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Survival Outcome of Infants in NICU - A Three Year Review

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Abstract

Aim: To retrospectively review survival rates and to assess the survival outcome of infants admitted in Newborn Intensive Care Unit [NICU].

Methods: The case records of all infants admitted in NICU, from 2012 to 2014 were scrutinized. Morbidity data detailing complications of admitted babies and medical complications of their mothers was noted. The birth weight, gestational age at birth of admitted babies, and the details of discharge from NICU were noted.

Results: Admission of neonates in the NICU, had risen from 31.4% of live births in 2012 to current rates of 39.06 % of live births in 2014. Major causes for admission were low birth weight and prematurity, followed by jaundice and birth asphyxia. The overall survival rate was 89.6% in 2012, and risen to 91.6% in 2013 and 91.7% in 2014.

Conclusion: Among extreme premature group of babies [GA (gestational age) < twenty eight weeks] there was a steady increase in survival rates yearly and in 2014, 14% of babies survived. There was no change in survival rates of moderate preterm group [GA 32 to 33 weeks] and in the late preterm group [GA 34 to < 37 weeks], there was an increase in survival rates by 4%. Term babies of GA 37 to 42 weeks had survival rates of 95% in 2013 and 96% in 2014.

Keywords : survival neonates, Newborn intensive care, NICU, preterm, small for date

Aim

To retrospectively review and assess the survival outcome of infants admitted in Newborn Intensive Care Unit [NICU]^{1,2,3}.

Methods

The case records of all infants admitted to NICU, from 2012 to 2014 were scrutinized. The admitted numbers, along with the total number of live births yearly were noted. To assess the survival outcome of the admitted babies, Morbidity data detailing complications of admitted babies and medical complications of mothers of admitted babies^{4,5,6,7}, birth weight, gestational age at birth, and the details of discharge from NICU were also noted^{7,8,9,10}.

Results

The year 2012 saw a total number of admissions of 4329 infants, and 4831 in 2013 and 5000 in 2014, with a yearly increase of 200 to 500 admissions. The overall survival rates were higher than 89 %, in all the three years and the last two years saw overall rates of survival of 91.6% and 91.7% . [fig.1]

Major Causes of Admission in NICU

The Morbidity data detailing complications of admitted babies was assessed. [fig.2] The major cause for admission was low birth weight [LBW] in all the three years^{8,9,10}. It was the cause, in 34.6% of the total admissions, in 2012 and in 2013 and showed a minimal decrease by a little less than 3% in 2014^{9,10,11}. Prematurity was the major cause in 25% of admissions. Jaundice was the cause of admissions in 9% of babies in 2012 and rose to 14.3% of babies in 2014¹². Birth asphyxia was causative factor for nearly 6% of admissions in all three years.

Sepsis was the reason for admission in 5% of total in 2012 and was reduced to nearly 4% in 2014¹³. Hyaline Membrane Disease was responsible for admission in 4% of the total^{14,15} numbers of babies admitted and followed by congenital malformations in around 3% of total admissions^{16,17}. Other reasons which necessitated

admissions for newborns were Intra Uterine Growth Retardation, anemia of newborn, Infant of Diabetic Mother,⁴ [in14.5%], and Transient Tachypnea of Newborn.

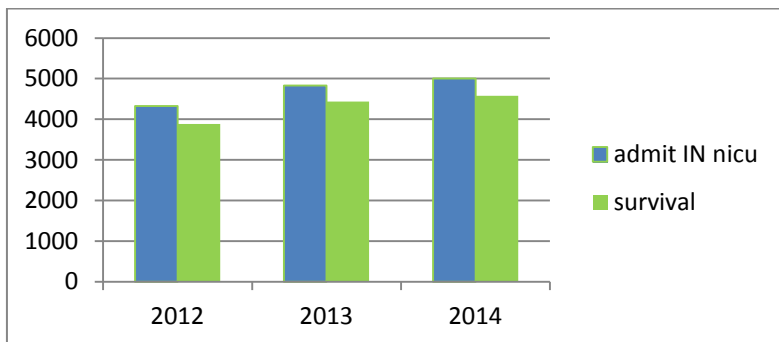
Survival of Babies By Gestational Age- Year Wise

The survival rate of extreme preterm group [GA < 28 weeks] was 8.06 % in 2012^{17,18}. In the very premature group [GA 28 to 31 weeks], more babies were only GA 28 weeks, and there was a yearly decrease in survival rates. Survival of moderate preterm babies [GA 32 to 33 weeks] was 83.1 % in 2012 and was slightly lowered to 82.2 % in 2014. Late preterm group [GA 34 to 36 weeks] had good survival rates of 89.74 % in 2012, which had increased to 93.37 % in 2014. Term babies [GA 37 to 42 weeks] had survival rates of 95.27 % in 2012 and 96.36 % in 2014. [fig.3] The survival of post term babies [GA > 42 weeks] was 100 % in 2012. In 2013 there was a steep tenfold rise in admissions of post term babies and 87% of babies survived.^{19,21} In 2014, the overall survival of babies admitted in NICU was 91.7 %¹. At least 13% of Extreme preterm babies and 49% of very premature babies survived. The survival of moderate preterm babies was 82% and 93% of late preterm babies survived. The survival rate was 96% for term babies, and 80 % for post term babies.

Conclusion

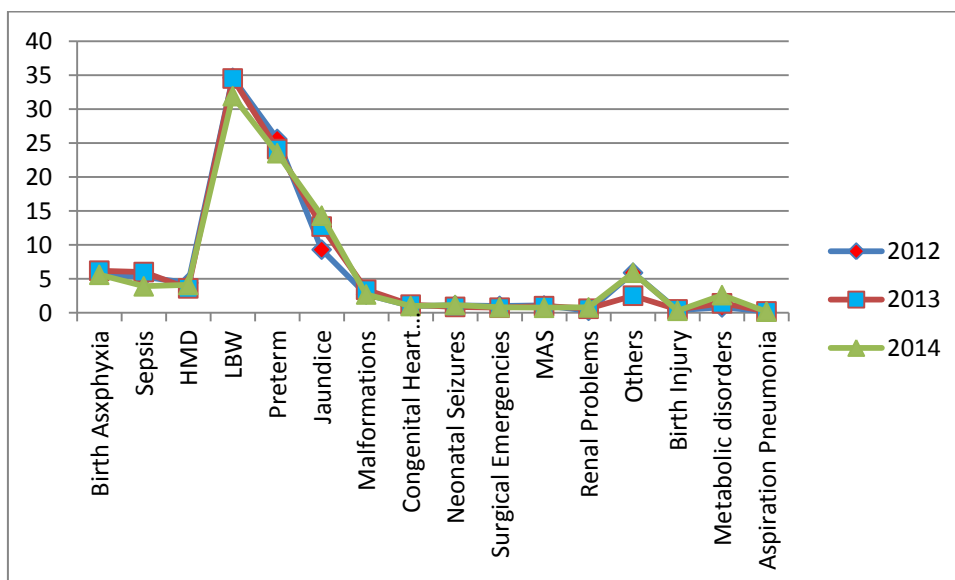
Survival outcome of infants had increased steadily over the last three years.²² The overall survival rates of infants admitted in NICU, at Govt. Hospital for Women and Children was 89.6% in 2012 and rose to a rate of 91.6% in 2013 and to 91.7% in 2014^{9,22}. The extreme premature group born before 28 weeks, with very low birth weight of one kg and below, had a survival of 13% [fig.4] and around 48% of very premature babies survived. All three years saw survival of least 82% of moderately preterm babies. Late preterm babies had high survival rates of 90% in 2012 and 93% in 2014. Term babies had survival rates of 95% in 2013 and 96% in 2014.

Fig. 1 Year wise Admission - Survival of Babies In NICU



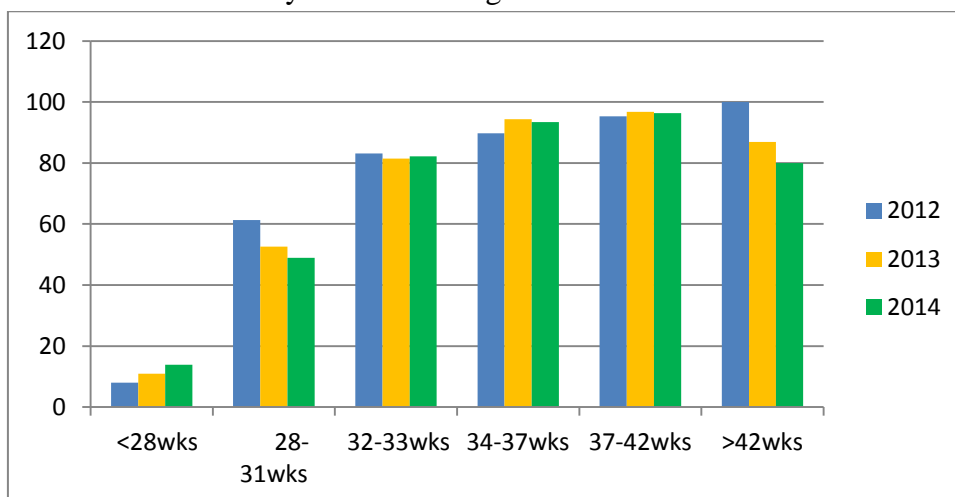
In all the three years the overall survival rates were higher than 89 %
 The last two years saw overall percentage of survival of 91.6 % and 91.7%

Fig. 2 Major Causes of Admission of Babies In NICU



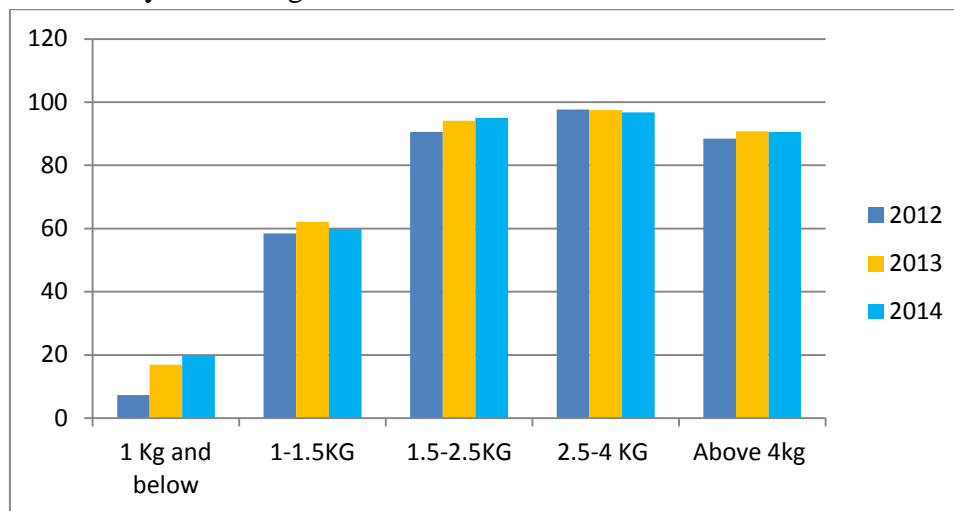
In the years from 2012 to 2014, low birth weight and prematurity, followed by jaundice and birth asphyxia were the main reasons necessitating admission in NICU.
 A large number of babies in the Low Birth Weight Group of 1.5 to 2.5 Kg required admission.
 Numbers of babies shown as percentage of total admissions.

Fig. 3 Yearly Survival of Babies By Gestational Age



The survival rate of extreme preterm group [GA < 28 weeks] was 8.06 % in 2012. Survival of moderate preterm babies [GA 32 to 33 weeks] was 83.1 % in 2012 and was slightly lowered to 82.2 % in 2014. Late preterm group [GA 34 to 36 weeks] had good survival rates of 89.74 % in 2012 which had increased to 93.37 % in 2014. Term babies [GA 37 to 42 weeks] had survival rates of 95.27 % in 2012 and 96.36 % in 2014

Fig. 4 Survival of Babies By Birth weight Year wise



The survival of babies by birth weight is shown above.

Among extreme premature group of babies of birth weight below one Kg, there was a steady increase in survival rates yearly from 7% in 2012 to a better figure in 2014 where 20% of babies survived.

Among the very premature group of birth weight of 1Kg to 1.5 Kg the 2012 saw the survival of 59% of babies, and continued at 60% survival of babies in this birth weight group in 2014.

There was a marginal increase from the already good figures of 91% survival in 2012 to 95% in 2014 for the birth weight group of 1.5 Kg to 2.5Kg. yearly decrease and in 2014 49% of admitted babies survived.

There was no significant change in survival rates of babies in the birth weight group of 2.5 Kg and was 97% in 2014. Term babies of birth weight above 4 Kg, the survival rates were 88% in 2012 and rose to 91% in 2014.

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Conflict of Interest Statement

The authors have no conflicts of interest relevant to this article

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