Cardiac Telemetry: Literature Review

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Cardiac telemetry is overused, increasing patients' health care costs and their length of stay in hospitals. Furthermore, telemetry overuse leads to a shortage of telemetry beds, which results in delayed patient care (Rizvi et al., 2017). In addition, patients are kept on telemetry longer than required due to a lack of awareness by health care providers. The purpose of this literature review is to become aware of the current telemetry issues and develop a new theoretical framework to address those issues by extensive research and incorporating evidence-based practice.

Reducing over-utilization of cardiac telemetry with pop-ups in an electronic medical record system

Cardiac telemonitoring is regularly used in a non-ICU setting such as the medical-surgical floor, leading to increased patient care costs and hospital expenses. The primary purpose of this quantitative article is to incorporate pop-up reminders in the electronic medical record (EMR) to reduce telemetry overuse. The per-day expense of one patient with telemetry monitoring is $1400 (Rizvi et al., 2017). In addition, the use of a pop-up reminder will prompt health care providers to recognize when to cease the telemetry. Telemetry is an effective technology to decrease patient mortality rates by early detection of arrhythmia, but continuous cardiac telemetry increases patients' hospital stay and reduces satisfaction rates.

Key Points

The primary function of cardiac telemetry is to assess for cardiac arrhythmia. However, it is often overused, causing stress and anxiety to patients due to the increased length of stay in hospitals and their costs. Three hospitals in Kansas incorporated pop-up reminders in EMR from 2015 to 2016 (Rizvi et al., 2017). This protocol resulted in a decrease in the use of telemetry by 37% (Rizvi et al., 2017). This method effectively decreases telemetry overuse because it reminds health care providers when to cease telemetry. The use of pop-up reminders in EMR should be implemented in US hospitals to decrease hospital costs and save millions of dollars in health care**.**

Assumptions

Cardiac telemetry is an effective way to monitor cardiac comorbidities, such as arrhythmia. However, cardiac telemetry overuse may cause harm to patients by weakened skin integrity and increased risk of pressure sores due to immobility in bed. The article emphasizes adapting the simple method of using pop-up reminders to stop telemetry when not in use. The statistical results showed a reduction in the use of telemetry by 37 % after implementing pop-up reminders (Rizvi et al., 2017). The average number of days before using this method was 4.26 days but decreased to 2.68 days (Rizvi et al., 2017). A simple analogy can explain the idea of using this method. For example, one must turn off the stove when not in use. Thus, this article provides a novel idea of reducing telemetry in the health care system, which also decreases medical care costs of the patients.

Deficit/Conclusion

The usage of pop-up reminders is an excellent strategy to cease telemetry overuse in non-ICU settings. The article described the implementation of pop-up reminders in three hospitals in Kansas, which decreased patients' length of stay from 4.26 to 2.68 days and an overall decrease

of 37 % of telemetry usage during the two years (Rizvi et al., 2017). The positive statistics convinced this student nurse to agree with the author's implementation of pop-ups. If nursing practice fails to accept pop-ups, the telemetry will continue to be overused, resulting in compromised patient care and increased health care costs. The limitation of the article is that it is confined only to hospital settings and beyond the scope of a private practicing physician. Therefore, it is crucial to incorporate pop-up reminders to reduce telemetry overuse in all hospital settings.

Interventions to decrease overuse of cardiac telemetry when transitioning from the intensive care unit to the regular nursing floor

Cardiac telemetry is widely utilized in a hospital setting to assess for any cardiac comorbidities such as arrhythmias. However, overutilization of telemetry increases the financial burden for patients as well as hospitals. The primary purpose is to reduce telemetry usage by incorporating an educational approach through powerpoint and videos to residents, physicians, nurses, and nurse practitioners. False alarms increase delirium in older adults due to frequent awakening (Chahine et al., 2019). According to the author, patients' telemetry cost is $ 230 per day at Cleveland Clinic, which is very expensive (Chahine et al., 2019). Overuse of telemetry causes a spike in healthcare costs jeopardizing the US economy. Isn't it beneficial to save millions of dollars by reducing telemetry costs of all US hospitals?

Key Points

A health care provider overly orders cardiac telemetry in the United States. The primary reason for telemetry overuse is not establishing proper treatment protocol by health care providers. The unawareness of health care providers is also a contributing factor to telemetry

overuse. Excessive telemetry utilization leads to stress and anxiety due to false alarms resulting in inadequate sleep (Chahine et al., 2019). The article describes Solutions of value enhancement(SoLVE), a 12-week training program at Cleveland clinic to reduce telemetry overuse in sepsis patients (Chahine et al., 2019). The study emphasized the overuse of telemetry in the form of posters and powerpoint presentations to resident physicians, nurses, and nurse practitioners. It is indeed a simple but effective way to educate caregivers by a didactic approach.

Assumptions

The soLVE study is a 12-week training program done at Cleveland Clinic focused on reducing telemetry overuse by health care providers through the didactic method through posters, videos, and poster presentations. Telemetry overuse increases fatigue in patients and nurses due to inadequate sleep and answering false alarms (Chahine et al., 2019). The soLVE program was a huge success. After 12 weeks, there was a reduction of 23.1% in telemetry overuse (Chahine et al., 2019). The article emphasizes implementing a didactic approach to health care providers to reduce the overutilization of telemetry. The positive aspect of educating health care providers will improve the financial condition of patients and hospitals. Implementation of the soLVE project is an effective strategy to minimize telemetry overuse.

Deficit/Conclusion

Education programs are an effective strategy to convey a message to a more significant number of people. For example, the soLVE program at the Cleveland clinic was a 12-week training program to educate resident physicians, nurses, and nurse practitioners about the overuse of telemetry. After only 12 weeks of the program, there was a 23.1% reduction in telemetry use, which is a significant achievement (Chahine et al., 2019). However, several deficits in the article include a small sample size and shorter program duration (Chahine et al., 2019). Moreover, the

study was conducted only on sepsis patients, which is another limiting factor. Although

limitations, this student nurse supports the author's claim of educating caregivers to reduce

telemetry overuse. If the nurse fails to implement the changes, the telemetry overuse problem

will deteriorate, and the entire health care system will be negatively affected. Thus, education is

a brilliant way to reduce telemetry rates, increase patient safety and promote quality care.

Appropriate utilization of cardiac telemetry monitoring: A quality improvement project

Cardiac telemetry plays a vital role in preventing arrhythmias and myocardial ischemia.

However, overuse of cardiac telemetry leads to an increase in patient and health care costs. The

article's primary purpose is to reduce the overutilization of telemetry by implementing hard-stop

orders in which physicians were required to indicate a reason for telemetry usage. The project

was named PDSA (Plan, Do, Study and Act), which constituted two cycles. 62.5 % of patients

are on telemetry monitoring in Kansas City hospital (Stoltzfus et al., 2019). The project lasted for

two years and decreased the overuse of cardiac telemetry by 17.8 % with two PDSA cycles

(Stoltzfus et al., 2019). Reduction in telemetry usage saved $ 4.8 million annually and decreased

the mean duration of telemetry days by 43 % (Stoltzfus et al., 2019). Therefore, it is inevitable to

implement the second PDSA cycle in US hospitals to reduce health care costs of patients and

hospitals.

Key Points

It is essential to cease telemetry overuse in all hospital-based settings to prevent the

financial burden of patients and hospitals. The project constituted two PDSA cycles involving

daily huddles where the nurse asks the physician to continue or discontinue telemetry. Although

PDSA cycle one was ineffective, PDSA cycle two was a success due to hard stop orders. Hard

stop order means that physician must answer the question regarding the decision of telemetry before he can proceed with further treatment. In addition, the physician must also indicate a reason for continuing telemetry from a list of preselected indications. The results of PDSA cycle two were highly successful, with a reduction of 17.8 % in all hospital units (Stoltzfus et al., 2019). Therefore, it is imperative to implement PDSA cycle two, which involves a hard stop order to cease the overuse of cardiac telemetry.

Assumptions

Cardiac telemetry is highly overused by hospital settings due to the nonadherence of treatment plans. The hard stop orders in PDSA cycle two showed a reduction of 17.8 % telemetry usage within few months (Stoltzfus et al., 2019). PDSA cycle two also incorporated automated protocol to discontinue telemetry based on the amount of time the patient has been on telemetry monitoring without any cardiac event. The article emphasizes integrating hard stop orders in PDSA cycle two to reduce telemetry overuse effectively. The PDSA cycle two, although simple, is an effective strategy to reduce the overutilization of cardiac telemetry. A simple act of following hard stop orders was a successful intervention to reduce telemetry usage in hospital settings.

Deficit/Conclusion

The hard stop intervention was a huge success and reduced telemetry usage by 17.8 % within a few months (Stoltzfus et al., 2019). Although this project was successful, the project has several limitations. The project was initiated at a single institution, so it is hard to predict its results on different institutions. The article was biased because it did not include specific balancing measures when asking rapid response questions. They considered the frequency of rapid responses as a measure that could lead to discrepancy because the rapid response questions

were answered by patients, physicians, and family members (Stoltzfus et al., 2019). A nurse plays a vital role in hard-stop huddles because she is the first person to ask questions to the physician who decides whether to continue telemetry orders or not. If nursing practice fails to accept this intervention, telemetry overuse will continue to jeopardize health care. Therefore, it is necessary to stop telemetry at the appropriate time by adequately implementing a hard stop huddle project across all US hospitals.

Conclusion

It is essential to stop telemetry at the appropriate time by implementing three different effective methods. The first method is implementing pop-up reminders in the electronic medical system at three regional hospitals in Wichita, Kansas. The pop-ups remind the health care providers to decide whether to continue or discontinue telemetry monitoring when no longer indicated. As a result, pop-ups reduced the number of days of hospital stay from 4.26 days to 2.68 days (Rizvi et al., 2017). In about one year, telemetry reduction rates were 37%, a positive outcome (Rizvi et al., 2017). The second method was educating caregivers by didactic approach in posters, videos, and powerpoints to create awareness of the severe issue of telemetry overuse by caregivers. For example, the Solution for value enhancement (SoLVE) project was implemented at Cleveland Clinic to investigate telemetry overuse in sepsis patients transferred from ICU to the floor. As a result, there was an overall reduction rate of 21.3% in just two weeks, indicating a successful intervention (Chahine et al., 2019). The third method consisted of two PDSA(Plan, Do, Study, Act) cycles. PDSA cycle two implemented a hard-stop program, which means that the physician could not proceed to the next treatment plan until he decides to continue or discontinue telemetry. As a result, the reduction of telemetry was about 17.8 % in only a few months of the project's initiation (Stoltzfus et al., 2019). Telemetry is a critical

assessment tool to predict cardiac disorders such as arrhythmia. It consists of automatic detection of abnormalities in the patients' vital signs like alteration in spo2 and subtle EKG changes, allowing the provider to detect early changes (Stoltzfus et al., 2019). A positive impact was observed on patient outcomes because telemetry can detect arrhythmia early, decreasing patient mortality rates. Telemetry is a valuable machine in nursing practice because minor changes in vital signs alert the nurse for further action. This literature review positively reforms nursing practice because reducing telemetry overuse will increase nurse's work efficiency and quality patient care.

Evidence-based practice is a combination of current research evidence, clinical experience, and patient preferences. The literature review of cardiac telemetry is abided by evidence-based practice principles by presenting the current health care issue of overuse of telemetry. In addition, this literature review also outlays the three methods to stop the overuse of telemetry. This literature review describes three current peer-reviewed resources less than five years old. The patient outcome can be drastically improved by ceasing telemetry overuse due to reduced duration of stay in hospitals and financial expenses of patients. This literature review focuses on the reduction of health care costs by stopping telemetry when not in use. For example, a reduction in telemetry saved an estimated $4.8 million annually for the medical center in Kansas City, Kansas (Stoltzfus et al., 2019). Reducing the overutilization of cardiac telemetry will transform the healthcare system due to decreased financial burden on patients and hospitals.

References

Chahine, J., Thapa, B., Gosai, F., Abdelghaffar, B., Al Ashi, S. I., Maroo, A., Alappan, N., & Gopalakrishna, K. (2019). Interventions to decrease overuse of cardiac monitoring (telemetry) when transitioning from the intensive care unit to the regular nursing floor. *Cureus, 11*(3), 1–6. https://doi.org/10.7759/cureus.4311

Rizvi, W., Munguti, C. M., Mehta, J., Kallail, K. J., Youngman, D., & Antonios, S. (2017). Reducing over-utilization of cardiac telemetry with pop-ups in an electronic medical record system. *Cureus, 9*(5), 1–4. https://doi.org/10.7759/cureus.1282

Stoltzfus, K. B., Bhakta, M., Shankweiler, C., Mount, R. R., & Gibson, C. (2019). Appropriate utilization of cardiac telemetry monitoring: A quality improvement project. *BMJ Open Quality, 8*, 1–6. https://doi.org/10.1136/bmjoq-2018-000560