

## Correlation between Fetal Umbilical Cord pH and the Day, the Time and the Team Hand over Times: An Analysis of 6929 Deliveries of the Ulm University Hospital

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**Abstract :** Purpose: The umbilical cord pH is a well evaluated contributor for prediction of neonatal outcome. This study correlates neonatal umbilical cord pH with the weekday of delivery, the time of birth as well as the staff hand over times (midwives and doctors). Material and Methods: This retrospective study included all deliveries of a 20 year period (1994-2014) at our primary obstetric center. All deliveries with a newborn cord pH under 7,20 were included in this analysis (6929 of 48974 deliveries (14,4%)). Further subgroups were formed according to the pH (< 7,05; 7,05 - 7,09; 7,10 - 7,14; 7,15 - 7,19). The data were then separated in day- and night time (8am-8pm/8pm-8am) for a first analysis. Finally, handover times were defined at 6 am - 6.30 am, 2 pm -2.30 pm, 10 pm- 10.30 pm (midwives) and for the doctors 8-8.30 am, 4 - 4.30 pm (Monday- Thursday); 2 pm -2.30 pm (Friday) and 9 am - 9.30 am (weekend). Routinely a shift consists of at least three doctors as well as three midwives. Results: During the last 20 years, 6929 neonates were born with an umbilical cord ph < 7,20 ( < 7,05 : 7,1%; 7,05 - 7,09 : 10,9%; 7,10 - 7,14 : 30,2%; 7,15 - 7,19:51,8%). There was no significant difference between either night/day delivery (p = 0.408), delivery on different weekdays (p = 0.253), delivery between Monday to Thursday, Friday and the weekend (p = 0.496 ) or delivery during the handover times of the doctors as well as the midwives (p = 0.221). Even the standard deviation showed no differences between the groups. Conclusion: Despite an increased workload over the last 20 years, the standard of care remains high even during the handover times and night shifts. This applies for midwives and doctors. As the neonatal outcome depends on various factors, further studies are necessary to take more factors influencing the fetal outcome into consideration. In order to maintain this high standard of care, an adaption of work-load and changing conditions is necessary.

**Keywords :** delivery, fetal umbilical cord pH, day time, hand over times

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