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Basic Life Support is not an Esoteric science! Evaluation of skill transfer after training parents of NICU graduates

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INTRODUCTION

- Basic life support (BLS) is the first level of medical care given for a life-threatening event, till focused medical care is at hand.
- No system akin to "911" or "999" in India. Hence, laymen are first responders
- Infants discharged after long and advanced neonatal intensive care support : most vulnerable group for Life threatening events.
- Our unit administers **BLS training to parents of NICU graduates**
- <u>No equipment</u> except the physical presence of the first responder is required for our method of administering BLS.
- Address all **three domains of human learning** : <u>Psychomotor</u> (utilization of motor skills) <u>Cognitive</u> (acquisition of relevant knowledge, <u>Affective</u> (attitudes of the learner)

METHODOLOGY

- Prospective study was conducted in our Level IIIB NICU. **The unit follows a well-known indigenously designed check list format for high risk newborn care commencing in the perinatal period itself (Blue book).**
- Parents of neonates (planned for discharge) at risk of life- threatening events post discharge.
- BLS steps were according to modified Neonatal Resuscitation Protocol (NRP) and American Heart Association (AHA) guidelineswith no additional equipment requirement.
- Hands on session on a neonatal mannequin (Laerdal®).

FIGURE 1: CHECKLIST USED TO TEST PSYCHOMOTOR DOMAIN AFTER TRAINING SESSION. ITEMS IN BOLD FORMAT WERE CONSIDERED KEY COMPONENTS FOR EVALUATION

OBSERVATION CHECK LIST

(I) Psychomotor domain: (Primary outcome)
Key components are in **BOLD** Format
Indication for BLS – Unresponsive and not breathing

A. Shouts for help; **Stimulation** by flicking soles OR rubbing back; places baby on firm surface in **correct position** (neck extension by appropriate maneuver)   [ ]
B. **Checks breathing (look,** listen and feel)   [ ]
C. "Mouth" to "mouth and nose"artificial Breaths 2 breaths   [ ]
D. **Effective (chest rise)**
Checks by looking for chest rise   [ ]
E. Chest compression
• Site (placement of thumbs encircling chest just below nipple line and centre of chest)   [ ]
• **30 compressions with call out**   [ ]
• Allows recoil   [ ]
• Depth atleast 1.5 inch   [ ]
F. **Resume cycle 2:30 (breath: chest compression)**   [ ]

Marks ___ / 5

FIGURE 2.
STUDY FLOW DIAGRAM

NICU graduates planned for discharge N=25 <=30 week at birth

Exclusion: Parents not willing to participate in the study(n=0)

Caregivers enrolled (n= 46)

BLS training administered

Primary outcome – proportion of parents with 5 out of 5 check marks in psycho motor checklist = 80.43%

Secondary outcome- proportion of parents with - 80% correct response in Cognitive domain questionnaire = 91.3% -3 out of 3 positive response Affective domain questionnaire =100%

AIM

- To measure effectiveness of skill transfer, measured as proportion of home caregivers who obtain **100% marks on the performance checklist for psychomotor skills of BLS** after training session
- To measure knowledge transfer : parents who obtain >80% marks on the objective test administered after the BLS training to measure cognitive domain of learning
- To analyze the affective domain regarding BLS training measured as proportion of home care givers/ parents who respond positively on the questionnaire.

RESULTS

- 46 caregivers of 25 infants
- Median interquartile range (IQR)] birth weight: 1050 g (930, 1570);median gestational age :29 (IQR 28, 33) weeks.
- More than 75% of parents had no prior exposure to BLS training.
- <u>**Among 46 trained caregivers, 80.4% achieved the desired score of 5 in the psychomotor performance check list on the first attempt.**</u>
- Maximum of 2 attempts were required to re-educate and achieve score of 5 in the remaining.
- Forty two (91.3%): obtained full marks on the cognitive domain written test.
- All caregivers responded positively towards the affective domain questionnaire (keenness to train and no anxiety).

TABLE 1 : BASELINE CHARACTERISTICS OF INFANTS AND CARE-GIVERS

Sl No	Characteristic	Measure
1	Gestational age (weeks)*	29 (28,33)
2	Birth weight (g)*	1050 (930, 1570)
3	Male Gender n(%)	12 (47.8%)
4	Indication for BLS training#n(%) - Very Preterm - Encephalopathy - Critical congenital heart disease - Congenital anomalies	22 (91.3%) 2 (6.5%) 6(26.08%) 3(8.6%)
	Caregiver details (N=46)	
5	Relationship with the baby n(%) - Mother - Father - Grand mother	25 (54.3%) 19 (41.3%) 2 (4.3%)
6	Place of residence n(%) - Kerala	41 (89.13%)
7	Highest educational qualificationn(%) - Health professional (doctor, para-medical) - Post-graduation - Under graduation - 12th grade - 10th grade	7 (15.21%) 16 (34.7%) 19 (41.3%) 4 (8.7%) 0
8	Received previous BLS training n(%)	10 (21.73%)
9	History of previous infant death n(%)	7 (15.2%)
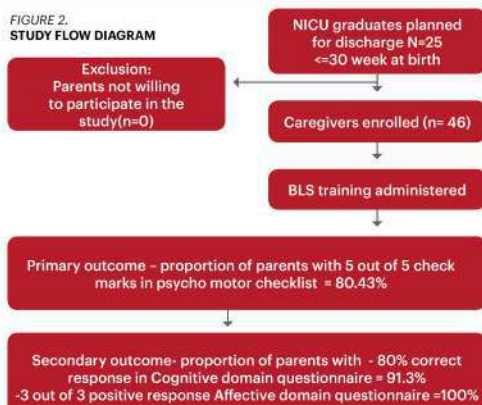
CONCLUSION

- It is <u>**possible to train families of NICU graduates in infant BLS,**</u> including those with no medical education backgrounds.
- Able to demonstrate skills effectively on a mannequin.Attained good scores when essential knowledge was tested; families felt more confident and less anxious
- Future prospective studies are required for assessing the retention of skills and survival outcomes of those infants if an out of hospital arrest occur.