

Research Article

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Package of local interventions for reducing in-hospital neonatal mortality using quality improvement methodology at a major hospital in India

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ABSTRACT

Background: Reducing neonatal mortality has always been a challenge for the world and India. Here we provide a brief account of a pilot done at Sanjay Gandhi Memorial Hospital, New Delhi for reducing neonatal mortality.

Methods: Rotation of labour room nurses to In-hospital Neonatal ICU for a specified period of 4 months for providing hands-on training on neonatal emergencies. In exchange, equal number of Nurses from NICU was posted in labour room, thus making each delivery managed by an obstetric nurse and a paediatric nurse. Ensuring breastfeeding within one hour within the labour room itself was also mandated by NICU Nurse.

Results: It was observed that there was 30.2% decrease in In-hospital neonatal mortality.

Conclusions: Using these interventions, there has been a dramatic decrease of neonatal mortality to 30.2% and 4.53% due to sepsis. There has also been 1% decrease in Median Referral Percentage to In-hospital Neonatal ICU due to morbidities associated with inborn neonates.

Keywords: Neonatal mortality, Quality Improvement, Labor room intervention

INTRODUCTION

Reducing Neonatal Mortality is a challenge for achieving MDG goal 4¹ and India, still, has high neonatal mortality of 29 with Delhi standing at NMR of 16.² In Delhi facility-based neonatal mortality is possibly due to lack of trained manpower and resources and high burden of patients compromising the service delivery. Sanjay Gandhi Memorial Hospital is a 100-bedded major hospital in Delhi catering to a population of 15-20 lakhs and provides free health care facilities of OPD, casualties, Indoor and Emergency services of all the common specialties along with free drug distribution and investigation of the patients.³ Sanjay Gandhi Memorial Hospital (SGMH) was chosen for Quality Improvement

on account of its better health services, adequate health staff especially pediatricians, ease of access to data and high motivation on the part of Medical Superintendent and Quality Improvement team. As part of the Quality Improvement Methodologies developed by IHI⁴, an Internal Quality Improvement team was formed consisting of one Obstetric Specialist, one pediatrician, one labor room Nursing in charge and one medical officer, chaired by Medical Superintendant.⁴ An aim was chosen to improve health services of Neonates in the labor room and to decrease Neonatal Mortality in the hospital and interventions were identified in their meetings. The Quality Improvement (QI) team delivered a package of local interventions for decreasing neonatal mortality and held regular bi-weekly meetings and collected monthly data relevant to the interventions.

Sanjay Gandhi Memorial Hospital has average monthly delivery load of around 700 and labor room is well-quipped to manage all the deliveries. The hospital has the policy to managing each delivery by two Labor room staff nurses belonging to Obstetrics Department. In order to manage Neonatal emergencies, the hospital has Neonatal ICU for in-born Neonates and a SNCU (Sick Newborn Care Unit) for out-born Neonates. The Neonates are delivered in Labor room and then shifted to Post-Natal Ward. All the Neonates with complications from Labor room and Post-Natal Ward are referred to NICU for Pediatric Consultation. Here we provide a brief account of a pilot done by Quality Improvement Team to reduce neonatal mortality and manage emergencies in the labor room itself utilizing the existing resources.

METHODS

The quality improvement team delivered the following package of local interventions on 1st December 2013.

1. Rotation of Labor Room nurses to In-born Neonatal Intensive Care Unit (NICU) for a specified period of 4 months for providing hands-on training on neonatal emergencies. In exchange, equal number of Nurses from NICU was posted in labour room, thus making each

delivery managed by an obstetric nurse and a paediatric nurse.

2. Policy of managing each delivery by an obstetric nurse and a pediatric nurse was made and role of Pediatric nurse was confined to providing services to newborn only.
3. The Pediatric nurse was given special instruction on ensuring initiation of breastfeeding within one hour within the labor room itself.
4. The staff nurses rotated to Inborn NICU was shifted back to labor room after 4 months and data was collected and assessed to study the sustenance of the pilot.

The monthly data, collected from facility records, from July to November 2013 was taken as the baseline data and from December 2013 till June 2014 as post-intervention data. The data was compiled and analyzed to assess the impact of local interventions.

RESULTS

The results were obtained after collecting and analyzing the data and run charts were prepared. Median was chosen for the as part of the analysis for Quality Improvement.⁵

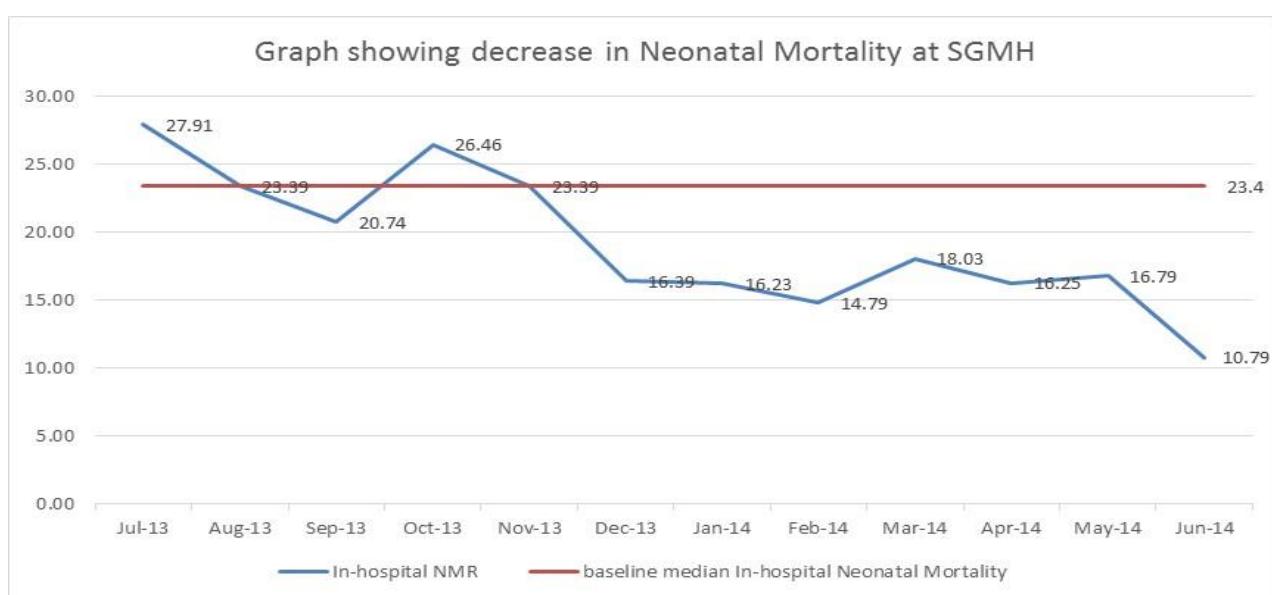


Figure 1: Graph showing the decrease in neonatal mortality in in-born NICU.

Baseline period is from June to November 2013 and Post-interventional Period is from December 2013 to June 2014.

The median for neonatal mortality for baseline and post-intervention was calculated and compared. The median for baseline was calculated as 23.4 and for post-intervention was as 16.32 and percentage decrease in neonatal mortality was calculated. It was observed that

there was 30.2 % decrease in Neonatal Mortality from the hospital.

The Labor Room Nurses were rotated back from NICU to Labor Room in March 2014 and still the Neonatal Mortality maintained at a lower level thus signifying the sustainability of the pilot.

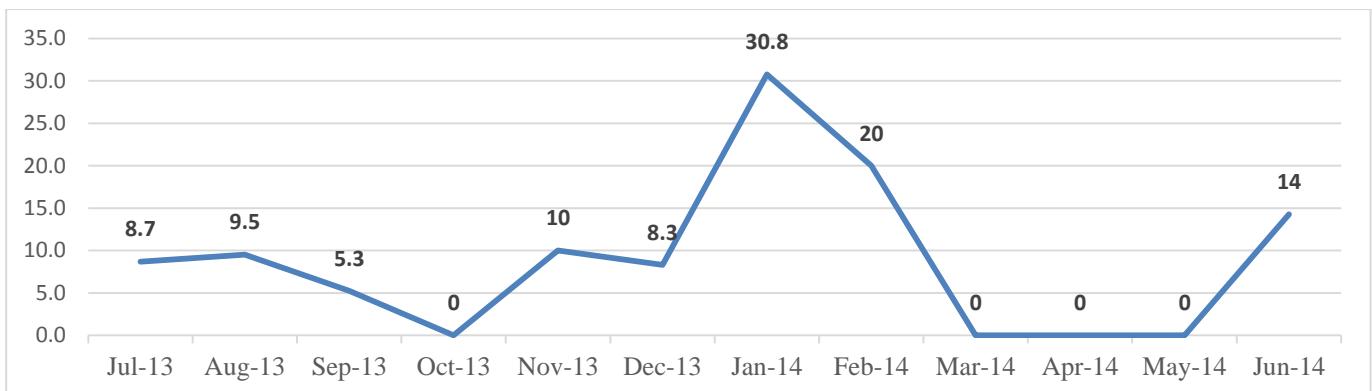


Figure 2: Graph showing the decrease in neonatal mortality in in-born nursery due to sepsis.

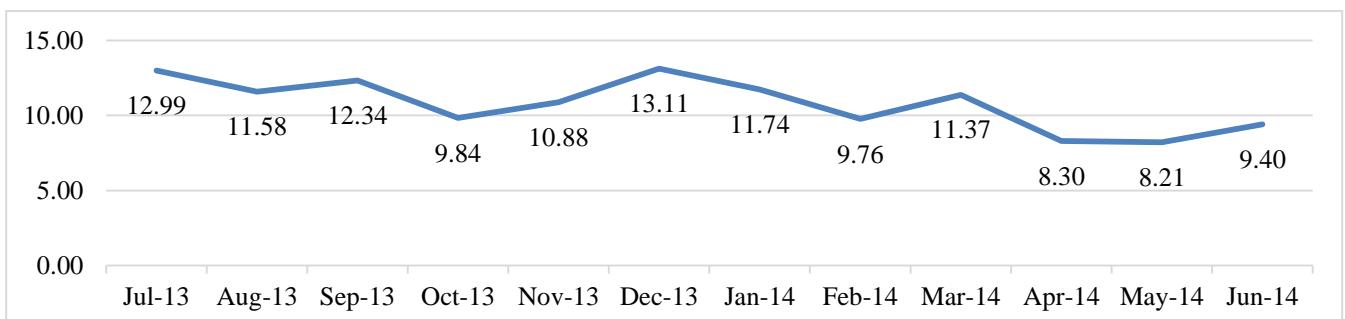


Figure 3: Graph showing the percentage of referrals from labor room to inborn nursery.

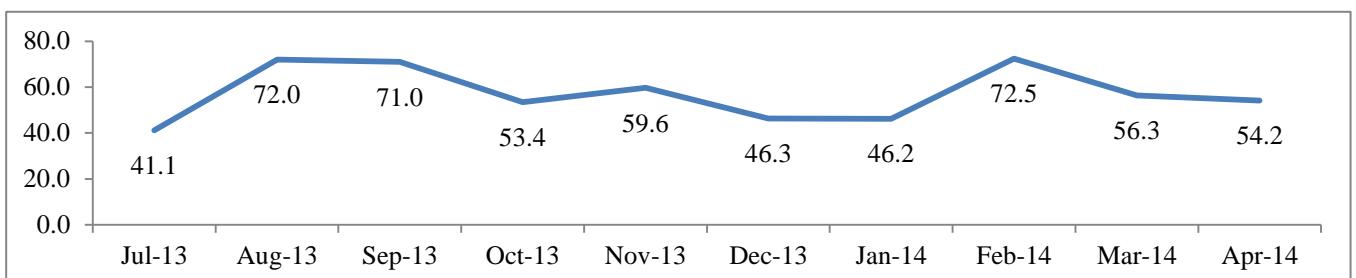


Figure 4: able showing the percentage of newborns breastfed within one hour of birth.

Table 1: The median (both baseline and Post-intervention) rates and corresponding reduction.

	Baseline Median	Post-Interventions Median	% Reduction
In-hospital Neonatal Mortality Rate	23.4	16.3	30.2
Percentage of Neonatal Mortality due to sepsis	8.7	4.17	4.53
Percentage referral from Labor room to Inborn Nursery	11.58	10.57	1.01

It is also observed that neonatal deaths due to sepsis dropped down in post-intervention period with "No death due to sepsis" in the middle 3 months. The rise in the deaths due to sepsis was possibly due to the beginning of rainy season in June accounting for infections, especially respiratory, due to seasonal variations (Figure 2). Figure

3 shows that there has been a constant decrease in the referrals from the labor room to the Inborn Nursery.

DISCUSSION

From the pilot above, it has been observed that using the existing resources, a package of local interventions

delivered in the labor room has substantial effect on decreasing overall neonatal mortality of the hospital. The interventions included training the staff nurses on various aspects of neonatal emergencies including resuscitation. However, the formal training could not be as useful as the staff tends to forget the skills with the time. Thus, this pilot was successful because the staff nurses were posted in the Neonatal ICU where they had the ample chance to learn the skills and practice them under a highly specialized center. Using these interventions, there has been a dramatic decrease of neonatal mortality to 30.2% and also shows effect on neonatal mortality due to sepsis by 4.53%. In addition, there has also been slight decrease in Median Referral percentage inborn nursery referrals due to morbidities associated with inborn neonates. This has been due to the better management of neonatal emergencies by the Pediatric staff nurse in the labor room itself. The Labor Room Nurses were rotated back to Labor Room after 4 months of hands-on training at NICU and still the decrease maintained, thus establishing the sustainability of the pilot. Thus, it has been concluded that a package of high-impact interventions, using the existing resources, delivered at labor room and post-natal ward can reduce facility-based neonatal mortality and morbidity. An effort was made to see the relationship between breastfeeding within one hour of birth and trends with neonatal mortality (Table). However, the graph did not show any significant change in the early initiation of breastfeeding with the decrease in neonatal mortality.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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