Current practice of LISA (Less Invasive Surfactant Administration) and Challenges of implementation in England: A National survey.

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INTRODUCTION

LISA has been shown to improve the outcomes of death and bronchopulmonary dysplasia (BPD) in preterm infants, as evidenced in meta-analyses of randomised control trials.¹

Fig 1. Composite outcome of death or BPD at 36 weeks. J. Aldana-Aguirre et al. ADC 2017

Theory of LISA: Administration of surfactant through a semi rigid catheter which allows surfactant diffusion through spontaneous breathing without need for mechanical ventilation. Already implemented in many countries in Europe.²

AIMS

- To evaluate the use of LISA in England
- To determine the practices of premedication, inspired oxygen (FiO₂) threshold at which surfactant is indicated and the feasibility according to gestational ages and location (Neonatal unit vs Delivery suite).
- To identify potential challenges of implementing use of LISA.

METHODS

- Total of 164 neonatal units in England (obtained from BAPM website): 14 units excluded (surgical unit with no delivery suite or same trust as other unit).
- 150 units included:** 43 Neonatal Intensive Care Units (NICU/Level 3), 73 Local Neonatal Units (LNU/Level 2), and 34 Special Care Units (SCU/Level 1).
- A questionnaire with 6 questions was devised of which there were multiple choice, e.g. FiO₂ threshold and gestation, and open-ended questions
- A web-based service (SurveyMonkey) was used to send out the questionnaire by email to all units in December 2017. Telephone conversations were conducted with non-responders in May 2018.
- Responses were screened for duplications and data completeness assessed using Microsoft Excel. Data analysis was descriptive.

RESULTS

- Response rate:** 95. 3% (143/150 units). No response from 1/43 NICUs and 1/73 LNUs.
- 56.4 % (n=79) of units would consider performing LISA on delivery suite. Others feel it is a less controlled environment, and would prefer intubation if necessary.

- Reasons for not using LISA:**
- Lack of guidelines/training
 - Invasive/no sedation
 - Unsure about benefits
 - Prefers intubation/current practice

		< 28 weeks	28-32	32-37
All levels of Units	MEDIAN	30 (25-90)	40 (30-88)	40 (30-85)
	MEAN	35.08	37.95	40.53
NICUs (Level 3)	MEDIAN	30 (25-70)	40 (30-70)	40 (30-80)
	MEAN	34.34	36.97	39.86

Table 1. FiO₂ threshold for administering surfactant on non-invasive ventilation according to gestation

CONCLUSION

- Limitations of the study:**
 - Done over a specific period of time; greater or fewer numbers of units may be using LISA since the survey.
 - Answers per unit are based on views of one consultant – potentially different views within the same unit.
- The use of LISA in England is low compared to some European countries, despite the evidence of benefits of LISA.
 - Main reasons are lack of guidance and training.
 - Other challenges are in method of sedation and difficulty in ascertaining the exact catheter’s position, as there is no end tidal CO₂ detection unlike an Endotracheal Tube.
- Current evidence of FiO₂ >30% in preterm infant being predictive of CPAP failure³ correlates with survey finding of FiO₂ >30% for surfactant administration
- Awaiting Optimist-A trial (multi-centered randomised control trial) and Cochrane review.

References:
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2.Klotz, D. et al. European perspective on less invasive surfactant administration—a survey. *European Journal of Pediatrics* 176, 147–154 (2017)
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