Weights to Reduce Waits

Category of submission (select as many as apply):

Resident/Fellow Project

IOM Domains that this project addresses (select as many as apply)

Safety

Patient Centered

Effective

Please share how you defined your project. Consider addressing the questions below. (Max 500 Words)
What was the identified Quality Gap? - What was the improvement target? - What was the timeline of the project? - Who were the stakeholders? - What was the stakeholders' input? - What was the method for collecting stakeholder input? - What was the potential for significant impact to the institution? - What was the potential for significant impact to society?

Anecdotal experience and data tracked by department leadership demonstrated that patient weights were frequently not accurately documented upon arrival to the emergency department (ED). An accurate weight is obviously extremely important with medications that require weight-based dosing, especially with critically ill patients requiring time-sensitive interventions. Weight is also important for diagnosing or following chronic disease states such as heart failure. Not having an updated weight when treating a patient can lead to delays that adversely impact patient care. Based on preliminary data, we identified that only about 60% of patients presenting to our ED had an updated weight when being seen by the physician. Our goal was to increase this to 90%. We identified a timeline of 12 months to design and implement the quality improvement project. Stakeholders included physicians, nurses, and ED technicians who all played important roles in measuring and utilizing accurate patient weights. Our initial assessment of workflow and process mapping (Figure 1) included discussions with both frontline bedside nurses and nursing leadership to help us understand the current process, limiting factors, and unique challenges. We also offered opportunities for suggestions on how to provide resources and reinforcement to improve performance. The project had the potential to directly impact patient care at multiple levels. Most fundamentally, the goal was to ensure that critical interventions were not delayed because of missing information. More generally, all weight-based interventions would be timelier, hopefully eliminating delays related to obtaining this critical piece of information at some downstream point in the patient's stay. This even has the potential to improve overall ED throughput. Clinicians could be freed to focus on optimal care and not chasing down missing information, improving both care and satisfaction for both clinicians and patients.

Please describe how you measured the problem. Consider addressing the questions below. (Max 500 Words)
What data sources were used? - Was a numeric baseline OUTCOME measure obtained? - What defined the sample size? - What counterbalance measures were identified? - What numeric baseline

COUNTERBALANCES were obtained? - Was the outcome measure clinically relevant? - Was the outcome measure a nationally recognized measure?

Kaiser Permanente (KP) utilizes the Epic (Verona, WI) electronic health record (EHR). Our department has built multiple electronic dashboards that track important clinical and operational metrics. Any documented patient weight during an ED encounter is captured in the electronic record. Prior to implementation of our project in 2020, we found that between the two KP San Diego medical service area emergency departments, KP San Diego Medical Center and KP Zion Medical Center, only 60% of patients had a documented weight entered with their first set of vital signs. We set a goal of a documented weight at the time of initial vital sign measurement and documentation for 90% of patients arriving at the KP San Diego Medical Center. The sample size was determined by all ED visits within the identified time frame. Twelve months of data was collected and analyzed prior to implementation and monthly data has been tabulated and disseminated since implementation. There were no counterbalances identified or measured. Our outcome was highly clinically relevant despite not being a clear patient-oriented outcome. Having this important measurement consistently and accurately captured and available would lead to improved patient care. Despite not being a nationally recognized measure, it's fundamental importance to acute care in the ED is clear.

Please describe how you analyzed the problem. Consider addressing the questions below. (Max 500 Words)
What was one factor contributing to the gap? - Were multiple factors contributing to the gap? - Was a structured root cause analysis undertaken? - What was the appropriate QI method or tool used for root cause analysis? - Was a root cause analysis performed prior to identifying potential solutions? - What was the rationale for selecting intervention(s)? - Did the project use a QI method or tool for selecting intervention(s)?

Multiple factors contributed to the identified quality gap. These included inconsistent availability of necessary equipment, lack of available open beds for patients arriving via EMS, and lack of recognition of the importance of the specified task by staff. Multiple discussions with nursing administration and bedside nurses helped us to better understand and appreciate the many factors that contributed to poor performance. Process mapping and "5 Whys" techniques were used to accurately assess the factors contributing to the problem. The series of questions helped understand the complexity of appropriate scaled bed availability and how this was disrupted by multiple factors that extended beyond the ED. Failure Mode and Effects Analysis evaluated the potential consequences and was valuable in developing effective communication to staff that reinforced the critical importance of this task. Furthermore, there was a focus on including positive interventions, recognizing and rewarding staff for good work.

Please describe how you improved the problem. Consider addressing the questions below. (Max 500 Words)
What was the implementation of intervention(s) (date/time of go live)? - Was the target measure re-measured afterwards with comparison graph? - Was a structured plan for managing change used? - Was the project counterbalance re-measured with a comparison graph? - Was the counterbalance adversely affected? - Is the improvement in target outcome measure shown? - Was a statistical significance demonstrated in the outcome measure?

The project officially launched on April 1, 2021. The specific intervention period spanned eight weeks, and then data was continuously collected for one year, until March 31, 2022. During the intervention period, flyers were displayed throughout the department to explain the goals of the

initiative. Project team members met with nurses regularly during nursing huddles to reinforce the importance and goals of the project. Data was collected weekly from the Epic EHR database. Improvement data in the forms of graphs were emailed out to the ED nursing staff via weekly emails. This email also presented a "save of the week" which spotlighted a specific nurse who recorded a weight on a patient in which that measured weight had a direct impact on patient care.

To determine statistical significance, a t-test was used to compare means. The percentage of patients that had a measured weight recorded on their ED visit in the year prior to project initiation was 65.3%. In the subsequent year following the initiative start date, the average percentage jumped to 85.4% (Figure 2). This represents an absolute increase of 20.1% and a relative increase of 30.8%. This difference was statistically significant with a p-value < 0.05. Additionally, subgroup analyses of time of arrival (day or night shift) and mode of arrival (private vehicle or EMS) both revealed significant differences in the pre and post intervention group (Figures 3 and 4). Data was also obtained at the other KP San Diego ED, Zion Medical Center, where the specific intervention was not implemented. There were modest improvements in measured weights at KP Zion Medical Center (70.7%), however not to the same degree as SDMC (Figure 5). This may be because a single nursing clinical director oversaw both hospitals as well as the fact that some nursing staff work at both hospitals.

Please describe the control phase of your project. Consider addressing the questions below. What were the lessons learned from the project? - Was there communication to stakeholders of the summary of the project, and lessons learned? - Was a process owner identified? - Did the process owner acknowledge ownership of ongoing monitoring? - What control measures were identified? - What was the reaction plan for deficiencies identified in the control measure? - Was there at least one year of sustained monitoring demonstrated? - Was the project successfully diffused in scholarly form (i.e. poster, manuscript, etc)?

Our project demonstrated the impact of increasing awareness of weight documentation. Periodically throughout the project, updated data was presented to key stakeholders and the entire nursing staff. Additionally, individual cases were highlighted in which weight documentation led to better patient care. Once we had finished collecting data for the duration of our project, we presented our findings to the nursing staff to encourage permanent implementation of our new improved process of documenting accurate weights. This data continues to be easily accessible through the KP San Diego ED data analyst. The ED nursing leadership has acknowledged, and taken over, ongoing monitoring. This will continue to be a key clinical metric for our department. While we are not quite one year out from project, we have seen sustained improvement compared to the prior baseline with only a small drop in performance in the ten months following the intervention. Our findings will be presented as an oral presentation at the Kaiser Permanente San Diego resident research symposium on June 2, 2022.

Attachments

Figures