ARTICLES ON BREATH SOUNDS ANALYSIS

# Digital stethoscope technology to evaluate breath sounds in preterm neonates with respiratory distress syndrome (1)

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| --- | --- | --- |
| **Summary** | **Key points** | **Details** |
| Biological background  &  Tools to measure lungs aeration | Biological background | Lung aeration  Surfactant  Surfactant replacement therapy |
| - Chest X-ray  -Lung ultrasound  -Electrical impedance tomography  -Respiratory inductive plethysmography  -Whole body plethysmography  -Computed tomography | Different tools with advantages and disadvantages. |
| Digital stethoscope technology (DST) |  |
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# Practical implementation of AI algorithms in pulmonary auscultation examination (2)

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| **Summary** | **Key points** | **Details** |
| AI in pulmonary auscultation intelligence |  |  |
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# Developing a reference of Normal Lung Sounds in Healthy Peruvian Children (3)

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| **Summary** | **Key points** | **Details** |
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# Digital stethoscopes in pediatric medicine (4)

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| **Summary** | **Key points** | **Details** |
| Review of available DS | The acoustic stethoscope | Before the DS |
| Composition of a stethoscope | P1 |
| Why DS better than AS | P2 ++ |
| Different models of DS |  |
| DS used in neonatology |  |
| Limitation of DS | * Alone no ability to identify a pathology: just record and sometimes display * Quality of sound |
| Future DS |  |

# Otimizing high-frequency-oscillation ventilation using acousitic parameters of the newborn lung (5)

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| --- | --- | --- |
| **Summary** | **Key points** | **Details** |
| Lung neonate acoustic properties investigation to determine optimal MAP during high frequency ventilation | Ventilation using high-frequency-oscillation (HFO) | Standard care for the ventilatory management of critically ill neonates |
| MAP | Mean airways pressure |
| Acoustic measurements | Taken before and just after the administration of exogenous surfactant |
| Acoustic reflection, volume and MAP | Acoustic reflection increases 🡪 volume increases  MAP increases 🡪 volume increases |
| Surfactant administration | * Reduces the surface tension throughout the lung * During procedure, no way to estimate where surfactant was absorbed * Increases lung volume |
| Limitations | Noise  Resolution |

# Questions

**Biological field**

1. *Is it the subject of your thesis? Since when is the study in progress? How many people are involved?*

Belle is a medical student probably in 5th year. She is doing a one-year research, since the beginning of March. She is helped by a doctor (I don’t remember his name).

1. *How do we know when a baby needs SRT? (should all with RDS have SRT)*

It depends on their breathing pattern; on how much oxygen they need.

1. *All recordings are done between 24 and 48h, right? Why?*

Arbitrarily chosen.

**Engineering field**

1. *What has already been done on the engineer side? (cf. p29 the 3 steps)*

Difference between birth vaginally and cesarean section. Other things but I don’t know. **???**

1. *Did you recover the signals? How much?*

20 neonates with SRT injection

20 without

1. *What are the differences between adults and neonates in the signal features? (Maybe it is my job to find that).*

**???**

1. *Do you have some articles or things that I can read to know more about the subject?*

86 and 100

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Mon but : regarder des caractéristiques pour qu’il y est le plus de différences before and after SRT in neonates with RDS + entre ceux qui ont SRT et ceux qui ne l’ont pas.