

## Newborn Respiratory

### *Nursing 201: Nursing Care of Special Populations*

- Fetal Lung Fluid
  - 80- 110 ml present at birth
  - “vaginal squeeze”
    - During vaginal delivery, chest is compressed and approximately 1/3 of fluid is “squeezed out”
    - Remainder of fluid enters pulmonary circulation through aveolar capillaries and lymphatic
    - Hypotonic and easily absorbed
    - Small NB or C/S have increased fluid due to no squeeze
  
- Respiratory Stimuli:

Chemical	Thermal	Sensory/ Physical	Mechanical

- Lung Expansion
  - Infant must overcome resistive forces
    - surface tension
    - viscosity of fluid in airway
    - tissue resistance
  - Inflation near total with first good cry but changes continue to occur over several hours or days

- Aveoli open serially
  - Pop-pop-pop phenomenon
  - Each achieves full expansion before the next opens
- Surfactant
  - Surface factors or wetting agents
  - Lecithin is a critical component for alveolar stability
  - Coats the alveolar surface
  - Decreases surface tension
  - Prevents alveoli from completely collapsing at the end of expiration
  - Prevents atelectasis
  - 24 weeks to birth
  - Lungs enter “terminal sac period” of development
  - As aveoli develop they begin to differentiate into Type I and Type II aveolar cells
    - Type I- needed for gas exchange
    - Type II- synthesis and storage of surfactant , begin to secrete surfactant
  - Survival chance greater at 28-32 weeks
- L/S Ratio
  - Assesses fetal lung maturity
  - Lecithin/ Sphingomyelin
  - Lecithin increases from 24 weeks, sphingomyelin stays the same throughout development

<b>Gestation</b>	<b>L/S Ratio</b>	<b>Lung Maturity</b>
26-27 weeks	Secretion begins	Viability attained
30-32 weeks	1.2 – 1	
35 weeks	2 - 1	Maturity attained

- Respiratory Assessment

- Transient Tachypnea of the NB (TTNB)
  - “Wet Lung Syndrome”
  - Clinically resembles respiratory distress syndrome
  - Commonly seen in: SGA, AGA, Pre-term, Near term
  - Normal Apgar Scoring

<b>Contributing Factors</b>	<b>Signs and Symptoms</b>	<b>Diagnosis</b>	<b>Treatment</b>	<b>Prognosis</b>

**\*\*No risk of reoccurrence or residual pulmonary dysfunction**

- Respiratory Distress Syndrome (RDS)
  - o Surfactant deficiency
  - o Common with Pre-term and IDM
  - o Progressive hypoxia and hypercapnia

Signs and Symptoms	Dx	Tx

- Pneumonia

Causes	Contributing Factors	Complications	Signs & Symptoms/ Dx	Treatment

- Choanal Atresia
  - Most common anomaly of the nose
  - A bony or membranous septum located between the nose and pharynx
  - Unilateral or bilateral
  - Formed during 7<sup>th</sup> week of embryonic development

Signs and Symptoms	Diagnosis	Treatment

- Diaphragmatic Hernia
  - Defect in the formation of diaphragm
    - Septum developed between heart and liver
    - Abdominal organs are displaced into the thoracic cavity
    - Lung is underdeveloped due to pressure exerted on abdominal organs

Signs and Symptoms	Diagnosis	Treatment	Prognosis

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- Meconium Aspiration Syndrome (MAS)
  - The passage of meconium intrauterine
  - Caused by:
    - Hypoxia → fetal distress
    - Vagal response
    - May be physiological
  - Higher incidence:
    - SGA
    - Post-term
    - Mother with prolonged labor
- Clinical Manifestations:
  - Meconium present in amniotic fluid
  - Varying degrees
  - Large amount of meconium = complete obstruction of trachea (thick pea soap consistency)
  - Small amount of meconium = obstruction of distal airways = atelectasis (green tint)
  - Ball- Valve affect- air allowed in but not expelled



**Ball-Valve Effect**

Drawing Courtesy Margy Priddy, MPS, MSN, RN-BC

<b>Signs and Symptoms</b>	<b>Treatment</b>

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