ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Point of Care Quality Improvement: Experience of Vitamin-K Administration at a Tertiary Care Centre.

Kiran Bhojraj Bhaisare[1], Sunil Holikar[2]*, and Kanchankumar Bhagyawant[3].

[1]Associate Professor, VDGMC, Latur, Maharashtra, India.
[2]Associate Professor, VDGMC, Latur, Maharashtra, India.
[3]Associate Professor, Zydus medical college & hospital, Dahod, Gujarat, India.

ABSTRACT

Healthcare teams can improve systems and patient outcomes by implementing small changes using a structured framework for quality improvement (QI). We did a study to determine the efficacy of point-of-care QI in administering vitamin K to all newborns immediately after birth. World Health Organization recommends the administration of Vitamin K to newborns, but some misconceptions have led to non-compliance with this protocol in our institute, especially in cases of low birth weight and abscess formation. 1800 newborns delivered in the labour room and operation theatre over a period of 12 weeks, at Government Medical College, Latur were enrolled in the study. We used a stepwise Plan-Do-Study-Act (PDSA) approach to administering Vitamin-K immediately after birth. After baseline meetings with staff and doctors, a quality improvement team was formed. We conducted three PDSA cycles (PDSA I, PDSA II, and PDSA III) of 10 days each, followed by a post-intervention phase over three months. During 12 weeks, PDSA I, II, and III results were 60%, 80%, and 100%, respectively. We conclude that Simple Point-of-Care Quality Improvement (POCQI) measures ensured that Vitamin K was administered promptly to all newborns.

Keywords: Vitamin K, newborn, PDSA, POCQI

https://doi.org/10.33887/rjpbcs/2024.15.3.18

Corresponding author

ISSN: 0975-8585

INTRODUCTION

Quality improvement (QI) is an approach health workers use to reorganize patient care to ensure patients receive good quality healthcare. QI focuses on reorganizing care within existing resources to solve problems in the local context of health facilities. It is a systematic and continuous process integral to everyone's work, regardless of their role or position within the organization [1, 2].

Newborn infants are at risk of vitamin K deficiency, which can lead to vitamin K deficiency bleeding (VKDB). This condition may present from birth to 6 months of life with cutaneous, gastrointestinal or central nervous system haemorrhage. VKDB can be prevented by vitamin K prophylaxis given either via the intramuscular or oral routes [3, 4].

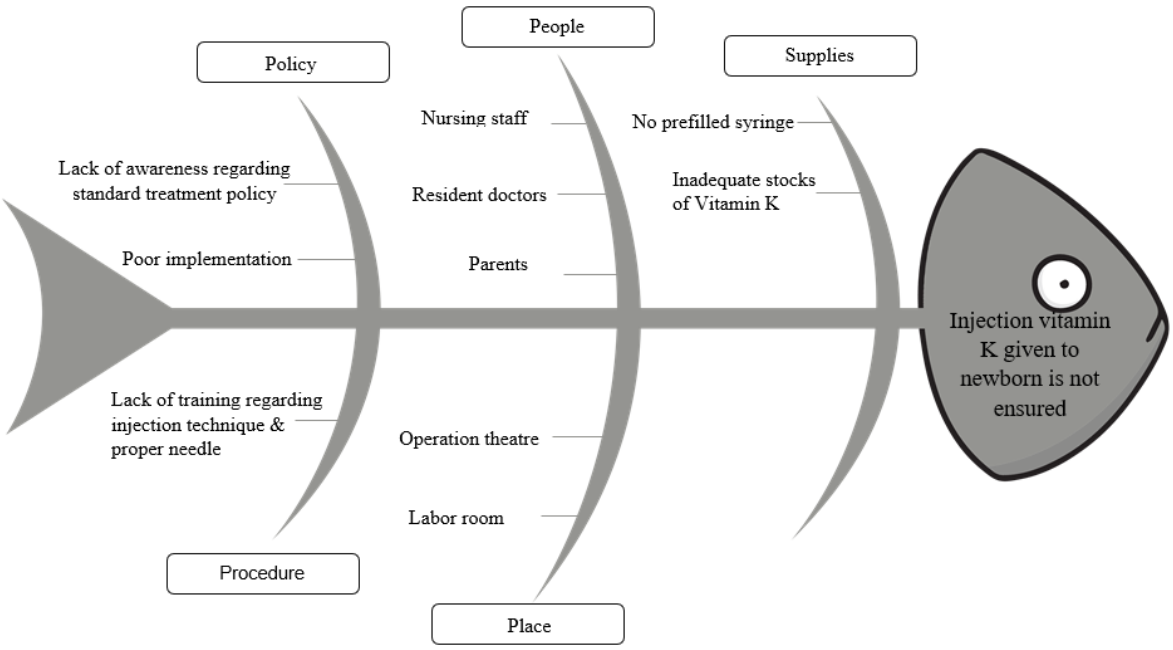
Despite the standard treatment protocol and government regulations regarding the birth dose of vitamin K at our institute, some newborns missed their birth dose of vitamin K for various reasons. However, there were some myths surrounding intramuscular injections to low-birth-weight babies due to their low muscle mass, injection technique, and the type of needle used. Additionally, in an overcrowded labour room, some staff members forgot to give injections, unavailability of vitamin K. Hence, a quality care study has been initiated to ensure that such mistakes do not happen in the future.

MATERIAL AND METHODS

A study was conducted at Government Medical College, Latur in the labour room and operation theatre. The study was carried out from June 2020 to August 2020 using a plan-do-study-act cycle. The study population consisted of all normal newborns delivered by vaginal delivery and caesarean section during the study period. Newborns requiring NICU admission were excluded from the study.

The institute has an average of 20 to 25 deliveries per day. The administration of vitamin K injection to newborns had been stopped due to abscess formation on one of the newborns, and despite repeated orders, only a few newborns received the birth dose. To address this issue, a quality improvement study was conducted, and a team was formed with a staff nurse as the team leader.

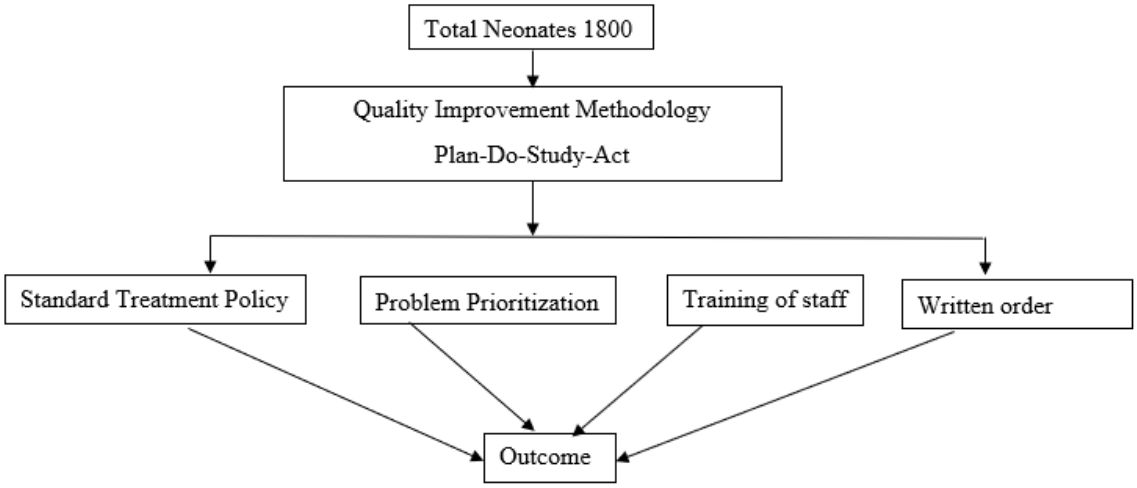
Figure 1: Fishbone analysis of vitamin K administration to newborns



The problem was analysed using a neonatal care fishbone diagram and five factors were identified: policy, people, procedure, place and supplies.

ISSN: 0975-8585

Figure 2: Study flow chart



To address these issues, problem prioritization was done, and the team began implementing the Plan-Do-Study-Act (PDSA) cycle. In PDSA I, staff members were made aware of the importance of the birth dose, the consequences of not administering it, and the dose for both very low birth weight (VLBW) and normal weight neonates. Staff members were also trained on injection techniques and the use of tuberculin syringes in the case of VLBW babies. In PDSA II, a written order stamp was tied to the weighing machine to ensure that no staff member would forget the order. In PDSA III, prefilled syringes were kept near the weighing machine, and their stock availability was checked weekly to ensure that the injections were always available. Results were documented after every PDSA cycle and concentrated on further problems.

RESULTS

In the study, there were a total of 1800 newborns enrolled. Over the course of 12 weeks, the results of PDSA I, II, and III were 60%, 80%, and 100% respectively. Following the last cycle, all newborns received a birth dose of vitamin K and the consistency has been maintained till date.

DISCUSSION

There have been various definitions of quality in healthcare, but the most widely accepted one is from the Institute of Medicine (IOM). According to IOM, quality refers to the extent to which health services for individuals and populations improve the probability of desired health outcomes and comply with current professional knowledge [3, 5].

After identifying problems using this tool, we provided support to healthcare professionals using QI methods to solve these issues. This study has presented a new methodology for identifying bottlenecks in health systems at the facility level and resolving them using the QI approach [6].

Health facility teams can utilize quality measures to identify gaps in the quality of care and improve the provision and experience of care in line with the standard and the relevant quality statement. Health facility leaders, planners, managers, and providers can use them to evaluate and monitor resource availability, process performance, areas that need improvement, and the impact of interventions, thereby promoting quality improvement [7].

Despite the complexity of the NICU environment, basic QI methodology can bring significant improvements in outcome. The first step is to identify a clinically significant and modifiable outcome to improve. Next, form a small team with knowledge of the problem and the authority to effect system-based changes specific to this problem. Establish a clear and achievable goal for the team, determine fundamental outcome, process, and balancing measures, and collect the minimum number of measures required to determine the effect of the intervention. Display and analyse data with annotated run charts, use established evidence and change concepts to make system changes and enhance outcomes, test

changes to evaluate their effectiveness, modify them as necessary until the goals are achieved, and ensure success is maintained by continuously reviewing outcomes and system status [8, 9].

CONCLUSION

It is crucial for initial projects to be simple, achievable, focused on the needs of patients, and under the control of team members. Disease processes or problems with multiple causes take time or may not result in improvement at all. Undertaking such projects at the outset would demotivate staff who may feel overburdened and unable to cope. Our team found it comfortable to use the Plan-Do-Study-Act (PDSA) cycle for rapid cycle improvement, as recommended by the Institute for Healthcare Improvement. Changes were implemented through small and frequent PDSAs. Building sustainability in each project is crucial, so that improvements are maintained in the long run and the changes become a new norm in the unit. This involves making changes in the system itself, using visual reminders, posters, scorecards, and identifying champions who would lead the change movement [10, 11]. Simple and Goal oriented QI leads to unsolved problem to become solved, also changes the attitude of people as well as leads to sustainable results.

REFERENCES

[1] ACW LEE, CH LI, KT SO. Vitamin K Deficiency Bleeding Revisited: HK J Paediatr (new series) 2002;7:157-161.
[2] Operational Guidelines. Injection Vitamin K Prophylaxis at Birth (in facilities: Child Health Division Ministry of Health and Family Welfare Government of India.
[3] Sindhu Sivanandan, Amanpreet Sethi, Meena Joshi et al. Gains from Quality Improvement Initiatives – Experience from a Tertiary-care Institute in India. Indian Pediatrics 2018;55.
[4] Moon Sung Park, Quality improvement in pediatric care. Korean J Pediatr 2018;61(1):1-5.
[5] Zaka N, Alexander EC, Manikam L, Norman ICF, Akhbari M, Moxon S, et al. Quality improvement initiatives for hospitalised small and sick newborns in low- and middle-income countries: a systematic review. Implement Sci 2018;13:20.
[6] Vikram Datta, Sushil Srivastavab, Rahul Garde et al: Combining bottleneck analysis and quality improvement as a novel methodology to improve the quality of neonatal care in a northeastern state of India: a feasibility study. Int Health 2019; 11: 52–63.
[7] Standards For Improving Quality Of Maternal And Newborn Care In Health Facilities: World Health Organization 2016.
[8] Dan L Ellsbury, Robert Ursprung. A Primer on Quality Improvement Methodology in Neonatology: Clin Perinatol 2010;37:87–99.
[9] Plsek PE. Quality improvement methods in clinical medicine. Pediatrics 1999; 103(1 Suppl E):203–14.
[10] Harolds J. Quality and safety in health care, part I: Five pioneers in quality. Clin Nucl Med 2015; 40:660-2.
[11] Barker PM, Reid A, Schall MW. A framework for scaling up health interventions: Lessons from large-scale improvement initiatives in Africa. Implement Sci 2016;11:12.