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Monitoring Feeding Ability of Newborns

Lack of Feeding Maturity

Feeding Ability = Feeding Maturity

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Most of the term infants, which were born after the regular gestation period of 37 complete weeks, have **coordinated sucking-swallowing patterns**. However, these abilities are underdeveloped in preterm infants. The lack of development of effective feeding in premature infants can cause serious complications such as accidentally aspirated food into the respiratory tract and the lungs, respiratory illnesses related problems like brain hypoxia exacerbating neurological deficit, infections, respiratory arrest and even death. Further, this can also cause preterm infants get tired very quickly during feeding and thus impact their growth negatively. For these reasons, most of the preterm infants are fed via an orogastric tube in neonatal intensive care units (NICU).

ISSUES

Health Problems

Prolonged Hospitalization

Re-Admissions

The Telegraph

13/11/2012

Baby died after nurse fed her day's worth of food in an hour.

The Washington Post

11/08/2017

Breastfeeding mother who accidentally suffocated her newborn sues hospital.

Daily Mail

12/01/2018

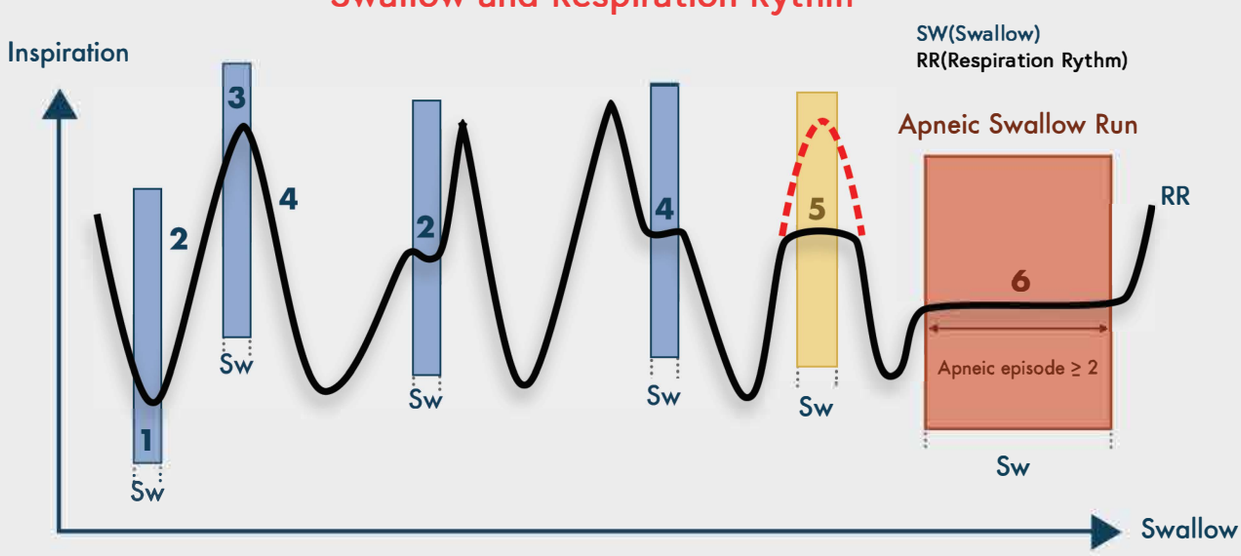
Premature baby girl died after a hospital blunder saw her feeding tube incorrectly inserted into an ARTERY.

Feeding Ability = Feeding Maturity

Suck-swallow-breathe and their coordination

Achievement of effective oral feeding after birth is important for ideal growth and for safe discharge from hospital. The exact time at which sucking, swallowing, and respiration become coordinated in preterm infants is still unknown; however, integrity of oropharyngeal anatomy and neurological function is essential to complete the maturation process. Preterm infants who are discharged before they have acquired effective feeding skills may be at risk for aspiration, breathing difficulties, or severe respiratory and neurological problems.

Swallow and Respiration Rythm



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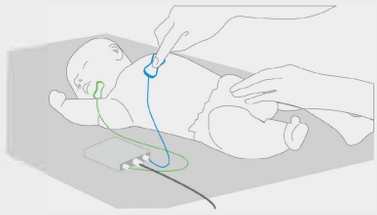
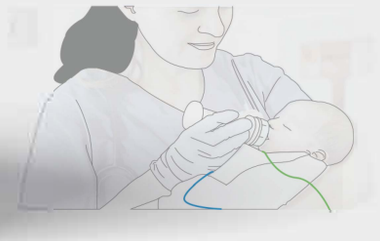
1



2



3

4

A NON-INVASIVE POINT-OF-CARE BIOMEDICAL DIAGNOSTIC DEVICE

A non-invasive medical device for the assessment of feeding maturity is developed by using state-of-the-art machine learning algorithms and sensors, which are placed over the neck and chest of the infant during a trial feeding. Easy to use, painless to patients and at most 2.5 min for the whole process.

- Mobile
- 10" multi touch screen
- Two non-invasive probes
- Auto brightness
- Arm Cortex A9 1.0 GHz CPU
- 4 GB Memory
- 32 GB Storage
- Embedded OS
- Neural Network Engine
- Signal Processing Engine

How Does It Work?

1 Acquire Bio-Signals

2 Extract Bio-Events

3 Compute Temporal Statistics

4 Report Maturity Metric

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NURTURING THE CHILD

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REGULAR ARTICLE

Noninvasive evaluation of swallowing sound is an effective way of diagnosing feeding maturation in newborn infants

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Keywords
Maturation, Preterm infants, Sucking and swallowing

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ABSTRACT

Aim: Despite extensive research, there is still controversy regarding the time at which sucking and swallowing functions mature in preterm infants. This study aimed to evaluate maturation using the noninvasive method of swallowing sound.

Methods: We compared 52 preterm infants of between 27 and 36 weeks' gestational age

Informed Clinical Decisions

Feeding Method Schedule

NICU Period

Safe Discharge Decision

Improve Growth

Healthy Newborns

Prevent Illnesses

2012 — 2020

- 6/12 Kick-Off (w. Local Funding)
- 10/14 H2020 SME Phase-1 Kick-Off
- 6/16 New Prototype Design
- 3/17 H2020 SME Phase-2 Kick-Off
- Today
- 9/18 MEDICA Launch
- 11/18 International Clinical Research Kick-Off
- 4/19 CE Application
- 12/13 Proof-of-Concept
- 7/15 2nd Iteration Kick-Off (w. Local Funding)
- 8/18 Clinical Research Kick-Off
- 12/19 Out-Patient Development Kick-Off

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