

Assessing Standardized Handoff Adherence to Improve Continuity of Diabetes

Care Management

by

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Abstract

Problem: At a maternal-fetal care center in a mid-sized community hospital, Advanced Practice Registered Nurses (APRNs) provide care for patients with type 2 diabetes during pregnancy but are no longer involved in care after delivery. Consequently, there is a gap of care from the intrapartum to postpartum care period. Internal data revealed that 57.1% of these patients had a hemoglobin A1c level greater than 6.5%, indicating that there is a need for continuity of diabetes care management post-delivery. **Purpose:** The purpose of this quality improvement project was to improve continuity of care among women with pre-existing type 2 diabetes in pregnancy at a maternal-fetal care center by implementing and measuring Situation-Background-Assessment-Recommendation (SBAR) handoff, an evidence-based practice change. **Methods:** The Project Leader utilized various strategies to establish this new practice change. The Project Leader created a SBAR template in the electronic health record using SmartText phrases and educated the three clinic APRNs via visual demonstration. The three APRNs were tasked with providing referrals for patients without a Primary Care Provider (PCP) and sending SBAR handoff notes to the patients' PCPs. The Project Leader performed weekly chart audits to track the percentage of referrals sent and handoff notes completed. **Results:** Only patients with type 2 diabetes with estimated delivery due dates within September to December 2024 were included in the data collection. Of the eligible patients, 44.4% of referrals were provided for patients who did not have a PCP, and 50% of handoff notes were sent for patients who identified a PCP. **Conclusions:** SBAR handoff is an evidence-based tool recommended to improve communication and the handoff process. The new practice changed improved continuity of care and can be utilized for future practice to help smooth transitions across patient care.

Keywords: APRN, continuity of care, SBAR, handoff, type 2 diabetes

Assessing Standardized Handoff Adherence to Improve Continuity of Diabetes Care Management

Diabetes is a common health issue that can negatively affect health, especially during pregnancy. To mitigate these risks, an outpatient maternal-fetal care center within a mid-sized community hospital provides diabetes care for high risk pregnant women. As part of standard care, clinic Advanced Practice Registered Nurses (APRNs) managed patients' diabetes during pregnancy but were not involved in patient care following delivery. There was consequently a gap in care from the intrapartum to postpartum period in which patients, especially those without a primary care provider (PCP), were not establishing continuity of diabetes care. From internal data reports in January 2024, about 25% of patients came to the clinic with pre-existing type 2 diabetes, and 57.1% of these patients had a baseline hemoglobin A1c level greater than 6.5%, which indicated a need to address ongoing diabetes management. This was problematic because patients required ongoing diabetes management following pregnancy, but there was no communication among providers across specialties after delivery. Important health information could have been missed during this care gap, which would have negatively affected recognition of health problems and diminished cost-effective care (American Academy of Family Physicians, 2020). Thus, a quality improvement project was conducted at the clinic to address this gap in care.

In examining this problem, various root causes were considered (see Figure 1). In this context, literature supported handoff processes to improve communication and further enhance continuity of care. Therefore, the purpose of this quality improvement project was to improve continuity of care among women with pre-existing type 2 diabetes in pregnancy in an outpatient maternal-fetal care center by implementing and measuring a standardized handoff tool.

Available Knowledge & Specific Aims

A literature review was conducted to evaluate standardized handoff processes. For this quality improvement project, the target population, specifically women with pre-existing type 2 diabetes during pregnancy, was highly specific; therefore, the evidence search was generalized to various populations and clinical settings utilizing handoff tools. Records were obtained using the PubMed database with the keywords “patient handoff” AND “health care providers,” yielding an initial search of 857 articles (see Appendix A). Exclusion criteria and filters, such as articles from the past seven years, were applied to yield a final result of seven articles (see Table 1).

The seven selected articles consisted of one randomized controlled trial, one meta-analysis, two quasi-experimental studies, and three systematic reviews (see Table 2). All studies examined the effect of a standardized handoff tool among various outcomes, such as communication, patient safety, or quality of patient care (see Table 3). Five studies concluded that handoff tools had statistically significant improvements in the outcome measures, such as handoff completion, communication, and amount of information passed. The other two articles drew compelling conclusions regarding the effectiveness of handoff tools on improving patient safety and adverse events, though emphasized the need for further research to evaluate additional outcomes. Regarding handoff tools, three of the studies (Abbaszade et al., 2021; Lazzari et al., 2024; Müller et al., 2018) strongly supported the Situation-Background-Assessment-Recommendation (SBAR) mnemonic. In addition, the use of an SBAR tool has been recommended by numerous accrediting organizations, such as The Joint Commission (TJC), to structure and standardize handoff communication (TJC, 2017). Due to the majority of high-quality studies, there was a reasonable recommendation for a practice change implementing a standardized SBAR handoff tool.

Rationale

The Consolidated Framework for Implementation Research (CFIR) served as the guiding theoretical framework to assess the implementation process in this quality improvement project. The CFIR was used to analyze constructs ranging from individuals to the broader organizational and systemic influences (*CFIR*, n.d.). The CFIR provided a comprehensive, structured approach by identifying key domains that influenced implementation outcomes.

The CFIR consists of five main domains: characteristics of individuals, implementation processes, inner setting, intervention characteristics, and outer setting (*CFIR*, n.d.). Specific to this project, characteristics of individuals referred to the stakeholders, such as the Quality Improvement Project Leader (QI-PL) or clinic APRNs. Implementation processes referred to the activities used to implement the innovation, such as assessing organizational needs or determining roles and responsibilities. Inner setting referred to the setting in which the innovation was implemented, such as the clinic itself or the Electronic Health Record (EHR). Intervention characteristics referred to the actual intervention being implemented, such as the SBAR tool. Finally, the outer setting referred to the setting in which the inner setting existed, such as the organization as a whole.

After each domain was identified as applicable to the project, an overall systematic assessment was evaluated for the feasibility of the intervention (see Figure 2). The SBAR handoff tool was selected for use in this setting, as it facilitates structured, concise, and consistent communication among healthcare providers. In addition, the SBAR handoff template was created within the EHR via SmartText phrases, making it easily accessible to the clinic APRNs. Therefore, the evaluation of the CFIR framework allowed for a targeted approach to identify the factors most important in influencing implementation success.

Methods

Context

Prior to project implementation, a cultural assessment tool was used to evaluate the project site culture. The Organizational Culture Assessment Instrument (OCAI) is a validated research instrument that assesses six cultural dimensions of an organization. Within each dimension, there are four statements that correlate with the type of culture: clan, adhocracy, market, and hierarchy (OCAI, 2018). For the project site organization, the dominant culture related most closely to the Clan Culture, in which the organization is held together by loyalty or tradition, and the values include commitment, communication, and development (OCAI, 2018). This assessment aligned with the maternal-fetal care center's values of providing high quality care to high risk pregnant women through open collaboration within the interdisciplinary team. However, the clinic APRNs reported low satisfaction with the lack of continuity of care postpartum. Although there was a clear desire for change, a formal handoff process had not previously been established.

Initially, obstetric providers refer high risk patients to the maternal-fetal care center for diabetic care management throughout pregnancy. However, the standard practice was that the clinic APRNs were no longer involved in the care of the patients after delivery, so there was no further follow up on the patients' diabetes care (see Figure 3). The desired process change was for the implementation of a handoff tool to bridge the care gap (see Figure 4). Throughout project implementation, the handoff tool was limited to patients with type 2 diabetes due to the large volume of patients at the clinic and limited number of providers. This initiative aimed to establish a more coordinated approach to ongoing diabetes care by introducing a structured handoff process.

Intervention

The QI-PL mobilized a team of stakeholders to establish a workflow practice change over a 15-week period from September to December 2024 (see Appendix B). Participants involved in the project included three clinic APRNs and patients with type 2 diabetes with estimated delivery due dates by December 2024. During the first week prior to the project implementation, the QI-PL formatted a SBAR template in the EHR using a SmartText phrase and educated the three clinic APRNs on the practice change via a combination of emails, educational materials, and in-person visual demonstration. The new practice change involved the three clinic APRNs identifying the patients' PCP status. If the patients did not have an established PCP, then the clinic APRNs provided electronic referrals to local PCPs or endocrinologists. Upon the patients' delivery due dates, the clinic APRNs documented the SBAR note for each patient and attached the note to the referral if applicable. The handoff process was completed when the clinic APRNs sent the handoff note to the patients' PCPs electronically or via fax.

Various strategies were used to sustain the intervention throughout the implementation period. For instance, the QI-PL created a shared patient list specifically for patients with type 2 diabetes to identify which patients qualified for the SBAR handoff intervention. Since there was consistent turnover at the clinic, the QI-PL updated the patient list weekly to ensure that all eligible patients were included. The QI-PL also created a resource list of available providers, including internal and external endocrinologists and PCPs, for the clinic APRNs to provide patients who did not have a healthcare provider. For patients who did not have insurance, the QI-PL also created a list of free local healthcare clinics to provide referrals. Throughout the project implementation, the QI-PL collaborated with the Clinical Site Representative (CSR) weekly to discuss project updates and reinforce the practice change with the providers.

Measures

A measurement plan was developed to collect data over time to measure adherence to the performance improvement plan. Prior to project implementation, the QI-PL determined process and outcome goals. The QI-PL then collected data weekly from the EHR and stored all data in the REDCap secure web application (see Appendix C).

In order to send a handoff note, the patients must have first identified a PCP to receive the note. Process measures included the PCP status for patients with type 2 diabetes and the percentage of referrals sent for patients with type 2 diabetes who did not have a PCP. The process goal was for 100% of patients with type 2 diabetes who did not have a PCP to be referred to a new PCP or endocrinologist by December 2024. The EHR displayed the patients' PCP information, and the QI-PL performed chart reviews to determine which patients had an active PCP listed. The clinic APRNs also verified whether this information was accurate during in-person visits. The QI-PL tracked the patients' PCP status in the overall patient list within REDCap. Each week, the QI-PL identified patients with the earliest expected delivery due dates to enable the clinic APRNs to prioritize sending referrals accordingly. It was important to distinguish which patients required a referral since referrals were only sent for patients who did not have a PCP.

The outcome measure was handoff completion to the patients' identified PCP, as measured by either an electronic note sent via the EHR or a printed note faxed to the receiving clinic. The outcome goal was for 100% of patients with type 2 diabetes with estimated delivery due dates by December 2024 to have a completed SBAR handoff note sent to their PCP. The QI-PL conducted chart audits each week to identify the number of SBAR handoff notes sent to the patients' PCPs.

Analysis

Changes in quality improvement projects are often measured by tracking data over time. A total of fifteen data points was collected during the project implementation period. In accordance to the process and outcome measures, the QI-PL audited the data indicating the percentage of patients' PCP statuses, referrals provided, and handoff notes sent each week. This data was entered into REDCap. One process measure included identification of the patients' PCP statuses to determine which patients would require referrals. This data was presented via a bar graph to display the percentage of patients who had a PCP compared to that of patients who did not have a PCP (see Figure 5).

The percentages of referrals sent for patients without a PCP and SBAR handoff notes sent were displayed via run charts with the goal set at 100%. Fifteen weeks into the project, the median line remained below the goal for the percentage of referrals and SBAR handoff notes sent. To analyze the run charts, three detection rules (shift, trend, and runs) were applied to identify any special-cause signals. The run chart of referrals sent over time revealed one run below the median from weeks three to six, and a second run above the median from weeks ten to fifteen (see Figure 6). Although the percentage of referrals sent were gradually increasing each week, there were no significant shifts or trends in the data points. The second run chart displayed the percentage of SBAR handoff notes sent over time, and it revealed one run below the median from weeks three to six, and two additional runs above the median from weeks ten to thirteen and weeks fourteen to fifteen, respectively (see Figure 7). Similarly, the percentage of SBAR notes sent increased over time, though there were no significant shifts or trends in the data points. At the conclusion of the implementation period, a pie chart was used to breakdown the total percentage of handoff notes sent for further analysis of the data (see Figure 8).

Ethical Considerations

This quality improvement project was conducted ethically under the direction of the University of Maryland School of Nursing. Prior to the project implementation, the QI-PL obtained both Non-Human Subject's Research Determination from the Human Research Protections Office at the University of Maryland School of Medicine and the project site organization's Institutional Review Board. To protect privacy, the QI-PL conducted chart audits from the EHR using a side-by-side screen method with a password-protected computer in a private room at the project site. To protect confidentiality, the QI-PL collected, stored, and managed all data in the secure password protected REDCap web application, which was accessible only to the QI-PL, Project Faculty, and CSR. The patients' medical record numbers were coded as "identifiers" in REDCap, so only the non-identifying record identification number it was associated with was displayed in the downloaded data. There was no conflict of interest between the QI-PL and the project site.

Results

Data was collected over a 15-week measurement period from September to December 2024. The first week of the pre-implementation period was devoted to education of clinic APRNs to the practice change. Prior to the project implementation, two clinic APRNs were available in the clinic for the project education via written and visual demonstration. The QI-PL reached out to the third APRN who was unable to attend the education session via email to provide written education regarding the project details and received a confirmatory return email. Thus, 100% of the APRNs were educated on the practice change.

Only patients with type 2 diabetes with delivery due dates from September to December 2024 were included in the final data collection. The QI-PL and clinic APRNs screened 100% of

eligible patients regarding their PCP status. Prior to the intervention, 10% of eligible patients had a PCP listed whereas 90% of eligible patients did not have a PCP (see Figure 5). Of note, several patients had their midwife listed as their main PCP, though this was not included in the count as midwives are not generally considered long-term providers for ongoing diabetes management.

Throughout the implementation phase, the clinic APRNs provided referrals for patients without a PCP. In total, referrals were sent for 44.4% of patients who did not have an established PCP (see Figure 6). The process goal for 100% of patients who did not have a PCP to be referred to a PCP was ultimately not met. However, from reviewing patient charts, the QI-PL noted that the clinic APRNs sent electronic portal messages inquiring about following up with their preferred PCP to all of the remaining patients, though there were no patient responses to the messages. There were several weeks during which no new referrals were sent due to unexpected barriers that arose. For instance, several patients did not have health insurance or only had insurance linked to pregnancy. Another identified barrier was that several patients had limited English proficiency and preferred PCPs who could communicate in their native language. The QI-PL collaborated with the CSR to develop a list of Federally Qualified Health Centers (FQHC) that offered discounted healthcare services to underserved communities and provided access to multi-lingual providers or translation services.

Throughout the implementation phase, the clinic APRNs also sent SBAR handoff notes for patients who identified a PCP. In total, 50% of SBAR handoff notes were sent for patients with type 2 diabetes with delivery due dates by December 2024 (see Figure 7). Although the outcome goal for 100% of SBAR handoff notes to be sent was not achieved, 50% of patients had follow-up communication sent to their existing or new PCPs. During weeks with no changes in data, the QI-PL evaluated barriers and strategies to improve adherence to ensure the ongoing

effectiveness of the practice change. The handoff notes could only be sent for patients who identified a PCP, so the main barrier to not sending handoff notes was that patients did not identify their preferred PCP despite the clinic APRNs sending inquiry messages. In reviewing the total handoff note data breakdown, the QI-PL ascertained that 10% of all the handoff notes were sent for patients with a pre-existing PCP, 40% of handoff notes were sent for patients referred to a new PCP, and 50% of handoff notes were not sent due to no patient response to the inquiry messages sent by the clinic APRNs (See Figure 8). Although the process and outcome goals were not fully met, there was still a positive change made from standard practice, during which there was no handoff process.

Discussion

Key findings from this quality improvement project suggest that the implementation of a standardized SBAR handoff tool improved continuity of care by facilitating communication among providers from the intrapartum to postpartum care period. In the progress notes and electronic portal messages, the clinic APRNs encouraged patients to schedule an appointment in advance with a PCP for ongoing diabetes management postpartum, especially as many patients were motivated to manage their diabetes during pregnancy. Consequently, almost half (44.4%) of the eligible patients without a PCP were referred to a new PCP or clinic to establish care. In addition, half (50%) of the SBAR handoff notes were sent for all eligible patients, indicating that these patients are now able to see providers who will be able to establish or resume care based on the most recent handoff note provided by the clinic APRNs. These findings underscore the potential of a structured handoff process to enhance care coordination and support sustained diabetes management across specialties.

The results from this project align with current literature that supports the use of SBAR

handoff tools to improve the handoff process. Evidence shows that the SBAR handoff tool has been effective in improving communication, patient safety, and quality of care. However, the results of this project cannot directly compare to the results of the studies from the evidence review since majority of the studies were conducted in settings that verified the recipient of the handoff intervention. In terms of the quality improvement project, the QI-PL called several of the clinics to verify that the clinics received the faxed SBAR handoff notes, though it is uncertain whether the referred patients actually followed up with the referrals to the clinics over time. Further investigation into the follow-up plan for referred patients would be beneficial in the sustainability plan.

For sustainability of this intervention, the clinic APRNs will assume ownership of the SBAR handoff tool. The clinic APRNs can continue to incorporate the SBAR handoff tool into their practice, as it incurs no additional cost and can be personalized within the EHR system. Although the SBAR handoff tool was utilized exclusively for patients with type 2 diabetes during this project, the SBAR template has the potential to be adapted for use with all patients at the clinic in the future.

There are several limitations that affected the anticipated outcomes of the project. One limitation is that the clinic APRNs have demanding workloads, so sending referrals and SBAR handoff notes required additional time beyond their routine responsibilities that may have affected the project outcomes. Another limitation that emerged was the higher-than-anticipated number of patients without an identified PCP. For future practice, further investigation into the underlying reasons why patients with chronic diseases lack an established PCP is warranted to support ongoing care management. In addition, an unexpected barrier to not providing referrals or handoff notes was that patients did not identify their preferred PCP despite the clinic APRNs

sending reminder messages. Methods of encouraging patients to establish with a PCP should also be further examined for future practice.

Conclusion

SBAR handoff is an evidence-based practice tool recommended to improve the handoff process. The new practice change for this quality improvement project incorporating SBAR handoff improved continuity of care, which is an essential component of managing diabetes care from the intrapartum to postpartum care period. The SBAR handoff tool offers several advantages, including widespread recognition in healthcare, ease of integration into existing workflows, and cost-effectiveness. The results from the quality improvement project demonstrated the feasibility of the SBAR handoff tool for patients with type 2 diabetes, which suggests that it could be expanded to include other high-risk patient populations at the clinic requiring coordinated care.

Although the project was conducted in a specialty clinic, the practice change highlights the need for care coordination in promoting continuity of care. A PCP or endocrinologist is essential in managing diabetes care, but it is also beneficial to incorporate additional members of the interdisciplinary team, such as a nurse case manager or care coordinator, to help facilitate care transitions. In addition, the implementation of the SBAR handoff tool underscores the need for ongoing education and support for clinical teams to ensure consistency and sustainability. While the intervention of this project focused mainly on enhancing handoff communication, it is equally important to frame these efforts within the larger context of health promotion, including providing accessible follow-up care and strategies to support long-term disease management.

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Table 1

PRISMA Evidence Selection

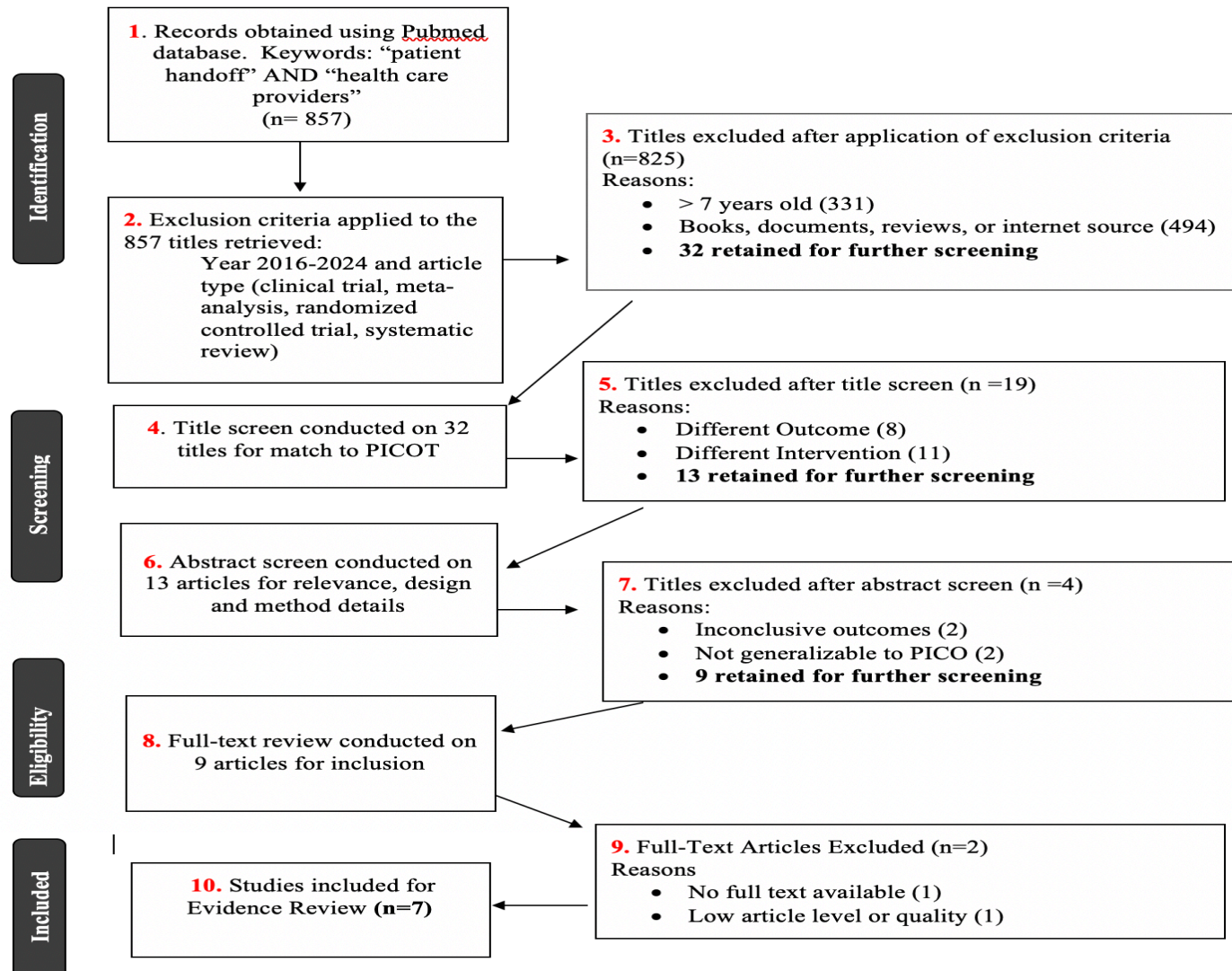


Table 2

Evidence Review Table

Citation #1: Hockly, M., Williams, S., & Allen, M. (2018). Transfer of care - a randomised control trial investigating the effect of sending the details of patients' discharge medication to their community pharmacist on discharge from hospital. <i>The International Journal of Pharmacy Practice</i> , 26(2), 174–182. https://doi.org/10.1111/ijpp.12364					
Level: I-A					
Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this study was to investigate the effect of sending patients' hospital discharge letters to the patients' community pharmacists on the number of discrepancies between the general practitioner records and the patient's medical records and self-described medication regime.	Randomized controlled trial (two parallel arms)	<p>Sampling technique: Convenience.</p> <p>Eligible Participants: 141 patients- Inpatients taking at least four medicines regularly prior to hospital admission, used the same community for their prescriptions, made changes to their medication during hospital stay, and discharge letter clinically screened by a pharmacist</p> <p>Setting: Royal Sussex County Hospital in the United Kingdom</p> <p>Excluded: 108 patients- under 18 years old, unable to carry out a telephone interview, no registered general practitioner, living outside the clinical setting location, had their medication administered by carers or dispensed in a blister pack</p> <p>Accepted: 33 participants</p> <p>Control: 16 participants</p> <p>Intervention: 17 participants</p> <p>Power analysis: minimum required sample size for confidence = 8 (based on alpha, beta, and effect size d)- sample size was met</p> <p>Group Homogeneity: The two groups did not show any significant difference in comparison between the participants' demographics.</p>	<p>Control Protocol: Standard discharge practice- discharge letter sent electronically to the general practitioner only</p> <p>Intervention Protocol: Standard discharge practice + discharge letter faxed to the participants' nominated community pharmacist</p> <p>Treatment Fidelity: To reduce bias, a single pharmacist, who was blinded to the group allocation list, carried out all the analyses.</p>	<p>Dependent variable: Discrepancy in medications as defined by "any difference in drug name, dose, route, or frequency" (Hockly et al., 2018)</p> <p>DV Measure: The total number of discrepancies between the general practitioners' medication record or the discharge letter compared to the participants' self-described medication regime.</p>	<p>Statistical Results: The number of discrepancies in the number of drugs prescribed was significantly lower in the intervention group than in the control group ($p < 0.05$).</p> <p>Conclusions: The study concluded that sending a copy of patients' discharge letters to their community pharmacist could be beneficial in reducing post-discharge prescribing discrepancies and also improve patients' understanding of their medication lists.</p>

<p>Citation #2: Keebler, J. R., Lazzara, E. H., Patzer, B. S., Palmer, E. M., Plummer, J. P., Smith, D. C., Lew, V., Fouquet, S., Chan, Y. R., & Riss, R. (2016). Meta-analyses of the effects of standardized handoff protocols on patient, provider, and organizational outcomes. <i>Human Factors</i>, 58(8), 1187–1205. https://doi.org/10.1177/0018720816672309 Level: II-A</p>					
Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
<p>The purpose of this study was to examine the effects of handoff protocols on patient, provider, and organizational outcomes using meta-analytic approaches.</p>	<p>Meta-analysis of pre-/postintervention designs</p> <p>Quality Assessment: A set number of five reviewers met to classify each criterion by the modified Systems Engineering in Patient Safety (SEIPS) Model</p>	<p>Inclusion criteria: Implementation of a handoff protocol in pre/post intervention design or compared to another experimental group not using any protocol, data collected in the field, articles reported statistics required to calculate the effect sizes</p> <p>Setting: Interventions implemented in live clinical or hospital settings</p> <p>Accepted: 33 articles</p> <p>Total sample size: 106,724 pre-protocol measurement and 97,642 post-protocol measurement data points</p> <p>Meta-Analytic Procedure: Effect size calculated using Hedge’s <i>g</i>; additional calculations made using means, standard deviations, or 95% CIs</p>	<p>Intervention: Handoff protocol</p>	<p>Outcomes:</p> <ol style="list-style-type: none"> 1) <i>Handoff information-</i> measured by the amount of information passed between providers 2) <i>Patient outcome-</i> dependent variables related to the health of patients or opinions of their care (e.g. length of stay, mortality/morbidity, patient satisfaction) 3) <i>Provider outcome-</i> provider performance or opinions about provider performance (e.g. response times, effects on interruptions) 4) <i>Organizational outcome-</i> higher levels of the organization (e.g. measures of culture, organizational-wide improvements) 	<p>Statistical results:</p> <ol style="list-style-type: none"> 1) <i>Handoff -</i> Medium and significant increase in the amount of information passed after implementation of handoff protocol (<i>g</i>=.71) 2) <i>Patient outcomes-</i> Medium and significant level of improvement (<i>g</i>=.53) 3) <i>Provider outcomes-</i> Medium and significant increase (<i>g</i>=.51) 4) <i>Organizational outcomes-</i> Small but significant increase (<i>g</i>=.29) <p>Conclusion: The reviewers of this study concluded that handoff protocols can positively affect outcomes based on handoff information, patient, provider, and organizations.</p>

Citation #3: García Roig, C., Viard, M. V., García Elorrio, E., Suárez Anzorena, I., Jorro Barón, F., & Colaboradoras (2020). Implementation of a structured patient handoff between health care providers at a private facility in the Autonomous City of Buenos Aires. <i>Archivos Argentinos de Pediatría</i> , 118(3), e234–e240. https://doi.org/10.5546/aap.2020.eng.e234					
					Level: II-B
Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
<p>The purpose of this study was to determine whether using a structured handoff mnemonic (I-PASS) may reduce the omission of key data during the handoff process without prolonging its duration.</p>	<p>Quasi-experimental, uncontrolled, before-and-after design carried out in two phases</p>	<p>Sampling technique: Convenience. Setting: Private facility in Buenos Aires Inclusion Criteria: Physicians at the Division of Clinical Pediatrics Pre-intervention assessments: 158 Post-intervention assessments: 124</p>	<p>Intervention Protocol: Standardized handoff (I-PASS mnemonic: Illness severity, Patient summary, Actions, Situation, Synthesis) Treatment Fidelity: Baseline verification tool consisting of 15 key points was used for observation; three handoffs were consistently observed per day for a week, every 15 days, over a period of 2 months. An introductory workshop was provided to improve the handoff process.</p>	<p>Dependent variable: Handoff process DV Measure: The handoff process consists of the following components: duration, identification, interruption, disease relevance, diagnosis, current condition, personal history, complication, lines/drainages, current status, tests, medication, date of admission, behavior, responsible party, contingency situations, contingency planning, synthesis</p>	<p>Statistical Results: There was a significant improvement in patient identification, interruption, disease relevance, personal history, medication, date of admission, behavior, responsible party, contingency situations and planning, and synthesis by the receiver ($p < 0.05$). There were no differences between the handoff duration after the intervention ($p = 0.523$). Conclusions: The study concluded that the use of a standardized handoff mnemonic (I-PASS) revealed improvements in the handoff communication process without prolonging its duration.</p>

Citation #4: Abbaszade, A., Assarroudi, A., Armat, M. R., Stewart, J. J., Rakhshani, M. H., Sefidi, N., & Sahebkar, M. (2021). Evaluation of the impact of handoff based on the SBAR technique on quality of nursing care. <i>Journal of nursing care quality</i> , 36(3), E38–E43. https://doi.org/10.1097/NCQ.0000000000000498					
					Level: II-B
Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
<p>The purpose of this study was to determine the impact of bedside handoff using the Situation, Background, Assessment, Recommendation (SBAR) technique on the quality of patient care.</p>	<p>Quasi-experimental</p>	<p>Sampling technique: Simple random</p> <p>Population: All patients hospitalized in the coronary care units of 2 public teaching hospitals in Iran</p> <p>Inclusion criteria: >18 years old, conscious and literate</p> <p>Exclusion criteria: diagnosed psychiatric problems, intubated, blind, or deaf</p> <p>Accepted: 144 patients (72 patients in each hospital)</p> <p>Power analysis: 72 participants in each hospital (alpha .05, power 85%, effect size 0.77, 10% dropout rate)- sample size met</p>	<p>Intervention: SBAR technique (Situation-Background-Assessment-Recommendation)</p> <p>Treatment Fidelity: Nurses were provided with five 1-hour SBAR education sessions within 5 days, and all nurses implemented the SBAR technique under the supervision of a research investigator to ensure the technique was being performed correctly.</p>	<p>Dependent variable: Quality of patient care</p> <p>DV Measure: Quality Patient Care Scale (QUALPACS)- scale consisting of 65 items in 3 domains (psychosocial, communicative, and physical). Each item is scored on a 4-point Likert-type scale (never, sometimes, often, and always); higher scores indicate better quality of care whereas lower scores indicate lower quality of care.</p> <p>Validity/reliability: Confirmed in the article-internal consistency (0.96)</p>	<p>Statistical results: There were statistically significant increases in the mean scores of psychosocial, physical, and communication dimensions of the QUALPACS after the SBAR implementation ($p < .05$). However, there were potential cofounders among the patients that could lead to different perceptions of the quality of care.</p> <p>Conclusion: This study concluded that utilizing the SBAR handoff technique increases the quality of nursing care.</p>

Citation #5: Lazzari C. (2024). Implementing the verbal and electronic handover in general and psychiatric nursing using the introduction, situation, background, assessment, and recommendation framework: A systematic review. *Iranian Journal of Nursing and Midwifery Research*, 29(1), 23–32. https://doi.org/10.4103/ijnmr.ijnmr_24_23

Level: III-B

Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
<p>The purpose of this article is to examine the significance of structured handover using ISBAR in general and psychiatric clinical practice.</p>	<p>Qualitative Systematic Review of a combination of quantitative and quantitative studies</p> <p>Quality Assessment: Two researchers appraised the articles and a third reviewer resolved any disputes</p>	<p>Inclusion Criteria: I/SBAR used in mental and medical settings, articles in English</p> <p>Exclusion Criteria: I/SBAR as marginal finding, systematic reviews, non-English studies</p> <p>Included for review: 55 articles</p> <p>Setting: Medical organizations including medical/nursing/pharmacy schools, nursing homes, hospitals, mental-health settings</p> <p>Population: health care participants, including medical/nursing/pharmacy students and healthcare providers</p>	<p>Intervention protocol: I/SBAR Handover</p>	<p>Outcome:</p> <ol style="list-style-type: none"> 1) Communication and handover skills and quality 2) Confidence, preparedness, and self-efficacy 3) Interprofessional communication skills and confidence 4) Senders of communication exchanges 5) Patient safety <p>Measures: The researchers utilized the Cochrane Rob-2 Software to categorize the quality of the studies</p>	<p>Results:</p> <ol style="list-style-type: none"> 1) <i>Communication</i>-increased after implementation of I/SBAR handover 2) <i>Confidence</i>- increased in those who applied the handover 3) <i>Interprofessional communication skills</i>-increased 4) <i>Senders in communication exchanges</i>-Registered nurses were the most frequent 5) <i>Patient safety</i>-increased <p>Conclusion: The review concluded that implementation of I/SBAR handover increases patient safety and care along with improving self-efficacy and communication in health carers.</p>

Citation #6: Müller, M., Jürgens, J., Redaelli, M., Klingberg, K., Hautz, W. E., & Stock, S. (2018). Impact of the communication and patient hand-off tool SBAR on patient safety: A systematic review. <i>BMJ open</i> , 8(8), e022202. https://doi.org/10.1136/bmjopen-2018-022202					
Level: III-C					
Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
The purpose of this article was to summarize the impact of the patient handoff tool SBAR on patient safety.	<p>Qualitative Systematic review of a combination of RCT and experimental/quasi-experimental studies</p> <p>Quality Assessment: To ensure accuracy and completeness of the data extraction, two trained reviewers reviewed the articles and a third reviewer checked the data extraction. The article reported that quality assessment was evaluated for inter-rater reliability, content, and construct validity.</p>	<p>Inclusion criteria: SBAR implementation, SBAR as the primary objective, at least one patient outcome reported</p> <p>Exclusion criteria: No evaluation data on patient outcome, SBAR not the main intervention, survey outcomes or team perception studies</p> <p>Included for review: 11 studies</p> <p>Setting: Hospitals, rehabilitation centers, and nursing homes in North America and Europe</p> <p>Population: healthcare professionals including nurses and physicians</p>	Intervention protocol: SBAR communication technique (Situation-Background-Assessment-Recommendation)	Outcome: Patient safety- defined by outcome parameters measuring the occurrence or incidence of adverse events, such as adverse patient/drug events or unplanned events, such as transfer to hospitals	<p>Results: 26 different patient outcomes were measured: 8 outcomes significantly improved, 11 were described as improving, 6 did not change significantly, 1 reported an increase in adverse events, and no studies found a significant reduction of patient safety.</p> <p>5 studies found significantly improved patient safety outcomes and 4 reported descriptive improved patient outcomes.</p> <p>Conclusion: There is moderate evidence on the effectiveness of implementing the patient handoff tool SBAR on patient outcome, though future studies are needed to demonstrate its benefit on patient safety.</p>

Citation #7: Delardes, B., McLeod, L., Chakraborty, S., & Bowles, K. A. (2020). What is the effect of electronic clinical handovers on patient outcomes? A systematic review. <i>Health Informatics Journal</i> , 26(4), 2422–2434. https://doi.org/10.1177/1460458220905162 Level: III-C					
Purpose or Hypothesis	Type of Evidence and Research Design	Sample (population, size, setting)	Intervention Procedures	Primary Outcome/Measures	Results Conclusions
<p>The purpose of this review was to evaluate the effectiveness of electronic handover methods on patient outcomes.</p>	<p>Systematic review of pre-post interventional studies</p>	<p>Inclusion Criteria: e-handover between two or more healthcare personnel or teams, quantitative data for patient outcome</p> <p>Exclusion Criteria: not a peer reviewed publication, not available in English, no full text available, qualitative papers</p> <p>Included for review: 9 studies</p> <p>Setting: emergency department, hospital wards, community pharmacy in the United States, United Kingdom, Taiwan, and Ireland</p> <p>Population: physicians, community pharmacists, integrated hospital teams</p>	<p>Intervention protocol: electronic clinical handover</p> <p>Quality assessment: Two reviewers independently assessed each article and conflicts were discussed between the two reviewers</p>	<p>Outcomes: patient outcomes</p> <ol style="list-style-type: none"> 1) Length of stay 2) Adverse events 3) Time to procedure 4) Handover completeness 	<p>Results:</p> <ol style="list-style-type: none"> 1) Length of stay: 2 articles found reduced length of stay post-intervention, 2 articles found no statistically significant changes in length of stay post-intervention 2) Adverse events: no statistically significant difference pre/post-intervention 3) Time to procedure: 2 studies reported reduction in time post-intervention; 1 article found no statistically significant change in time post-intervention 4) Handover completeness: $\frac{3}{4}$ studies reported increases in amount of detail recorded during handover post-intervention <p>Conclusion: The review concluded that electronic handover has the most significant effect on handover completeness, though more research needs to be conducted to translate to an improvement in patient care.</p>

Table 3*Evidence Synthesis Table*

Project Title: Standardizing Handoff to Improve the Handoff Process			
PICOT: Among women with pre-existing type 2 diabetes in pregnancy at a maternal-fetal care clinic, does the implementation of a standardized handoff tool affect the handoff process?			
Category (Level Type)	Total Number of Sources	Quality Ratings And Authors	Synthesis of Findings
Level I - Experimental study · Randomized Controlled Trial (RCT) · Systematic review of RCTs with or without meta-analysis	1 RCT (Hockly et al., 2018)	A	The study found that sending a copy of patients' discharge letters to their community pharmacist could be beneficial in reducing post-discharge prescribing discrepancies and also improve patients' understanding of their medication lists. This study had a sufficient sample size, adequate control, consistent results, and recommendations based on literature.
Level II · Quasi-experimental studies · Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis	1 Meta-analysis of experimental studies (Keebler et al., 2016) 2 Quasi-experimental studies (García Roig et al., 2020; Abbaszade et al., 2021)	Keebler et al. (2016): A García Roig et al. (2020): B Abbaszade et al. (2021): B	Keebler et al. (2016), García Roig et al. (2020), and Abbaszade et al. (2021) all examined the utilization of handoff tools as the intervention and involved experimental studies. Keebler et al. (2016) concluded that handoff protocols can positively affect outcomes based on handoff information, patient, provider, and organizations. This study was transparent, utilized appropriate meta-analytic approaches, and frequently referred to literature. García Roig et al. (2020), and Abbaszade et al. (2021) were both quasi-experimental studies that found statistically significant increases in communication in the handoff process and the quality of nursing care. Both articles demonstrated the effectiveness of handoff tools at the practice sites though with considerations due to the lack of control and randomization.
Level III · Non-experimental study · Systematic review of a combination of RCTs, quasi-experimental, and non-experimental studies, or non-experimental studies only, with or without meta-analysis · Qualitative study or systematic review of qualitative studies with or without meta-synthesis	3 Qualitative systematic reviews of combination of experimental/non-experimental studies (Lazzari et al., 2024; Müller et al., 2018; Delares et al., 2020)	Lazzari et al. (2024): B Müller et al. (2018): C Delares et al. (2020): C	Müller et al. (2018), Lazzari et al. (2024), and Delares et al. (2020) were all systematic reviews that examined handoff tools as the study intervention though with different outcomes. Lazzari et al. (2024) concluded that the implementation of a structured handover increases interprofessional communication and confidence and increases patient safety. This article was methodologically thorough and made insightful conclusions, though with limitations due to potential bias. Müller et al. (2018) and Delares et al. (2020) investigated the effectiveness of handoff tools on patient safety and outcomes related to adverse events, but both studies concluded the need for future studies to demonstrate the improvement in patient safety and care. Both studies did utilize a systematic literature search strategy though had inconclusive results.
Overall Quality Rating and Recommendations Based on Evidence Synthesis: B; Majority of the studies were of good/high quality with consistent results so there is a reasonable recommendation to support standardized handoff tools as a practice change.			

Figure 1

Fishbone Diagram

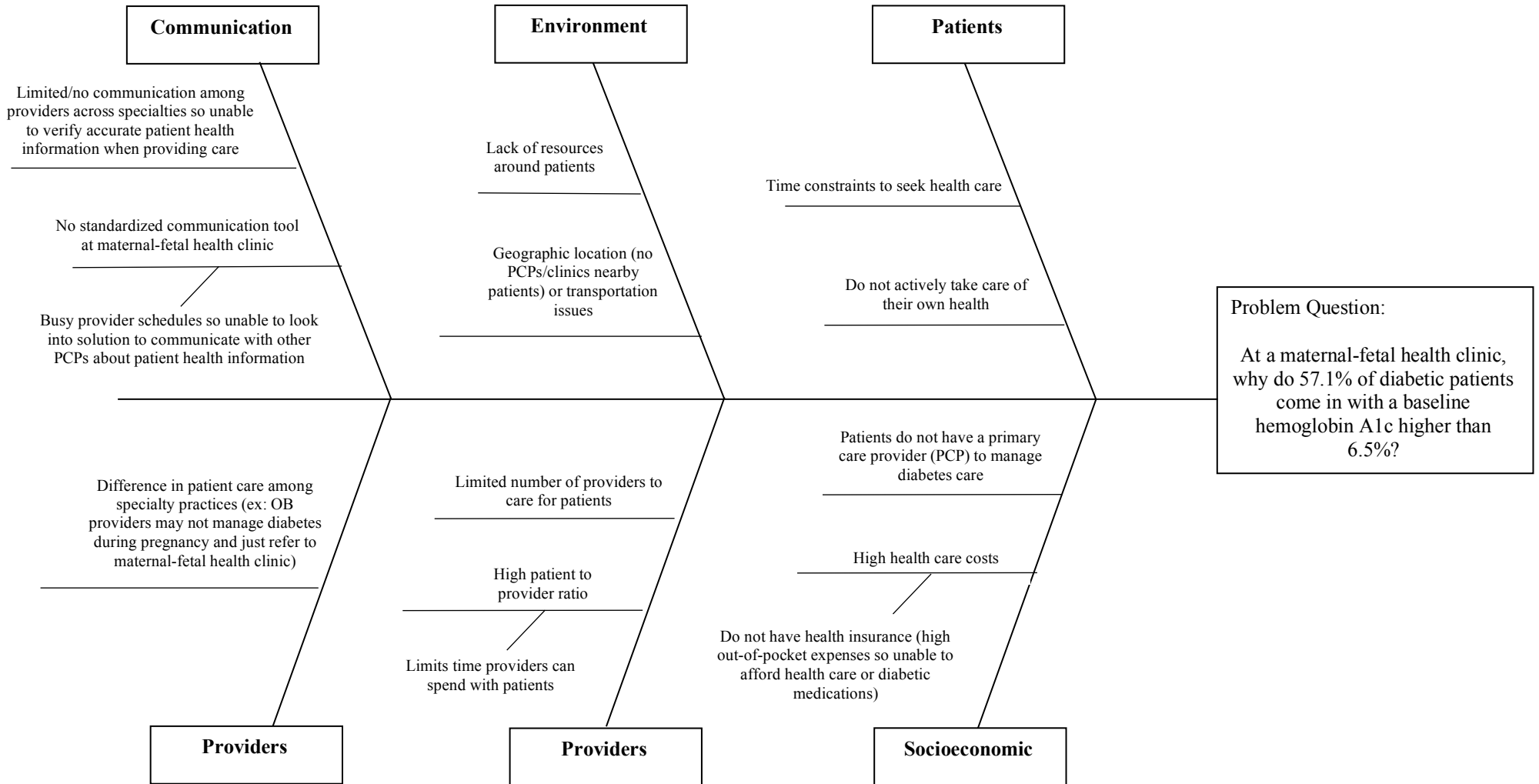
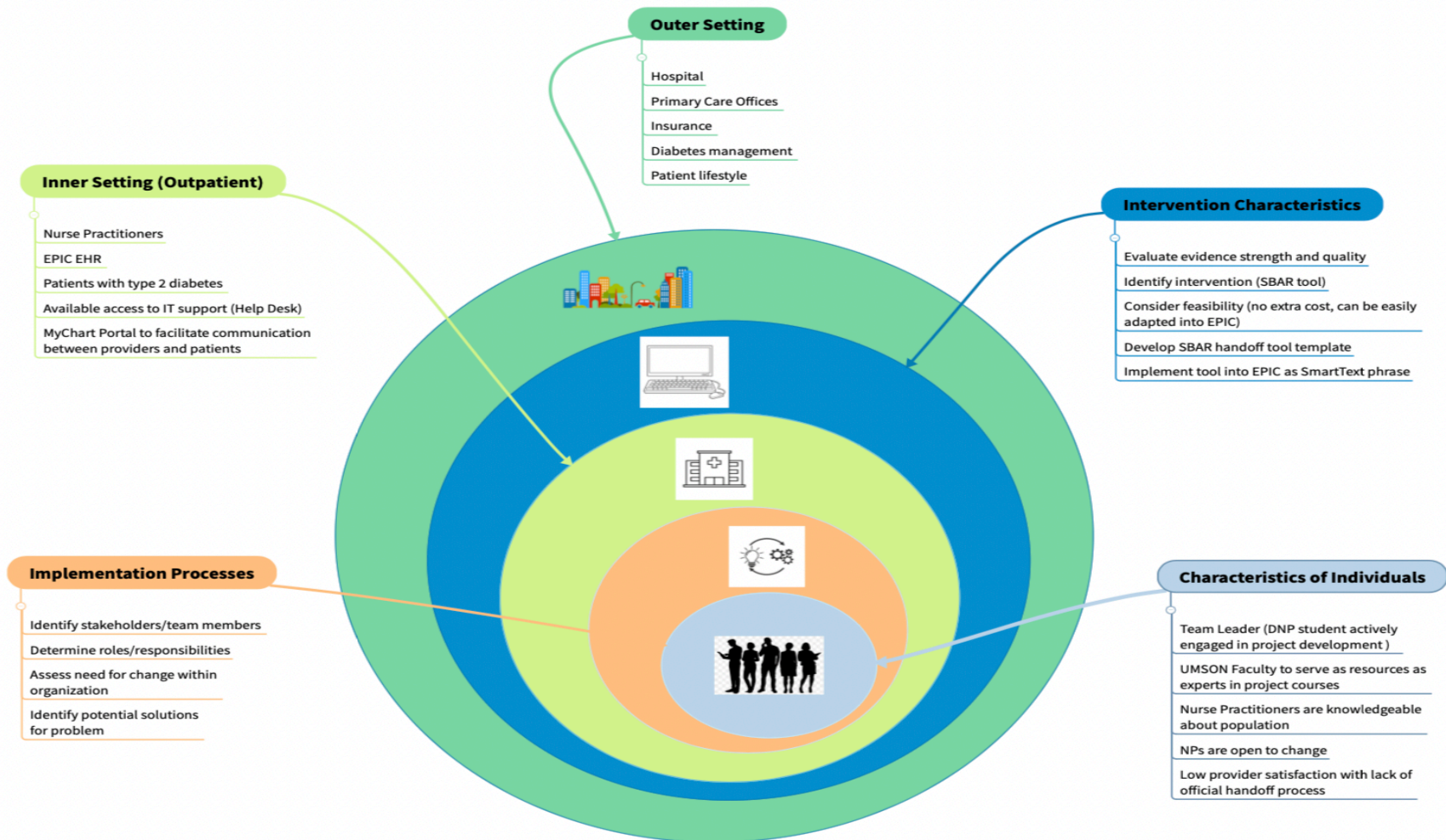


Figure 2

Theoretical Framework Diagram



Note. Adapted from the Consolidated Framework for Implementation Research (n.d.)

Figure 3

Standard Process Flowchart

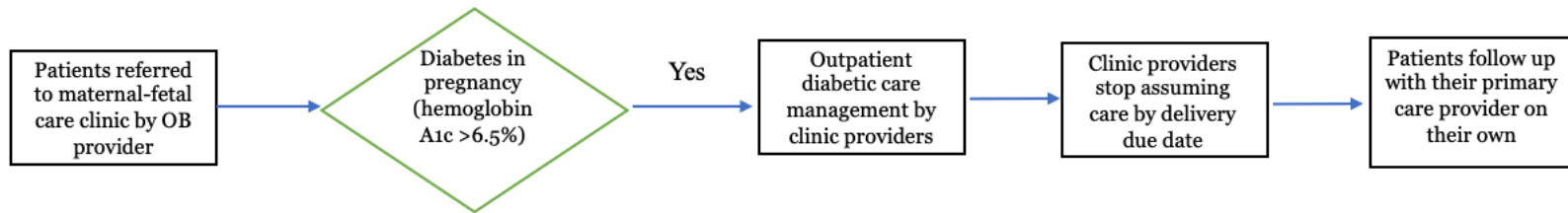


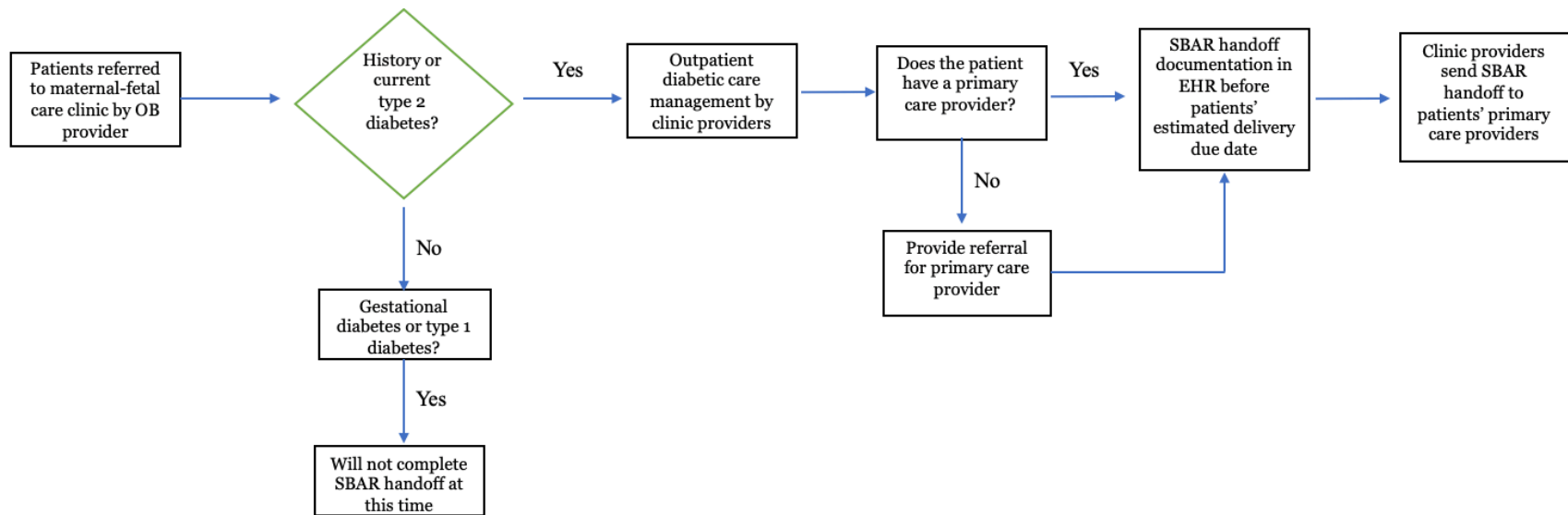
Figure 4*Desired Process Flowchart*

Figure 5

Bar Graph of PCP Status

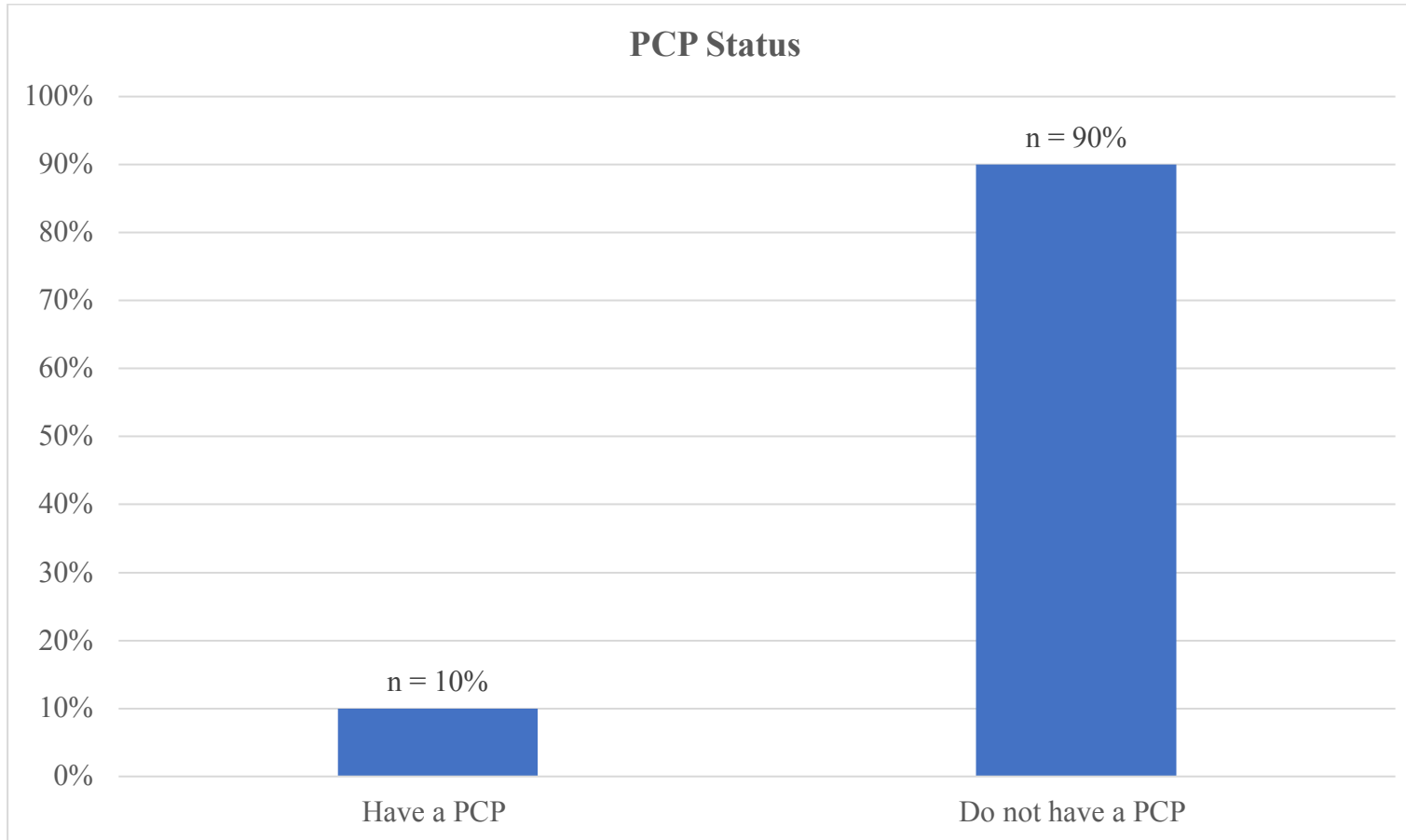


Figure 6

Run Chart of Referrals Over Time

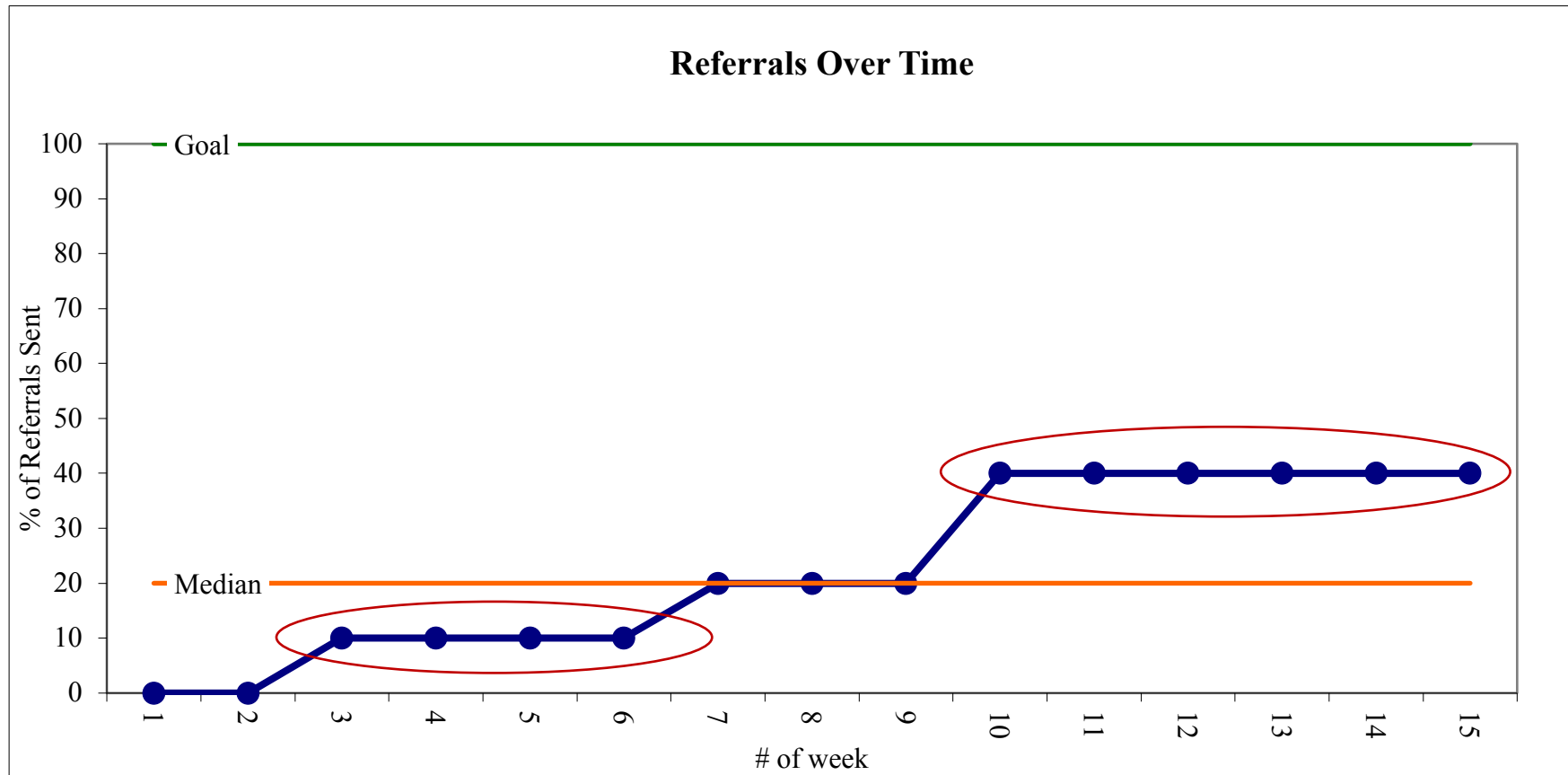


Figure 7

Run Chart of SBAR Handoff Sent Over Time

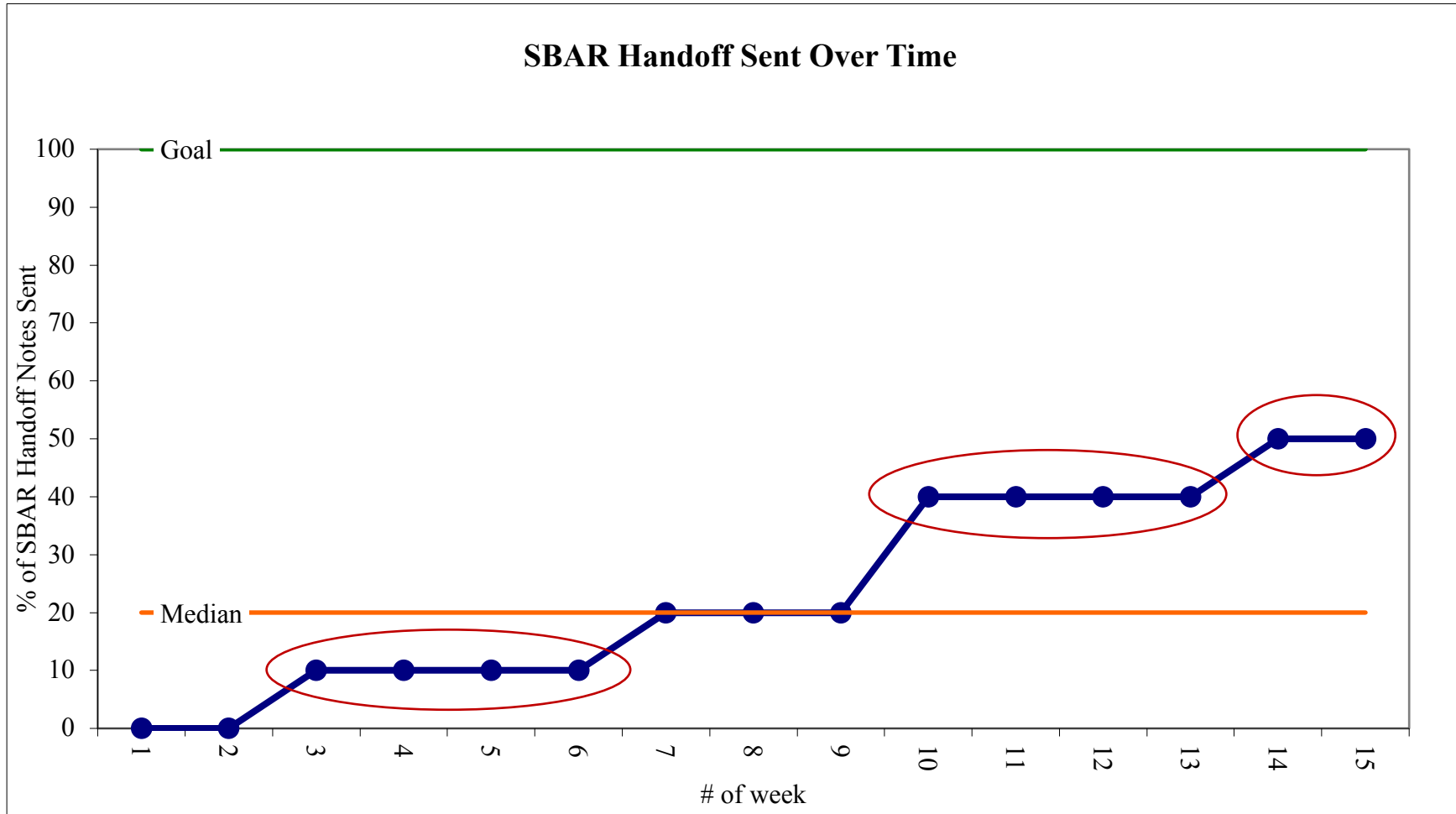
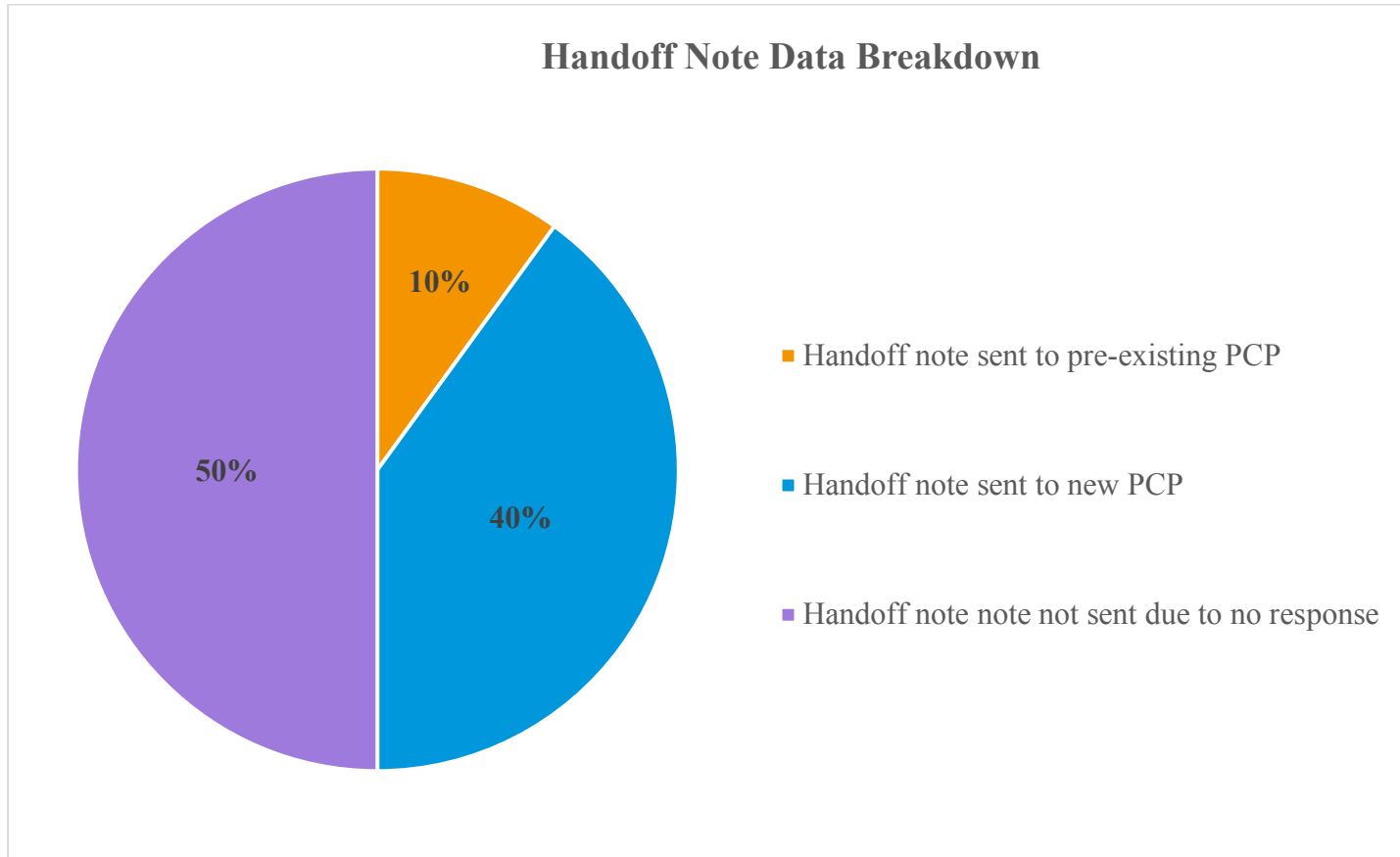




Figure 8

Pie Chart of Handoff Note Data Breakdown



Appendix A

PubMed Evidence Search

History and Search Details				 Download	 Delete
Search	Actions	Details	Query	Results	Time
#6	...	>	Search: (patient handoff) AND (health care providers) Filters: Clinical Trial, Meta-Analysis, Randomized Controlled Trial, Systematic Review, from 2016 - 2024	32	12:57:01
#5	...	>	Search: (patient handoff) AND (health care providers) Filters: Clinical Trial, Meta-Analysis, Randomized Controlled Trial, from 2016 - 2024	22	12:56:58
#4	...	>	Search: (patient handoff) AND (health care providers) Filters: Clinical Trial, Meta-Analysis, from 2016 - 2024	22	12:56:56
#3	...	>	Search: (patient handoff) AND (health care providers) Filters: Clinical Trial, from 2016 - 2024	19	12:56:54
#2	...	>	Search: (patient handoff) AND (health care providers) Filters: from 2016 - 2024	526	12:56:47
#1	...	>	Search: (patient handoff) AND (health care providers)	857	12:56:37

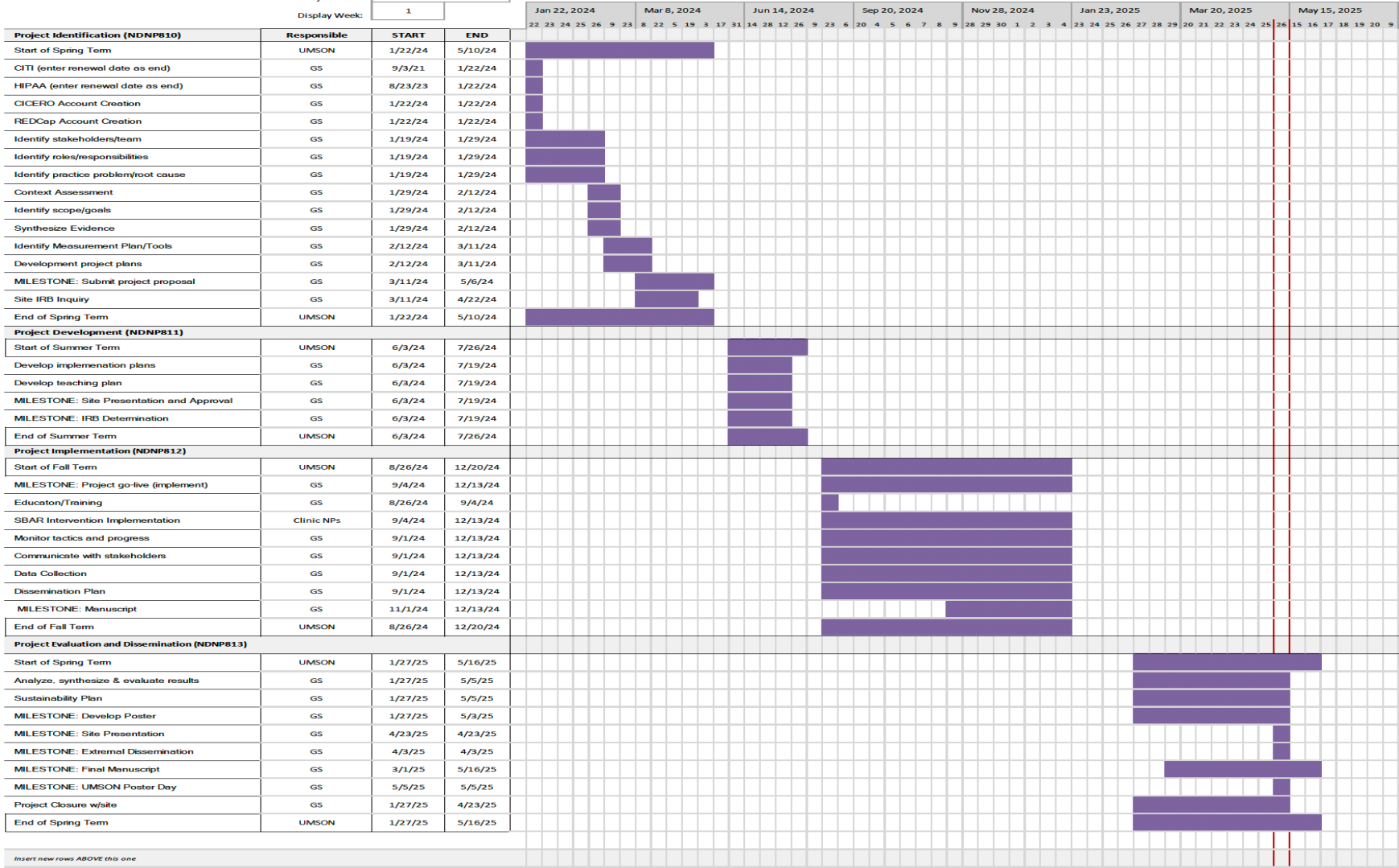
Appendix B

GANTT Chart

DNP Project Title: Assessing Standardizing Handoff Adherence to Improve Continuity of Diabetes Care Management

Student: Grace So

Project Start: Mon, 1/22/2024
 Display Week: 1



Appendix C


REDCap Measurement Tools

Patient list

AAA
+ -

Please complete the survey below.

Thank you!



1) MRN	<input type="text"/>
2) Record date	<input type="text"/>  Today M-D-Y
3) Does the patient have an established primary care provider (PCP)?	<input type="radio"/> Yes <input type="radio"/> No reset
4) If the patient does not have an established PCP, was a referral provided?	<input type="radio"/> Yes <input type="radio"/> No reset
5) Comments	<input type="text"/>

Handoff Completion

AAA
+ -

Please complete the survey below.

Thank you!

1) MRN	<input type="text"/>
2) Record date	<input type="text"/>  Today M-D-Y
3) When is the estimated delivery due date	<input type="text"/>  Today M-D-Y
4) Was SBAR note completed in chart prior to estimated delivery due date?	<input type="radio"/> Yes <input type="radio"/> No reset
5) Was SBAR note sent to primary care provider?	<input type="radio"/> Yes <input type="radio"/> No reset
6) Comments	<input type="text"/>