## An Introduction to Anaesthesia









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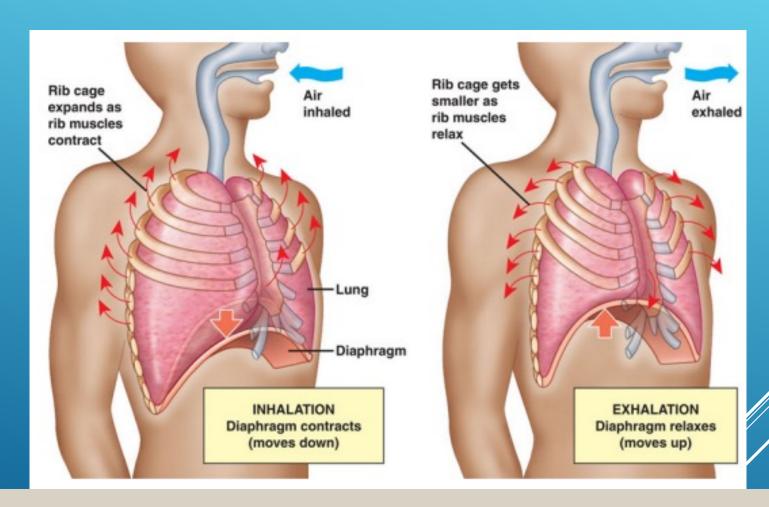
UCL Hospitals

## FIVE THINGS I HOPE YOU WILL LEARN FROM THIS LECTURE

- How breathing is affected by anaesthesia?
- ▶ Who is most at risk of problems?
- Breathing / ventilation considerations throughout the perioperative period
- Ventilation & monitoring intra-op
- ► Common post-op problems



## WHAT IS BREATHING?





## HOW IS BREATHING AFFECTED BY ANAESTHESIA?



**General Anaesthesia** 

### **Regional Anaesthesia**





## WHAT CAN WE DO ABOUT IT?



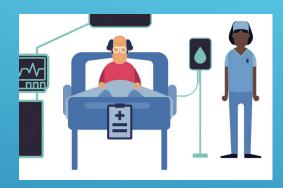


## WHO IS MOST AT RISK?



## **PREOPERATIVELY**

- ► Assessment & Investigations
- **▶** Optimisation
- ▶ Pre-habilitation
- ► Other options
- ▶ Post-op destination





## ASSESSMENT OF BREATHING



#### **Pulmonary Function Report**

Dr. Respiratory and Associates 123456 Respiratory Way Asthma, MN 55447

#### Office Medic 5.1.0 . QRS Diagnostic, LLC

Session Date & Time: 5/16/2008 9:42 AM

37 5 ft 9 in Name: Account Number: 123456789 Gender: Female 0 lbs Caucasian Smoking-Pack Years: 0

All test results should be evaluated by a qualified physician.

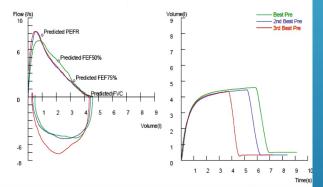
	Pred. (LLN)	Best Pre	% Pred.	2nd Best Pre	% Pred.	3rd Best Pre	% Pred.
Test Sequence		#3		#5		#2	
FEV1 (L)	3.57 Nh (2.89)	3.63	101.7%	3.45	96.7%	3.48	97.6%
FEV6 (L)	4.29 Nh (3.50)	4.59	107.1%	4.44	103.6%	4.35	101.3%
FEV1/FEV6	0.84 Nh (0.76)	0.79	93.6%	0.78	92.0%	0.80	94.9%
Time		9:45 AM		9:46 AM		9:44 AM	
Mouthpiece #		6575-7381		6575-7381		6575-7381	
Physician/Tech							

#### Best Pre-FVC: 4.59 (L), Best Pre-FEV1: 3.63 (L)

Best Pre-FVC. 4.39 (L), best Pre-FVC 1.3.00 (L)

Best Pre-FVC interpretation. Normal spirometry. Lung Age (yrs): 33

Comments: The various report customization options allow you to entier comments, turn the interpretation on and off, turn the lung age on and off, turn parameters on and off, turn the graphs of turn







## INTRAOPERATIVELY

► Most appropriate anaesthetic technique

- ▶ Oxygenate
  - ▶ Pre-oxygenation
  - ► Minimise periods of apnoea

- ▶ Ventilate
  - ► Avoid Airway obstruction
  - ► Lung protective ventilation





## TYPES OF VENTILATION

#### **SPONTANEOUS VENTILATION**

- Physiological advantages
- Respiratory rate indicator of pain

#### **BUT**

- ► Prone to hypoventilation
- Some types of surgery require muscle paralysis

#### **CONTROLLED VENTILATION**

- ► More control of Vt / RR
- ► End-tidal CO<sub>2</sub>
- Prevent atelectasis

#### **BUT**

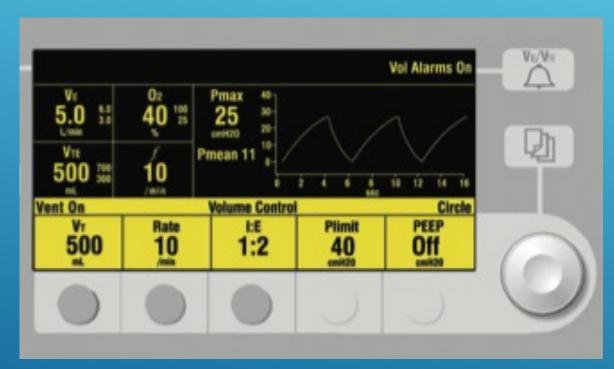
- Can cause barotrauma & volutrauma
- ▶ Muscle relaxant use



## THE VENTILATOR

- Ensure adequate gas exchange
- Avoid lung trauma

- ► FiO2
- Tidal Volume(6-8ml/kg)
- Frequency



- ► I:E Ratio
- PEEP
- Pressure limits ///



## ASSESSMENT OF VENTILATION

**Anaesthetic Machine** 

**Saturations** 

Inspired O<sub>2</sub>

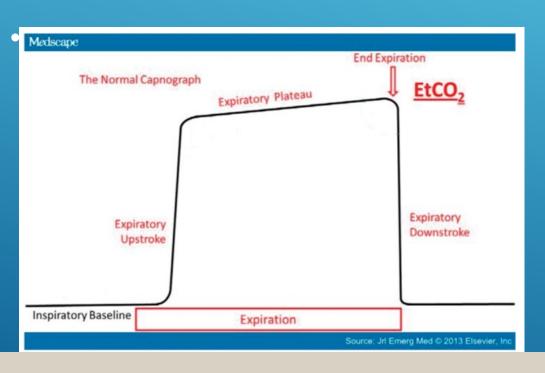
ETCO<sub>2</sub>





## CAPNOGRAPHY: END-TIDAL CO<sub>2</sub>

- Immediate information
- Adequacy of ventilation
- Confirms circuit is intact



- Flat line: failure of ventilation
- Slow rising initial phase airway obstruction



## **INTRAOPERATIVE — END OF SURGERY**

- ▶ Reverse muscle relaxation
- **►** Suction
- ► High flow & FiO2 Oxygen
- **▶** Extubation



## **POSTOPERATIVELY**

- ► Supplemental Oxygen
- ► Monitoring in recovery

- ► Chest Physiotherapy
- ▶ Medications

► Intensive Care





MOMENT TO THINK ....

POSTOPERATIVE PROBLEMS WITH VENTILATION



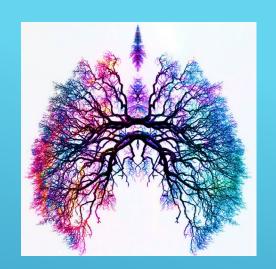
## POSTOPERATIVE PROBLEMS WITH VENTILATION

- ▶ Atelectasis
- ► Analgesia causing hypoventilation
- Pain causing hypoventilation
- ▶ Poor mobility
- ▶ Pneumonia
- ► Chronic respiratory conditions



## **MY 'TOP TIPS'**

- Oxygenation is KEY
- 2. Capnography is **really** important
- 3. Consider patient, anaesthetic and surgical issues with ventilation
- 4. Optimise at each stage of perioperative journey
- 5. Prevention / early treatment of respiratory problems is better than a cure



# THANK YOU FOR LISTENING. ANY QUESTIONS?