

MEETING ABSTRACT

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# Stabilization of the critically ill neonate awaiting transport

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## Introduction

An appropriate stabilization before transport is essential to reduce adverse events [1-5]. The aim of this study was to describe the characteristics of a cohort of newborns transported and to evaluate the association between stabilization time and change of Transport Risk Index of Physiologic Stability (TRIPS score)[6].

## Materials and methods

The database of the Neonatal Emergency Transport Service in Lazio Region and all newborns transported within May 2009-December 2012 were analyzed (N=2,331). A multinomial logistic regression model was used to study the association between stabilization time and

improvement and deterioration in TRIPS score in reference to no change, adjusting for potential confounders. Mortality Index for Neonatal Transportation score (MINT) [7] was analysed but not included in the multivariate model due to the covariation with the TRIPS score. In order to evaluate the potential interaction with stabilization times, the data analysis was stratified by perinatal level of care (I, II, III). Two-tailed p-values were considered at 5% significance level.

## Results

Table 1 shows descriptive statistics of transport characteristics by birth centre level. Median GA was 36 weeks and 6.6% had less than 28 weeks. Median age at trans-

**Table 1 Infants characteristics by perinatal level of care. Lazio, 2009-December 2012**

	Birth centre level			Total N=2331
	I N=966	II N=651	III N=714	
<b>Gestational age (wks)</b>				
22-27 (%)	8 (0.8)	30 (4.6)	117 (16.4)	155 (6.6)
28-31 (%)	37 (3.8)	52 (8.0)	212 (29.7)	301 (12.9)
32-36 (%)	313 (32.4)	200 (30.7)	280 (39.2)	793 (34.0)
37+ (%)	608 (62.9)	369 (56.7)	105 (14.7)	1082 (46.4)
Mean (SD)	37.0 (2.8)	36.1 (3.9)	31.9 (4.1)	35.2 (4.2)
Median	37	37	32	36
<b>Age at transport (hours)</b>				
Mean (SD)	15.2 (16.8)	15.0 (16.1)	6.8 (11.2)	12.6 (15.6)
Median	6.6	6.9	3.1	4.9
<b>Group of diagnosis/symptoms (%)</b>				
Antenatal conditions	194 (20.1)	128 (19.7)	312 (43.7)	634 (27.2)
Respiratory	511 (52.9)	370 (56.8)	340 (47.6)	1221 (52.4)
Cardiovascular	39 (4.0)	29 (4.5)	29 (4.1)	97 (4.2)

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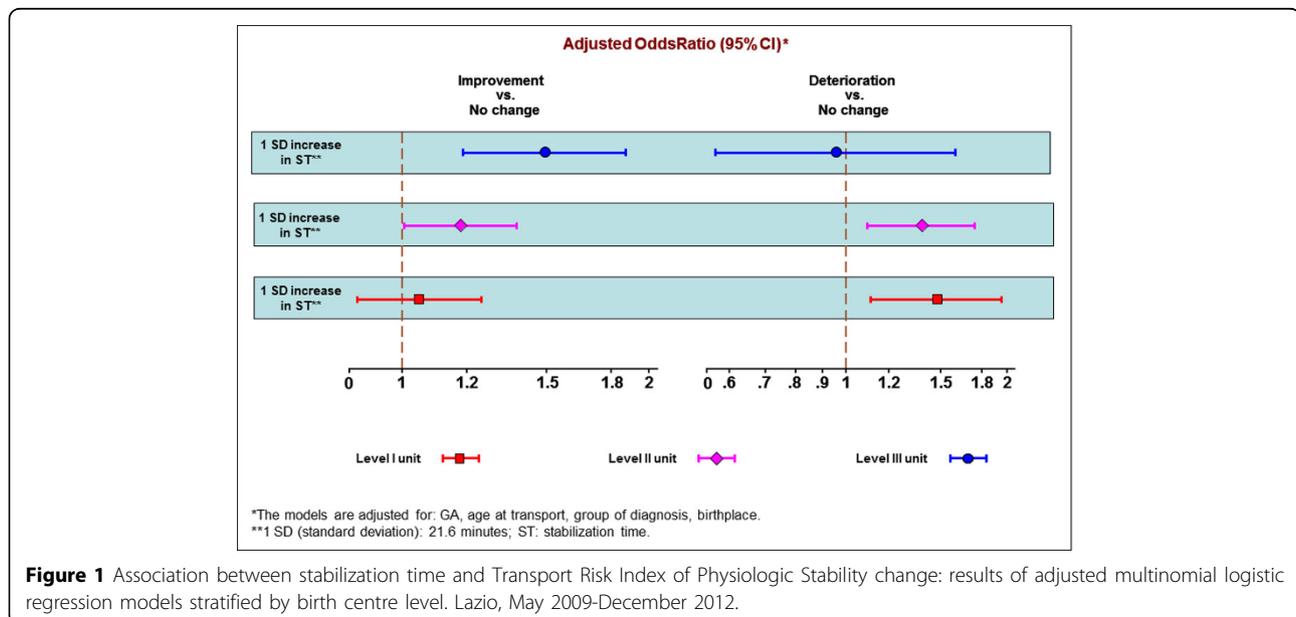
**Table 1 Infants characteristics byperinatal level of care. Lazio, 2009-December 2012 (Continued)**

Infectious	53 (5.5)	38 (5.8)	6 (0.8)	97 (4.2)
Hematologic	66 (6.8)	33 (5.1)	5 (0.7)	104 (4.5)
Other	103 (10.7)	53 (8.1)	22 (3.1)	178 (7.6)
<b>MINT<sup>a</sup></b>				
Mean (SD)	1.4 (3.5)	3.2 (5.5)	5.4 (5.7)	3.1 (5.2)
Median	0	0	4	0
<b>Birthplace (%)</b>				
Municipality of Rome	550 (56.9)	175 (26.9)	689 (96.5)	1414 (60.7)
Other	416 (43.1)	476 (73.1)	25 (3.5)	917 (39.3)
<b>Stabilization time (minutes)</b>				
Mean (SD)	31.6 (20.0)	39.6 (26.3)	28.5 (17.2)	32.9 (21.6)
Median	25	30	25	30
<b>TRIPS score pre</b>				
Mean (SD)	5.8 (7.4)	9.6 (10.8)	11.7 (11.3)	8.7 (10.0)
Median	5	6	6	6
<b>TRIPS change (%)</b>				
Deterioration	40 (4.1)	28 (4.3)	35 (4.9)	103 (4.4)
No change	697 (72.2)	445 (68.4)	557 (78.0)	1699 (72.9)
Improvement	229 (23.7)	178 (27.3)	122 (17.1)	529 (22.7)

<sup>a</sup>The Mortality Index for Neonatal Transportation was available for March 2010-December 2012.

port was 4.9 hours. The most frequent diagnosis was respiratory diseases in all birth centre levels (52% overall). Mean MINT score was 3.1 and increased from 1.4 to 5.4 across the three levels of care. Median stabilization times were 25 minutes in level I and III, and 30 in level II. Overall, median pre-transport TRIPS score was 6; the highest mean value was observed in level III units (11.7). Overall, 72.9% of all infants showed no TRIPS score change, 22.7% an improvement, and 4.4% a deterioration (4.9% in level III). Figure 1 shows the results

from multinomial regression analysis of improvement and deterioration in TRIPS score in reference to no change. An association between stabilization time and TRIPS change was observed, depending on the level of the centre: an increase in stabilization time was associated with increased odds of deterioration (+48% for 1 SD increase, 21.6 minutes) in level I; by contrast, an increase in stabilization time was associated with increased odds of improvement (+49%) in level III. Both effects were observed in level II units.



**Figure 1** Association between stabilization time and Transport Risk Index of Physiologic Stability change: results of adjusted multinomial logistic regression models stratified by birth centre level. Lazio, May 2009-December 2012.

## Conclusion

The findings suggest that specialized level of care contribute to improve the prognosis of sick infants, although the transportation may alter neonatal physiology. Future research may include also other process and outcomes measures.

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