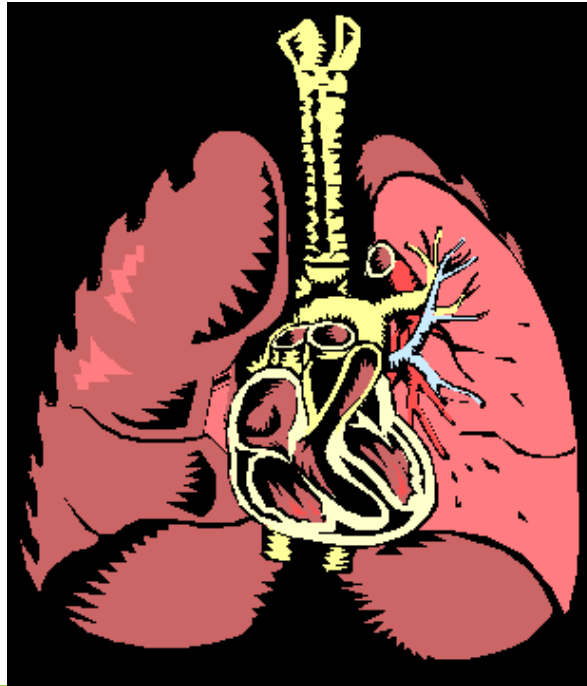


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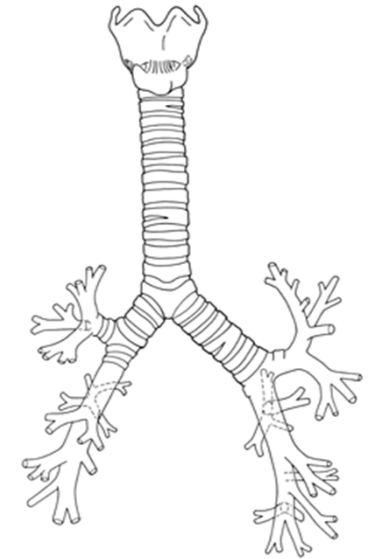


Neonatal Respiratory Care

Julia Petty

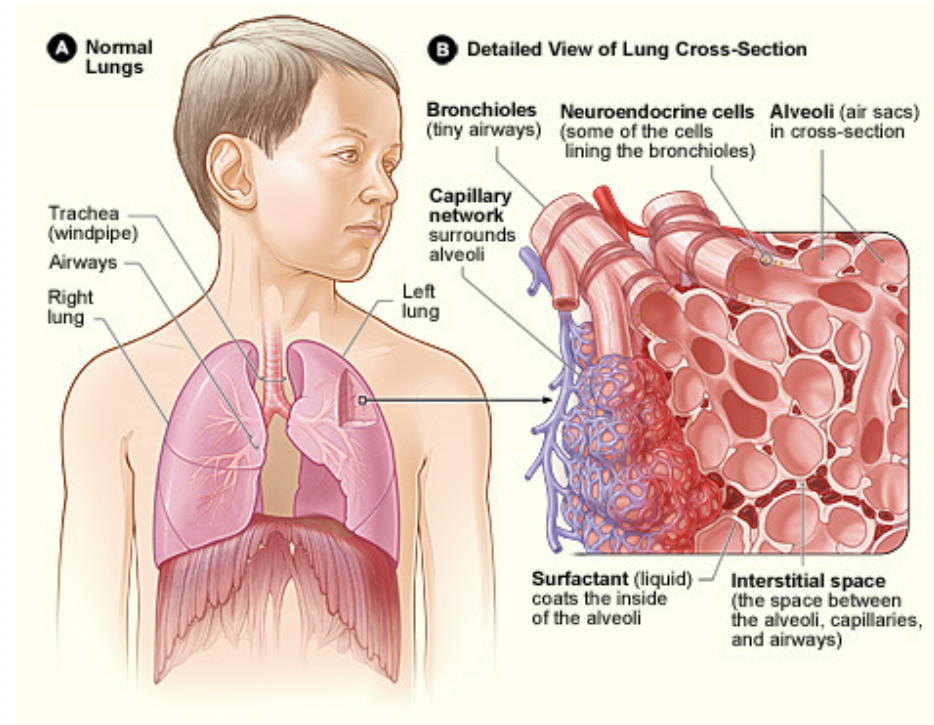
Respiratory conditions

- EXAMPLES.....
- Respiratory Distress Syndrome (RDS)
- Chronic lung disease
- Transient Tachypnoea of the Newborn
- Meconium Aspiration
- Pneumonia
- Apnoea of prematurity
- Air leaks – e.g. pneumothorax
- Persistent Pulmonary Hypertension of the Newborn (PPHN)



Assessing the normal respiratory system

- Rate
- Pattern / rhythm
- Sounds
- Chest movement
- Colour
- Blood gases
- Good saturations / transcutaneous O₂ in air
- Heart rate



Assessing the *compromised* respiratory system

- Rate - Tachypnoea
- Pattern / rhythm – dyspnoea / gasping
- Sounds - grunting
- Chest movement - recession and nasal flaring
- Colour – cyanosis / pallor
- Blood gases - ? Acidosis / ? High CO₂
- Poor saturations in air & requiring oxygen
- Heart rate – tachycardia (late bradycardia)

Respiratory care

- *Different levels of dependency (from healthy up to intensive care).....*
- Self ventilating in air
- Oxygen – ambient in incubator
- Oxygen – via nasal cannula
- Oxygen – via head box
- High flow oxygen (Vapotherm ©)
- CPAP – continuous positive airway pressure
- BiPhasic CPAP (2 levels)
- Ventilation

Oxygen therapy

- Different ways of giving oxygen highlighted on previous slide
- Remember oxygen at high levels can be harmful
- Reduce/remove oxygen as soon as possible
- Monitor oxygen saturations continuously



What is CPAP?

- Continuous Positive Airway Pressure
- The application of positive pressure to the airways of a spontaneously breathing patient throughout the respiratory cycle
- Spontaneous breathing possible but with difficulty maintaining airway patency / when there is poor compliance and collapse
- Thompson, 2006

Binasal CPAP

- Delivered by nasal prongs in both nostrils OR via a mask over the whole nose (see next picture)
- Based on a linear relationship between flow and pressure (i.e.- increase flow to increase pressure)
- Designed to provide accurate and easily controlled CPAP by a non-invasive means
- Continuous flow, a constant seal is vital,
- A unique 'fluidic flip' mechanism in the tubing near the nose ensures this pressure delivered is in tune with inspiration and expiration of the neonate (flow driver)



BiPhasic CPAP (“SiPAP” ©)

- Two fluctuating levels of pressure
- Changes in pressure can be set by the nurse / clinician OR set according to the baby (i.e. ‘trigger’)
- Increases of pressure referred to as ‘pulses’ rather than breaths
- See next picture



Nursing care issues

- Fixation – ensure good seal, c/o nostrils, nose care
- Correct bonnet size and prong
- Support of tubing – positioning tubes and the baby (?prone), correct angle
- Humidity
- Feeding & observe abdomen
- Observation of respiratory status
- Petty (2013a)

Ventilation

- Full mechanical ventilation is only given when non-invasive interventions have been attempted and are ineffective
- Neonate is intubated and put onto ventilator support with a given selected mode guided by their individual condition and assessment
- Protective lung strategies mean that the lowest possible pressure, volume & oxygen must be given to prevent damage to fragile neonatal lungs
- Bellettato et al, 2011; Sweet et al, 2013; Petty, 2013b



Other areas

- Surfactant therapy for preterm neonates administered early (Sweet et al, 2013)
- Other related drug areas are – use of caffeine & steroids (maternal antenatal use to prevent RDS and the use of post-natal steroids to get neonate off ventilation)
- Weaning ventilation.
- Conventional versus non-conventional modes & adjuncts - e.g. high frequency oscillation, nitric oxide therapy.
- NON-invasive strategies always best if condition allows ...

Further Reading

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