

## TO STUDY THE IMPACT OF OXYGEN SATURATION OF NEONATES ON THEIR IMMEDIATE OUTCOME BY USING TOPS SCORE

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### Abstract

**Background & Method:** This study was carried out at Index Medical College Hospital & Research Centre, Indore, when baby come to scnu, SPO<sub>2</sub> is measured by pulse oximeter (ChoiceMMed MD300C2.). Fit the pulse oximeter on the foot, the light part of the sensor should be placed over soft tissue supported by a bony area. If the foot is cold or blue the pulse oximeter can be attached at the wrist. If the signal is poor re-position the probe. In a resuscitation situation the pulse oximeter should be attached to the right arm to read pre-ductal saturations.

**Result:** In this study, 28.46% newborns oxygen saturation was less than 85% and 71.53% newborns oxygen saturation was more than 85%. In this study, 67.81% newborns having oxygen saturation less than 85% and 1.9% newborns having oxygen saturation more than 85% died during first 48 hrs of admission. Chi square test was applied and p value was <0.05 and was significant.

**Conclusion:** Most of neonatal transports are self transport without any pre-treatment stabilization or care during transport These new born thus transported can become cold, blue and hypoglycaemic. This can have serious clinical implications. As it is seen in this study that all those babies who were given proper care during transportation were less affected & more over survival was also better among these babies.

**Keywords:** Oxygen Saturation, Neonates & TOPS score.

### Introduction

In India, majority of the deliveries still occur at home (approximately 60% in rural areas as per NFHS 3). Although hospital based deliveries need to be promoted, delivery of sick neonates needing special care will still take place at places with extremely limited resources, necessitating need for transport. Transportation of the sick or preterm babies to a centre with expertise and facilities for the provision of multi-organ intensive care has been shown to improve outcomes<sup>[1]</sup>. In India, neonatal health care delivery is unregulated, patchy and not standardized<sup>[2]</sup>.

One of the score was devised by Mathur NB et al<sup>6</sup> and was given the acronym TOPS and study was done in Maulana Azad medical college Delhi as Role of TOPS (a simplified assessment of neonatal acute physiology) in predicting mortality in transported neonates. Neonatal physiology is adversely affected based on temperature, oxygen saturation, skin perfusion and blood sugar (TOPS) which have shown to predict the mortality in transported neonates. TOPS score has an equally good prediction for mortality as SNAP II and can be used as a simple and useful method of assessment of fatality that can be assessed immediately, at admission.

Tarnow-Mordi et al<sup>[3]</sup> published a scoring system, the Clinical Risk Index for Babies (CRIB) score that was created to predict mortality for infants born at less than 32 weeks gestation at birth and was derived using data from infants admitted to four UK tertiary neonatal units from

1988 to 1990. It takes into account birth weight, gestational age, maximum and minimum fraction of inspired oxygen (FIO<sub>2</sub>) and maximum base deficit during the first 12 hours, as well as presence of congenital malformations<sup>[4]</sup>.

### Material & Method

This study was carried out at Index Medical College Hospital & Research Centre, Indore (M.P.) from September 2018 to August 2019.

When baby come to scnu, SPO<sub>2</sub> is measured by pulse oximeter (ChoiceMMed MD300C2.). Fit the pulse oximeter on the foot, the light part of the sensor should be placed over soft tissue supported by a bony area. If the foot is cold or blue the pulse oximeter can be attached at the wrist. If the signal is poor re-position the probe. In a resuscitation situation the pulse oximeter should be attached to the right arm to read pre-ductal saturations. In suspected congenital cardiac lesions, saturation monitoring may be required both pre and post ductally. Right arm = pre ductal, left arm or either leg = post ductal

In this study, >85% was considered as normal and <85% was considered as abnormal.

### Inclusion criteria:

- Neonates < 7 day
- Transportation time > half an hour

**Exclusion criteria:**

- Neonates >7days.
- Transportation time <half an hour
- Lethal Congenital malformation.
- Acute surgical emergency.
- New born who left against medical advice (LAMA) before 48 hours.
- Extremely low birth weight.

**Results****Table 1: 48 hours post admission outcome according to gender**

Gender	Newborns survived during first 48 hrs of admission	Newborns died during first 48 hrs of admission
Male	262	67 (20.36%)
Female	145	39(21.12%)
Total	407	106

In this study, 20.36% male and 21.12% female newborns died during first 48 hours of admission while 79.33% newborns survived during first 48 hrs of admission. Chi square test was applied and Pearson chi square value was 0.050 and p value was 0.824.

**Table 2: Distribution of Oxygen saturation by pulse oximetry**

SPO2	No of neonates	% of neonates
<85%	146	28.46%
>85%	367	71.53%
Total	513	

**Mean of SPO2-83.88 % Standard deviation ± 12.917**

In this study, 28.46% newborns oxygen saturation was less than 85% and 71.53% newborns oxygen saturation was more than 85%.

**Table 3: Effect of oxygen saturation on outcome of newborn**

SPO2	No. of neonates survived during first 48 hrs of admission	No. of neonates died during first 48 hrs of admission
<85%	47	99(67.81%)
>85%	360	7(1.90%)
P value	<0.026	<0.038

In this study, 67.81% newborns having oxygen saturation less than 85% and 1.9% newborns having oxygen saturation more than 85% died during first 48 hrs of admission. Chi square test was applied and p value was <0.05 and was significant.

**Discussion**

An aggregate of 513 children who satisfied the incorporation standards were analyzed clinically for signs and side effects and their glucose levels were screened for hypoglycemia utilizing a Glucometer. Temperature of the infant was estimated at the hour of confirmation by thermometer in axillary area. Hairlike refill time was

estimated by squeezing thumb on mid sternum and oxygen immersion was taken by beat oxymeter. This investigation expects to contemplate the effect of intense physiological boundaries identified with move of youngsters on their nearby result by utilizing TOPS score.

In an investigation in Brazil Suzana et al[5], 98 children were hypothermic with transport time <1hr, 101 infants voyaged 1-2hrs & 121 infants voyaged >2 hrs, and more serious danger of hypothermia was found for those that voyaged more than 2hrs. In our examination we incorporated those infants whose transportation time was the greater part an hour and out of 513 youngsters, 250 were hypothermic, 244 were normothermic and 19 were hyperthermic.

Begum et al[3] discovered most elevated adjusted boundary in the examination was hypothermia (39%) and the mortality in seriously hypothermic children was discovered to be 82%. In Mathur NB et al[6] study, 80% mortality was in extreme hypothermic babies. Tafari N et al[7] discovered 44 percent of the babies were hypothermic (<36°C) on affirmation. In our examination 48.73% infants were hypothermic at the time admission[8].

Suzane et al[5] in Brazil found that 52.5% of moderate hypothermia had disintegrated to death while just 17% of no hypothermia decayed to death. In our investigation 16% hypothermic, 26.6% normothermic, and 5.2% hyperthermic infants kicked the bucket during initial 48 hours of confirmation.

**Conclusion**

Most of neonatal transports are self transport without any pre-treatment stabilization or care during transport, newborn thus transported can become cold, blue & hypoglycaemic. This can have serious clinical implications.

As it is seen in this study that all those babies who were given proper care during transportation were less affected & more over survival was also better among these babies.

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