

**Enhancing Timeliness of Care Through Intake Paperwork Completion: A
Quality Improvement Project**

Elaina Furrow

Oregon Health & Science University

NURS 703: DNP Project

03/14/2021

Abstract

Traumatic brain injury (TBI) impacts many individuals in the United States and can lead to interference in daily functioning. With this in mind, it is important that those who experience brain injury receive the best care possible throughout their recovery. To ensure timely and focused appointments, some outpatient clinics require patients to complete intake paperwork prior to the first appointment. This can be challenging for patients who have experienced TBI. The aim of this project was to increase intake paperwork completion at an outpatient clinic in Tigard, Oregon specializing in TBI to enhance timeliness of care. Interventions took place during three separate PDSA cycles utilizing email reminders, phone call reminders and phone call reminders with a description of intake paperwork importance.

Introduction

Problem Description

According to the Centers for Disease Control and Prevention (CDC, 2019) each year there are approximately 2.5 million patients who suffer from traumatic brain injury (TBI). This is significant as TBI can cause severe life disturbance and is a leading cause of disability and death. In the United States in 2013, TBI accounted for approximately 56,000 deaths and 282,000 hospitalizations (Taylor et al., 2017). With a high prevalence and impact on functioning, it is important that patients receive the best care possible throughout the recovery process.

TBI is an acquired brain injury resulting from trauma to the head. Symptoms may vary depending on the severity of the injury and the TBI may be classified as mild, moderate or severe (National Institute of Neurological Disorders and Stroke [NINDS], 2019). Most TBIs are “mild” and are commonly referred to as “concussions” (CDC, 2019). For the purposes of this paper, we will encompass all forms/severities of TBI with a focus on mild TBI. Symptoms secondary to TBI can include confusion, headache, decreased concentration, blurred vision, restlessness, agitation, mood changes, decreased memory and difficulty with thought process (NINDS, 2019). The effects resulting from TBI may last anywhere from a few days to across the lifespan (CDC, 2019).

When patients are evaluated for concussion/TBI an assessment is performed consisting of many elements including a detailed description of the incident, events following the incident, and a thorough review of symptoms. With a lengthy evaluation and assessment process, having access to patient information prior to the

appointment can be beneficial. It has been said that the information gathered prior to the appointment can improve interactions with the clinician and the patient as there can be more eye-contact, less note taking, and the clinician is able to see what the patient's primary concerns are for the appointment to adjust focus accordingly (Sinsky, 2006). Due to enhanced workflow and improved patient-clinician interactions, outpatient clinics often require the completion of paperwork prior to the initial appointment.

The clinic at hand is a private practice clinic with a mission of treating individuals of all ages who experience brain injuries including concussions/mild TBI. The protocol at this clinic is that patients complete an intake paperwork packet, which is given to the clinician at the first appointment to assist with the assessment and billing process. The intake paperwork packet used at this clinic includes demographic information, insurance details, in-depth information regarding the injury, physical and psychiatric symptoms experienced following the injury, pre-existing comorbidities and a release of information form. The packet is eight pages in length and is emailed to patients after they schedule their first appointment.

In clinics such as this, clinicians rely on information included in the intake paperwork to guide their initial assessment and appointment focus. Having the information beforehand ensures optimal utilization of patient and provider time while improving patient satisfaction (Sinsky, 2006). Unfortunately, patients were frequently arriving to their initial appointment without completing the intake paperwork packet. When a patient does not have this paperwork complete prior to the appointment, they must either fill it out in the waiting room or with the clinician

during the appointment impacting the length and quality of the appointment. Additionally this can delay subsequent appointments, which, per Crowley et al., (2020) can lead to decreased patient satisfaction. Based on this, the goal of the project at hand was to increase intake paperwork completion prior to the first appointment to enhance timeliness of care.

Available Knowledge

There are many potential reasons why the intake paperwork packet is often not completed prior to the appointment. One reason may be interference by the symptoms secondary to the brain injury. While there was not literature found on the effect of brain injury on the completion of new patient paperwork, inferences were made based on available research on the symptoms of brain injury as well as the effect on occupational/vocational functioning.

Given the occupational nature of filling out paperwork, it is feasible to examine the effects of brain injury on cognitive functions such as reading comprehension. Following brain injury, individuals may experience greater difficulty comprehending written content in comparison with their peers (Moore Sohlberg, et al., 2015). Further, many individuals report increased levels of fatigue which may interfere with important daily activities such as paperwork. In a study conducted by Andelic et al. (2020), the frequency of fatigue following traumatic brain injury was examined. After analyzing the data from over 3000 participants, it was found that 47% of patients reported fatigue following the injury.

In addition to fatigue, when we examine the symptoms of concussions/mild TBI we see cognitive deficits such as memory impairment (Cunningham et al.,

2020). When considering the pathophysiology, working memory deficits secondary to mild TBI/concussion are caused primarily by axonal injury (Laskowski et al., 2015) and are further supported in the literature. One study by Broadway et al., (2019), examined memory deficits among patients with a history of brain injury. Of the participants, 23 were control, 38 were sub-acute (within two weeks of the injury) and 23 were chronic (three or more months since the injury). Upon review of the results, chronic and sub-acute participants displayed memory deficits when compared with the control group. While this study had a small sample size, the results highlight the negative impact that brain injury can have on cognitive functions such as memory (Broadway et al., 2019).

Many gaps exist in the literature. No articles were found regarding the effect of brain injury on the completion of intake paperwork or on how this issue might be addressed, suggesting the need for further research. That said, given the body of literature suggesting that brain injury often leads to difficulties with memory (Broadway et al., 2019; Cunningham et al., 2020), reading comprehension (Moore Sohlberg, et al., 2015) as well as fatigue (Andelic et al., 2020), it is possible that these symptoms are impeding the individual's ability to complete the intake paperwork at home prior to the appointment. If fatigue and memory deficits have been contributing to an inability to remember to complete the task, then perhaps using a reminder prior to the appointment would increase intake paperwork completion. The use of reminders has proven to be an effective way to enhance prospective memory (remembering to complete a future task) (McDaniel et al., 2004) such as paperwork.

Rationale

Most reminders used in health care are now electronic, sent via email or short message service (SMS) technology (text messaging). In a systematic literature review of 162 articles conducted by Schwebel and Larimer (2018), almost all of the studies reviewed showed benefit in the use of SMS reminders in appointment attendance and medical compliance. Researchers reported minimal risk associated with the technology and discussed benefits such as easy use, inexpensiveness, and speed (Schwebel & Larimer, 2018). This article did not focus on patients with brain injury; however, the results were thought to be generalizable to the population at hand. With potential memory deficits, fatigue and cognitive changes, it was hypothesized that patients at the private practice clinic would benefit from having a reminder to complete their intake paperwork.

Moving forward with this plan, this project was informed using the Model for Improvement (Langley et al., 2009) which involves setting aims, establishing measures, implementing and testing changes, and spreading changes. In doing so, the project utilized multiple Plan-Do-Study-Act (PDSA) cycles during which interventions were planned, trialed, observed, and used to guide the next action (Institute for Healthcare Improvement, 2020).

The Lean model also helped guide this project. This model focuses on enhancing value while engaging in the reduction of waste and unnecessary effort. Therefore, when the Lean model is applied to the healthcare setting it can assist in improving the flow of patients as well as processes (Kinsman et al., 2014). When considering the project at hand, “waste” was defined as the time needed to complete

the patient intake paperwork during the appointment versus having it completed prior. "Improvement in flow" was defined as the timeliness of patient appointments. The five steps of this model include defining the value, mapping the value stream, creating flow, establishing pull, and seeking perfection (Yost, 2016).

Specific Aims

The quality improvement project described in this report was completed with the goal of enhancing timeliness of care for individuals who have experienced TBI through assessing the impact of reminders on intake paperwork completion. More specifically, the aim of the project was to have 70% of new patients fill out the intake paperwork prior to their first appointment by the end of February 2021 at the designated clinic.

Methods

Context

The project setting was a private practice clinic in Portland, Oregon, which specializes in the treatment of individuals with brain injury including whiplash and concussion recovery. The clinic also treats ADHD and Disconnection Syndrome as well as the general promotion of brain health and longevity. Staff that make up the clinic consist of two clinicians, one clinic manager and two front desk staff, however, the primary front desk staff member was terminated during the project. Clinic staff members requested the completion of intake paperwork to be the focus of the project and were willing to assist as needed. The project included data from all patients over the age of 18 who attended an initial intake appointment within 60 days following the start of the project. These participants were recruited via chart/scheduling review and communicated with via telephone and email.

Interventions

For the first PDSA cycle, an email alert was sent to participants one week prior to their first appointment with a message reminding them to bring the completed intake paperwork to the appointment (see Appendix). Following this, a designated staff member at the clinic recorded whether or not the participants arrived with their paperwork completed. Participants also received a brief questionnaire when they arrived for their appointment to assess the impact of the reminders. The questionnaire consisted of primarily open-ended questions focusing on the impact of the reminder on completion of intake paperwork, as well as satisfaction with the reminder and paperwork process.

For the second PDSA cycle, phone call reminders were utilized. These calls were made by front desk clinic staff, two to three days prior to the patient's scheduled appointment and used wording similar to the script outlined for email reminders (see Appendix). Following this, the third PDSA cycle was completed using phone call reminders with the addition of an explanation of importance regarding the intake paperwork. Staff explained briefly the utility of the paperwork (clinic intake, assessment of the presenting injury, billing components, etc.) as well as the benefit to having paperwork completed prior to the appointment (enhanced timeliness of care). This PDSA cycle also included creation and implementation of a training protocol for clinic front desk staff outlining the entire intake process, including the reminder system.

Study of the Interventions

The impact of the interventions was assessed in a few capacities. Benefit and patient perceptions of the reminders were assessed via qualitative questionnaires administered to the participants during the first PDSA cycle. Impact of interventions on timeliness of care was assessed via open-ended questions with clinic staff regarding clinic flow and frequency of delayed appointments following the completion of each PDSA cycle.

Measures

The primary outcome measure utilized was the completion rate of intake paperwork following each intervention. The data was gathered by a designated staff member and consisted of the total number of participants who completed their paperwork prior to the appointment and those who did not. A process measure was also utilized to assess whether the interventions were implemented as planned. This measure involved monitoring the rate of new patients receiving the designated intervention. Additionally, a balance measure was included assessing whether the reminders impacted patient satisfaction. This balance measure consisted of the data gathered from the post-intervention questionnaire. Cost was not an issue as the clinic had access to the technology utilized and was therefore not be assessed.

Analysis

Quantitative data was converted to percentages to simplify analysis of results. This data was then compared to baseline and the various PDSA cycle results to allow for inferences to be drawn. Qualitative data gathered via questionnaires was assessed and coded for themes.

Ethical Considerations

It is important to note that the participants had experienced TBI and were therefore considered a vulnerable population. Steps were taken to maintain

confidentiality such as de-identifying all project data gathered. Patients were also informed that their involvement in the questionnaire was completely voluntary and that if they chose not to participate it would not impact their care in any way. As this project was not research based but rather a quality improvement project it was IRB exempt.

Results

The first PDSA cycle began with the implementation of email reminders over the course of three weeks. The reminders were sent to patients two to three days prior to their first appointment reminding them to bring their completed intake paperwork to the appointment. This intervention led to 11 out of 15 new patients (73.33 %) arriving with paperwork completed. With the baseline approximation of paperwork completion at 60%, this demonstrated a significant improvement. To further assess the impact of the intervention, questionnaires were administered to all new patients during this PDSA cycle, nine of which were returned. Upon review of the qualitative questionnaires, eight of the participants noted the reminder was helpful in their remembering to complete the intake paperwork while one participant noted it was not helpful as they did not have access to a printer. All participants reported that the reminder increased their satisfaction with the clinic, with one participant stating "It shows the clinic does things to make sure that appointments go smoothly." In the portion of the questionnaire asking for feedback or ideas for improving the intake paperwork process, many thoughtful responses were obtained. The primary theme which emerged was the desire for a more interactive reminder mechanism such as telephone calls or text messages. In addition, two participants recommended that the paperwork be mailed out due to

one participant having difficulty accessing a printer and the other reporting difficulty looking at screens for long periods of time following their head injury.

Based on the findings of the first PDSA cycle, the decision was made to adapt the reminder to something more interactive. The idea of SMS (text message) reminders was discussed, however, as patients must “opt in” to receive text messages, feasibility was problematic for the first visit. It was decided that phone calls to patients would be utilized. It should be noted that at this point in the project, the primary front desk staff member was terminated from the clinic, posing an unforeseen challenge to project completion. Coordination then began with the administrative member who was covering the open position.

During the second PDSA cycle of three weeks, phone calls were made to new patients two to three days before their scheduled intake appointment reminding them to bring their completed paperwork. Data then revealed a further increase in intake paperwork completion with a total of 11 out of 14 new patients (78.57%) arriving with their paperwork complete.

For the third PDSA cycle, the focus settled around sustainability. After much discussion, it was found that issues with maintaining front desk staff were longstanding and staff turnover is common. With this in mind, the decision was made to create a training protocol outlining the intake process including the reminder system. In addition to this protocol, a slight adaptation was made in the reminder process to assess for further improvement in paperwork completion. Staff were instructed to briefly discuss the function and importance of the intake paperwork during the reminder phone call. At the completion of this PDSA cycle,

there was an additional increase in intake paperwork completion with 12 out of 15 new patients (81.25%) arriving with paperwork complete.

Discussion

Summary

The project accomplished the primary aim which was to reach a 70% completion rate for intake paperwork by the end of February 2021 at the designated clinic. Not only was this goal reached, but upon completion of the third PDSA cycle the intake paperwork completion rate was 81.25% demonstrating a larger improvement than anticipated. Further, participants reported largely positive experiences with the paperwork reminders.

Interpretation

Over the course of the three PDSA cycles, completion of intake paperwork slowly began to rise with the final PDSA cycle resulting in an 81.25% completion rate versus the estimated baseline of 60%. While literature was not found on this specific topic, results are in alignment with increased rates of attendance to follow up appointments following the implementation of reminders. Fiscal costs were not assessed but assumed to be essentially non-existent as the clinic already had access to the required technology for the interventions. While opportunity costs were not directly observed, the additional time front desk staff spent implementing the phone call reminders likely detracted from other tasks. Email reminders provided a quicker option but were found to be slightly less effective.

Context may have also played a role in project outcomes. The project was completed in a small clinic with strong buy-in on behalf of the clinic staff. This may

have impacted the efficacy of the intervention and decreased generalizability to larger clinical settings with less motivation to engage in the interventions.

Limitations

Limitations of the project included short duration and small sample size. With the clinic seeing only four to five new patients weekly, sample sizes for each PDSA cycle were small, threatening the internal validity. With PDSA cycles lasting three weeks each, this meant that 14-15 patients were included in the results for each cycle. Given more time and longer trials of interventions in the various PDSA cycles, more robust data could be obtained. Further, this project did not measure rate of delayed appointments pre-and post-intervention. Because of this, further research is needed on the degree to which intake paperwork completion impacts timeliness of care.

Conclusion

TBI can significantly impact functioning and quality of life. Therefore, it is imperative that individuals receive the best care possible throughout the recovery process. Intake paperwork can be a useful tool in the evaluation and treatment of TBI but barriers are often present to timely completion. Results from this project indicate that reminders increase intake paperwork completion among individuals with TBI. The most significant benefit was seen when phone call reminders included a description of intake paperwork importance. Patients primarily reported increased satisfaction with the clinic after receiving the reminders.

When applying the project findings to implications for practice, results suggest that individuals seeking treatment for TBI may benefit from a reminder via

telephone call to complete intake paperwork. Clinics should reach out to patients prior to scheduled appointments to encourage timely paperwork completion, as well as explain the utility of the paperwork to motivate patient buy-in. While the focus of this project was on patients with TBI, patients experiencing other health concerns may also benefit from this reminder system, though further research is needed. Additionally, to ensure sustainability of reminder systems, training protocols may be efficacious, especially in settings with frequent staff turnover.

There are numerous directions available for project continuation. One potential next step would include further exploration of SMS reminders. If there is a way to work around the “opt in” issue, this intervention may provide a more efficient and less labor-intensive reminder system. Lastly, the intake paperwork packet could be revised and consolidated to ensure each element included is pertinent. Considering common symptoms of TBI, it is reasonable to assume that a straightforward and intuitive design would provide optimal benefit in paperwork completion and patient experience.

Other Information

Funding

No funding was utilized for this project.

Resources

- Andelic, N., Røe, C., Brunborg, C., Zeldovich, M., Løvstad, M., Løke, D., Borgen, I. M., Voormolen, D. C., Howe, E. I., Forslund, M. V., Dahl, H. M., & von Steinbuechel, N. (2020). Frequency of fatigue and its changes in the first 6 months after traumatic brain injury: results from the CENTER-TBI study. *Journal of Neurology*. <https://doi.org/10.1007/s00415-020-10022-2>
- Broadway, J. M., Rieger, R. E., Campbell, R. A., Quinn, D. K., Mayer, A. R., Yeo, R. A., Wilson, J. K., Gill, D., Fratzke, V., & Cavanagh, J. F. (2019). Executive function predictors of delayed memory deficits after mild traumatic brain injury. *Cortex; a Journal Devoted to the Study of the Nervous System and Behavior*, 120, 240–248. <https://doi.org/10.1016/j.cortex.2019.06.011>
- Centers for Disease Control and Prevention. Traumatic brain injury. (2019). Retrieved July 28, 2020, from <http://www.cdc.gov/TraumaticBrainInjury/index.html>
- Crowley, C., Guitron, S., Son, J., & Pianykh, O. S. (2020). Modeling workflows: Identifying the most predictive features in healthcare operational processes. *PLoS ONE*, 15(6), 1–14. <https://doi.org/10.1371/journal.pone.0233810>
- Cunningham, J., Broglio, S. P., O'Grady, M., & Wilson, F. (2020). History of sport-related concussion and long-term clinical cognitive health outcomes in retired athletes: A systematic review. *Journal of Athletic Training*, 55(2), 132–158. <https://doi.org/10.4085/1062-6050-297-18>

Fisher, A., Bellon, M., Lawn, S., & Lennon, S. (2020). Brain injury, behaviour support, and family involvement: putting the pieces together and looking forward. *Disability & Rehabilitation*, 42(9), 1305–1315.

<https://doi.org/10.1080/09638288.2018.1522551>

Hux, K., & Mahrt, T. (2019). Alexia and agraphia intervention following traumatic brain injury: A single case study. *American Journal of Speech-Language Pathology*, 28(3), 1152–1166. https://doi.org/10.1044/2019_AJSLP-18-0245

Laskowski, R. A., Creed, J. A., & Raghupathi, R. (2015). Pathophysiology of mild TBI: Implications for altered signaling pathways. In F. H. Kobeissy (Ed.), *Brain Neurotrauma: Molecular, Neuropsychological, and Rehabilitation Aspects*. CRC Press/Taylor & Francis.

McDaniel M.A., Einstein G.O., Graham T., Rall E. (2004). Delaying execution of intentions: Overcoming the costs of interruptions. *Applied Cognitive Psychology*, 18(5), 533–547.

Moore Sohlberg, M., Griffiths, G. G., & Fickas, S. (2015). An exploratory study of reading comprehension in college students after acquired brain injury. *American Journal of Speech-Language Pathology*, 24(3), 358–373. https://doi.org/10.1044/2015_AJSLP-14-0033

National Institute of Neurological Disorders and Stroke (2019). *Traumatic brain injury information page*. Retrieved June 27, 2020, from <https://www.ninds.nih.gov/Disorders/All-Disorders/Traumatic-Brain-Injury-Information-Page>.

- Rotter, T., Kinsman, L., Bath, B., Goodridge, D., Harrison, L., Dobson, R., ... Westthorp, G. (2014). A first phase evaluation of Saskatchewan's Lean transformation. Final report. Saskatoon, Canada: University of Saskatchewan, College of Pharmacy and Nutrition.
- Schwebel, F. J., & Larimer, M. E. (2018). Using text message reminders in health care services: A narrative literature review. *Internet interventions*, 13, 82–104.
<https://doi-org.liboff.ohsu.edu/10.1016/j.invent.2018.06.002>
- Sinsky, C. A. (2006). Improving office practice: Working smarter, not harder. *American Academy of Family Physicians*, 13(10), 28-34.
- Taylor, C. A., Bell, J. M., Breiding, M. J., & Likang Xu. (2017). Traumatic brain injury-- Related emergency department visits, hospitalizations, and deaths -- United States, 2007 and 2013. *MMWR Surveillance Summaries*, 66(9), 1–16.
<https://doi.org/10.15585/mmwr.ss6609a1>
- Wallace, S. E., Donoso Brown, E. V., Schreiber, J. B., Diehl, S., Kinney, J., & Zangara, L. (2019). Touchscreen tablet-based cognitive assessment versus paper-based assessments for traumatic brain injury. *NeuroRehabilitation*, 45(1), 25–36.
<https://doi.org/10.3233/NRE-192725>

Appendix

“We look forward to seeing you for your appointment on _____. Please remember to bring your completed intake paperwork with you. If you are unable to complete the paperwork ahead of time please plan to arrive 15-30 minutes prior to your scheduled appointment time to complete the paperwork in our waiting room. Thank you.”