Exploring Methods to Facilitate the Role of Office Assistants to Improve Primary Care Office Workflow and Job Satisfaction

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Abstract

Provider burnout in primary care is a concerning possibility in today's healthcare environment. Providers commonly spend a great deal of time on administrative tasks and paperwork that do not require their level of training. A review of the literature suggested several ideas to improve office workflow and decrease provider burnout. To date, there are no published studies that have implemented strategies to test their effectiveness in improving workflow. This study implemented selected interventions from the literature in a small primary care office and administered a pre- and post-intervention survey to measure the interventions' effects on job satisfaction and productivity. The interventions selected from the literature included: formation of teamlets, daily team huddles, and expanded MA function through guided autonomy algorithms. In the post-intervention survey it was found that providers felt there was improvement in teamwork environment (p=.04) and overall job satisfaction (p=.023) while staff responses did not show any significant changes. The most effective interventions, according to frequency of reporting in the intervention survey, were formation of teamlets (77.38%), use of team huddles (66.7%) and use of guided autonomy algorithms (55.6%). When analyzing provider versus staff responses to the intervention survey, providers reported significant feeling that the algorithms for guided autonomy were effective (p=.002). This project was unique in studying the effects of implementing specific interventions from the literature into a practice and attempting to determine whether the effect was significant. It appears that these interventions do improve provider job satisfaction and provider feeling of workflow efficiency and effectiveness. Additional studies with larger sample sizes, longer study duration, and other workflow strategies are suggested for further research.

Keywords: Primary Care, Nurse Practitioner, Assistant Workflow, Office Management, Team-based Care.

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Time is the most important commodity a practice has, therefore, optimizing workflow to run efficiently and effectively is essential (Woodcock & Keegan, 2015). Office workflow is directly related to the ability of the office to provide quality care in a timely manner. Ineffective time management in the primary care office leads to pressure, chaotic work environments, increased administrative demands, and fragmentation of care delivery (Sinsky et al., 2013). Such pressures and demands are associated with a high-degree of provider burnout, especially in primary care (Ghorob & Bodenheimer, 2012b; Sinsky et al., 2013).

High patient volume and the increasing regulatory requirements in our current healthcare system contribute to a high demand placed on primary care providers (PCPs). For patients, this demand is complicated by fewer providers choosing to practice in the primary care setting; which can result in large panel sizes – the number of patients under the care of a given provider – and long wait times for appointments (Ghorob & Bodenheimer, 2012b; Sinsky et al., 2013). Some areas currently report wait times as long as 36 days for a new patient appointment with a family care provider and 48 days for internal medicine provider (Ghorob & Bodenheimer, 2012b). Such a high demand on PCPs is not desirable; patients and providers alike become frustrated. Likewise, Ghorob and Bodenheimer (2012b) estimate that a provider with a panel size of 2,500 patients (the national average is currently about 2,300 patients) would need to work 18 hours a day to provide “excellent care”. Such a demand is not sustainable for providers; burnout would worsen. Coordination of care and administrative work comprise much of the time demands placed on PCPs (Ghorob & Bodenheimer, 2012b; Sinsky et al., 2013).

Increasing administrative and regulatory demands on PCPs require the completion of many tasks that do not require the level of training it takes to be a PCP (Sinsky et al., 2013).

Many PCPs are routinely performing such work (Sinsky et al., 2013). One task commonly performed by a PCP is data entry into an electronic health record (EHR) (Johnson, Bookman, Bailyn, Harrington, & Orton, 2011). Lack of PCP willingness to delegate non-clinician tasks to others perpetuates the problem of increased PCP time spent on such tasks (O'Malley, Gourevitch, Draper, Bond, & Tirodkar, 2014). PCPs delegating tasks to their assistant(s) (medical assistant [MA], licensed practical nurse [LPN], registered nurse [RN], or other licensed or unlicensed employee) is important to improve workflow, increase practice effectiveness, and improve job satisfaction. It is important that the primary care team work together to accomplish the tasks needed to provide excellent care.

Multiple key roles in a primary care office need to function in concert with one another for efficient and effective operations. Though not every primary care practice has the same structure, some basic roles and/or functions are common. These roles/functions include PCPs (physicians, nurse practitioners, and physician assistants), office administrators, front office staff, assistants, and billing staff. Coordination of the work and efforts of all primary care personnel is essential, no matter what the practice size is.

This practice improvement project was implemented within a small primary care office. The purpose of this project was to determine, outline, and implement new processes. The implemented processes were taken from the literature and were aimed at expanding the role of the assistant in the primary care setting. Finally, the implemented processes were evaluated for their effectiveness as to whether they decreased administrative workload for PCPs and improved overall job satisfaction in the primary care setting.

Review of the Literature

There is a general paucity of literature on the subject of improving primary care workflow (Mitchell et al., 2012; O’Malley et al., 2014). In order to capture as many applicable

articles as possible, two different searches were performed though multiple databases. Searched databases included CINAHL, PsycINFO, Ovid Medline, and the Cochrane. Results from the last ten years (2005 to 2015) were included if they dealt with primary care and how to utilize MAs, LPNs, RNs, and other support staff to improve office workflow. Articles were excluded if they did not discuss utilization of assistants or workflow in a primary care setting.

Databases were first searched with search terms “patient care team” and “workflow.” CINAHL returned one result, which was excluded. PsycINFO returned one result. Ovid Medline returned 107 results, only three of which met the inclusion criteria. The Cochrane returned no results. In total three articles were found that met inclusion criteria from these search criteria. The same databases were then searched using the search terms “primary health care” and “workflow.” CINAHL returned 48 results, none of which met inclusion criteria. PsycINFO returned 39 results, only one met inclusion criteria. Ovid Medline returned 103 articles with three that met inclusion criteria. The Cochrane again returned no results. In total four articles were found that met the inclusion criteria using this search, one of which was a duplicate from the previous search terms (making the final total three). Finally, a Google Scholar search was also conducted using the search terms “patient care team” and “medical assistant” and two results were found which met inclusion criteria. The reference lists of selected articles were searched for classic articles, and one article was identified. A total of nine articles were reviewed for this project.

A review of the articles was performed and themes were identified. Four of the included articles are descriptive; no intervention was applied. Each of these four articles described characteristics of high-performing practices. Some of these articles focused on multiple high-performing practices (Ghorob & Bodenheimer, 2015; O’Malley et al.,2014; Sinsky et al., 2013) and one evaluated a large practice with greater than 35 providers (Johnson et al., 2011).

Of the three articles that sampled multiple high-performing practices, Sinsky and colleagues reviewed a sample of 23 primary care offices from “multiple geographic regions”, in practices ranging from small to large from both the private and academic settings (Sinsky et al., 2013). In another study, by O’Malley et al. (2014), randomly sampled high-performing practices listed in a national database of patient centered medical homes as of February 2013. Practices were separated into strata based on geographic regions and reported success at achieving “high team scores”. Interviews were conducted to determine practice characteristics until saturation was reached; 27 practices were sampled, only one of which was a low scoring facility that was used for comparison (O’Malley et al., 2014). Finally, Ghorob and Bodenheimer (2015) completed detailed observations at 29 “highly regarded primary-care practices” from a variety of sizes and locations. Together these articles provide insights from a variety of highly productive offices of various sizes that are operating in a variety of settings. They provide good evidence of common characteristics and organizational structures that are present in high-performing offices.

Nemeth, Ornstein, Jenkins, Wessell, and Nietert (2012) performed a quality improvement project that had a pre- and post-intervention assessment design. The intervention (use of electronic standing orders for preventative exams, immunizations, and orders for the routine examination of diabetic patients) was implemented in a variety of practices. These practices varied in size and location (different states) and even included two rural locations as research sites (Nemeth et al., 2012). This article shows the utility of the use of electronic standing orders in a variety of settings and locations.

Three articles were literature reviews that detailed different aspects of effective organization of a health care team (Ghorob & Bodenheimer, 2012a; Ghorob & Bodenheimer, 2012b; Woodcock & Keegan, 2015) and represent a pool of suggestions gleaned from literature

and from experts in management and are valuable resources for sound and proven strategies for office workflow improvement.

Finally, Balasa (2008) reported on the skills training that MAs undergo (Balasa, 2008). This descriptive report highlighted the expanded functions that are taught in programs that are accredited by the American Association of Medical Assistants (AAMA). Legal considerations were also commented on.

After all the included articles were reviewed, suggestions were compiled. These suggestions include workflow mapping, establishing stable care teams (teamlets), performing daily team huddles, increasing the number of assistants per provider, and expanded assistant function. Each of these interventions will be discussed in detail.

Workflow Mapping

Multiple articles suggest mapping workflows to improve office function (Ghorob & Bodenheimer, 2012a; Ghorob & Bodenheimer, 2015; Woodcock & Keegan, 2015). Workflow mapping is a visually represented outline of any step-by-step process (Ghorob & Bodenheimer, 2012a; Nelson, Batalden, & Godfrey, 2007). The workflow map should be a comprehensive overview of every step, from beginning to end, of a given process. This map should also show what each individual is responsible for during the process. Mapping will aid in identifying problem or potential problem areas, in addition to clearly identifying team responsibilities.

Similarly, checklists should be created for each role and step to ensure nothing is missed (Woodcock & Keegan, 2015). For example, a checklist should be created to outline everything that the assistant should do when rooming a patient or when the patient arrives for a health maintenance exam, or when a medication refill request is received from the pharmacy, or virtually any process that a patient or clinic might encounter. Along the same lines, it is recommended that exam rooms be set up in a uniform way (Woodcock & Keegan, 2015). This

makes supplies, forms, and equipment easy to locate. It also improves accuracy and speed of stocking.

Establishing Stable Care Teams (Teamlets)

Creating a stable team dynamic is an important part of ensuring good teamwork (Ghorob & Bodenheimer, 2015; Nemeth et al., 2012; O'Malley et al., 2014; Sinsky et al., 2013). Teamlets, a PCP and one or more assistants, should consistently work together in providing care to a single panel of patients. Ghorob & Bodenheimer (2015) identified five potential benefits of using teamlets. First, it fosters a sense of responsibility to care for the panel. Second, it creates a structure for accountability. Third, it allows patients to feel like they are part of a small practice that is more invested in their health (important in large health care organizations). Fourth, it decreases staff burnout. Fifth, it allows assistants to take on more responsibilities as they have a more vested interest in their assigned patient panel (Ghorob & Bodenheimer, 2015).

It is further suggested that teamlets be located next to each other in a side-by-side workstation; known as colocation (Ghorob & Bodenheimer, 2015; Sinsky et al., 2013). Colocation improves communication and facilitates teamwork (Ghorob & Bodenheimer, 2015). This consistent and close teamwork has the potential to improve communication, workflow, accountability, and job and patient satisfaction (Ghorob & Bodenheimer, 2015).

Team Huddles

Daily team huddles are one of the most important things a practice can do to improve efficiency and workflow (O'Malley et al., 2014). Huddles are used to organize the day's work (Ghorob & Bodenheimer, 2012b; Ghorob & Bodenheimer, 2015; O'Malley et al., 2014). They should last approximately 10 minutes at the beginning of the day and include the provider and assistant(s). A representative from the front office staff can also be a valuable team member to have at the morning huddle. The huddle should be used to delegate tasks/roles, collect needed

information, and clearly communicate the plan for the day to the entire team (see Appendix A for an example agenda; O'Malley et al., 2014).

Increased Assistant-to-Provider Ratio

In connection with the next recommendations (expanded function of the assistant), the reviewed literature suggests that the assistant-to-PCP ratio be increased to at least two assistants per PCP (Ghorob & Bodenheimer, 2015; O'Malley et al., 2014; Sinsky et al., 2013). The PCP should delegate tasks to the assistant(s) in order to increase productivity, expand appointment availability, increase revenue earning potential, and improve patient satisfaction (Ghorob & Bodenheimer, 2015; O'Malley et al., 2014; Sinsky et al., 2013). PCPs should consider using non-clinicians as scribes as this can save up to 75 minutes per every four hours of clinic time (Ghorob & Bodenheimer, 2015).

Expanded Assistant Function

There are multiple suggestions in the area of expanded assistant function and it is imperative that the PCP delegate for these suggestions to work. The major themes that will be discussed here include chart preparation and maintenance, expanded rooming protocols, and greater autonomy through the use of protocols or algorithms (termed guided autonomy).

Chart preparation and maintenance. Many providers spend a great deal of time entering data into an EHR (Johnson et al., 2011). This task, among others, does not require the level of training it takes to be a PCP. Delegating such tasks frees the PCP to attend to care items that require the level of training they have received and improves PCP, support staff, and patient satisfaction (Balasa, 2008; Ghorob & Bodenheimer, 2012a; Ghorob & Bodenheimer, 2015; Sinsky et al., 2013; Woodcock & Keegan, 2015). An example of a chart preparation process is included in Appendix B; it highlights pre-visit planning and maintaining a complete and accurate medical record.

Pre-visit planning, reviewing the schedule and applicable charts prior to the appointment day, is suggested by many experts (Adewale, Anthony, & Borkan, 2014; Balasa, 2008; Sinsky et al., 2013; Woodcock & Keegan, 2015). Notes, consultations, and other applicable results should be collected in preparation for the visit. It should be noted if there are any overdue orders or missing consultation notes or if there will be any needed forms for the visit (Adewale, Anthony, & Borkan, 2014; Balasa, 2008; Sinsky et al., 2013; Woodcock & Keegan, 2015). This undertaking should be completed prior to the day's huddle so that the assistant can identify any care gaps, plan for needed vaccine administration, or to coordinate other needs (Ghorob & Bodenheimer, 2012a; Ghorob & Bodenheimer, 2015). Gaps might include orders that have not been completed, lack of return communication from sent referrals, or identifying screenings that are not up to date (Ghorob & Bodenheimer, 2012a). Increasing the number of responsibilities the assistant has during a given visit is also recommended.

Expanded rooming protocols. O'Malley et al. (2014) and Sinsky et al. (2013) provide an extensive list of suggested tasks that assistant should be responsible for, especially when rooming a patient. These tasks should include: (a) collection of information prior to the patient's visit (as discussed above), (b) taking down chief complaint and asking further history questions as directed by the PCP, (c) taking and charting vital signs, (d) reviewing medication(s) and noting new or discontinued medicines, (e) obtaining point of care tests (e.g. urinalysis, rapid strep, vision screening) as directed by the PCP or by protocol, (f) performing any needed questionnaire(s) (e.g. depression screening, drug and alcohol screening, Attention Deficit Hyperactivity Disorder (ADHD) monitoring, (g) administering indicated/ordered vaccinations, (h) completing any needed form(s), (i) noting any missing or incomplete care items (e.g. overdue orders), (j) reinforcing goals and encourage patient engagement in the management of chronic condition(s), (k) collecting any lab specimens ordered, and (l) completing referrals and/or

assisting the patient to arrange for follow-up (see example in Appendix C; O'Malley et al., 2014; Sinsky et al., 2013).

It is also appropriate for assistants to provide health coaching as trained and delegated by the PCP (Balasa, 2008; Ghorob & Bodenheimer, 2015). The assistant will need additional instruction and training to prepare them for expanded function as well as intermittent skill assessment (Balasa, 2008; Sinsky et al., 2013). In order to perform these tasks, the assistant will need greater overall autonomy.

Guided autonomy. Increasing the amount of responsibility that is delegated to the assistant will require forethought on the part of the PCP. In delegating tasks, the assistant will need clear operating guidelines. Expanded areas of autonomy might include: performing vaccinations, obtaining point-of-care testing specimens, and many other standing orders at the direction of the PCP (Balasa, 2008; Ghorob & Bodenheimer, 2012b; Ghorob & Bodenheimer, 2015; Nemeth et al., 2012;O'Malley et al., 2014; Sinsky et al., 2013; Woodcock & Keegan, 2015).

Nemeth et al. (2012) reported significantly higher vaccination rates in both children and adults when surveyed practices used standing orders for vaccination administration. Another successful example is given by Ferrell, Aspy, and Mold (2005) who reported that training and written protocols for assistants (e.g. medication refills) could decrease operating costs can be and improve practice efficiency. These same benefits could be experienced in many other areas of practice if the use of standing orders were developed. Having a protocol for ordering labs, refilling medications, and directing patients to come in for follow-up appointments are additional and powerful ways the assistant can assume greater responsibility and improve the workflow in the health care setting (Ghorob & Bodenheimer, 2015; Nemeth et al., 2012).

Legal Considerations. PCPs must keep the assistants' scope of practice in mind when delegating assignments. Not all states have the same legal scope of practice for assistants so it is important for the PCP to familiarize themselves with the state laws (AAMA, n.d.). In Oregon, assistants can perform any task that is delegated within the judgment of the physician; providing that the assistant's level of training and experience is appropriate to the assigned task and that they do not provide any independent medical judgement or practice medicine as defined by the *Oregon Medical Practice Act* (Oregon Medical Board, 2012). It is important to remember that the PCP is ultimately responsible for the actions taken by supervised personnel; ensuring proper training and ongoing monitoring is vital.

Gaps in the Literature

Given the paucity of research on the subject, there are many gaps in the literature regarding office workflow (O'Malley et al., 2014). Such gaps include how support staff can best function to improve workflow, how accountability of assistants can be tracked and improved, and how to best organize routine tasks to maximize productivity. It is recommended that additional, focused research be performed on office workflow to identify the most effective and efficient models of practice. It would also be beneficial if there were training programs on how PCPs can implement such changes in their respective practices.

Summary of the Proposed Project

After reviewing the literature, this project consisted of implementing a few of the suggestions gleaned from the literature. Implementation and evaluation all of the suggested changes at once was too great an undertaking for the limited amount of time available for this project, would have made data interpretation more difficult, and was not feasible in a small family practice. The implemented recommendations included establishing stable care teams, daily team huddles (see Appendix A), and using guided autonomy algorithms (including

medication refill algorithms, standing orders, and vaccination assessment; see Appendix D). These changes necessitated some workflow mapping; however, this was not comprehensive and was not the focus of the project. These recommendations were selected because they were reported to have the greatest impact on improving office workflow (Ghorob & Bodenheimer, 2012b; O'Malley et al., 2014) and because they did not increase the operating costs of the practice.

Approach to Conducting the Project

This practice improvement project was performed in a small family practice in Hillsboro, Oregon (Population approximately 99,393 people; United States Census Bureau, 2015). The city of Hillsboro has a robust medical climate with many health care providers that offer services ranging from primary to specialty and subspecialty care. Large healthcare networks in Hillsboro include Providence healthcare, Kaiser Permanente healthcare, Legacy Health, Tuality Healthcare (recently affiliated with Oregon Health & Science University), in addition to the multiple private primary and specialty offices. The project was implemented and evaluated in a small office that offers primary care and urgent care services. This practice has had a high turnover rate of providers in the last few years. There have not been clearly defined job descriptions and expectations. This has been frustrating for patients as well as for support staff and providers.

During the time of implementation and evaluation, there were four family practice providers, one urgent care provider, five medical assistants, three front office staff, and two administration staff working in the practice. The greatest motivating factors for change were the many frustrations associated with the general lack of organization and structure in the office. The owner of the practice, who is a family practice provider, was motivated to improve the organization and flow in the office; however, there has been reluctance from both providers and support staff to take on leadership assignments related to making such changes.

One major expected obstacle was a lack of buy-in from providers and support staff. It was suspected that providers would be reluctant to delegate tasks to support staff and that there would be differences of opinion between providers when formulating and establishing protocols for guided autonomy. It was also expected that the support staff, primarily the assistants, would be reluctant to assume more responsibility. Thankfully, this did not turn out to be the case.

Proposed Implementation and Outcome Evaluation

Prior to introducing any intervention, all the staff (support staff and providers) were asked to complete a survey aimed at evaluating current job satisfaction and the amount of time that providers were investing in administrative type activities per day on average (see Appendix E, Appendix F, and Appendix G). The project and interventions were then introduced to the staff during an all-staff meeting. Formation of teamlets (stable assistant provider teams), daily team huddles (see Appendix B), and algorithms for guided autonomy (see Appendix D) were presented. This introduction to the interventions included training for all staff members (support staff as well as providers) on how to utilize the algorithms for guided autonomy. It was explained that all questions regarding interventions would be addressed though group email so that all staff members receive the same answers and directions. It was also explained that, if needed, face-to-face group meetings could be called to address any concerns, problems, or training needs. After four weeks, all staff were asked to complete the post-intervention survey.

Both pre- and post-intervention surveys were created in a Likert-type format, which collected ordinal data. There was also an intervention survey that was administrated with the post-intervention survey. The intervention survey focused on asking questions pertaining to the specific interventions and the perceived effectiveness of each intervention. These surveys were in a pen-and-paper format and were anonymous, with a locked submission box in the manager's office. Survey results were analyzed using descriptive statistics.

The small sample size, type of data, and small homogenous implementation site limits the generalizability and power of the findings of this project. However, despite its limitations, this project is unique. Currently there are no published studies containing implementation of workflow improvements in a primary care office that are described by pre- and post-intervention assessments. Though the sample and practice size was small in this case, similar problems can exist in small and large organizations. As Adewale et al. (2014) reported in their study of EHR utilization, similar problems were expressed in all the organizations that they surveyed (no matter the size of the practice).

Final Report

Project Implementation

A staff meeting was held prior to project implementation. Each intervention was explained and questions were answered. Informed consent was obtained and those interested in participating completed the survey. The pre-intervention surveys were completed and submitted by 12 of 15 (80%) eligible to participate in the survey. Participants included three providers, five assistants, one scheduler, and three not specified (see demographics in Table 1). There were no questions or problems to address during the project. Weekly emails were sent to express gratitude for, and encouragement in, implementing changes in workflow.

After four weeks, the post-intervention survey was administered with the additional survey on the individual interventions. During the time of implementation, one provider left the practice, and another provider had put in his/her resignation. The post-intervention survey participation was again optional and nine of 15 (60%) choose to participate. Participants included three providers, four assistants, one scheduler, and one not specified (see the demographics in Table 1). The data were then analyzed in excel using descriptive statistics and t-tests (Data

displayed in Table 2, Table 3, Figure 1,Figue 2, Figure 3, Figure 4, and Figure 5; discussed in detail below).

Outcomes in relation to the literature

Though there are currently no comparison studies on this subject, the literature did suggest interventions that were thought to improve workflow efficiency and effectiveness as well as job satisfaction (Adewale et al., 2014; Balasa, 2008; Ghorob & Bodenheimer, 2012a, Ghorob & Bodenheimer, 2015; O'Malley et al., 2014; Sinsky et al., 2013; Woodcock & Keegan, 2015). Though some workflow mapping was used in the planning phases of this project, its effect on workflow efficiency, workflow effectiveness, and job satisfaction was not assessed. The completed intervention focused on the effects of teamlets, team huddles, and expanded assistant function with guided autonomy.

There were no significant findings in the analysis of the responses of staff alone. Nor were there any significant findings in the analysis of the combined responses of all participants. However, analysis of the responses of providers alone (comparing pre- and post-intervention responses) and analyzing providers versus staff responses in the post-intervention survey did yielded several significant findings.

When analyzing provider responses alone, there was a significant difference between the pre- and post-intervention responses ($p=.023$; see the summary of t-test comparisons in Table 2 and see the mean responses and 95% confidence interval Figures 1-3). This finding suggests that providers felt there were improvement in general job satisfaction, workflow effectiveness, and workflow efficiency. Though there was a trend in responses toward decreased administrative time and increased patient capacity, there was, however, no significant difference noted (see Table 2 and mean responses to the pre- and post-intervention survey in Figure 2).

When comparing pre- and post-intervention job satisfaction survey responses of providers versus staff, a significant difference was found (p=.019, see the summary of t-test comparisons in Table 2 and compare mean provider and staff comments in Figures 2 and 3). This difference suggests greater job satisfaction and an improved feeling of workflow efficiency and effectiveness experienced by participating providers after the implementation of the interventions (see the summary of t-test comparisons in Table 2 and compare provider and staff responses in Figures 2 and 3). Providers were also found to have a greater sense of teamwork when comparing responses between providers and staff (p=.04, see the summary of t-test comparisons in Table 2, and the mean pre- and post- intervention responses to question four of providers and staff found in Figures 2 and 3).

When comparing provider versus staff responses in the intervention survey, there are two statistically significant findings. First is that all the interventions were felt to be a significant improvement by the participating providers (p=.002; see the summary of t-test comparisons in Table 2 and the frequency of answering agree or strongly agree for providers, staff, and all participants in Figure 5). Interpretation of this difference suggests that providers felt that all of the interventions were effective at improving job satisfaction and improving workflow efficiency and effectiveness. When analyzing the provider responses verses staff responses on intervention survey for grouped interventions (teamlets, team huddles, and algorithms for guided autonomy), only the algorithms for guided autonomy were found to be significantly different (p=.002; see the summary of t-test comparisons in Table 2 and mean provider and staff responses to the intervention survey in Figure 5). This is an interesting finding when looking at response rates; perhaps suggesting that the small sample size the lack of time limited the sensitivity of the project.

When analyzing the response rate to the intervention survey, a few of the individual interventions stand out (See Table 3). When responding to the question about feeling whether teamlets improved workflow, 77.8% of all respondents either agreed or strongly agreed. Teamlets also seem to improve job satisfaction with 66.7% of all respondents agreed or strongly agreed. Team huddles were also thought to improve workflow and job satisfaction with 66.7% of all respondents either agreed or strongly agreed. Finally, 55.6% of all respondents agreed or strongly agreed that the algorithms for guided autonomy were effective. Providers reported higher agreement rates than staff on the intervention survey overall (see the response frequency to the intervention survey for providers, staff, and all respondents in Table 3).

Implications and Recommendations for Practice

It is important to note that, though providers felt there was improvement in job satisfaction, there was a trend toward decreased job satisfaction among the staff (see Figure 3). The decrease in staff satisfaction could be related to project implementation. However, during the time of project implementation there were also many major changes that could have contributed to decreased staff satisfaction (e.g. a provider changing jobs and another provider submitting their resignation). Given the analysis of these collected data, it is not possible to determine the cause of the apparent downturn in job satisfaction experienced. For example, job stress could have been elicited by implementing structural changes in an environment that lacked a comprehensive organizational structure to begin with.

Though the implemented interventions were not comprehensive, they provided structure to a system that lacked comprehensive organization. The components of teamlets, team huddles, and algorithms for guided autonomy seemed to provide noticeable feelings of improvement and satisfaction for providers. Finally, implementing workflow changes was easier than expected. The providers and staff participated willingly and adapted to the changes well. A possible reason

for the ease of implementation is an environment that had a relative lack of organizational structure. Other factors could have contributed as well; however, this was not able to be determined in the collected data.

Limitations and Recommendations for Future Study. There were several limitations to this project. First, due to time constraints, the implementation phase was only four weeks. Second, there was a small, homogeneous sample size, which limits generalizability. Third, it was not possible to control for all variables that could have affected responses.

Considering the short-term nature of this project, it is not possible to determine whether responses would have revealed significant changes given a longer implementation and evaluation phase. Perhaps, given adequate time, there would have been improvement in overall job satisfaction, workflow efficiency, and workflow effectiveness as the literature suggested there should be (Adewale et al., 2014; Balasa, 2008; Ghorob & Bodenheimer, 2012a, Ghorob & Bodenheimer, 2015; O'Malley et al., 2014; Sinsky et al., 2013; Woodcock & Keegan, 2015). A longitudinal study would be helpful to show whether productivity would have increased (the ability to see more patients) and if the amount of administrative time spent outside of regular office hours would have been significantly decreased..

Further, it is suggested that the use of scribes, increasing the ratio of providers to medical assistance, expanded rooming protocols, vaccination algorithms, and other role expanding interventions be studied. Finally, it would be advisable to perform a study to determine the safety of expanding the MAs role.

Conclusions. Though this project was performed with a small, homogenous sample it is a good first step toward determining effective workflow practices. Analysis of the intervention survey found that algorithms for guided autonomy were felt to be significant. The findings suggest that implementing teamlets, team huddles, and algorithms for guided autonomy

significantly improves job satisfaction, workflow effectiveness, and workflow efficiency according to provider responses. Providers felt that teamwork improved and that they were able to spend time on tasks that are appropriate to their level of training. The intervention that was statistically significant was using algorithms for guided autonomy, though teamlets and team huddles also trended toward significance.

Summary

The purpose of this project was to implement practice improvements into a primary care office and to determine, outline, implement, and evaluate the function of assistants. The hypothesis when starting this project was that organization and changes would improve job satisfaction and workflow. Optimizing workflow is essential because time is the most important commodity a practice has (Woodcock & Keegan, 2015). Ineffective time management in a practice leads to pressure, chaotic work environments, increased administrative demands, and fragmentation of care deliver (Sinsky et al., 2013). Ultimately, ineffective time management leads to provider burn out (Ghorob & Bodenheimer, 2012b; Sinsky et al., 2013).

Review of the literature suggested multiple interventions that are thought to improve workflow and job satisfaction (Adewale et al., 2014; Balasa, 2008; Ghorob & Bodenheimer, 2012a, Ghorob & Bodenheimer, 2015; O'Malley et al., 2014; Sinsky et al., 2013; Woodcock & Keegan, 2015). Interventions suggested included establishing teamlets, use of team huddles, increasing the assistant-to-provider ratio, and expanded assistant function (i.e. chart preparation and maintenance, expanded rooming protocols, and guided autonomy; Adewale et al., 2014; Balasa, 2008; Ghorob & Bodenheimer, 2012b; Ghorob & Bodenheimer, 2015; Nemeth et al., 2012;O'Malley et al., 2014; Nelson et al, 2007; Sinsky et al., 2013; Woodcock & Keegan, 2015).

This project implemented changes that did not cost the practice any additional expenditures. Interventions included formation of teamlets, daily team huddles, and expanded

MA function through guided autonomy algorithms. Significant findings included an improvement of provider job satisfaction and providers feelings of workflow efficiency and effectiveness when comparing pre- and post-intervention responses (p=.023; see Table 2 and Figures 1-3) and when comparing the post-intervention provider responses to the post-intervention staff responses (p=.019, see Table 2 and Figures 1-3). Notably, providers felt there was a significant improvement in teamwork (p=.04, see Table 2 and Figure 2, and Figure 3).

Overall there interventions were felt to be effective by the providers more than the staff (p=.002; see Table 2 and Figure 5). This was especially apparent with the use of guided autonomy algorithms (p=.002; see Table 2 and Figure 5). Despite providers feelings of general improvement being stronger overall, there was a trend toward a feeling of effectiveness for all of the interventions (See Table 3 and Figure 5).

Though this project has limitations of a short duration, a small and homogenous sample size, and potential confounding variables it is still an important step forward. The project is unique in that there are no published pre-/post-intervention studies on workflow improving strategies. This project encourages further study in this area. A few suggestions would include studies with longitudinal designs, discovery of the effectiveness of other workflow improving strategies (e.g. the use of scribes, an increased assistants to providers, expanded rooming protocols, and other role expanding algorithms), and studies on the safety of expanding the MAs role to name a few. Further study in this area could prove useful in improving workflow, increasing availability of medical care, and improving the efficiency and effectiveness of the care provided.

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Appendix A

Team Huddle Agenda

WHEN: 15 minutes before the first patient
Where: same time/same place every workday
Remember to be concise

1. Address any important announcement or information
2. Report on assigned tasks from previous day and pending needs
3. Review Scheduled patients for the day
    a. Identify:
        i. Gaps in care (needed or missing lab/test results, specialist notes, etc.)
        ii. Alerts for today's appointments [allergies, known needs, etc.]
        iii. Problem and/or potential problem areas in the schedule (patient who will need more time (language barrier, disability, etc.); identify who can help if applicable)
        iv. Any chronic no-show patients
    b. Available same day appointment slots – communicate any special instructions to the front office staff
    c. Make a plan for the day
        i. Note any special needs (staff time concerns, etc.)
4. Who will be in the office today (team resources)
5. Review tasks for the day, make assignments

[End of the day: wrap up, any needed report. Pre-visit planning.]

Appendix B

Chart Preparation Process

- Is there anything from the previous chart note that should be follow-up on?
- Are there medications that need to be refilled?
- Are there any gaps in care (missing or incomplete orders; notes from referrals that have not been received, etc.)?
- What is the reason for the scheduled appointment?
    - Are there and needed materials for the appointment (sterile tools, device, forms, etc.; discuss any questions with PCP)?
- Are they due for any immunizations (See CDC Pediatric and Adult Schedules)?
- When was their last health maintenance exam?
    - Are they due for any screening/monitoring?
        - Colon cancer; cervical, breast, prostate cancer; osteoporosis screening, etc.
- Are they due for any appointment for monitoring any chronic condition(s) (diabetes, hypertension, hypothyroid, etc.)?

Appendix C

Expanded Rooming Protocol

- Pre-visit preparation should be completed prior to the day of the appointment

1. Take vital signs and chart them in the EHR – obtain second reading if indicated
    a. Note any abnormality and report to the PCP
2. Review medications and update past medical, surgical, social, and family histories.
    a. Note any changes and report to the PCP
3. Chart chief complaint and appointment agenda (what is the patient here for today?)
4. Complete any needed forms or questionnaires (FMLA, Depression, Anxiety, ADHD, etc.) as directed by PCP
5. Obtain point of care testing (Rapid Strep, Urinalysis, glycohemoglobin (A1c), etc.; see Appendix D) as directed
6. Identify gaps in care (missing, overdue, or incomplete data)
7. Identify needed screenings (colon cancer screening, mammography, cervical cancer screening, osteoporosis, etc.) or needed maintenance cares (vaccinations, labs, tests, etc.)
8. Review any health goals and their progress

Post appointment:

- Arrange for referral and/or follow-up as indicated. Assist in completing record request(s)
- Administer indicated vaccinations (recommended pediatric vaccines, flu, pneumonia, shingles, tetanus) as directed by PCP

(O'Malley et al, 2014; Sinsky et al., 2013)

Appendix D

Algorithms for Guided Autonomy – Medication Refills

1. Diabetes

Appointment in the past 6 months?[1]	A1c ≤ 6.9% (or at/below patient goal)?	Normal creatinine and potassium in the past 6 months?	Action
Yes	Yes	Yes	Fill 90 day supply 1 refill, order labs, appointment
	Yes or No	No	Fill 30 day supply 0 refill, order labs, appointment
	No	Yes	Fill 30 day supply 0 refill, appointment
No	Yes	Yes	Fill 90 day supply 0 refill, appointment
	No	Yes or No	Fill 30 day supply 0 refill, order labs as indicated, appointment
Appointments (minimum): every 6 months and foot check, yearly eye exam Labs (minimum): A1c and BMP every 6 months, yearly urine microalbumin/creatinine ratio and cholesterol.			
1. Did plan in the most recent note indicate needed follow-up? Due for health maintenance or screening exam? Fill according to the algorithm, arrange appointment accordingly			

2. Hypertension

Appointment in the past 6 months?[1]	Last Blood Pressure at the patients' goal?[2]	Normal creatinine and potassium in the past 6 months?	Action
Yes	Yes	Yes	Fill 90 day supply 1 refill, appointment every 6-12 months
	Yes or No	No	Fill 30 day supply 0 refill, order labs, appointment
	No	Yes	Fill 30 day supply 0 refill, appointment
No	Yes	Yes	Fill 90 day supply 0 refill, order labs, appointment
	No	Yes or No	Fill 30 day supply 0 refill, order labs as indicated, appointment
Appointment (minimum): every 6 months Labs (minimum): BMP every 6 months, yearly urine microalbumin/creatinine ratio and cholesterol.			
1. Did plan in the most recent note indicate needed follow-up? Due for health maintenance or screening exam? Fill according to the algorithm, arrange appointment accordingly 2. Typical goal, unless another is established, is < 130 mmHg systolic and/or < 85 mmHg diastolic			

Appendix D

Algorithms for Guided Autonomy – Medication Refills, Continued

3. Hyperlipidemia

Appointment in the past 6 months?[1]	Total Cholesterol ≤ 200 mg/dL and LDL ≤ 100 mg/dL?	Normal AST & ALT enzymes in the past 6 months?	Action
Yes	Yes	Yes	Fill 90 day supply 2 refills, appointment every 12 months
	Yes	No	Fill 90 day supply 0 refill, order CMP, appointment
	No	Yes	Fill 90 day supply 0 refill, order lipid panel, appointment
No	Yes	Yes	Fill 90 day supply 0 refill, appointment
	No	Yes or No	Fill 30 day supply 0 refill, order labs as indicated, appointment
Appointment (minimum): every year Labs (minimum): CMP every 12 months, yearly cholesterol			
1. Did plan in the most recent note indicate needed follow-up? Due for health maintenance or screening exam? Fill according to the algorithm, arrange appointment accordingly			

4. Depression / Anxiety (Non-Controlled medications)

Appointment in the past 3-6 months?[1]	Were medications adjusted at the last visit?	Mood stable or improved at last visit (PHQ-9 / GAD-7 Score)?	Action
Yes	No	Yes	Fill 90 day supply with up to 1 refill, appointment
	Yes or No	Yes or No	Fill 90 day supply 0 refills, appointment
No	Yes or No	Yes or No	Fill 30 day supply 0 refill, order labs, appointment
Appointment (minimum): 6 months, PHQ-9 and/or GAD-7 at each follow-up Labs (minimum): yearly CMP Resources: suicide hotline number			
1. Did plan in the most recent note indicate needed follow-up? Due for health maintenance or screening exam? Fill according to the algorithm, arrange appointment accordingly			

Appendix D

Algorithms for Guided Autonomy – Medication Refills

5. Prescription NSAIDs

Appointment in the past 6 months?[1]	Creatinine, BUN, and GFR normal within the last 6 months?	Appropriate spacing for request?	Action
Yes	Yes	Yes	Fill 90 day supply up to 1 refill, order labs for 6 month mark, appointment
	Yes	No	Obtain explanation from patient; take info to PCP. Refill/follow-up as directed.
	No	Yes or No	Fill 30 day supply 0 refills, order labs, appointment
No	Yes	Yes	Fill 90 day supply 0 refill, order labs, appointment
	No	Yes or No	Fill 30 day supply 0 refill, order labs as indicated, appointment
Appointment (minimum): every 6 months Labs (minimum): BMP every 6 months			
1. Did plan in the most recent note indicate needed follow-up? Due for health maintenance or screening exam? Fill according to the algorithm, arrange appointment accordingly			

6. Controlled substances

Appointment in the past 3 months?[1]	Questions and Look up:	Action
Yes	1. What was the direction in the note? 2. Check prescription drug monitoring program 3. Is this patient on a contract?	Present information to PCP
No		Contact patient for appointment, prepare information for PCP
Appointment (minimum): every 3 months Labs (minimum): yearly CMP, urine drug screen		
1. Did plan in the most recent note indicate needed follow-up? Due for health maintenance or screening exam? Follow up accordingly.		

Appendix D

Algorithms for Guided Autonomy – Standing Orders

- Urine Dip (UD)
    - Obtain urine sample and perform UD if patient presents with urinary complaint (urgency, frequency, dysuria, hematuria)
    - Label urine specimen with patient name and birthdate, hold sample until the appointment is completed (ask if it is to be sent for culture, microscopy, or other testing)
    - Enter results into EHR (report to PCP)

- Rapid Strep Test
    - If the patient presents with sore throat please calculate the strep score using the *Modified Centro Score for Strep*:
        - Obtain rapid strep and culture swabs for score of 2 or 3
            - You can also run a rapid strep test if the patient requests it.
        - Enter results into the EHR and report results to PCP
        - Ask PCP whether to send culture swab.

- Urine Pregnancy Test (HCG, Qualitative)
    - Obtain urine sample and run a urine HCG if any of the following apply:
        - Patient requests pregnancy test
        - Patient indicates they have missed or are late for a cycle
        - Initiating birth control
        - Resuming birth control when there has been a lapse in birth control use
        - X-ray test is ordered.
    - Document result in the EHR and report result to PCP

Appendix D

Algorithms for Guided Autonomy – Adult Vaccination Coordination

Use the following three (3) steps to identify adult patients (≥ 19-years-old) who are due for immunizations and to prepare your recommendation to the PCP.

1. Identify patients who may be due for the following vaccinations:

- **Tetanus/diphtheria** (Td, Decavac, Tenivac) OR **Tetanus/diphtheria/acellular pertussis** (Tdap, boostrix, adacel).
  - Any of the following patients would be considered for vaccination:
    - Last tetanus containing vaccine was ≥ 10 years ago
    - The patient has had a tetanus vaccine in the past but does not remember the most recent dose
    - Pregnant woman during 27-36 weeks' gestation (that has NOT received vaccine from the obstetrical provider)
  - Determine the appropriate type of vaccine to recommend:
    - Tdap if the patient:
      - ❖ Has regular, close contact with children ≤ 12 months old (i.e.: parent, grandparent, healthcare worker, etc.)
      - ❖ Is a pregnant woman during 27-36 weeks' gestation (that has not received vaccine from the obstetrical provider)
      - ❖ Patients ≥ 65-years-old should have one (1) Tdap booster in place of Td booster
    - Td
      - ❖ All other adult patients
- **Influenza**
  - Should be administered every year during flu season (between October to May)
- **Shingles Vaccine (Zostavax)**
  - ≥ 60-years-old should have 1 vaccination administration
- **Pneumonia vaccine** (Prevnar, PCV14; Pneumovax, PPSV23)
  - ≥ 19-years-old if chronic illness (CDC recommendations, PCP will direct)
  - ≥ 65-years-old
    - Prevnar – PCV13: should be administered first
    - Pneumovax – PPSV23: should be administered about 1 year after PCV13 was given
    - Booster dose of PPSV23 after 5 years

2. If a need for vaccination is identified, have the patient complete the *Screening Checklist for Contraindication to Vaccines for Adults* (Immunization Action Coalition, 2015) questionnaire.

3. Report to PCP.

Appendix E

Survey Introduction

Thank you for participating in this anonymous and confidential survey. Please do not write any personal or identifying information on the survey (i.e.: name, birthday, etc.). This survey is aimed at determining job satisfaction and, for providers, time spent on administrative tasks. Please complete this survey with **only the last two (2) weeks** in mind. At the end of the survey, you will also have the opportunity to provide any feedback you would like. The survey will take about 4 minutes to complete. After completing the survey, please place in the envelope provided and seal it. The envelope can then be put in the locked box in the manager's office.

This survey, with a few additional questions, will be given again in four (4) weeks.

Appendix F

Provider Pre- and Post-Job Satisfaction Survey

Thinking of **only the last two (2) weeks**, Circle the number corresponding to your response to each question.	1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree				
1. I feel satisfied with my current work environment.	1	2	3	4	5
2. I feel that my time at work is used efficiently.	1	2	3	4	5
3. I feel that the majority of my time is spent on tasks that are appropriate to my level of training.	1	2	3	4	5
4. I feel that we have a good teamwork environment.	1	2	3	4	5
5. I feel comfortable delegating tasks to the medical assistant(s).	1	2	3	4	5
6. I feel confident that tasks delegated to the medical assistant(s) will be done correctly and in a timely manner.	1	2	3	4	5

Thinking of **only the last two (2) weeks**, Circle the number that corresponds to your answer for the following question: (Administrative tasks include charting or data entry into the medical record, writing letters, making phone calls, completing forms, or any other task that does not require the training necessary to be a PCP) (≤, less than or equal to; ≥, greater than or equal to)	1= ≥ 5 hours 2=About 4 hours 3=About 3 hours 4=About 2 hours 5= ≤ 1 hour				
7. What is the average number of hours you spent on administrative tasks each day?	1	2	3	4	5

Thinking of **only the last two (2) weeks**, circle the number that corresponds to your answer for the following question: (≤, less than or equal to; ≥, greater than or equal to)	1= ≤ 10 Patients 2= 11-14 Patients 3= 15-17 Patients 4= 18-20 Patients 5= ≥ 21 Patients				
8. What is the average number of patients that you have seen per day?	1	2	3	4	5

Appendix G

Staff Pre- and Post-Job Satisfaction Survey

- Please circle the applicable response: I work as a/an: Assistant Scheduler Office Administrator

Thinking of **only the last two (2) weeks**, Circle the number corresponding to your response to each question.	1=Strongly disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly agree				
1. I feel satisfied with my current work environment.	1	2	3	4	5
2. I feel that my time at work is used efficiently.	1	2	3	4	5
3. I feel that the majority of my time is spent on tasks that are appropriate to my level of training.	1	2	3	4	5
4. I feel that we have a good teamwork environment	1	2	3	4	5
5. I feel comfortable being able to complete the tasks that are delegated to me.	1	2	3	4	5
6. I feel that I have been given responsibilities that help patients in the practice.	1	2	3	4	5

Appendix H

Additional Post-Intervention Survey (for Staff and Providers)

- Please circle the applicable response: I work as a/an Provider Assistant Scheduler Office Administrator

Thinking of **only the last two (2) weeks**, Circle the number corresponding to your response to each question.	1=Strongly disagree / Never 2=Disagree / Rarely 3=Neutral / Sometimes 4=Agree / Usually 5=Strongly agree / Daily				
1. I feel that we regularly worked in teamlets (consistent PCP and assistant teams).	1	2	3	4	5
2. I feel that establishing teamlets helped improve office workflow.	1	2	3	4	5
3. I feel that establishing teamlets helped improve my job satisfaction 4. .	1	2	3	4	5
5. I feel that establishing teamlets lightened my overall workload.	1	2	3	4	5
6. I feel that we held team huddles daily.	1	2	3	4	5
7. I feel that team huddles helped improve office workflow.	1	2	3	4	5
8. I feel that team huddles helped improve my job satisfaction.	1	2	3	4	5
9. I feel that team huddles lightened my overall workload.	1	2	3	4	5
10. I feel that the algorithms for guided autonomy were used effectively.	1	2	3	4	5
11. I feel that the medication refill algorithms and the standing order algorithms were effective.	1	2	3	4	5
12. I feel that the standing order algorithms were effective.	1	2	3	4	5
13. I feel that algorithms for guided autonomy helped improve office workflow.	1	2	3	4	5
14. I feel that algorithms for guided autonomy helped improve my job satisfaction.	1	2	3	4	5
15. I feel that algorithms for guided autonomy lightened my overall workload.	1	2	3	4	5

Appendix I

Participant Consent Form

OREGON HEALTH&SCIENCE UNIVERSITY

Information Sheet

IRB# STUDY00015639

TITLE: Exploring Methods to Facilitate the Role of Office Assistants to Improve Primary Care Office Workflow and Job Satisfaction.

PRINCIPAL INVESTIGATOR: Gary Laustsen, Ph.D., F.N.P., F.A.A.N.P., F.A.A.N. (503) 494-3926

CO-INVESTIGATORS: Michael S. Robinson, M.S.N., F.N.P.-C

PURPOSE:
You are invited to be in this practice improvement project. The purpose of this project is to determine, outline, implement, and evaluate the function of assistants in a primary care setting in order to decrease administrative workload for PCPs and improve overall job satisfaction in the primary care setting.

PROCEDURES:
Prior to introducing any intervention, all staff will be asked to complete a survey aimed at evaluating current job satisfaction. Providers will be asked to estimate the average daily time that is spent in administrative tasks (completing paperwork, refilling prescriptions, inputting data into the chart, completing chart notes, etc.). The anonymous, pen-and-paper format, surveys will be collected with a submission box in the manager's office.

Interventions will be introduced in detail and time will be given for asking and answering questions regarding function, implementation, or other general concerns/questions. During the implementation phase, all questions regarding interventions will be addressed though the EHR messaging system so that all staff members receive the same answers and directions. If needed, face-to-face group meetings can be called to address any concerns, problems, or training needs.

After four weeks, all staff will be surveyed with the post-intervention questionnaire.
These questionnaires, as with the initial questionnaires, will be in a pen-and-paper format and will be anonymous with a submission box in the manager's office.

If you have any questions, concerns, or complaints regarding this study now or in the future, or you think you may have been injured or harmed by the study, contact Gary Laustsen at (503) 494-3926 or laustsen@ohsu.edu

RISKS:
Although we have made every effort to protect your identity, there is a minimal risk of loss of confidentiality.

BENEFITS:
You may or may not benefit from being in this study. However, by serving as a subject, you may help us learn how to benefit patients in the future.

CONFIDENTIALITY:
In this study we are not receiving any identifiable information about you so there is little chance of breach of confidentiality.

PARTICIPATION:
This research is being overseen by an Institutional Review Board ("IRB"). You may talk to the IRB at (503) 494-7887 or irb@ohsu.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
- You want to get more information or provide input about this research.

You may also submit a report to the OHSU Integrity Hotline online at https://secure.ethicspoint.com/domain/media/en/gui/18915/index.html or by calling toll-free (877) 733-8313 (anonymous and available 24 hours a day, 7 days a week).

You do not have to join this or any research study. If you do join, and later change your mind, you may quit at any time. If you refuse to join or withdraw early from the study, there will be no penalty or loss of any benefits to which you are otherwise entitled.

For studies recruiting OHSU students or employees as subjects, please include the following language:
The participation of OHSU students or employees in OHSU research is completely voluntary and you are free to choose not to serve as a research subject in this protocol for any reason. If you do elect to participate in this study, you may withdraw from the study at any time without affecting your relationship with OHSU, the investigator, the investigator's department, or your grade in any course. If you would like to report a concern with regard to participation of OHSU students or employees in OHSU research, please call the OHSU Integrity Hotline at 1-877-733-8313 (toll free and anonymous).

Table 1: Number and Type of Participants

	Pre-intervention Survey	Post-intervention Survey
Participating Providers	3	3
Participating Assistants	5	4
Participating Schedulers	1	1
Not Specified	3	1
Total Staff Participating	12	9
Total Potential Participants	15	15
% Participating	80%	60%

Table 2: Summary of t-test Comparisons

Summary of t-test Comparisons	**p-value**
Staff Pre- and Post-Intervention Response Comparison	1
Mean Provider Pre- and Post-Intervention Response Comparison	**.023**
Pre-Intervention Response of Providers versus Staff	.405
Post-Intervention Responses of Providers versus Staff	**.019**
Provider Pre- and Post-Intervention Responses: Time spent on tasks appropriate to my level of training	.057
Post-Intervention Responses Providers versus Staff: Feeling of teamwork	**.04**
Provider Pre- versus Post-Intervention Responses: Time and Workload	.614
Intervention Survey Responses of Providers versus Staff: All Interventions	**.002**
Intervention Survey Responses of Providers versus Staff: Teamlets	.209
Intervention Survey Responses of Providers versus Staff: Team Huddles	.268
Intervention Survey Responses of Providers versus Staff: Algorithms for Guided Autonomy	**.002**

Note: **Bolded** items are statistically significant (p-value < .05)

Table 3: Percent Responses to Intervention Survey

	Intervention Survey: % Frequency of Provider Responses				
	1	2	3	4	5
1	0%	0%	33%	33%	33%
2	0%	0%	0%	100%	0%
3	0%	0%	67%	0%	33%
4	0%	0%	33%	67%	0%
5	0%	33%	67%	0%	0%
6	0%	0%	33%	67%	0%
7	0%	0%	33%	67%	0%
8	0%	0%	33%	67%	0%
9	0%	0%	67%	33%	0%
10	0%	0%	33%	33%	33%
11	0%	0%	33%	33%	33%
12	0%	0%	33%	67%	0%
13	0%	0%	33%	33%	33%
14	0%	0%	33%	67%	0%

	Intervention Survey: % Frequency of Staff Responses				
	1	2	3	4	5
1	0%	17%	33%	50%	0%
2	17%	0%	17%	17%	50%
3	17%	0%	0%	50%	33%
4	17%	17%	33%	17%	17%
5	33%	17%	17%	17%	17%
6	17%	0%	17%	67%	0%
7	17%	0%	17%	67%	0%
8	17%	17%	33%	33%	0%
9	17%	0%	50%	33%	0%
10	0%	17%	33%	33%	17%
11	0%	17%	50%	17%	17%
12	17%	0%	50%	33%	0%
13	17%	0%	50%	33%	0%
14	17%	0%	50%	17%	17%

	Intervention Survey: % Frequency of All Responses				
	1	2	3	4	5
1	0%	11%	33%	44%	11%
2	11%	0%	11%	44%	33%
3	11%	0%	22%	33%	33%
4	11%	11%	33%	33%	11%
5	22%	22%	33%	11%	11%
6	11%	0%	22%	67%	0%
7	11%	0%	22%	67%	0%
8	11%	11%	33%	44%	0%
9	11%	0%	56%	33%	0%
10	0%	11%	33%	33%	22%
11	0%	11%	44%	22%	22%
12	11%	0%	44%	44%	0%
13	11%	0%	44%	33%	11%
14	11%	0%	44%	33%	11%

Intervention Survey Questions

1. I feel that we regularly worked in teamlets (consistent PCP and assistant teams).
2. I feel that establishing teamlets helped improve office workflow.
3. I feel that establishing teamlets helped improve my job satisfaction.
4. I feel that establishing teamlets lightened my overall workload.
5. I feel that we held team huddles daily.
6. I feel that team huddles helped improve office workflow.
7. I feel that team huddles helped improve my job satisfaction.
8. I feel that team huddles lightened my overall workload.
9. I feel that the algorithms for guided autonomy were used effectively.
10. I feel that the medication refill algorithms and the standing order algorithms were effective.
11. I feel that the standing order algorithms were effective.
12. I feel that algorithms for guided autonomy helped improve office workflow.
13. I feel that algorithms for guided autonomy helped improve my job satisfaction.
14. I feel that algorithms for guided autonomy lightened my overall workload.

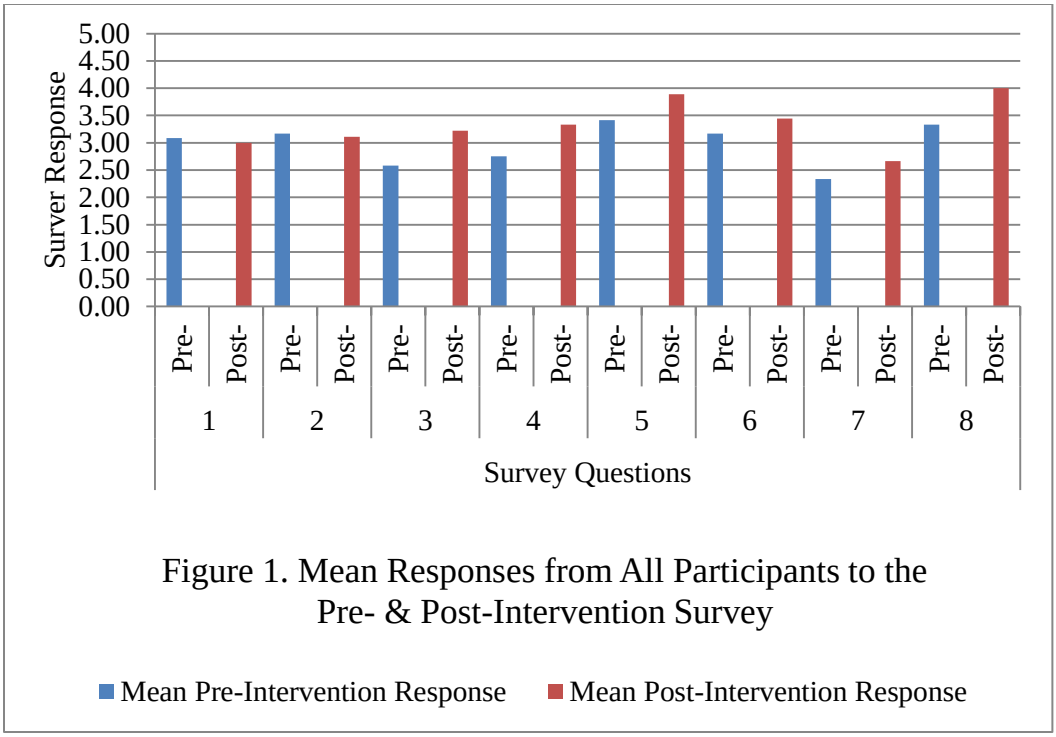

Figure 1. Mean Responses from All Participants to the Pre- & Post-Intervention Survey

Survey Questions

1. I feel satisfied with my current work environment.
2. I feel that my time at work is used efficiently.
3. I feel that the majority of my time is spent on tasks that are appropriate to my level of training.
4. I feel that we have a good teamwork environment.
5. (Providers) I feel comfortable delegating tasks to the medical assistant(s).
5. (Staff) I feel comfortable being able to complete the tasks that are delegated to me.
6. (Providers) I feel confident that tasks delegated to the medical assistant(s) will be done correctly and in a timely manner.
6. (Staff) I feel that I have been given responsibilities that help patients in the practice.
7. What is the average number of hours you spent on administrative tasks each day?
8. What is the average number of patients that you have seen per day?

Note: No significance found in analysis of responses

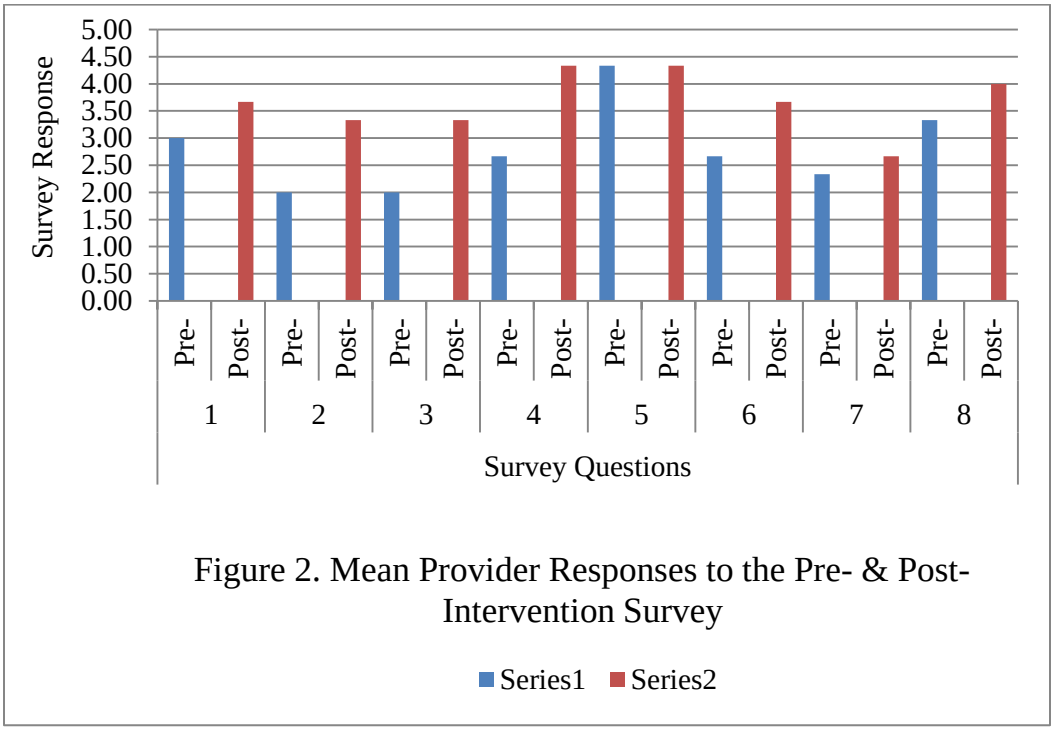

Figure 2. Mean Provider Responses to the Pre- & Post-Intervention Survey

Survey Questions

1. I feel satisfied with my current work environment.
2. I feel that my time at work is used efficiently.
3. I feel that the majority of my time is spent on tasks that are appropriate to my level of training.
4. I feel that we have a good teamwork environment.
5. (Providers) I feel comfortable delegating tasks to the medical assistant(s).
5. (Staff) I feel comfortable being able to complete the tasks that are delegated to me.
6. (Providers) I feel confident that tasks delegated to the medical assistant(s) will be done correctly and in a timely manner.
6. (Staff) I feel that I have been given responsibilities that help patients in the practice.
7. What is the average number of hours you spent on administrative tasks each day?
8. What is the average number of patients that you have seen per day?

Note: overall improvement Pre- to Post-Intervention responses significant (p=.023)

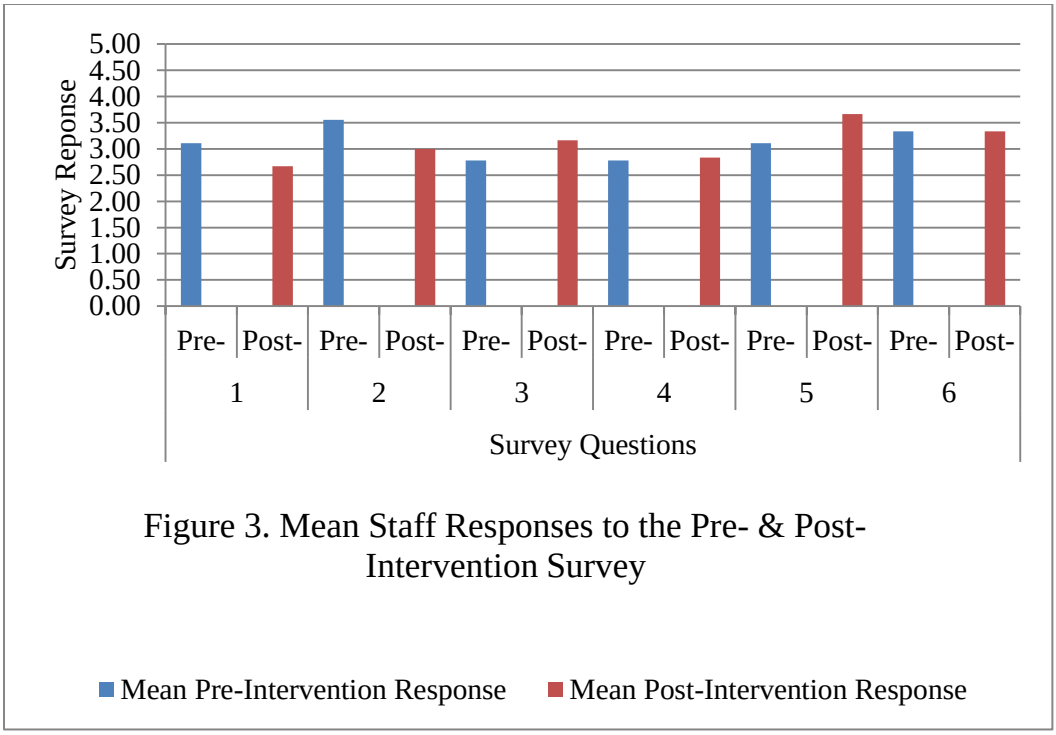

Figure 3. Mean Staff Responses to the Pre- & Post-Intervention Survey

Survey Questions

1. I feel satisfied with my current work environment.
2. I feel that my time at work is used efficiently.
3. I feel that the majority of my time is spent on tasks that are appropriate to my level of training.
4. I feel that we have a good teamwork environment.
5. (Providers) I feel comfortable delegating tasks to the medical assistant(s).
5. (Staff) I feel comfortable being able to complete the tasks that are delegated to me.
6. (Providers) I feel confident that tasks delegated to the medical assistant(s) will be done correctly and in a timely manner.
6. (Staff) I feel that I have been given responsibilities that help patients in the practice.
7. What is the average number of hours you spent on administrative tasks each day?
8. What is the average number of patients that you have seen per day?

Note: No significance found in analysis of responses

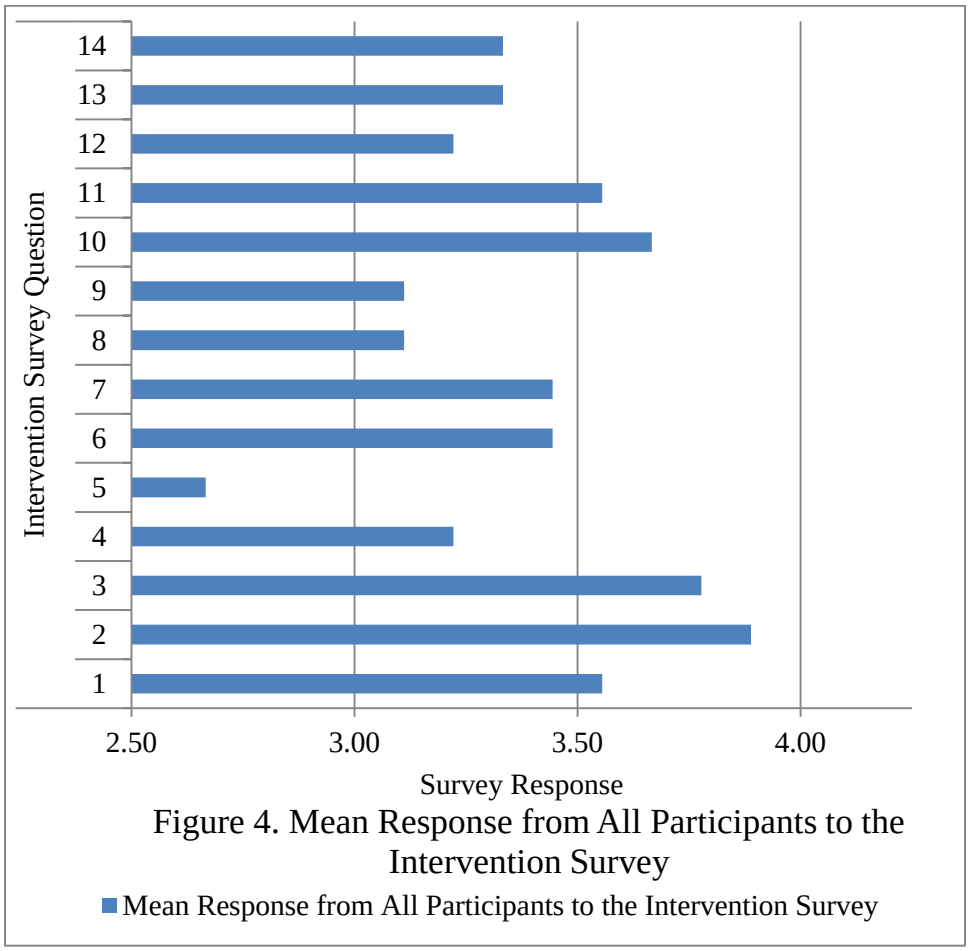

Figure 4. Mean Response from All Participants to the Intervention Survey

Intervention Survey Questions

1. I feel that we regularly worked in teamlets (consistent PCP and assistant teams).
2. I feel that establishing teamlets helped improve office workflow.
3. I feel that establishing teamlets helped improve my job satisfaction.
4. I feel that establishing teamlets lightened my overall workload.
5. I feel that we held team huddles daily.
6. I feel that team huddles helped improve office workflow.
7. I feel that team huddles helped improve my job satisfaction.
8. I feel that team huddles lightened my overall workload.
9. I feel that the algorithms for guided autonomy were used effectively.
10. I feel that the medication refill algorithms and the standing order algorithms were effective.
11. I feel that the standing order algorithms were effective.
12. I feel that algorithms for guided autonomy helped improve office workflow.
13. I feel that algorithms for guided autonomy helped improve my job satisfaction.
14. I feel that algorithms for guided autonomy lightened my overall workload.

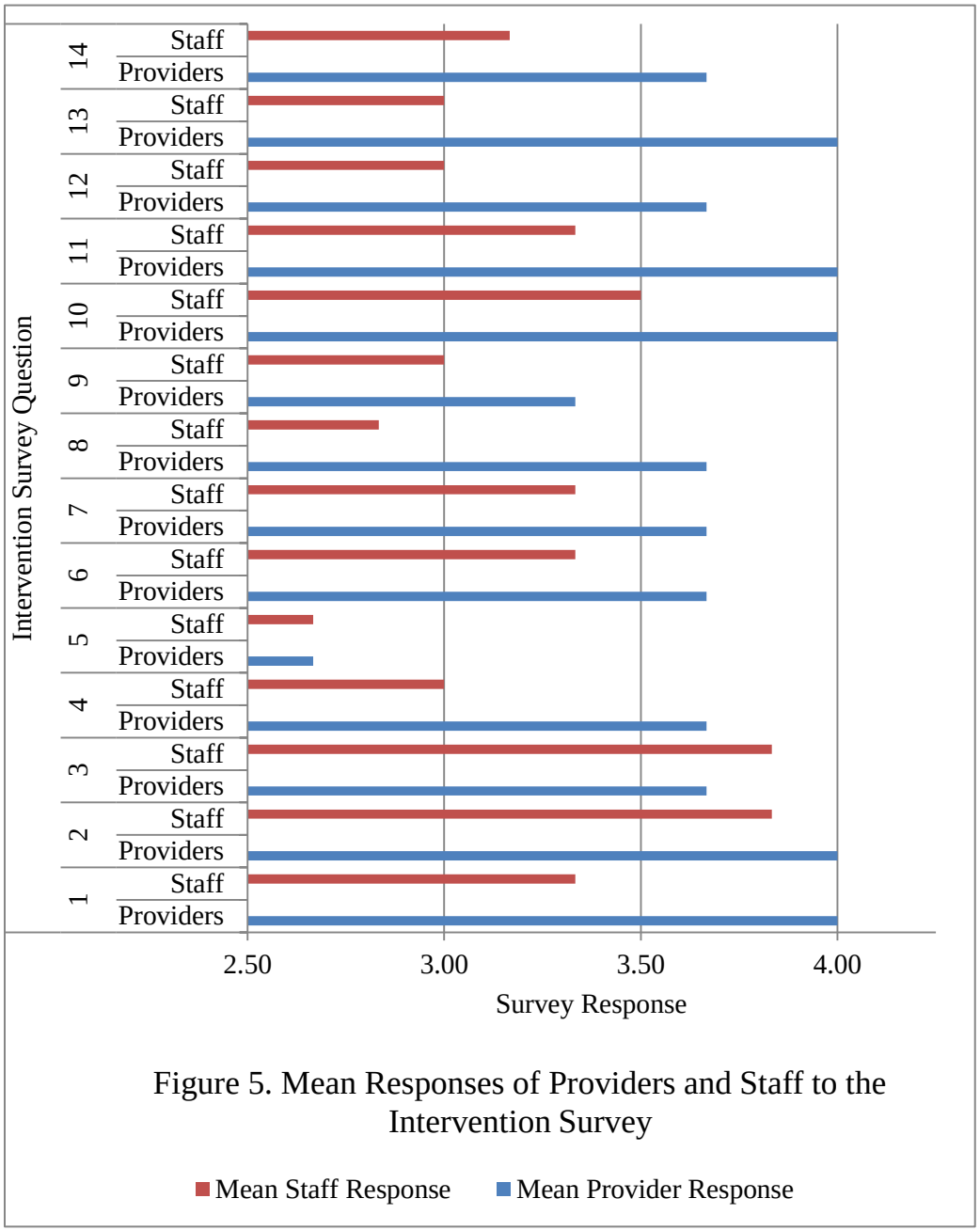

Figure 5. Mean Responses of Providers and Staff to the Intervention Survey

Post Intervention Survey Questions

1. I feel that we regularly worked in teamlets (consistent PCP and assistant teams).
2. I feel that establishing teamlets helped improve office workflow.
3. I feel that establishing teamlets helped improve my job satisfaction.
4. I feel that establishing teamlets lightened my overall workload.
5. I feel that we held team huddles daily.
6. I feel that team huddles helped improve office workflow.
7. I feel that team huddles helped improve my job satisfaction. 8. I feel that team huddles lightened my overall workload.
9. I feel that the algorithms for guided autonomy were used effectively.
10. I feel that the medication refill algorithms and the standing order algorithms were effective.
11. I feel that the standing order algorithms were effective.
12. I feel that algorithms for guided autonomy helped improve office workflow.
13. I feel that algorithms for guided autonomy helped improve my job satisfaction.
14. I feel that algorithms for guided autonomy lightened my overall workload.

Note: comparing providers and staff responses to all intervention found significant difference ($p<.002$)

* Provider versus staff responses significantly different ($p<.05$)