive a dashboard that identifies patients who have a visit approaching in 7-days or less (See Appendix). All efforts were made to reach the patient at the 7-day point but in some cases they were not reached and messages were left, therefore, the actual communication with the PEC could vary within the 7-day period prior to the appointment date.

Once the patient's were on the phone with the PEC, concrete planning using intentions prompts was initiated. The PECs had rehearsed this direct form of communication and had example questions to ask the patients (See Appendix B). Rather than simply saying the date and time of the appointment and ending the call once the patient confirmed they had awareness, the PECs would ask prompting questions to see if the patient's schedule would align with this appointment time or if it assisted the patient in identifying a barrier or conflicting priority. If a barrier were identified that could be overcome or assisted with, such as transportation, then the

PEC would initiate arranging transportation. If there was an insurmountable barrier or a conflicting priority, the PEC would validate the patient's time and needs by suggesting a rescheduled appointment that would work better. The PEC would also let the patient know that they would then call 7-days prior to this rescheduled appointment or if something changed beforehand; they could call the office and reach the PEC directly at their extension. This reinforced to the patient that there was shared value in commitment to the plan and that the PEC would continue to support engaged behavior.

Additionally, the purpose of the appointment was reviewed with the patient to ensure understanding and recognition of the shared goals. For instance, the patient would be made aware of any preventative care due and this was explained to them in a manner that aligned with what the patient felt the purpose of the appointment. If there was misalignment between the patient's perceived goals and the appointment type, education was provided and supplemental materials were offered to be sent by mail. If patients voiced specific needs, the PEC would record those in the comments of the appointment so that the care team was aware and prepared.

The PECs were required to be Medical Assistants with primary care experience. Recruitment internally and externally occurred over 2 months (June and July) for 3 positions. All 3 positions were hired by August 2018. The 3 PECs are bilingual (Spanish and English speaking). The job description is included in the Appendix and clearly explains the role in patient activation, screening for social determinants, scheduling patients, education, and overall adherence facilitation to plans of care (See Appendix C). During the interviews the goals of reducing no-shows and late cancellations were also explained to the candidates as a core focus of this role and as a measure of the return on investment to capture for ongoing funding of these



positions. These positions report directly to this investigator who holds the role of Population Health Clinical Manager.

During the onboarding process, PECs completed online learning modules in Cultural Competency. Shadowing the various roles of the community care team (including behavioral support specialists, community health workers, registered nurses and social workers) enhanced these modules as the localized population and necessary competencies were highlighted. Motivational interviewing (MI) training occurred both virtually and during an in-service training. Social determinants of health (SDOH) and cultural competency were further explored at a 1-day conference offered by Massachusetts Hospital Association; aligning the roles of clinicians in addressing SDOH in a culturally competent manner. Weekly check-ins with the Population Health team and this investigator as leader/manager were also held to reinforce education, share ideas and transfer knowledge.

### **Study of the Intervention**

Consistent with the PDSA guiding framework, intervention fidelity was regularly assessed through the weekly check-ins with the PECs to determine if the process was being followed as intended and how it needed to adapt overtime so that all PECs did so consistently. Gathering the qualitative feedback allowed for enhancements to the dashboard and integration of prompts that proved successful in evoking more engagement of patients in their own planning. The perception of the patient during the communication was also gathered to determine the impact of the intervention, including their willingness to offer information about their schedule and any conflicts to attending the appointment, their tone, and any voiced appreciation or discontent with the outreach support.

Confounding factors were also identified through the feedback, where patients would share their motivations for attending appointments or not. Example confounding factors that could not be controlled for included: received reminder letter for lab screenings overdue with upcoming appointment date; required physical exam with specific paperwork completed by physician for employment or other social benefit so were likely to attend visit regardless of a reminder call. In these examples these were supplemental to the proposed benefit of the reminder call and concrete planning but cannot be isolated when studying the impact of the intervention.

### **Measures**

The metric chosen to determine the intervention's impact was the percent change of no-show and late cancellation rates from baseline. Percent change does not only consider the rate shift from pre to post but also incorporates the difference in the rates as related to the baseline itself. Therefore, it actually measures the percent change between pre and post to see how powerful the intervention was relative to where you began. Reducing no-shows and late cancellations is a very challenging task as evidenced by the literature, which is why we elected to measure percent change and not simply the rate shift. This outcome measure was calculated on a global scale including all patients in the MassHealth population as well as a sample of the pilot population: MassHealth patients with identified behavioral health needs.

For the MassHealth population, the percent change was calculated using the pre intervention baseline rate in the timeframe of 2/1/2016 - 5/31/2018 and post intervention rate in the timeframe of 9/1/2018 - 12/5/2018. Aggregation of data from the electronic medical record and the scheduling system was required to calculate the pre and post rates. This metric includes patients who received the intervention and those who did not; therefore it is not a direct study of

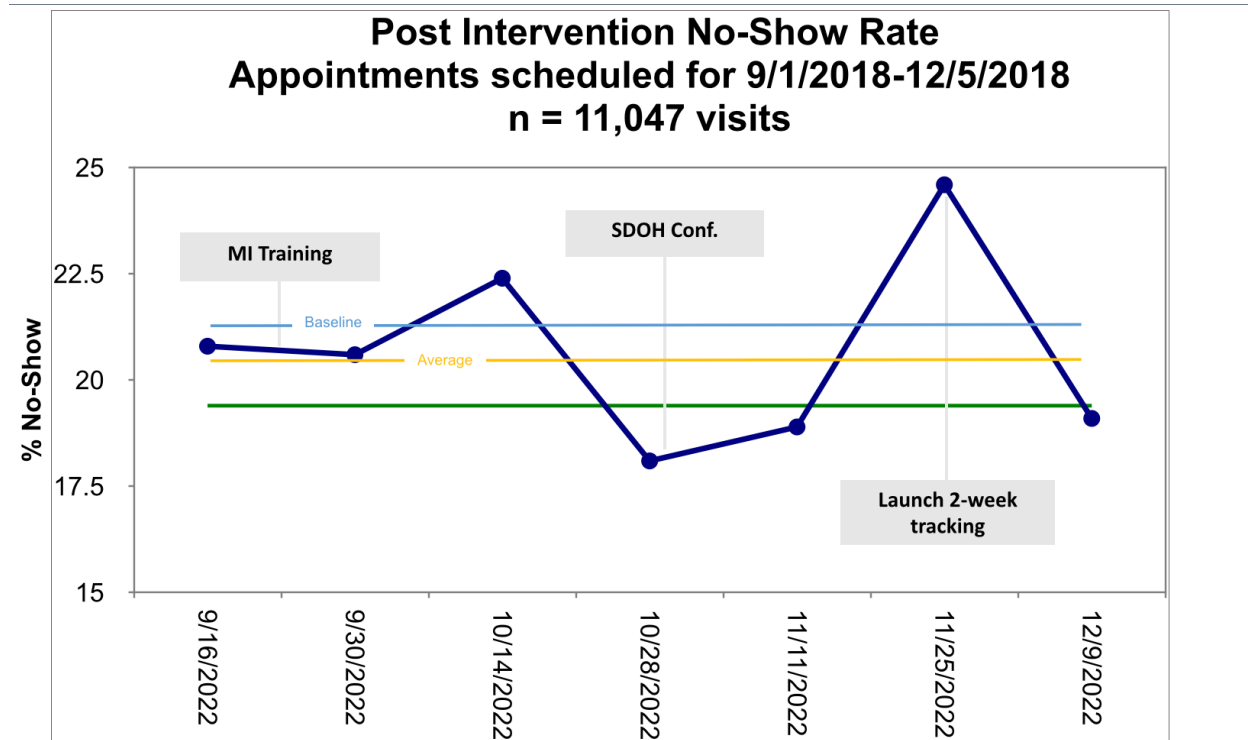
the intervention itself but includes other confounding factors. We cannot call this an accurate determination of intervention impact but it is an informative one to consider for future initiatives.

The pilot population metric required manual tracking and chart auditing in order to gather the post intervention rate. The baseline for this metric used the same original MassHealth population baseline calculated prior to the intervention (2/1/2016 - 5/31/2018). The manual tracking occurred between 11/27/2018 - 12/11/2018 to gather the pilot population rates for no-shows and late cancellations. During this timeframe the PECs audited patients who had received the intervention and had appointments scheduled within this 2-week timeframe to see if they: attended their appointment, no-showed, canceled, or rescheduled. Therefore, this percent change metric is very much a proxy measure. It does not use the same sampling methodology in the pre and post measurements. Reproducing this measure would not be advisable but due to limitations in this project, calculating as a proxy was the sole option and still provided interesting results to consider.

### **Analysis**

Figure 1 shows the run chart used as a visual depiction of the no-show rate for the MassHealth population from when the PECs initiated reminder calls (first PDSA cycle began on 9/1/2018) through the data collection period for this post-intervention rate (12/5/2018).

Figure 1. Run Chart for No-Show Rate in MassHealth Population During Intervention



The run chart includes when the Motivational Interview (MI) training and Social Determinants of Health Conference (SDOH) were completed along with the point where the 2-week manual tracking/auditing began in case these variables could have impacted the intervention.

The change in rate over time is apparent using the run chart approach. Recalling that the baseline for this population was a no-show rate of 21.4% we find that during the intervention at 2 points in time the rate surpassed the baseline while at 5 points in time it was below the baseline. There are too few runs in the chart to measure statistical significance or to determine special cause or common cause variation. There are also too few points either above or below the average line to determine any shift. There are also not enough consecutive points to identify a trend. No run chart was created for the pilot specific no-show rate because this manual tracking

only had 1 datapoint given each point was representative of a 2-week timeframe. Therefore, the value of this run chart is as a starting point if the intervention is continued so that more points can be gathered and more informative analysis performed; a minimum of 10 data points is needed to perform a true significance test and in this initiative only 7 points were collected during the 3-month intervention timeframe.

Qualitative feedback was gathered weekly during the Population Health team meetings and disseminated across the team to enhance the process. There was no cataloging of all feedback beyond the realtime integration of findings from week to week in alignment with Study and Act phases of the PDSA cycle.

### **Ethical Considerations**

An application was submitted to the University of New Hampshire's Nursing Clinical Review team who agreed with the determination that Institutional Review Board (IRB) was not necessary given the nature of this initiative (See Appendix E). The governing research/quality improvement body of the practice site, Center for Population Health, also reviewed the objectives and overview of this initiative and deemed IRB unnecessary. Patients already receive reminder phone calls by nonclinical staff and text messages. This intervention added a skilled clinician to engage patients within the appointment process. All patient level data analyzed was reserved to patients confirmed in MassHealth ACO.

Steps to ensure data security and confidentiality included secure e-mail with encrypted files and/or encrypted flash drives approved by the information systems department. Additionally, data reviewed and mined only occurred on double-encrypted approved devices. All files were encrypted, not just password protected, and the computer was locked for storage when

not in use. All data presented was aggregated and de-identified. There were no conflicts of interest.

## **Results**

From the initiation of the intervention on 9/1/2018, the PECs underwent further training and exposure to enhance their competency in addressing key drivers of patient engagement and accessing care. As their own confidence and skill grew with time, their qualitative feedback was representative of this self-efficacy. The results in the run chart for the MassHealth population do not depict this qualitative finding but perhaps if more data were collected and time continued it would become evident and align. When considering the aggregated post intervention rate of no-shows and late cancellations and the percent change for both, the outcomes do support the assumption that rapid cycle change supports improvement that is sustainable as was evidenced in this initiative.

Qualitatively, the intervention yielded a positive outcome for both the MassHealth population at large and the pilot population, in both cases the no-show rate and late cancellations resulted in an improved percent change. The baseline no-show rate for the MassHealth population was 21.4% and the post intervention rate was 20.5%, equating to a 4.2% positive change. The baseline late cancellation rate for the MassHealth population was 21.1% and the post intervention rate was 20.7%, a 1.8% positive change. For the pilot population, the no-show baseline rate was 21.4% and the post intervention rate was 11%, a 48.6% positive change. Finally, the post intervention late cancellation rate for the pilot population was 12.5%, a 40.5% positive change from the 21.1% baseline. While the pilot population percent change is certainly a proxy measurement given there was no baseline data available for this specific population, the intervention still proves positive because of the changes calculated in the MassHealth population.

Qualitative findings spanned social determinants of health and the predictors in the literature. When the patients were reached directly, most of the feedback was positive and appreciative for the phone call. Many patients said they had simply forgotten they even scheduled this appointment or could not recall what the appointment was for; showing that not only a reminder but explanation of the purpose and mutual goals was critical. A subsequent and interesting finding was that for one of the patients we had recorded English as their primary language but in actuality they were primarily Spanish-speaking; therefore, previous no-show letters and automated outreach attempts in English would not have necessarily informed the patient of much at all or simply could have confused them. With findings like this, it becomes even more complicated to assess if the other confounding variables occurring during this intervention were positive, negative, or neutral.

Overall the intervention's design and findings were consistent with both qualitative quantitative evidence gathered from the literature and used in developing this hybrid approach. With the limitations in data and the inability to isolate the intervention, it is however impossible to measure and report on its true impact.

### **Discussion**

While this quality improvement initiative has considerable confounding variables, is devoid of significance testing or statistical analysis, and certainly has limitations it did result in a positive outcome and key findings to inform future discovery in reducing no-shows and late cancellations. Thus, this initiative may be viewed as the groundwork for developing a process and model that is more consistent, measurable, and reproducible.

## Summary

The most prominent finding of the initiative was the positive percent change in no-show and late cancellations for the MassHealth and pilot population. The specific aim sought to reduce the no-show rate enough to generate a 5% change from baseline and this was achieved for the pilot population (48.6%). This was not achieved for the MassHealth population but it was close at 4.2%. The late cancellations for the MassHealth population fell much shorter than the goal of 5% with the result of a 1.2% change. However, the pilot population saw an equally impressive change for late cancellations as it did for no-shows: 40.5%.

A subsequent and unintended finding that may inform future staffing considerations for similar patient engagement initiatives, is the value of medical assistants trained in MI and SDOH. Their intuition and ability to adapt throughout the initiative as well as real time during conversations likely was a key driver in the patient's engagement and feelings of support. Through the qualitative feedback it became evident that this knowledge base was critical to identifying patient needs and addressing them, also in the manner of communication to evoke the information and activate the patient in creating a suitable plan.

The model for improvement and PDSA cycles was the right approach and a core strength of this design. Meeting weekly and adapting cyclically led to reduction of waste, improved efficiency and effectiveness as well as validating the PECs in their own growth and supporting development of their self-efficacy.

Pender's Health Promotion Model and its recognition of the clinician in engaging patients and their commitment to a plan was certainly evident in this initiative's results. Not only from the qualitative feedback but also in observing the positive percent change; patients revealed their



commitment by attending their appointments and/or calling in advance to cancel or more often reschedule them. This model was a critical strength in the communication approach of this initiative, inclusive of the concrete planning prompts that occurred during the conversation.

### **Interpretation**

Interpreting the outcomes includes considering the quantitative and qualitative findings. Graphically the run chart did not reveal any statistical significance nor did the PEC competency milestones result in an informative change in rate but it did capture the rollout of the intervention overtime and is a basis for further data collection. The metric of percent change did reveal an improvement that could have significant quality, access, and financial impact. Recalling that the annual revenue loss estimate for no-shows and late cancellations was over \$5M, if there was even a 0.9% annual rate shift (as seen in the baseline rate of 21.4% - post intervention rate of 20.5%) there is already a savings of \$45,000. This estimate is limited to one payer, a specific pilot population, and a 3 month timeframe, therefore with a greater scope; it could likely have a greater impact. This metric is the driving factor behind the practice's decision to continue piloting this initiative, gather further data, and consider spread.

The published studies on no-show rates that deployed components of this intervention also showed a reduction in the rate but they did not calculate a percent change similar to the one used in this initiative (Parikh et al., 2010; Shah et al., 2016). Those that were most successful also focused on the Medicaid population as in this initiative (Dantas et al., 2018; Miller et al., 2015; Parikh et al, 2010; Shah et al., 2016). Additionally, those studies that offered similar patient validation and ensured understanding of the appointment had impressive rate reductions. One of the most successful and local studies conducted in Boston was also a hybrid approach using a blend of live person phone calls and automated reminders with concrete planning

prompts. That study did not use clinicians however, and while it is unknown if the researchers identified if a clinician was needed or not, this initiative certainly found value in that background (Shah et al., 2016). Often patients would ask specific questions about their appointments or lead into another clinical area (i.e. medication question) that otherwise would have required handing off to a clinician and possibly disrupted the patient's engagement with this specific PEC. The PECs reported that patients were happy to be able to ask additional questions and receive information in real time or at a minimum an offer to speak with the patient's provider to gather further details and then return the call themselves. This generated continuity in the patient-clinician relationship, another core principle in Pender's Health Promotion Model.

### **Limitations**

There were significant limitations to the internal validity of this initiative which inherently disrupt the generalizability of the work. As mentioned, there were multiple engagement strategies occurring in tandem with this initiative, including: outreach letters, SDOH surveys/educational tips sheets, and automated reminder calls/texts remained in use at both days 5 and 2. It was the intent of this initiatives design to remove the 5 day reminder call/text altogether and to shift the 2 day automated outreach to 3 days prior but neither of these occurred. Therefore patient's received 3 outreach attempts specific to their appointment and this could have impacted the outcome. The multiple modes of communication make it difficult to specify that this intervention was the driving factor to attending appointments or reducing late cancels but the qualitative feedback does support that assumption.

Additionally, the 3 PECs all have different strengths and weaknesses as to be expected in any team and a valid variable in any intervention delivered by humans. Every effort was made to ensure comparable level of competency existed between the staff through the trainings,

conferences, and weekly meetings. Still, their prior experiences and own backgrounds may have been another confounding variable in their communication styles. This variable was not evaluated in the outcomes but is noteworthy.

Imprecise measurement subsequently led to imprecise analysis of results. The resource constraints that limited data extraction required a baseline population be used that was not fully representative of the pilot population. Proxy measurement was utilized to supplement these gaps but generates an imprecise analysis of the interventions true impact and must be considered in future design and deployment.

## **Conclusions**

A hybrid approach combining live outreach calls that employ patient engagement tactics with automated reminders could reduce both no-shows and late cancellations in primary care. This initiative's evidence although weak in terms of analytical power was strong in the observed outcomes to date. With additional time to enhance the approach and further pilot the intervention it is presumed that the impact would prove statistically significant.

Reflecting on the initiative's qualitative findings, there is incredible value in fostering competencies of medical assistants to mirror those used in this quality improvement project. Whether for a similar appointment initiative or another evoking engagement of patients and sustaining commitment to their own self-management and healthy behaviors, both MI and a working knowledge of SDOH would be desirable. This finding informs clinical and business leaders in the field as well as academia responsible for preparing medical assistants for practice.

Future action at the practice will include continuing this pilot for MassHealth patients with identified behavioral health needs and expanding it to other cohorts in the population with a

subsequent analysis before including any additional payers. Addressing limitations in the original pilot will be a priority to ensure sound data with improved analytic capability.

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Appendix A

Results of 5 day and 2 day pre-visit outreach  
(random sample of three days outreach in October 2018)

Results of Phone Calls 5 days Prior to Visit											
Site	Confirmed	Canceled	Hung Up	No Response	Repeated Msg	Answering Machine	No Answer	Busy	Invalid #	Total	
Haverhill	4	1	4	4	0	13	1	1	1	29	
	13.8%	3.4%	13.8%	13.8%	0.0%	44.8%	3.4%	3.4%	3.4%	100%	
Newburyport	2	1	0	0	0	11	0	0	0	14	
	14.3%	7.1%	0.0%	0.0%	0.0%	78.6%	0.0%	0.0%	0.0%	100%	
Lawrence	6	0	1	1	0	12	1	0	1	22	
	27.3%	0.0%	4.5%	4.5%	0.0%	54.5%	4.5%	0.0%	4.5%	100%	
Andover	1	0	2	0	0	6	0	0	1	10	
	10.0%	0.0%	20.0%	0.0%	0.0%	60.0%	0.0%	0.0%	10.0%	100%	
Prim Rose	0	0	0	0	1	1	0	0	0	2	
	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%	0.0%	100.0%	
<b>ALL SITES</b>	<b>13</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>43</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>77</b>	
	16.9%	2.6%	9.1%	6.5%	1.3%	55.8%	2.6%	1.3%	3.9%	100.0%	

Results of Phone Calls 2 days Prior to Visit											
Site	Confirmed	Canceled	Hung Up	No Response	Repeated Msg	Answering Machine	No Answer	Busy	Invalid #	Total	
Haverhill	5	0	3	13	2	21	2	1	0	47	
	10.6%	0.0%	6.4%	27.7%	4.3%	44.7%	4.3%	2.1%	0.0%	100%	
Newburyport	11	0	0	10	2	19	1	1	0	44	
	25.0%	0.0%	0.0%	22.7%	4.5%	43.2%	2.3%	2.3%	0.0%	100%	
Lawrence	9	1	3	18	2	21	0	1	0	55	
	16.4%	1.8%	5.5%	32.7%	3.6%	38.2%	0.0%	1.8%	0.0%	100%	
Andover	1	0	0	4	0	9	0	0	0	14	
	7.1%	0.0%	0.0%	28.6%	0.0%	64.3%	0.0%	0.0%	0.0%	100%	
Prim Rose	1	0	1	2	0	8	0	0	0	12	
	8.3%	0.0%	8.3%	16.7%	0.0%	66.7%	0.0%	0.0%	0.0%	100.0%	
<b>ALL SITES</b>	<b>27</b>	<b>1</b>	<b>7</b>	<b>47</b>	<b>6</b>	<b>78</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>172</b>	
	15.7%	0.6%	4.1%	27.3%	3.5%	45.3%	1.7%	1.7%	0.0%	100.0%	



<b>Results of Text Messages 5 days Prior to Visit</b>					
<b>Site</b>	<b>Undelivered</b>	<b>Delivered</b>	<b>Canceled</b>	<b>Confirmed</b>	<b>Total</b>
<b>Haverhill</b>	21	99	6	54	180
	11.7%	55.0%	3.3%	30.0%	100%
<b>Newburyport</b>	6	47	7	43	103
	5.8%	45.6%	6.8%	41.7%	100%
<b>Lawrence</b>	23	94	6	79	202
	11.4%	46.5%	3.0%	39.1%	100%
<b>Andover</b>	3	34	1	34	72
	4.2%	47.2%	1.4%	47.2%	100%
<b>Prim Rose</b>	5	12	1	16	34
	14.7%	35.3%	2.9%	47.1%	100.0%
<b>ALL SITES</b>	58	286	21	226	591
	9.8%	48.4%	3.6%	38.2%	100.0%

<b>Results of Text Messages 2 days Prior to Visit</b>					
<b>Site</b>	<b>Undelivered</b>	<b>Delivered</b>	<b>Canceled</b>	<b>Confirmed</b>	<b>Total</b>
<b>Haverhill</b>	21	122	1	15	159
	13.2%	76.7%	0.6%	9.4%	100%
<b>Newburyport</b>	13	57	0	16	86
	15.1%	66.3%	0.0%	18.6%	100%
<b>Lawrence</b>	17	126	4	22	169
	10.1%	74.6%	2.4%	13.0%	100%
<b>Andover</b>	5	42	3	8	58
	8.6%	72.4%	5.2%	13.8%	100%
<b>Prim Rose</b>	1	22	1	3	27
	3.7%	81.5%	3.7%	11.1%	100.0%
<b>ALL SITES</b>	57	369	9	64	499
	11.4%	73.9%	1.8%	12.8%	100.0%

## **Appendix B**

### **Example Questions to Facilitate Concrete Planning with Patients**

- Do you have work or another place you need to be before your appointment?
- What will you be doing in the morning prior to your appointment?
- If you aren't already committed to anything the morning of your appointment, do you think you could come in for your lab work prior?
- In the past you have expressed challenges with daycare, will your children be in school during your appointment or do you have someone scheduled to watch them?
- Who will be driving you to your appointment and do they have other obligations before or after?

## Appendix C

### Job Description for Patient Engagement Coordinator



#### Pentucket Medical Associates Job Description

**Job Title:** Patient Engagement Coordinator  
**Department:** Population Health  
**Date:** 6/1/2018  
**Reports to:** Clinical Manager of Population Health

**General Summary/Overview:** The Patient Engagement Coordinator works under the direction of the Clinical Manager of Population Health as part of the Partners Choice Accountable Care Organization (ACO). The core objective of this role is to facilitate preventative and health promoting care delivery while supporting patients in taking an active role in their care team through education, outreach, and ongoing coordination. Ensuring timely access to care for high risk patients, identifying social needs and assisting as part of the team in meeting those needs, will be central to this role.

Using culturally and linguistically appropriate methods, the Patient Engagement Coordinator will work as a member of the care team and will interface and engage with all stakeholders including providers/clinicians, office staff, payors, patients and patient families, as appropriate. The Patient Engagement Coordinator provides the link between patients and primary care providers in order to maximize the patient experience, increase effective communication between providers, community resources, patients and their families, as well as supporting delivery of best practices and alignment with quality indicators.

#### Essential Functions:

- Co-manage a panel of Partners Choice ACO patients under the direction of a Registered Nurse, to include:
  - Outreach to patients (via telephone, secure messaging, and mail) to support navigation of ACO, awareness of the resources, and identification of gaps in understanding/needs
  - Self-management education/reinforcement of care plans for patients and their families/caregivers
  - Scheduling for preventative and/or chronic care needs (i.e. disease management visits, specialty referrals, etc.)
  - Identification of health promoting care in accordance with evidence-based guidelines and initiation of needed care (i.e. lab orders)
  - Screening for social and behavioral needs as appropriate; communicating with clinicians on findings
  - Assist in closed-loop referrals, guiding in-network receipt of care and tracking completion of visit/attainment of records for care team

- Facilitate attainment of prescribed medications and durable medical equipment as appropriate (i.e. prior authorizations, pharmacy coordination)
- Identification of barriers to patient's engagement in care (i.e. transportation, communication, access) and collaboration with care team to develop solutions to achieve goals of care
- Accurately and effectively document patient interactions and care delivery in the electronic medical record
- Participate in the development and implementation of workflows related to quality measures and best practices
- Maintain a working knowledge of the MassHealth ACO requirements and the strategy of Partners Choice ACO in meeting them
- Identify modifications in processes, work flows, measure interpretation that will improve ability to achieve the measures
- Support clinical staff efforts to ensure patient compliance with quality performance measures
- Utilize information technology systems to identify patients with gaps in preventative care screenings and quality measures
- Utilize quality dashboards/reports to manage patient panel and drive positive health outcomes
- Develop and maintain a sound working relationship with internal and external stakeholders
- Communicate regularly with integrated team members, reporting progress, challenges/barriers, and improvement opportunities

**Preferred Qualifications:**

- Certified Medical Assistant (CMA) through American Association of Medical Assistants (AAMA) required
- 2+ years experience in a provider practice, healthcare company or clinical setting
- Experience in a community-based role is preferred
- Bi-lingual (English/Spanish) preferred

**Knowledge/Skills and Abilities:**

- Ability to utilize and demonstrate proficiency with Information Technology Systems
- Ability to work independently and function as a team member
- Exhibit flexibility and adaptability to fast paces office-based environment
- Excellent communication and customer service skills
- Proficient with Microsoft products especially Word, Excel, Powerpoint, Outlook
- Protects the confidentiality of member information and adheres to company policies
- Promotes communication, both internally and externally to achieve departmental performance metrics
- Performs other duties to support the team as required

**Physical Demands:**

While performing the duties of this job, the employee is frequently required to walk, stand, reach with hands and arms, climb or balance, stoop, kneel, crouch, talk and hear. Requires sitting and standing associated with normal office environment. Manual dexterity for using a computer keyboard and calculator.

**Environmental/Working Conditions**

Work is performed in an office environment. Involves frequent contact with staff, patients, physicians, and other professionals. Work may be stressful at times. Requires travel to other sites.

### Appendix D

### Example Dashboard for PEC Outreach

ANDIM Patients: 119													
Patient Name	DOB	Primary Care Physician	BH Risk	SDOH Resp	SDOH Tip Sheets Received	CCT Rfrl	Last Visit w IM/Pedi	Next Visit w IM/Pedi	Hosp 6m Last Hosp Date	ED 6m Last ED Date	ICMP Enrolled	SW/RN Assmnt	Community Care Team Name
			Low	10/11/18 - W			10/10/18		3 - 7/31/18	1 - 8/8/18			
			Low	10/1/18 - E M U W	E F H U W		9/26/18						
			Low	7/25/18 - F M			9/21/18						
			Low				7/3/17						
			Low				5/8/17						
			Low				9/17/18	1/14/19	3 - 9/11/18				
			Low				6/15/18						
			Low				10/10/18	11/26/18	1 - 7/12/18				
			Low		C F H M U		6/11/18	6/14/19		1 - 8/24/18			
			Low				3/2/18		3 - 5/23/18	1 - 5/25/18			
			Low				9/5/18	3/4/19					
			Low		C		8/17/18						
			Low				6/29/18						
			Low				6/1/18			2 - 9/7/18			
			Low				7/5/18						
			Low				9/19/18	10/31/18					
			Low				5/22/18	10/25/18		1 - 9/14/18			
			Low				9/26/17		1 - 5/10/18				
			Low				6/11/18						
			Low				10/4/18		14 - 9/21/18	1 - 9/10/18			

RULES: Patient was hospitalized/in the ER in the last 5 days OR didn't take the survey OR doesn't have a future appointment schedule OR hasn't been seen this year and isn't scheduled for this year OR responded with risks on the survey and have not been given tip sheets or been referred to community care OR scheduled to be seen in next 7 days  
 SURVEY RESPONSES: A (abuse), C (childcare), D (elderly/disabled care), E (education), F (food), H (housing), T (transportation), U (utilities), W (employment)

**Appendix E**  
**Nursing Quality Review Committee Letter**



College of Health and Human Services  
Department of Nursing  
Hewitt Hall  
4 Library Way  
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October 13, 2018

Dear Jessica

The UNH Department of Nursing Quality Review committee has reviewed your DNP proposal. Titled: "Reducing No Shows and Late Cancellations in Primary Care." Based on the SQUIRE 2.0 guidelines for determination quality improvement and research activities, the proposal meets the standards for a quality improvement project. The Quality Review committee determined that this project does not constitute research, and therefore does not need review by the UNH Institutional Review Board for the Protection of Human Subjects, and there are no potential conflicts of interest ( financial, professional, or institutional). You may implement your project as proposed.

Good Luck,

Pamela P DiNapoli PhD, RN.CNL

Assistant Professor and Graduate Programs Coordinator

247 Hewitt Hall

Durham NH 03824

cc. J. Samuels

J. Dufresne