

Telemetry Unit Vancomycin Medication Administration after Hemodialysis

Nicholas La Mar

SAC Cohort 6

Samuel Merritt University

Telemetry Unit Vancomycin Medication Administration after Hemodialysis

Problem Identification

An inpatient telemetry department in northern California has identified an opportunity for improvement in the managed care of our hemodialysis patient population directly related to vancomycin medication administration after hemodialysis. Missed doses of Vancomycin post hemodialysis when indicated places these patients at risk for infection as well as contributes to medications errors due to a communication breakdown between nurses and inpatient pharmacy. Vancomycin will be administered by the primary RN within 2 hours of completion of HD measured by medication administration record (MAR) chart review.

Literature Review

Breakdowns in communication are often a source of frustration in any avenue of life. Data collected by the Joint Commission on Accreditation of Healthcare Organizations (2006) suggest that poor communication contributed to nearly 70% of sentinel events reported during 2005. According to Taran (2011) “One study conducted in the late 1990s found that poor communication was responsible for causing between 44,000 and 98,000 patient deaths annually in American hospitals alone” (p.1). This project was extremely import to all parties because the breakdowns in communication directly affected patient safety. Taran (2011) further claims “Health care workers today acknowledge that poor communication is perhaps one of the most prevalent problems in medicine” (p.1).

So why is the administration of Vancomycin so critical in some HD patients? Launay-Vacher, V., Izzedine, H., Mercadal, L., & Deray, G. (2002) state that “Vancomycin is a

glycopeptide antibiotic that used in the treatment of severe infections with pathogens such as Staphylococcus and Streptococcus species” (p.1). Hemodialysis patients with gram-positive bacteremia such as Staphylococcus and Streptococcus are often on a continued treatment plan with this antibiotic which requires a therapeutic maintenance dose within the bloodstream during treatment. “Administration of vancomycin at the end of each dialysis session avoids intradialytic clearance and ensures therapeutic concentrations (Taylor, M. E., & Allon, M. (2010) p.1163). As healthcare providers we know that HD filters this medication out of the bloodstream and we know that it is important for the patient to maintain the appropriate levels. Through an improvement in the process more effective communication allows for less missed or delay doses.

Background

Currently there has been an opportunity for improvement in the communication between primary RN’s, Hemodialysis RN’s, physicians and the inpatient pharmacist. There have been delays and occasional omitted doses of the antibiotic Vancomycin post hemodialysis secondary to communication breakdowns. Taran (2010) describes the “given that both physicians and nurses are intimately involved in the care and support of patients, major communication breakdown between these two parties could potentially translate into serious medical difficulties for their patients” (p.87). The current practice is as follows. The hemodialysis (HD) agency contracted with the hospital distributes the hemodialysis schedule to the facility with a reminder to use the pharmacy in basket message system in the electronic medical record system to request the appropriate dose of Vancomycin for post HD dosing by the pharmacist. The loading dose is calculated per policy, and sent to the unit by the inpatient pharmacist, and hung by the primary RN post HD. Before the HD session can begin a “Dialysis Handoff Checklist” is completed

which discusses the HD order, current vital signs, as well as pertinent lab values. There has been an identified opportunity for improvement in communication in order to prompt the pharmacy to enter and schedule a x1 order for Vancomycin administration within two hours post HD. All parties involved agree that there is a desire for improved communication which should correct the issue of delayed/omitted doses.

All parties agreed to select staff members from each party to form a group of leaders to solve the communication issues. The committee met monthly to monitor the records of administration of the antibiotic Vancomycin post HD and its fallouts (delayed/missed doses). The committee updated the current HD handoff checklist to include a checkbox next to the prompt “All Medications including Vancomycin have been discussed and requested from the pharmacy” with the primary RN’s signature as well as the HD RN signature.

Identified Community and Stakeholders

The identified community are hemodialysis patients on the Medical/Surgical/Telemetry unit that have been identified to have an increased risk for infection requiring antibiotics post hemodialysis. This increased risk for infection or current colonization of bacteria delineates these hemodialysis patients from other hemodialysis patients not involved in this project. These patients are a kaleidoscope sample of the local community. The patients seen on this unit vary in age from 17 to over 100 years old. Hemodialysis risk factors are non-gender specific. According to the Mayo Clinic (2018), risk factors for hemodialysis include kidney cysts (polycystic kidney disease), diabetes, high blood pressure (hypertension), kidney inflammation (glomerulonephritis), and blood vessel inflammation (vasculitis). This specific group of hemodialysis patients can be adversely affected by ineffective communication between the

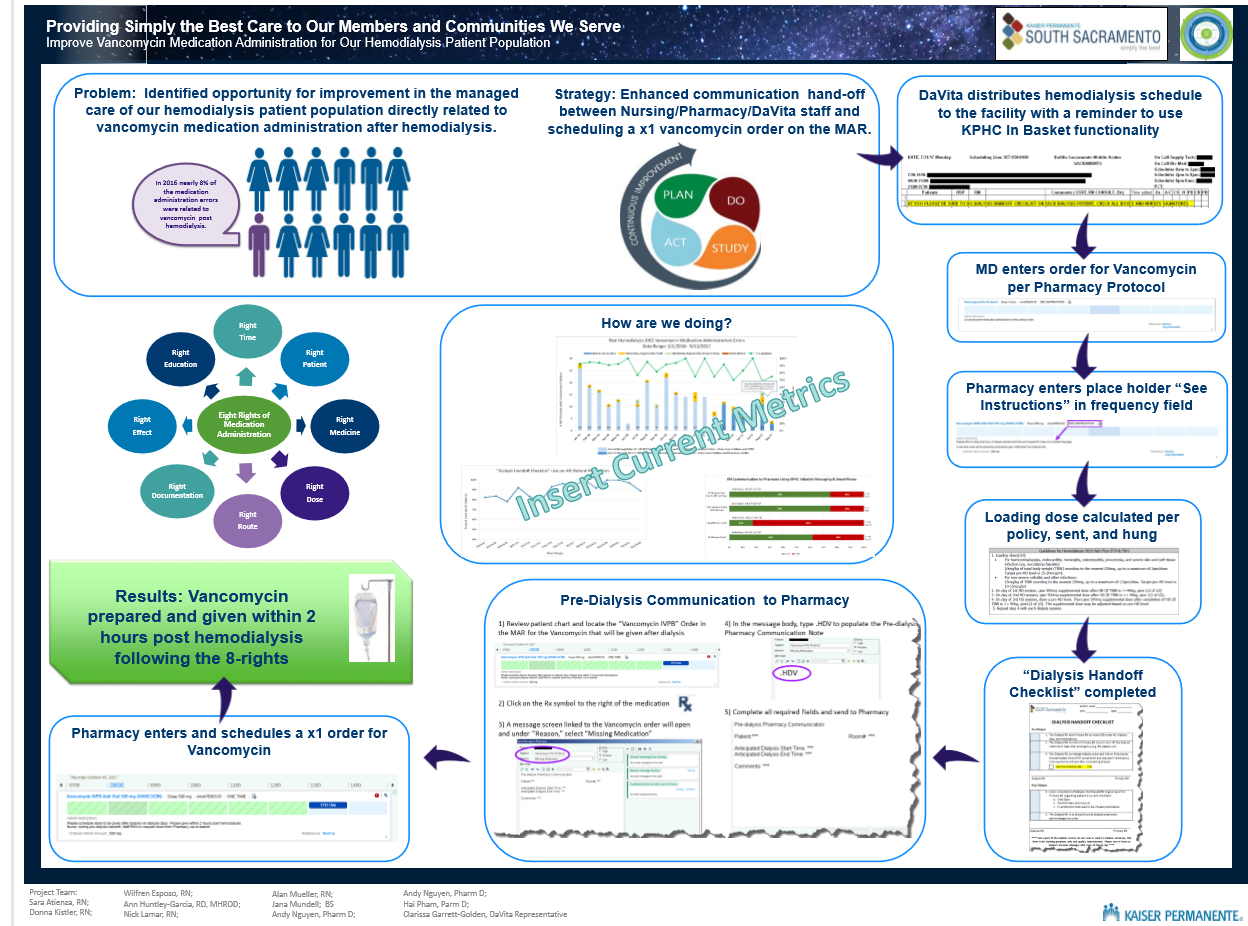
healthcare workers providing care. Delaying or omitting a dose of Vancomycin post hemodialysis when indicated places these patients at risk for infection as well as contributes to medications errors. Patients (community) and their safety are the paramount concern for this project.

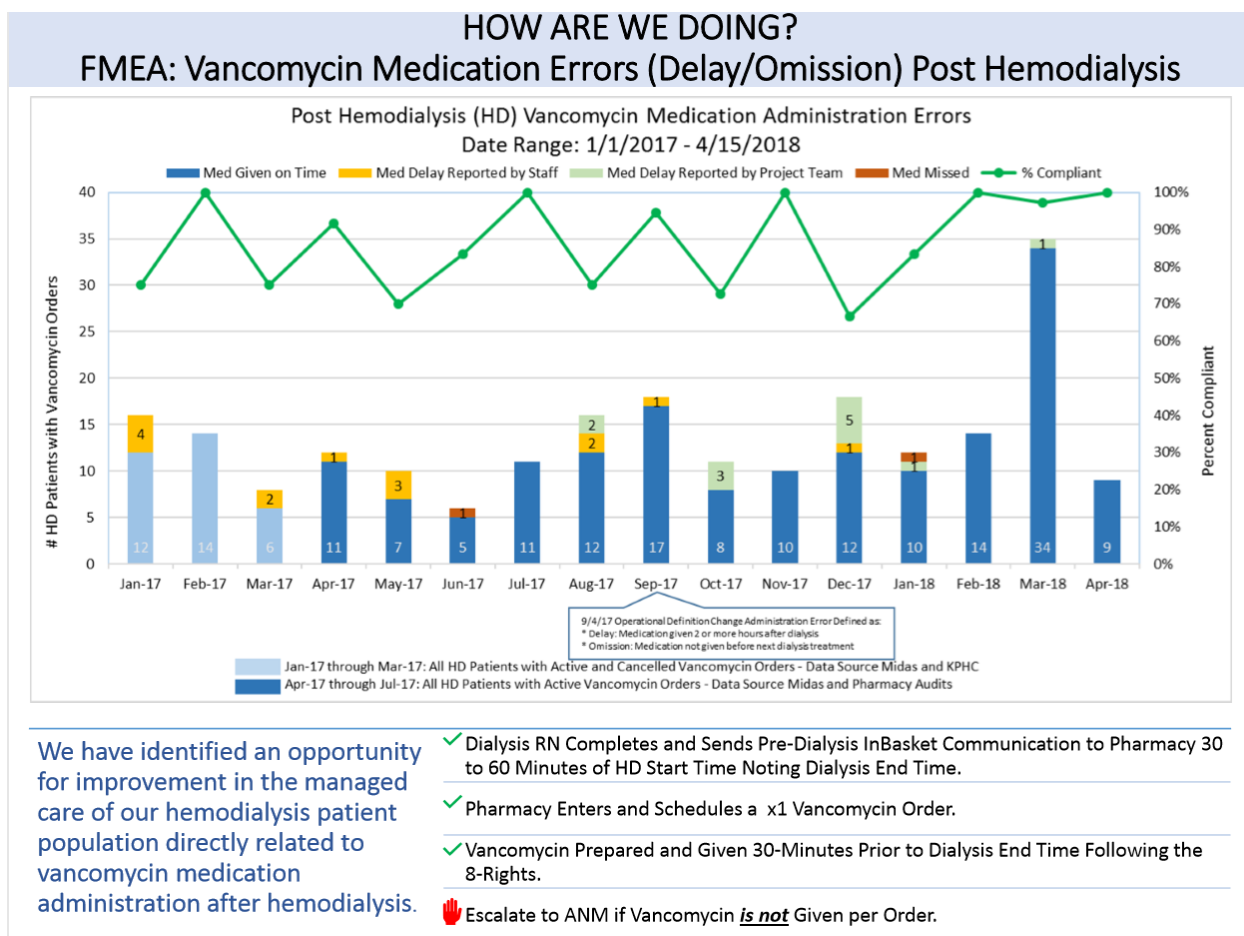
Stakeholders for this project are indirectly impacted in many ways. In some instances, the impact is financial, in others it is time and resources. An omission or delay of Vancomycin post hemodialysis effects a chain of processes shared between the pharmacy management team, nurse manager of the medical/surgical/telemetry unit, RN's including the hemodialysis RN and agency. The hospital healthcare care team is invested in not only improving patient outcomes but increasing communication.

Data Metrics and Benchmarks

Through improved communication the organization was able to reduce missed doses of the antibiotic and streamlined the work flow creating positive outcomes for all parties and improved patient safety and compliance with treatment.

In February 2018 the new handout was rolled out to the organization. Data obtained thru the organizations electronic medical record (EMR) and Midas responsible error reporting software showed an immediate shift in compliance nearly achieving 100% compliance in the following three months.





Caritas 5&7

In order to improve communication between hospital staff members I reflect on Caritas process #5 which states “Being present to, and supportive of the expression of positive and negative feelings as a connection with deeper spirit of self and the one-being-cared for” (Watson, 2008). Communication is a two-way street. It can flourish or be destroyed by the connotation of the message. By allowing for respectful, honest, and open-minded conversation an environment of learning which promotes effective communication can be enjoyed by all parties.

During the many committee meetings, the group was invited to discuss their own experiences surrounding the topic from their own perspective. Following Caritas process #7 which states “engaging in genuine teaching and learning experiences that attend to unity of being and meaning, attempting to stay within another’s frame of reference” (Watson, 2008) allowed the group to gain another perspective on the subject. The genuine honest opinions of members in the group ultimately proved beneficial in the framework of creating a solution to this communication breakdown.

Caritas 6 & 8

Caritas process 6 is defined by Watson (2008) as “creatively using self and all ways of knowing as part of the caring processes; engaging in artistry of caring-healing practices” (Watson, 2008). This was acknowledged as we quickly realized this multidisciplinary group each had individual contributions that would collaboratively be necessary for the entire project to flourish. We encouraged each other to ask questions and explore options thru each other’s viewpoints. We would need to comprehend that we each uniquely brought something to the project. We applied creative scientific problem-solving methods and took into consideration different perspectives as we focused on respectful and caring decision-making interventions. During our many meetings we utilized data analysis and creative thinking in order to construct new initiatives and interventions to further the healing process of our patients. The quality improvement team “Integrates aesthetics, ethical, empirical, personal, and metaphysical ways of knowing with creative, imaginative, and critical thinking for full expression of caring arts and sciences.” (Watson, 2008) This specific process was thoroughly integrated into the project by

exploiting creative and artistic problem solving in order to meet the goal of protecting our vulnerable patients through process modification.

Caritas process 8 is defined by Watson (2008) as creating a “healing environment at all levels, whereby wholeness, beauty, comfort, dignity, and peace are potentiated”. This was a paramount goal for the project and team. We understood that the change was not just necessary at one point of care but engrossed in multiple disciplines such as pharmacy, nursing, and medicine. The project was started because we realized that our patients were potentially at risk for infection jeopardizing the healing environment created by our unit during their hospitalization. By investigating our internal processes that potentially placed our patients at risk we identified several opportunities for improvement. Many people view the hospital as the ultimate environment for healing. What we found is that this was not always the case as we unintentionally sporadically created an atmosphere which could harm our patients. This caritas process goal is to “create healing environment for the physical and spiritual self which respects human dignity” (Watson, 2008). Our project was not concerned as much with the spiritual environment as we primarily focused on creating a healing physical environment for our patients. The application of both caritas process gave meaning to the foundation of why we were doing the quality improvement project.

Teamwork

The nurse scholar group I participated in excels at teamwork. Teamwork is effective when all members of the group feel that their conversation and opinions are respected and valued. Working on many other group activities prior to this assignment allowed us the

advantage of utilizing previous experience working together as a group. We were able verbalize in an emotionally safe and constructive atmosphere what quality related issue we were interested in. After identifying which topics we were passionate about, we worked together as a group to help each other fine tune their individual research components. Overall, it was an effective streamlined experience.

Discovery Interview

Interview Information

Date	Time	Location or phone/web	Initials of interviewee	Title
2/20/2019	1540	Kaiser South Tower Pharmacy conference room	VT	Inpatient pharmacist
2/21/2019	1540	Kaiser staff lounge	BD	Staff RN II
2/22/2019	1600	Kaiser South Tower Managers office	KH	Inpatient Nurse Manager

Interview Questions

- 1) What do you feel was the root cause for not administering the vancomycin after dialysis?
- 2) Where were the failure points during the old process?
- 3) Do you feel like the process has been improved on?
- 4) Have you noticed anything that can be improved on with the new current process?

5) What have you noticed about efficiency related to the new process?

6) Was this a single point failure meaning (RN error) vs multipoint system failure (RN, dialysis RN, Pharmacist)?

Themes

Communication

Situational awareness

Traveler staff not aware of regular staff workflow

Location of order within MAR

Familiarity with process

No double check for accuracy

No dedicated interprofessional handoff workflow between team members

Discovery Interview Summary and Findings

The interview process went extremely well, the most difficult portion of the interview process was coordinating a time and securing a location to meet. The staff that I interviewed were more than happy to discuss their thoughts on the project. The main identified fallout discovered during the interview process was the lack of effective interprofessional communication. This was similar to the findings in the original quality improvement paper. The interview touched on each of the four competencies described in the 2016 IPEC handout regarding interprofessional collaboration. Admittingly, each interviewee suggested that the problem was not only an individual contribution issue, but also a shared issue that expanded across the entire interprofessional team dynamic.

When I discussed the interview questions with the staff nurse, she felt like the issues we were having with missed doses of Vancomycin have now been streamlined and, in her opinion, resolved. The same question yielded different answers with the manager as well as the inpatient pharmacist. It appears we are still having occasional fallouts and missed doses according to the data they have access to. Likely the staff nurse feels opposite possibly for two reasons. One, she has changed her workflow and is more aware of the issue and therefore has not missed any doses, and two she does not have access to the same metrics leadership and the pharmacist receive.

The inpatient pharmacist reflected on the quality improvement project. He stated that it was a simple solution to the problem, “we just needed all the members of the team present to discuss the details of the issue”. Competency 4 according to IPEC (2016) states “Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable.” (p.10). The nurse manager stated she felt that “everyone shares the same goal of working efficiently and effectively to promote the best patient outcome.”

When I worked on the quality improvement project, I wish we could have brought in a patient not just a patient advocate to get the complete teams views on the subject matter. Mitchell, P., M. Wynia, R. Golden, B. McNellis, S. Okun, C.E. Webb, V. Rohrbach, and I. Von Kohorn. (2012) emphasize “The foundation of successful and effective team-based health care is the entire team’s active adoption of a clearly articulated set of shared goals for both the patient’s care and the team’s work in providing that care” (p.6)

Overall, I feel the unit has responded well to the implementation of the checklist and new revised workflow. All stakeholders were ultimately concerned for the patient and welcomed the modifications. The findings in these interviews parallel the findings of the original quality improvement project.

Interprofessionalism Analysis

This Vancomycin administration quality improvement project was not just a singular discipline problem. Some success achieved by the group should be attributed to the early realization that this improvement project would require frequent interdisciplinary collaboration together in one place rather than fragmented individual contributions. The multidisciplinary committee was comprised of several dialysis R.N.'s from a contracted agency, the liaison from the hospital and the dialysis company, several quality team members from the hospital, two pharmacists, an inpatient HBS physician, a patient advocate, occasionally a nephrologist, and me representing a medical surgical telemetry R.N. Having this many different perspectives from a variety of specialties allowed for robust discussion and problem-solving sessions.

The procedures that we were previously using were not working on multiple levels. All disciplines were found to have opportunities for improvement. One of the larger glaring issues was the fact that we did not have appropriate interprofessionalism where it was required. With so many "moving parts" it was vital to the success of the project to come together as a whole rather than fractions. The current compartmentalized work flow simply would not work any longer. The new interprofessional approach was necessary. This approach would have a large impact on the success of the project, as we identified multiple areas for improving process across the continuum of order generation from the physician to pharmacy and nephrology review, communication between nursing both primary and hemodialysis nurses and ultimately with the

patient. “We just needed all the members of the team present to discuss the details of the issue” (LaMar, 2019). Reflecting, it was amazing that we only had a few occurrences of missed doses of Vancomycin, due to the convoluted process that was in place before the formation of the quality improvement project task force. During the many months of the project we started to see success with improvements to communication and trust between departments. Data was continually collected and analyzed, and our process was refined and revised.

From my interviews I encountered the same motivations from different disciplines. Mitchell, P., (2012) emphasized “The foundation of successful and effective team-based health care is the entire team’s active adoption of a clearly articulated set of shared goals for both the patient’s care and the team’s work in providing that care” (p.6) Moreover, all members of the team wanted the same outcomes and shared the same feeling of responsibilities we had just never created the right atmosphere for change. Looking forward I hope to be part of other committees that can benefit from interprofessional collaboration.

References

- IPE Core Competencies for Interprofessional Collaborative Practice- 2016 Update.pdf
- Joint Commission. Sentinel events statistics—June 30, 2006. Retrieved from: [http://www.jointcommission.org/SentinelEvent/ Statistics/](http://www.jointcommission.org/SentinelEvent/Statistics/). Accessed: October 21, 2018.
- LaMar, Nicholas. (2019, February 20-22). Personal interview with multidisciplinary team.
- Launay-Vacher, V., Izzedine, H., Mercadal, L., & Deray, G. (2002). Clinical review: Use of vancomycin in haemodialysis patients. *Critical Care*, 6(4), 313–316.
- Mayo Clinic: Hemodialysis, (2018) Mayo Foundation for medical education and research (MFMER) retrieved from <https://www.mayoclinic.org/tests-procedures/hemodialysis/about/pac-20384824> Accessed: November 10, 2018

- Mitchell, P., M. Wynia, R. Golden, B. McNellis, S. Okun, C.E. Webb, V. Rohrbach, and I. Von Kohorn. 2012. Core principles & values of effective team-based health care. Discussion Paper, Institute of Medicine, Washington, DC. www.iom.edu/tbc.
- Taran, S. (2011). An Examination of the Factors Contributing to Poor Communication Outside the Physician-Patient Sphere. *McGill Journal of Medicine : MJM*, 13(1), 86.
- Taylor, M. E., & Allon, M. (2010). Practical Vancomycin Dosing in Hemodialysis Patients in the Era of Emerging Vancomycin Resistance: A Single-Center Experience. *American Journal of Kidney Diseases : The Official Journal of the National Kidney Foundation*, 55(6), 1163–1165. <http://doi.org/10.1053/j.ajkd.2010.03.016>
- Watson, J. (2008). *Nursing: The Philosophy and Science of Caring* (rev. ed.), Boulder: University Press of Colorado. Retrieved from <https://www.watsoncaringscience.org>
Accessed: November 10, 2018