

Quality Improvement Initiative to Track the Mothers of Preterm Neonates Admitted in Neonatal Unit, Tertiary Care Hospital, North India

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Received: December 09, 2019; **Published:** February 28, 2020

DOI: 10.31080/ecpe.2020.09.quality-improvement-initiative-to-track-the-mothers-of-preterm-neonates-admitted-in-neonatal-unit-tertiary-care-hospital-north-india

Abstract

Objectives: The objective of the current quality improvement (QI) effort was to improve the location of mothers by nursing staff working in neonatal unit from 62% - 95% over period of 6 weeks.

Methods: This QI initiative used a Plan-do-study-act (PDSA) approach to locate the mothers of preterm neonates admitted in level III neonatal unit, Chandigarh. Current project was completed in two phases. A multidisciplinary QI team was formed and improvements in location of mothers were introduced through PDSA cycles.

Primary Outcome: Was location of mothers known to nursing staff/total number of neonates admitted.

Process Measure: Was number of family contact chart filled per day/total number of neonates admitted.

Results: On average approximately 32 (25 - 34) neonates were admitted in neonatal unit per day. Initially family contact charts filled per day were minimum, gradually the number increased with days and finally the family contact charts were filled for all the admitted neonates.

Conclusion: We were able to locate mothers by introducing family contact charts through PDSA cycle.

Keywords: Quality Improvement; Location of Mothers; Family Contact Chart

Introduction

Babies who are born alive before 37 weeks of pregnancy are called Preterm neonates [1]. Preterm babies further subdivided in to mild preterm, very preterm and extremely preterm. The babies who are born between 32 - 36 weeks are called mild preterm, 28 - 31 weeks are designated as very preterm and before 28 weeks are referred as extremely preterm [2]. All preterm babies are also referred as low birth weight babies. According to weight, preterm babies are further divided in to three categories that are low birth weight (< 2,500g), very low birth weight (< 1500g) and extremely low birth weight (< 1000g).

The Preterm babies who are born before 32 weeks of gestation are at increased risk of aspiration because of difficulty in coordinating suck and swallow reflex. Respiratory distress, necrotizing enterocolitis, shock, hypoglycemia, hypothermia and infection are causes for morbidity and mortality in preterm neonates [3]. In addition to that preterm babies require mechanical ventilation that interfere with normal feeding pattern and this further complicates their situation. This is reason the preterm babies require intensive supervision and careful administration of nutrition related interventions. In our hospital, the neonates who are admitted in neonatal intensive care unit and neonatal nursery, are not admitted with their mothers. During first 4 - 5 days mothers remain admitted in different wards. When nursing staff working in neonatal unit wants to communicate with mothers of preterm neonates they face difficulty in tracking the mothers. This makes it difficult to ensure availability of expressed breast milk (EBM) for baby and decrease the rate of EBM feeding.

This prompted us to initiate a quality improvement effort with objective to improve the location of mothers by nursing staff working in neonatal unit.

Methods

Study was conducted in neonatal units, of PGIMER, Chandigarh. Neonatal unit refers to areas where neonates were admitted like NICU, and neonatal nursery and CLR extension nursery. On average approximately 32 neonates were admitted in neonatal unit per day. Duration of study was six weeks.

The study subjects were preterm neonates admitted in neonatal unit, their parents and HCPs. Neonates admitted outside nursery with mothers and neonates admitted in CLR nursery were excluded from study.

The study was approved by Institute’s Ethical Committee. The study did not interfere with routine investigations or treatment of any patient. Rather, policy was made so as mothers of preterm neonates can be easily tracked and involved in care of their neonates include regular and safe supply of expressed milk. The study was conducted in two phases: phase one (baseline phase) and phase two (PDSA cycle). The steps of baseline phase were to assess data about location of mothers known by nursing staff and feeding detail of preterm neonates, root cause analysis, draw process currently in place for location of baby and mother and driver about location of mother, and formation of QI team which comprises of administrator, investigator, two nursing educators, assistant nursing superintendents of neonatal unit and nursing staff working in neonatal unit. Phase B consist of conducting PDSA (Figure 1) cycle to improve location of mothers by implementing contact chart sheet. Descriptive statistics were used to describe baseline variables. Run-charts were used to display and interpret the serial measurements and to study the impact of changes.

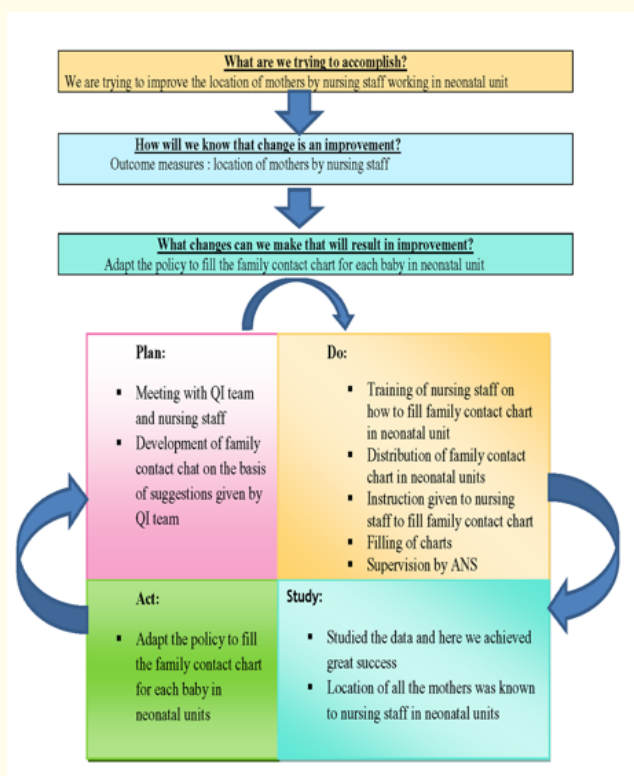


Figure 1: PDSA cycle.

Results

A fish bone diagram highlighting the possible root cause affecting the location of mother their involvement of mother in care as well in regular supply of expressed breast milk for neonate is presented in figure 2. Base line data related to location of mothers, type of milk fed to preterm neonates in first 10 days of life was collected. Location of 62% mothers was known to nursing staff (Figure 3).

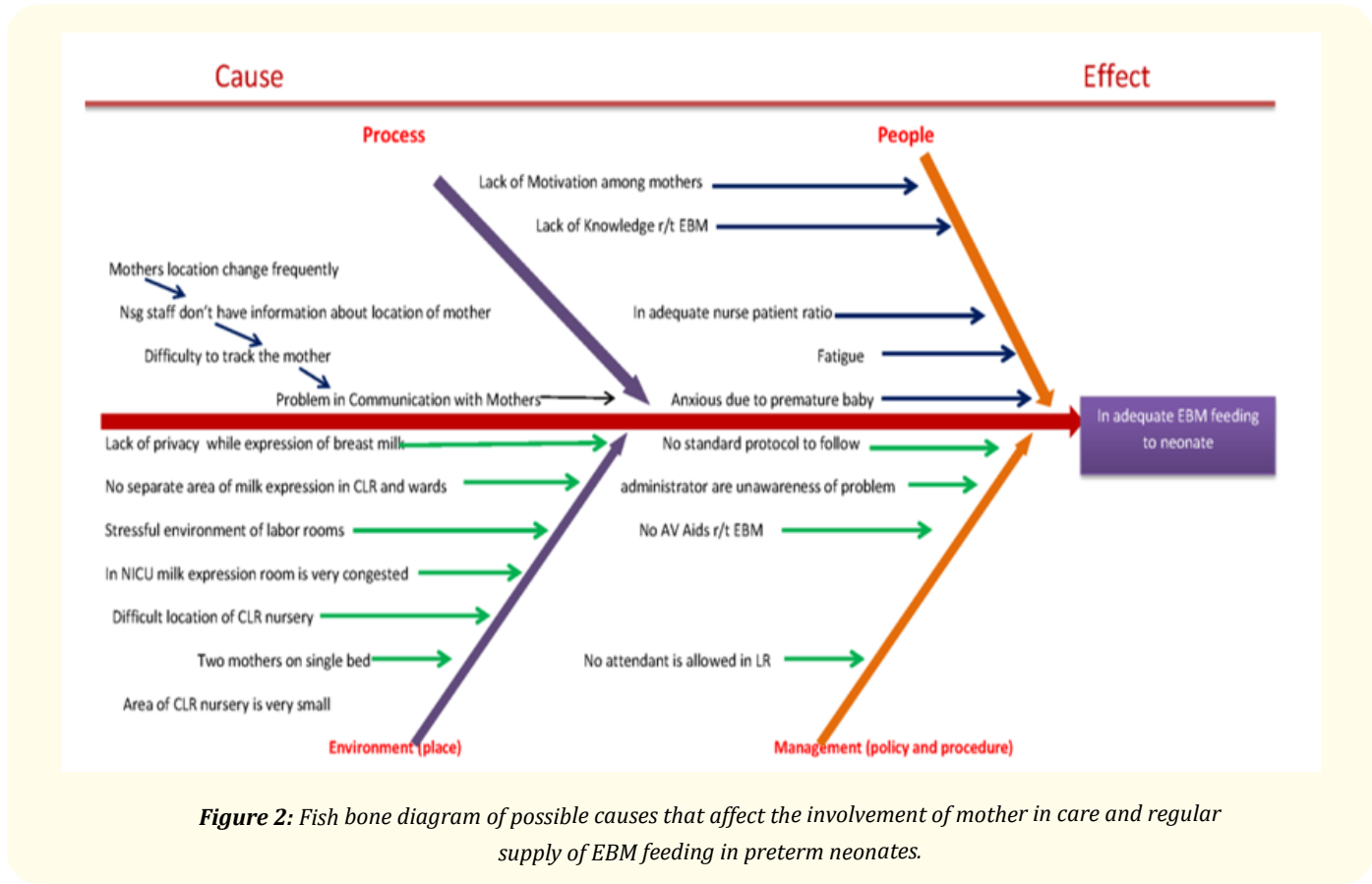


Figure 2: Fish bone diagram of possible causes that affect the involvement of mother in care and regular supply of EBM feeding in preterm neonates.

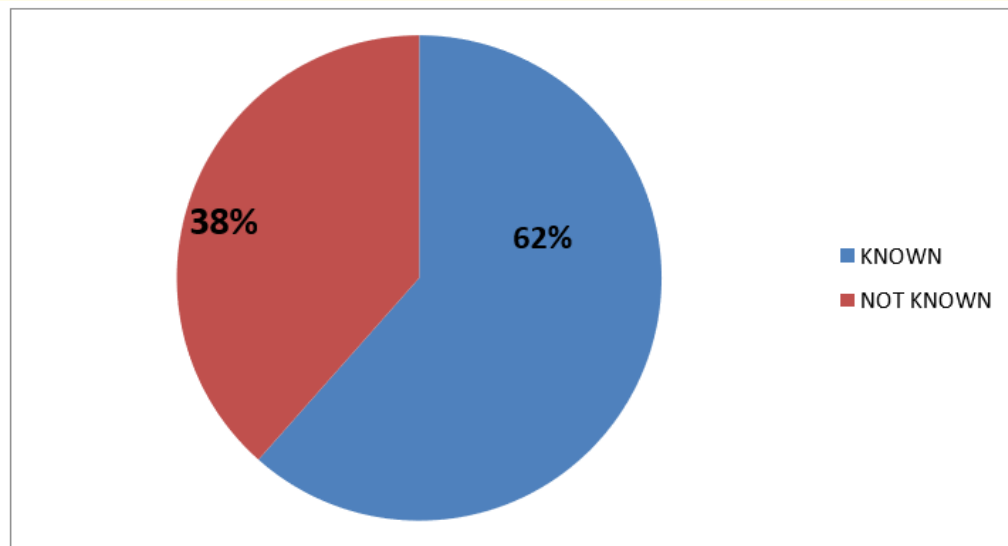


Figure 3: Location of mothers by nursing staff.

After birth, in subsequent 10 days the number of babies fed with EBM was less as compare to formula and mixed feed (Figure 4). On day one of life only (13.3%) babies received expressed breast milk exclusively, it increased to 1/3rd (33.3%) on 6 - 8 day of life. On day one more than quarter (26.7%) babies received only formula feed and this percentage kept fluctuating from day 2 to 10. Mixed feed was given to majority of babies as compared to EBM and formula feed. Overall, maximum number of babies were fed with mixed feed.

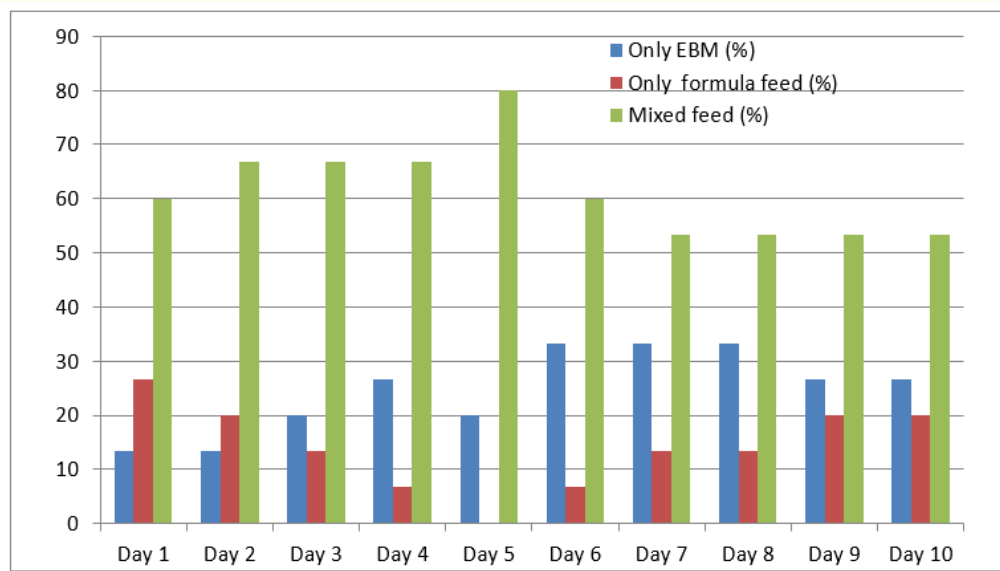


Figure 4: Babies fed with EBM, formula, mixed feed.

Focus group discussions with nursing staff revealed that it is very difficult to locate mothers when they are admitted in different wards (Figure 5) and this result in communication problem and insufficient expressed breast milk. When current process map was discussed with the team, number of alternatives were suggested by members. Most feasible effective solution was chosen that was family contact chart. Family contact chart (web table 1) was developed and changes were incorporated on the basis of suggestions given by team members. Furthermore, drivers (Figure 6) were drawn to improve location of mothers.

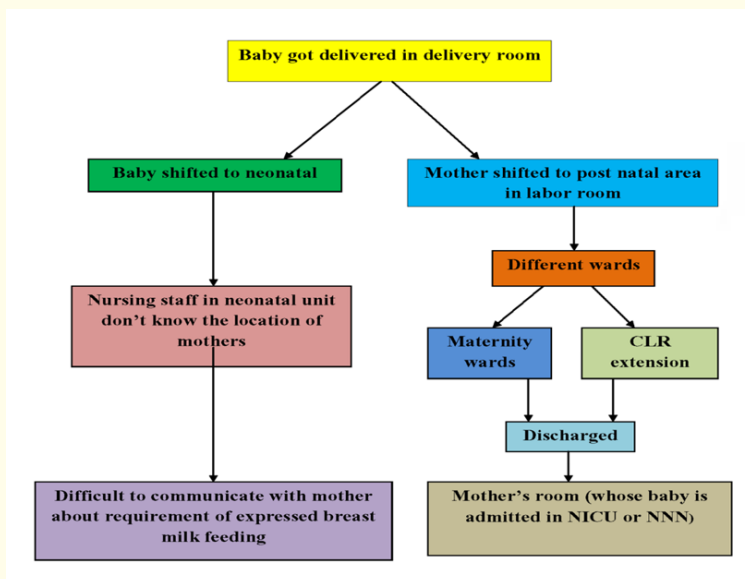


Figure 5: Flow diagram showing current process for location of baby and mother.

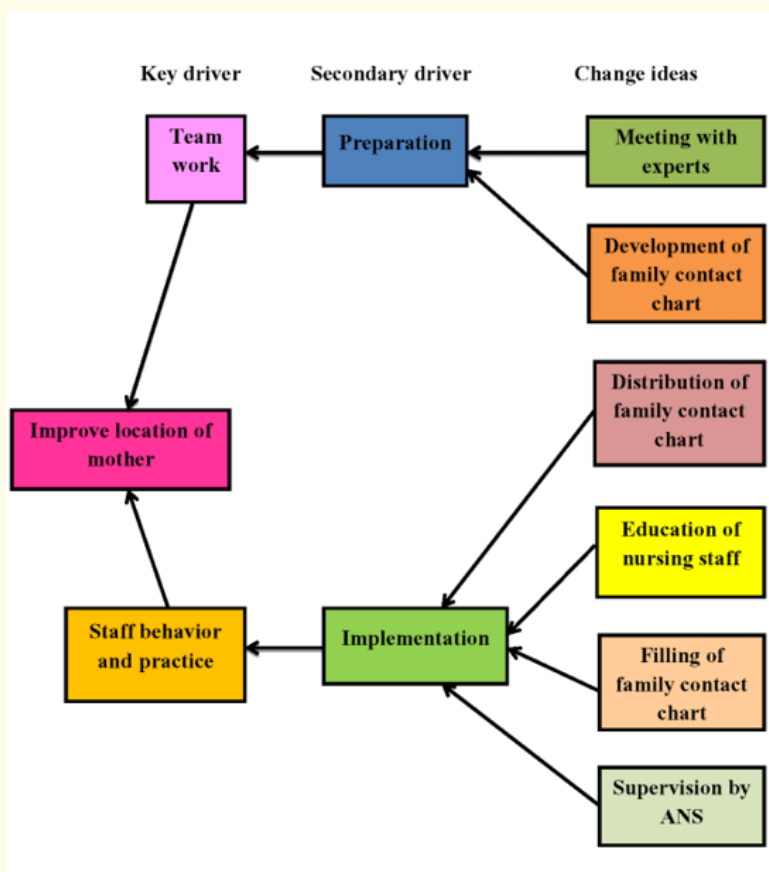


Figure 6: Driver diagram to improve location of mother.

Web Table 1

Parent/family contact chart

Neonatal unit, Department of pediatrics, PGIMER, Chandigarh

Name ----- CR no. ----- D.O.B ----- Mother's contact no ----- Date -----

Time	Location of mother (ward, bed no.)	Visit Mother				Milk		KMC Time		Any issue/ concern raised by mother	Counselling/ health education	Re- marks	Signature
		Yes	No	If no why	Relative (specify)	Ex- pressed	Brought by relative	From	To				
Name of morning shift nurse:													
Name of evening shift nurse:													
Name of night shift nurse:													

Instructions:

*Each visit of mother should be recorded. *Complete all columns. *On each visit, check and update location of mother.

*If mother has not been any visit in a shift, the nurse should find and contact the mother. Record the reason for no visit.

Nursing staff working in neonatal unit were taught how to fill family contact chart. Teaching was given in group of 3 - 4 nursing staff. Family contact charts were distributed in neonatal unit. After 4 weeks of implementation of family contact chart, the data related to location of mothers was collected. Here we achieved great success the concerned staff of each baby had knowledge about the location of all the mothers. On average approximately 32 (25 - 34) neonates were admitted in neonatal unit per day (Figure 7). Initially family contact charts filled per day was very less, gradually it increased and on last 12 days family contact charts were filled for all babies. Even though the mean number of babies admitted was 32 but mean number of family contact chart filled was 18. Minimum 10 and maximum 33 number of family contact charts were filled over the period of 4 weeks (Figure 8). After success of family contact chart we adapt the policy to fill the family contact chart for each baby in neonatal unit.

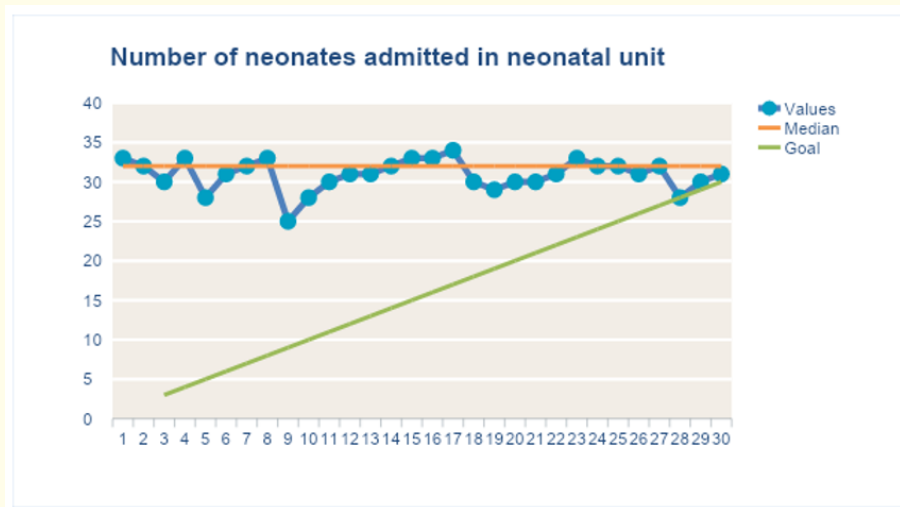


Figure 7: Number of preterm neonates admitted in neonatal neonates.

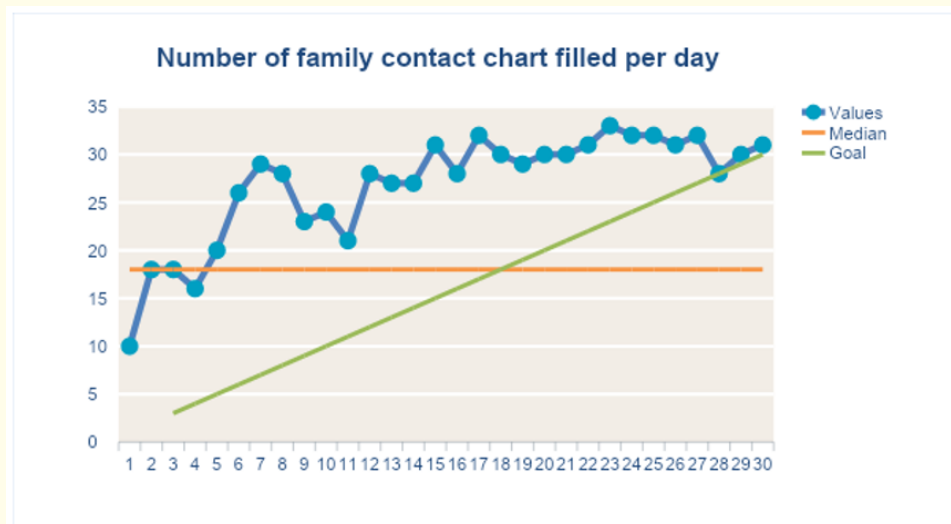


Figure 8: Number of family contact chart filled per day.

Discussion and Conclusion

Expressed breast milk is a main source of feed for preterm neonates as they have poor suck and swallow reflex. Initially, minimum amount of milk is administered and gradually the amount increase, whereas when the expressed milk is insufficient, requirement of these babies are being fulfilled by formula feed. The reason of lack of milk is attributed to inability mother to express milk, whereas insufficient milk is associated with hinderance to prolactin and oxytocin reflex due to stress the mother experience due to separation of her newborn. When baby is shifted to NICU and the mother is admitted in other units the communication gap among mothers and nursing staff is another major factor for inadequate breast milk in preterm neonates.

This lack of communication is associated with difficulty in tracking the mothers. This factor of lack of communication has also been discussed by Black and Hylander [4]. To overcome this barrier the PDSA cycle was conducted to implement the family contact chart. The study followed the model for improvement propagated by Institute for Healthcare Improvement (IHI) [5]. The model is not meant to replace change models that organizations might already be using, but rather to accelerate improvement. PDSA cycle gives stable model with current evidence. Our study was a single centre quality improvement initiative. The idea described here, is only filling of family contact charts and it can be easily tested in various health set-ups to improve tracking of mother and their communication with nursing staff. Though success has been sustained over a period of short time span by using PDSA cycle, it is imperative to observe that it is sustained. In conclusion, this simple PDSA cycle was very helpful to locate mothers of preterm neonates admitted in neonatal units.

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Volume 9 Issue 3 March 2020

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