Original Article

# Study of neonatal transport at tertiary care centre and role of tops scoring for prediction of mortality

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**Abstract**

Transporting neonates is the greatest challenge faced today in outcome of neonate in terms of mortality in India. Inaccessible facilities, poor awareness, poor compliance enroute and underdeveloped communication system are the responsible factors

Keywords: Birth asphyxia, Septicemia, Hyaline membrane disease.

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## INTRODUCTION

This observation at study is carried out from period of May 2014 to October 2014 to find out predictability of tm, pulse, oxygenation and sugar after referral for mortality.

This study was carried out At Tertiary neonatal careunit(A5), civil hospital, Ahmadabad, Gujarat.

## MATERIAL AND METHODS

**Inclusion Criteria:** All newborns those are extramural and admitted at < 7 days of life.

**Exclusion Criteria:** lethal congenital malformation , acute surgical emergency (TOF , CDH ) newborns > 7 days.

Data collected by complete history and examination, TOPS scoring at arrival at NICU, at 1st hr and 6th hr of admission. Temperature by digital thermometer in axilla, oxygenation by pulse oxymeter, capillary perfusion (CRT >3sec), sugar by reagent strip with glucometer.

**Figure 1:** Neonatal Transport

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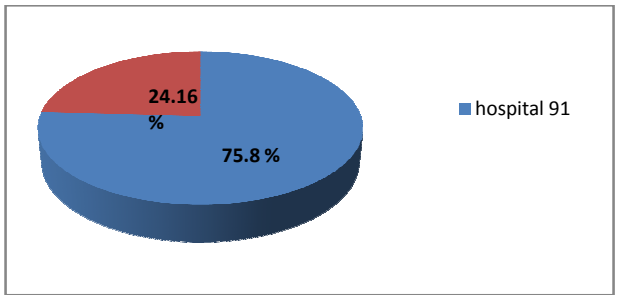
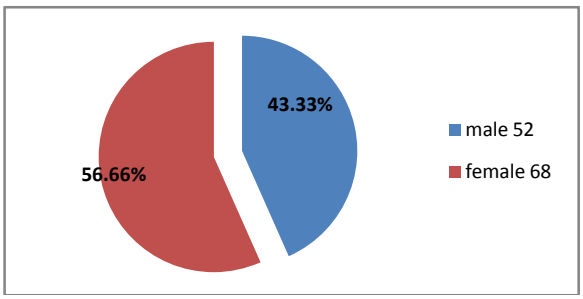



Figure 2:

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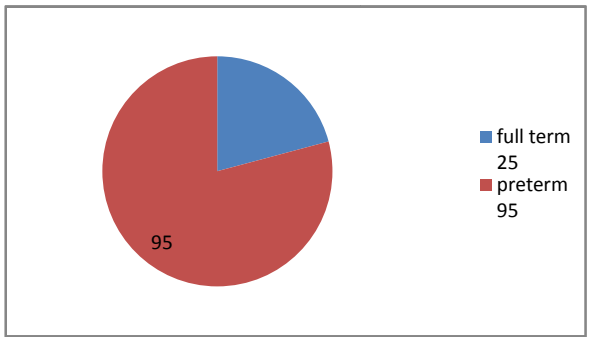


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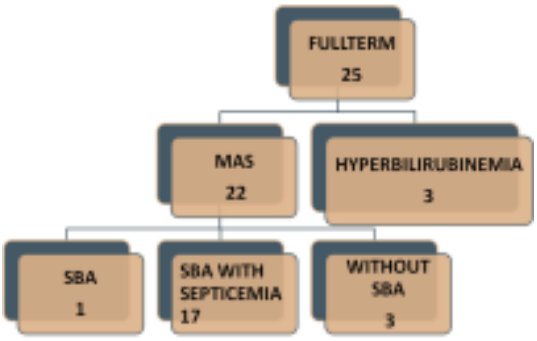


Figure 4:

Indications of Refferal

Severe birth asphyxia 25 (20.83%)

- Full term 18 (72%)
- Preterm 7 (28%)

Hyperbilirubinemia 14 (11.66%)

- Full term 3 (21.42%)
- Preterm 11 (78.58%)

Hyaline membrane disease 30 (25%)

- With severe birth asphyxia 7 (23.33%)
- With septicemia 18 (60%)

Septicemia 58(48.33%)

- Full term 17(27.86%)
- Preterm 41 (70.68%)

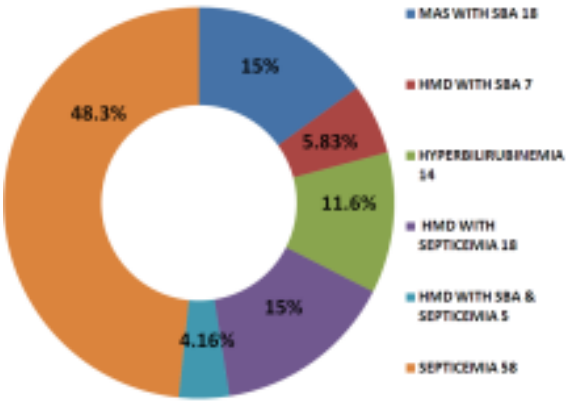


Figure 5:

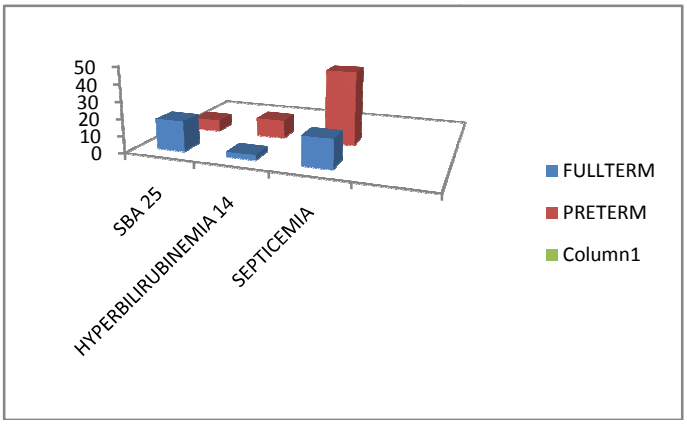


Figure 6:

**Time Taken For Transportation**

- < 30 MINUTES : NONE
- <1 HOUR : 92 (76.6 %)
- > 1 HOUR : 28 ( 23.33%)

**Table 1:**

| | Total | Percentage |
|---|---|---|
| referral chit available with specified reason | 109 | 90.83% |
| Pre referral stabilization | 44 | 36.66% |
| Accompanying paramedical person | 93 | 77.5% |
| Clothing and worming present | 78 | 65% |

**TOPS SCORING**

- TEMPARETURE: By Digital Thermometer In Axilla
- OXYGENATION: BY Spo2 Monitoring < 85%
- PERFUSION: By cappilary refill time on midsternum if > 3 second delayed
- SUGAR: By reagent stripe and low reading confirmed by serum sample at laboratory if <40mg/dl

**Table 2:** Sensitivity of TOPS scoring as a whole in predicting mortality

| At admission TOPS Scoring | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Total | 64 | 19 | 15 | 18 |
| Expired within 1 hour | 0 | 9 (47.3%) | 9 (60%) | 18 (100%) |
| Survived beyond 1 hour | 64 (100%) | 10 (52.6%) | 6 (40%) | 0 |

The data analysed by New Graph Pad Demo Version. Chi-squared for trend = 75.121. The p value is <0.0001. Means the varibles are significantly associated. High TOPS Scoring is associated with high mortality within 1 hour of admission.

**Table 3:**

| TOPS scoring at 1 hour of life | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Total | 12 | 6 | 4 | 7 |
| Expired within 6 hours | 0 | 1 (16.67%) | 4 (100%) | 7 (100%) |
| Survived beyond 6 hours | 12 (100%) | 5 (83.3%) | 0 | 0 |

The data analysed by New Graph Pad Demo Version, Chi-squared for trend = 23.215, The p value is <0.0001. Means the varibles are significantly associated. Failure to improve TOPS Scoring at 1 hour of admission is associated with high mortality within 6 hours of admission.

**Table 4:** Sensitivity of individual parameter in predicting mortality

| at admission | Total | Expired within 1 hour | Survived beyond 1 hour |
|---|---|---|---|
| Temperature <36.5 $^{o}$ C | 65 | 20 (30.7%) | 45 (69.23%) |
| $SpO_2$ <90% | 52 | 29 (55.76%) | 23 (44.23%) |
| CRT > 3 Sec | 20 | 18 (90%) | 2 (10%) |
| RBS < 40 mg/dl | 24 | 16 (66.67%) | 8 (33.33%) |

The data analysed by New Graph Pad Demo Version. Chi-squared = 25.644. The p value is <0.001. Means the varibles are significantly associated. Means altered perfusion is the most significant parameter in predicting mortality within 1 hour followed by hypoglycemia, low saturation and hypothermia

**Table 5:**

| at 1 hour of admission | Total | Expired within 6 hour | Survived beyond 6 hours |
|---|---|---|---|
| Temperature <36.5 $^{o}$ C | 24 | 11 (45.83%) | 13 (54.16%) |
| $SpO_2$ <90% | 12 | 10 (83.33%) | 2 (16.67%) |
| CRT > 3 Sec | 8 | 7 (87.5%) | 1 (14.28%) |
| RBS < 40 mg/dl | 6 | 4 (66.67%) | 2 (33.33%) |

The data analysed by New Graph Pad Demo Version. Chi-squared = 7.321. The p value is 0.0624 Means the varibles are not significantly associated.

Out of 120 newborns admitted, 91 (75.8%) were hospital delivered and 29 (24.16%) were home delivered.52 (43.3%) being male child and 68(56.6%) being female child, 25(20.83%) newborns were term and 95(79.1%) newborns were preterm. Among all prematurity is being the most common cause for referral to higher center. The parameter most often altered at admission is hypothermia (54.16%) followed by oxygenation, blood sugar and perfusion (6.66%).50% of those who expired within 1$^{st}$ hour of admission were carrying TOPS scoring of 4,25% carrying 3 and rest carrying 2.11 newborns expired among those who failed to improve TOPS scoring by 6$^{th}$ hour.4 newborns who failed to improve by 12$^{th}$ hour expired within 24hrs of admission. So, Higher TOPS scoring is related to early expiry within 1$^{st}$ or 6$^{th}$ hour of admission with significant value 0.0001 of TOPS scoring, indicative of poor outcome. Other parameters of neonatal transport like mode, distance, place and instruction to parents were also analysied.

## CONCLUSION

A significant number of deaths can be avoided by prompt and appropriate care during transport, proper regionalition of new born care, pre referral stabilization and adequate referral facilities. The problems are to be prioritization according to the most common cause being significant for transport failure or survival failure.

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