

Introduction of Less Invasive Surfactant Administration (LISA) for respiratory distress syndrome at University Hospital Zurich

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Background

- LISA: Administration of surfactant through a thin catheter, while the infant is breathing spontaneously on CPAP
- Compared to application of surfactant via endotracheal tube: Less death or BPD at 36 weeks, reduced rate of pneumothoraces¹

Methods

- September 2020: Introduction of a standardized protocol adapted from OPTIMIST-A² and training of staff
- Phase I: gestational age ≥ 28 weeks, $FiO_2 \geq 0.3$ for 15min at $PEEP \geq 8$ cmH₂O to achieve $SaO_2 \geq 90\%$



LISA being performed on a manikin

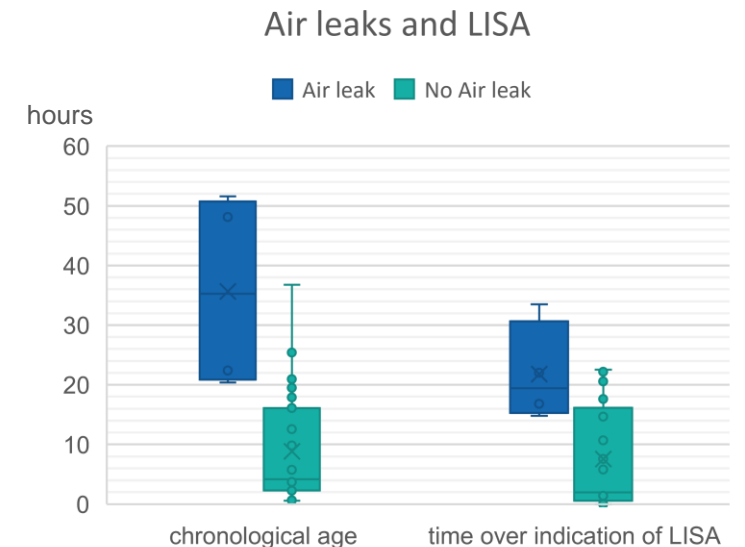
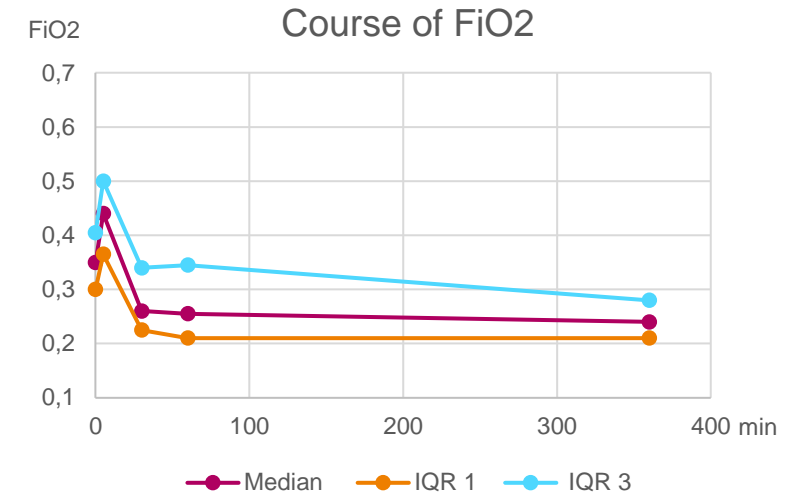
1. Aldana-Aguirre JC, Pinto M, Featherstone RM, Kumar M. Less invasive surfactant administration versus intubation for surfactant delivery in preterm infants with respiratory distress syndrome: a systematic review and meta-analysis. Arch Dis Child Fetal Neonatal Ed. 2017 Jan;102(1):F17-f23.
2. Dargaville PA, Kamlin CO, De Paoli AG, Carlin JB, Orsini F, Soll RF, et al. The OPTIMIST-A trial: evaluation of minimally-invasive surfactant therapy in preterm infants 25-28 weeks gestation. BMC Pediatr. 2014 Aug 27;14:213.

Results of the first half-year

- 33 infants, median GA: 30 4/7 weeks, median birth weight: 1400g
- Efficiency of LISA: significant reduction of FiO₂ after 30 mins, 1h and 6h
- The procedure was very well tolerated in all cases
- LISA-failure: 9 infants (27.3%) with need of mechanical ventilation, 2 (6.1%) with one repetition of LISA
- Air leak syndrome in 5 infants (15.2%), peak in November / December 2020

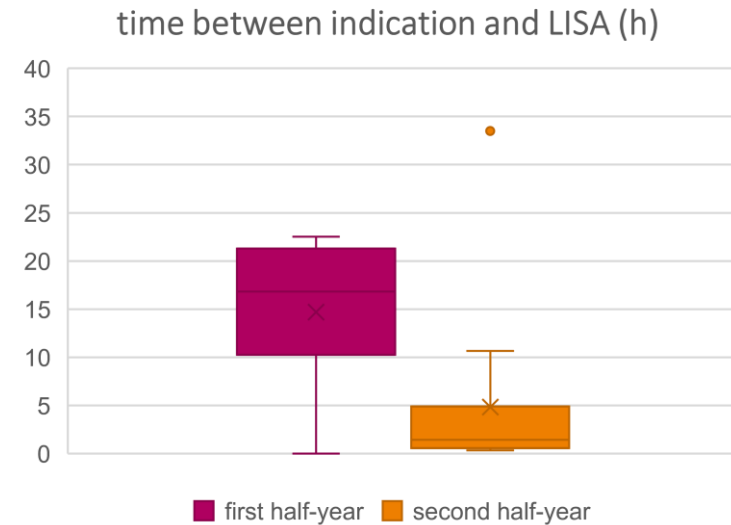
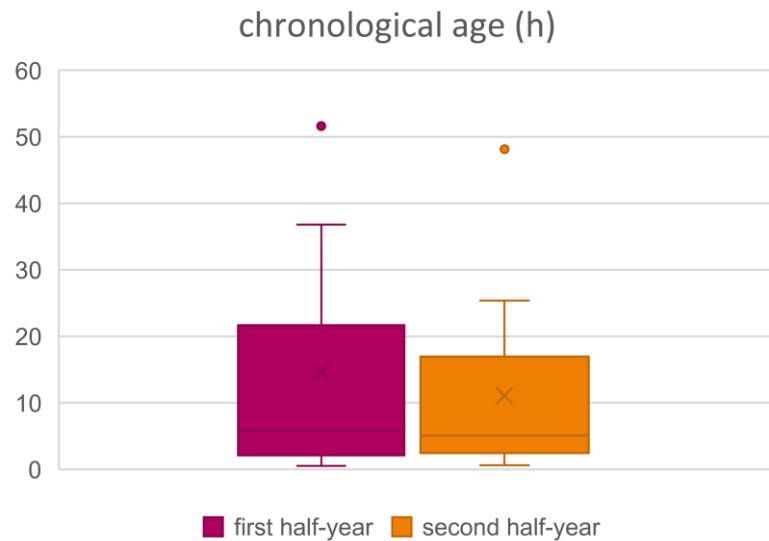
Safety-analysis

- Stop of two months for a safety evaluation and re-training of staff
- Air leaks: Later performance of LISA in chronological age, longer duration between indication and procedure



Re-start of Phase I

- After second half-year: higher protocol adherence, shorter interval between indication and execution of LISA



Conclusion

- An evidence-based standard operating approach, intensive training of staff and evaluation of efficacy and safety are necessary to introduce a new procedure in a NICU.

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Sources

- Picture on first slide: Bhayat S, Shetty S. Less-invasive surfactant administration (LISA). Issue 4 ed: Paediatrics and Child Health; 2020. S. 144-8.
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- Isayama T, Iwami H, McDonald S, Beyene J. Association of Noninvasive Ventilation Strategies With Mortality and Bronchopulmonary Dysplasia Among Preterm Infants: A Systematic Review and Meta-analysis. Jama. 2016 Aug 9;316(6):611-24.
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