

Does the Time Post Delivery of Surfactant Administration Have Impact on the Duration of Ventilation in Premature Infants With Respiratory Distress Syndrome?

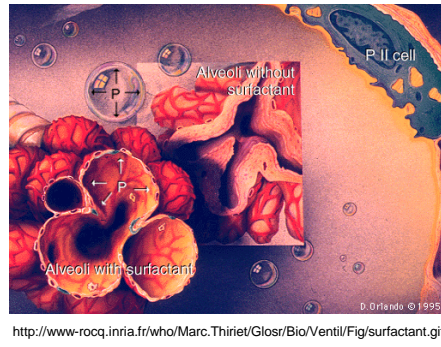
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Background

- Respiratory Distress Syndrome (RDS)
 - A common lung disorder in premature babies where the immature lungs can neither secrete nor synthesize surfactant
 - Surfactant - a surface tension-reducing fluid that prevents the lungs from collapsing.
 - Surfactant replacement therapy has been proven to treat RDS effectively and is usually administered within a couple hours of birth.
- Mechanical ventilation is a common modality to help neonates with RDS, but extended duration on a ventilator can lead to multiple complications for infants.



Hypothesis

- The primary purpose of this study is to determine if there is a difference in duration of ventilation (DV) between very early surfactant delay (SD) and early SD. The hypothesis is that there is no difference.

Methodology

- Data from the 2004-2009 Hillcrest Hospital, Cleveland Clinic and Vermont Oxford database were collected for infants between 401 ≤ 1500 g at birth or infants < 30 weeks gestational age.

Records Reviewed	Qualified Infants	Excluded Infants	Sample Size
212	66	23	43

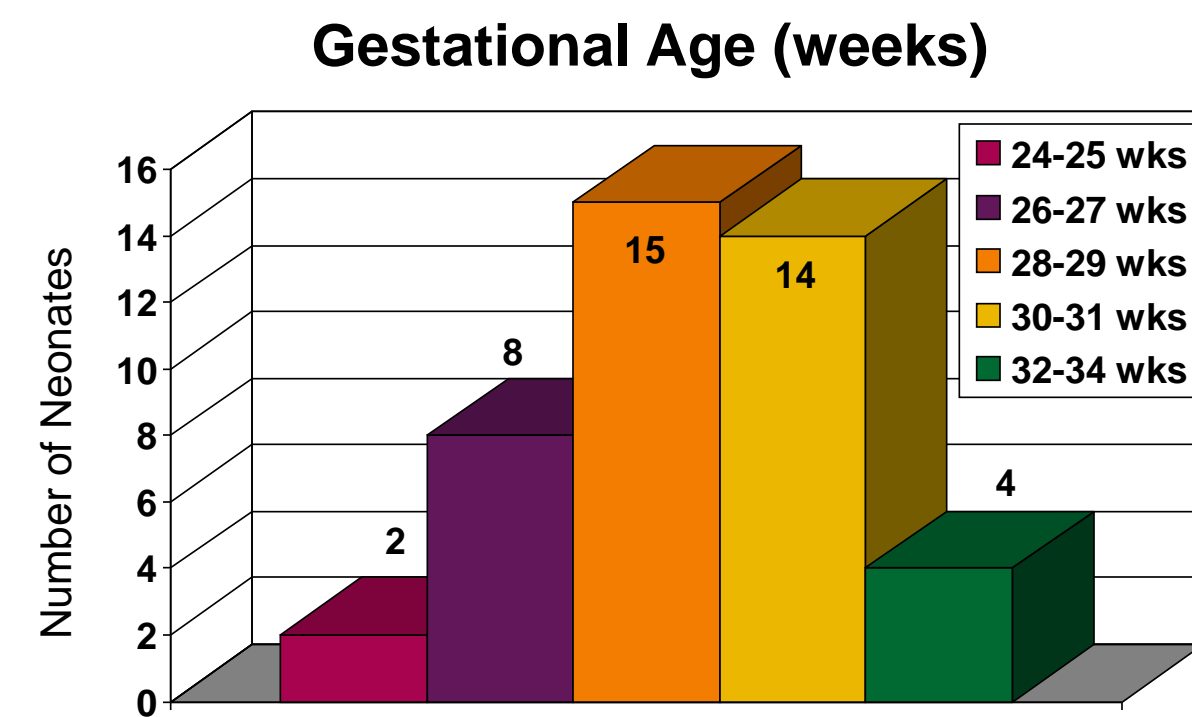
- Entry criteria: RDS, mechanical ventilation only, surfactant administration.
- Exclusion: death, transfer, incomplete records
- Very early SD was defined as surfactant administration ≤ 45 min and early SD was > 45 min
- Duration of ventilation was defined as minutes from intubation to extubation
- Linear correlation with SigmaPlot 10 was used to evaluate the association between SD and DV.

Data

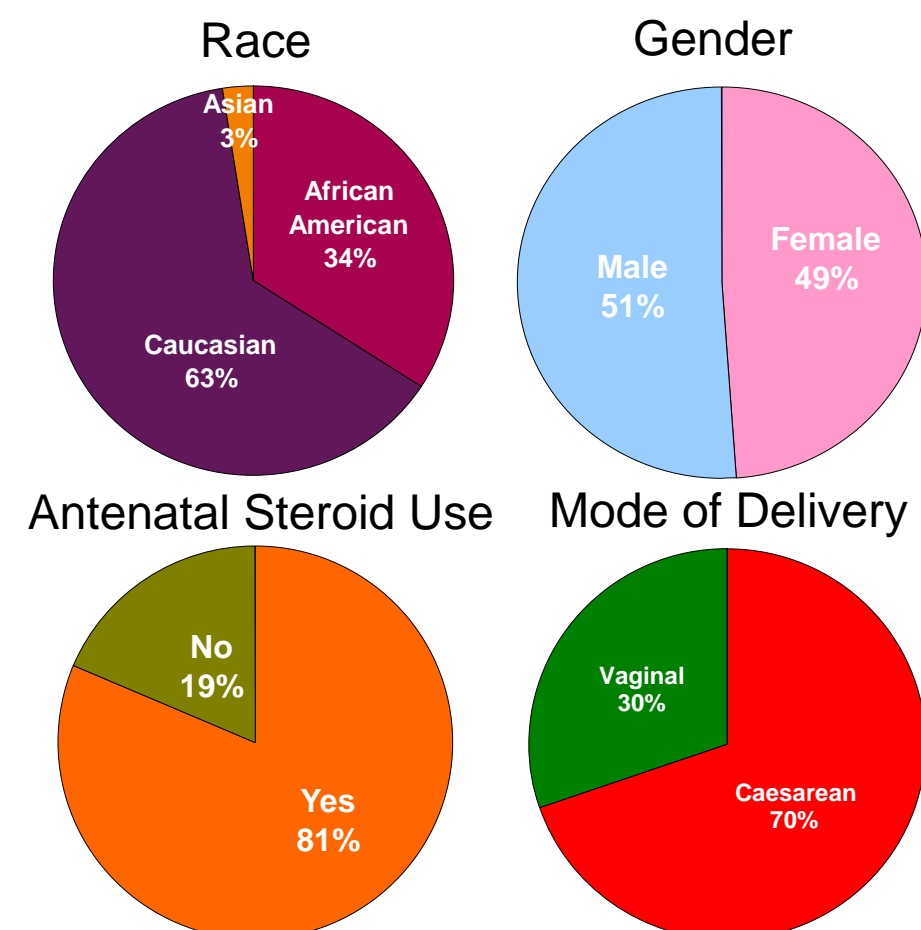
Data were obtained from 43 births.

	Gestational Age (weeks)	Birth Weight (grams)	Surfactant Delay (minutes)	Duration of Ventilation (minutes)
Range	24-34	596-1516	19-207	205-69,161
Median	29	1207	48	1460

Length of Stay: 25-125 days
Three exclusions due to incomplete records



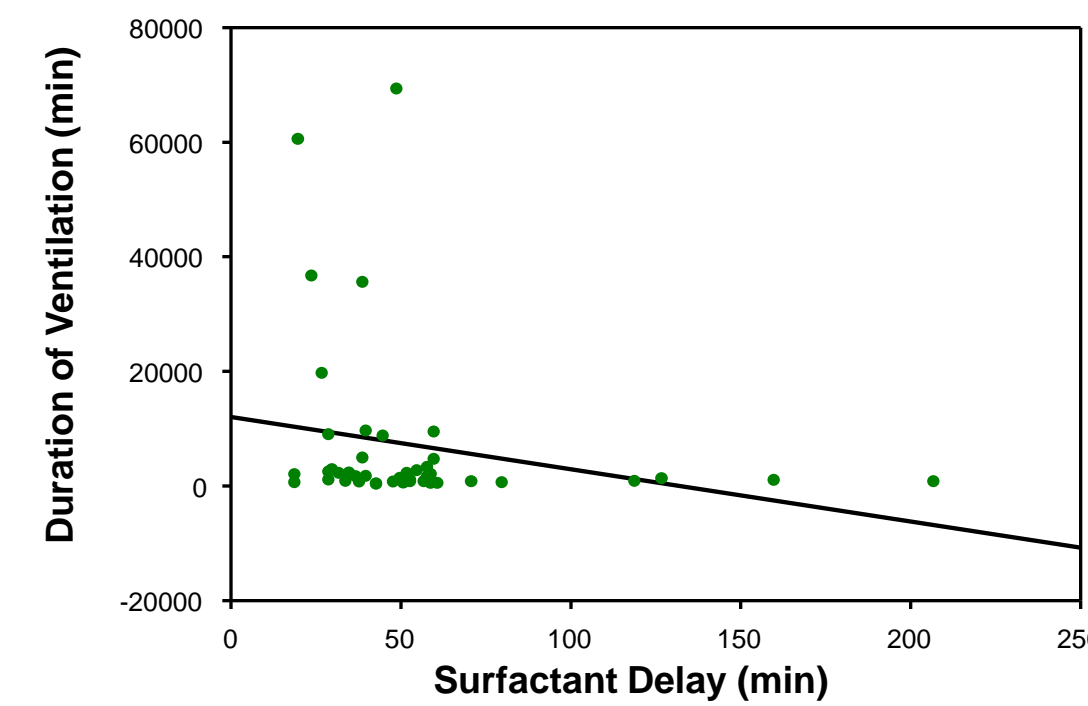
Descriptive Analysis



Results

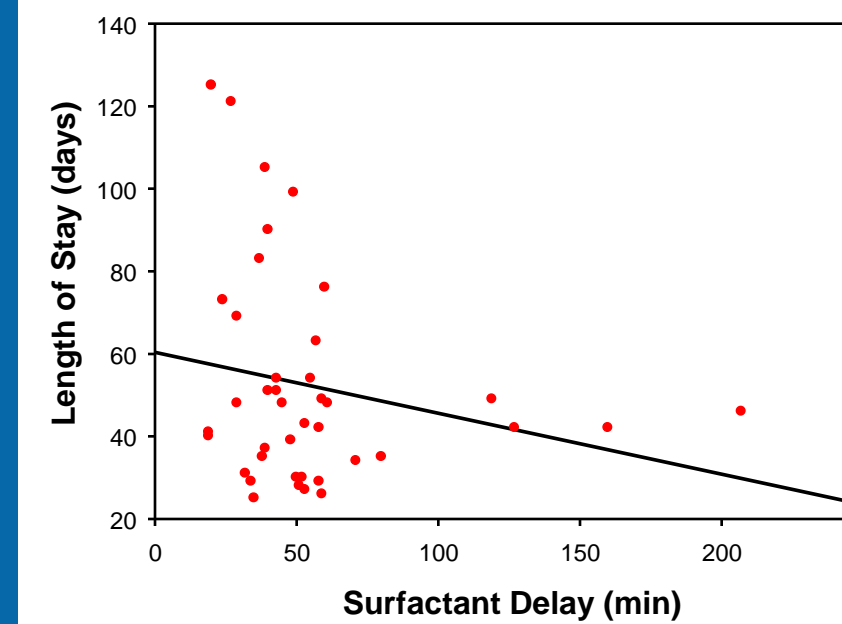
Duration of Ventilation vs. Surfactant Delay

- The low r value suggests that there is no difference in outcome between very early SD and early SD.
- A subset of the population (gestational age 29-31 weeks, n=23) was analyzed with comparable results



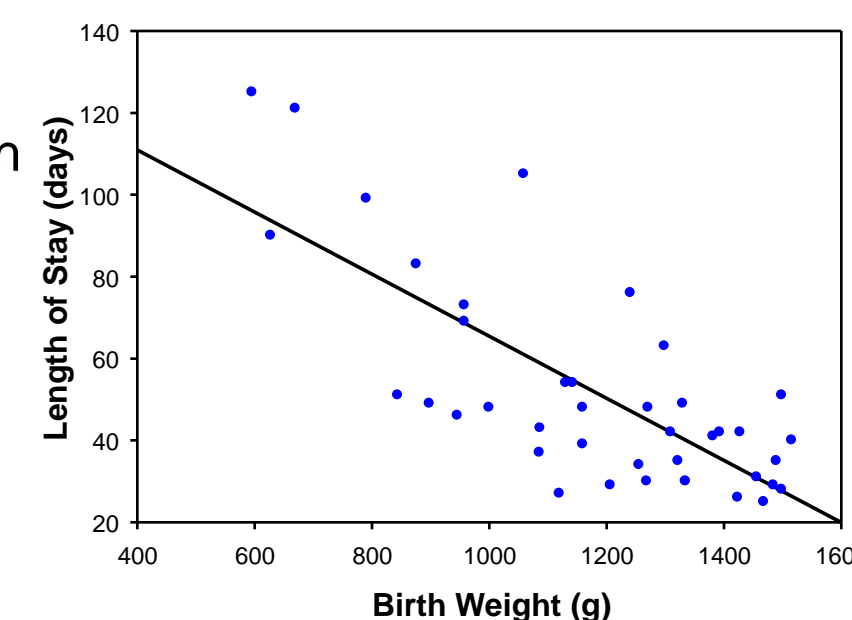
Length of Stay vs. Surfactant Delay

- Length of stay and birth weight were also measured
- Very early SD or early SD does not impact length of stay.



Length of Stay vs. Birth Weight

- The smaller the patient is, the longer the length of stay will be.
- There is a negative correlation.

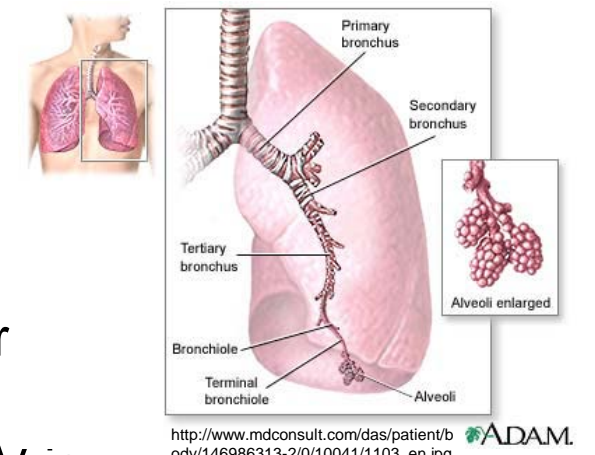


Conclusions

- The results indicate that primary outcome of very early surfactant delay does not differ with primary outcome of early surfactant delay. From this data we can extrapolate that surfactant administration in the delivery room may be unnecessary.
 - There is no apparent harm in administering surfactant after stabilization of the neonate.
- These results provide benchmark data for further studies and suggest that efforts to improve protocol compliance related to treatment delay would be unnecessary.
- This is a pilot study and further randomized controlled trials are necessary to provide more data.

Recommendations

- A variation of this study in a Level III neonatal intensive care unit with a larger sample size and population would be recommended.
- Delay in surfactant administration appears to show no harm to an infant committed to mechanical ventilation and thus staff may be able to wait longer before deciding to administer the costly treatment.
- Cognizance of other exterior factors that may contribute to DV is warranted.



Acknowledgements

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