

Clinical dilemma

Acute on chronic respiratory failure
complicated by acute lobar atelectasis and
confusion

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Physiother Res Int 2006;11:180-182.

Why is this dilemma relevant beyond physiotherapy?

...it contains features which are common

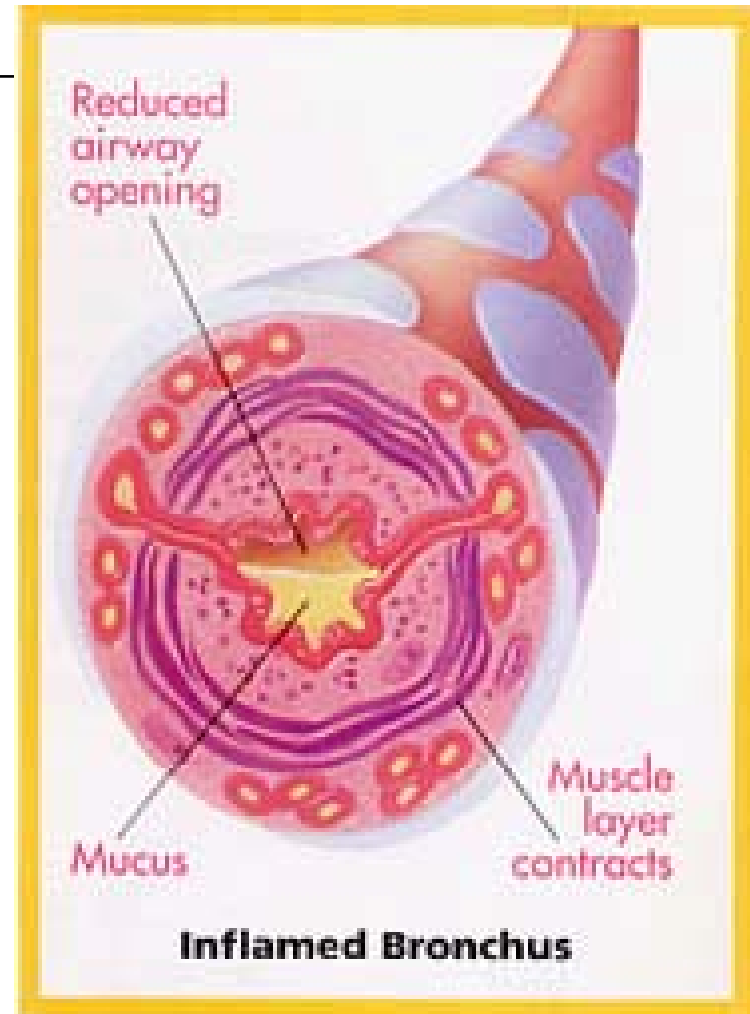
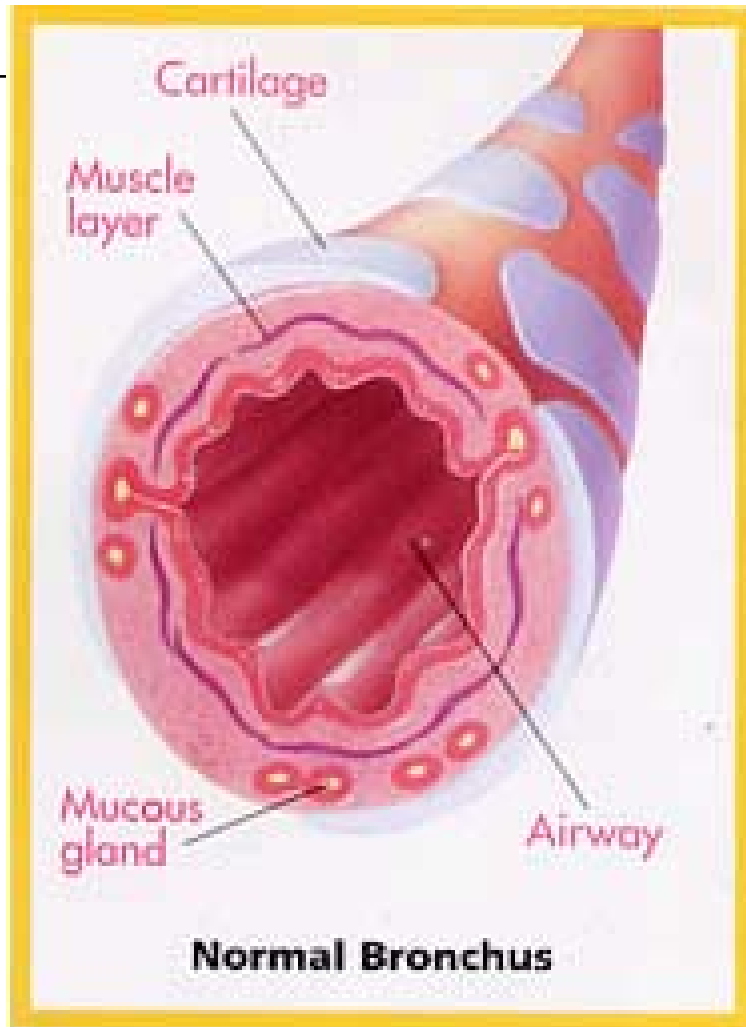
- A complex case is presented - such are often excluded from RCTs as the complexity itself acts as a confounder. Thus, there is little evidence to inform practice
- There is little communication between clinicians
- The patient is confused and combatant



Contextual background information

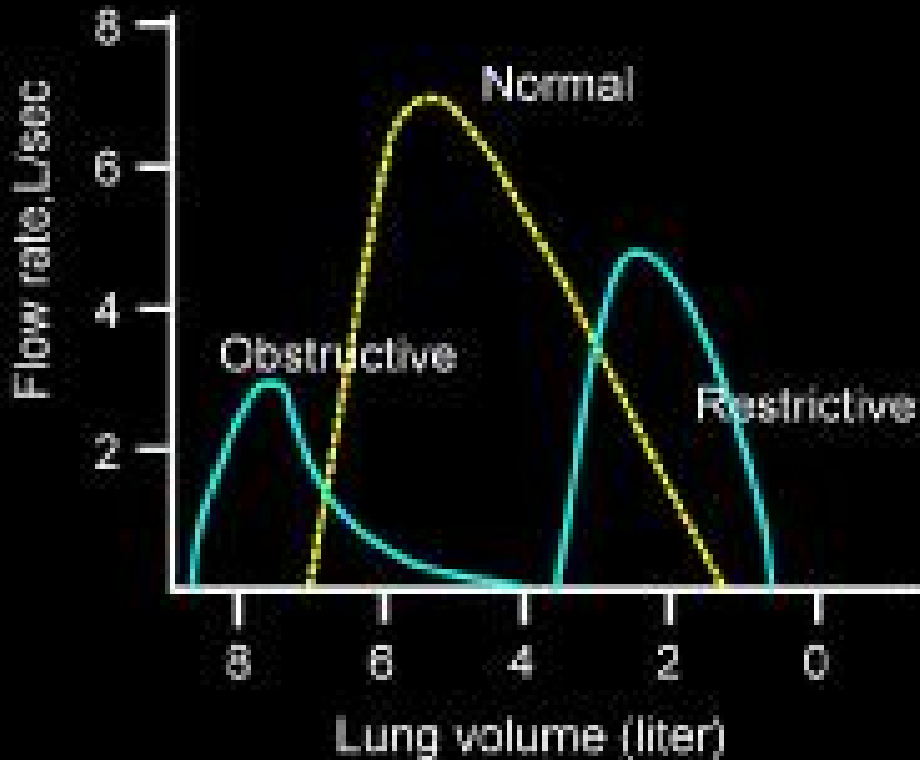
- Chronic obstructive pulmonary disease (COPD)
- COPD and chest physiotherapy

COPD: Increased airway resistance



COPD:

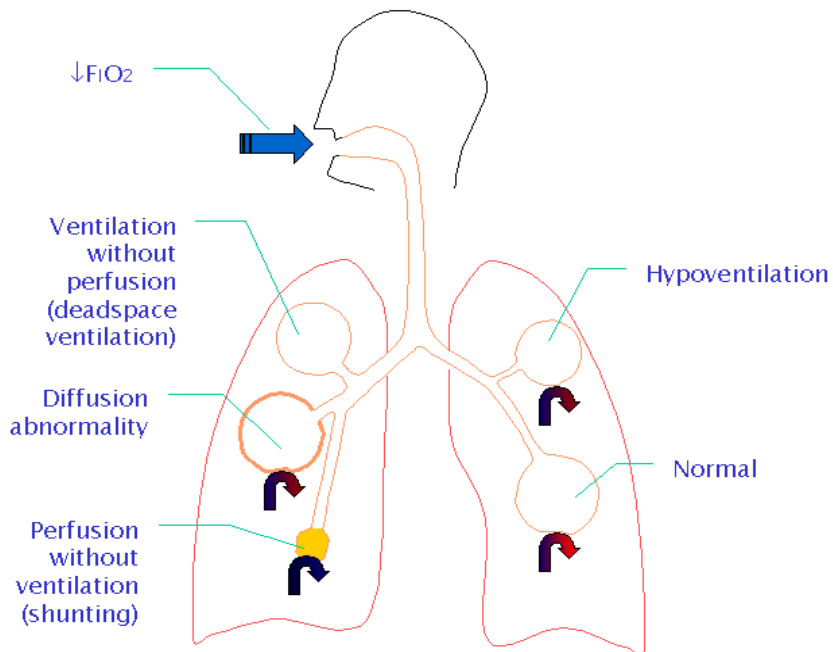
Gas trapping / hyperinflation



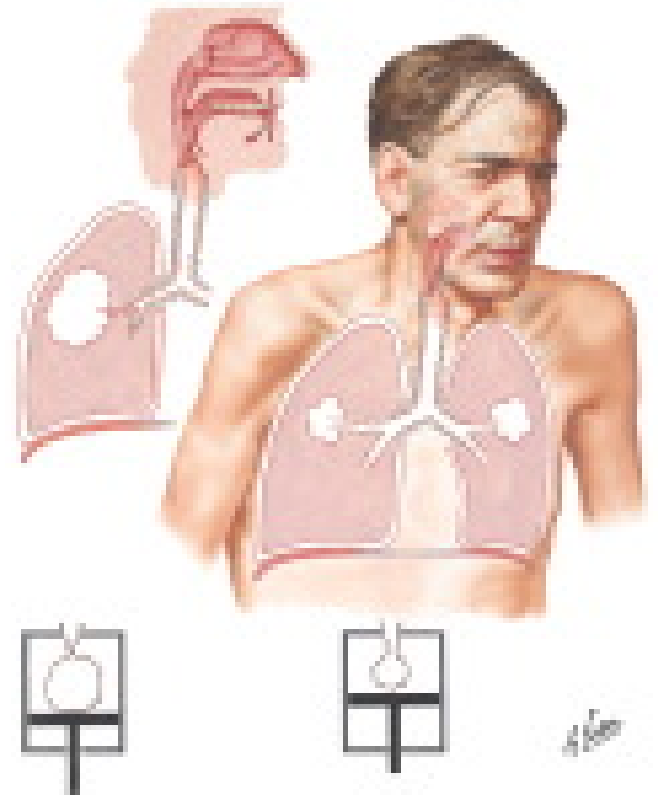
Ventilation:Perfusion mismatch

□ Hypoxaemia ($\text{PaO}_2 < 60 \text{ mmHg}$)

□ Hypercapnia ($\text{PaCO}_2 > 45 \text{ mmHg}$)



Increased work of breathing, dyspnoea, fatigue

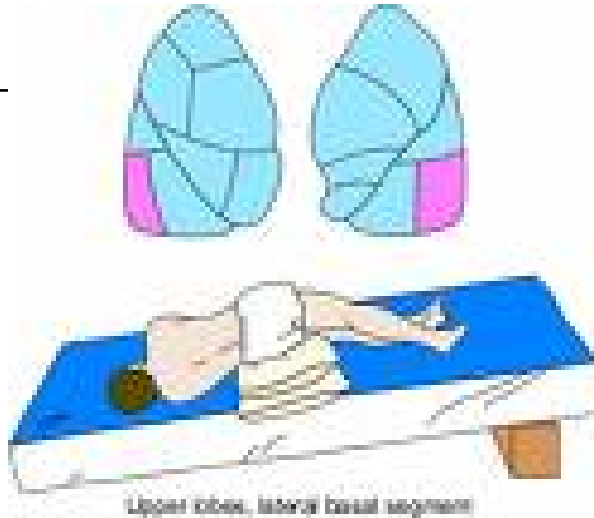




Other features

- Impaired chemoreceptor sensitivity
- Pulmonary hypertension

COPD and chest physiotherapy (CP)

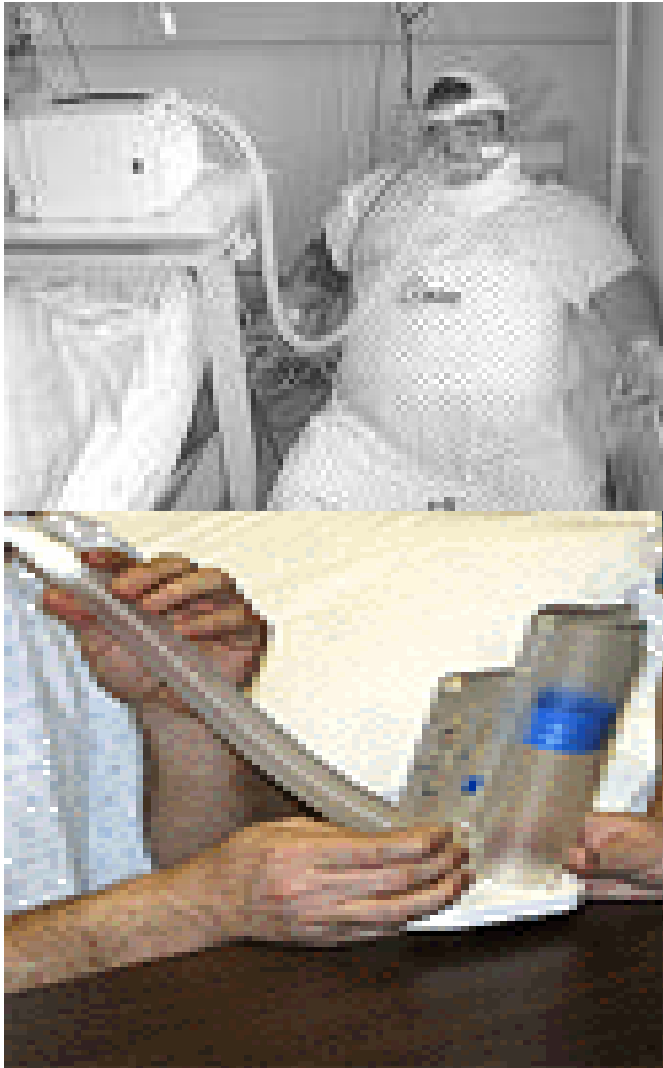


- ❑ Aggressive CP not shown to be any more effective in acute exacerbations of COPD than conservative CP (provided patient compliant etc)
- ❑ The underlying pathophysiology and pathomechanics impair the patients tolerance to physical interventions
- ❑ CP associated with increased O_2 demand and CO_2 production
- ❑ CP uses reclined positions which impact on cough and breathing mechanics, and heart function
- ❑ Gravity-assisted drainage requires patent airway

Clinical scenario

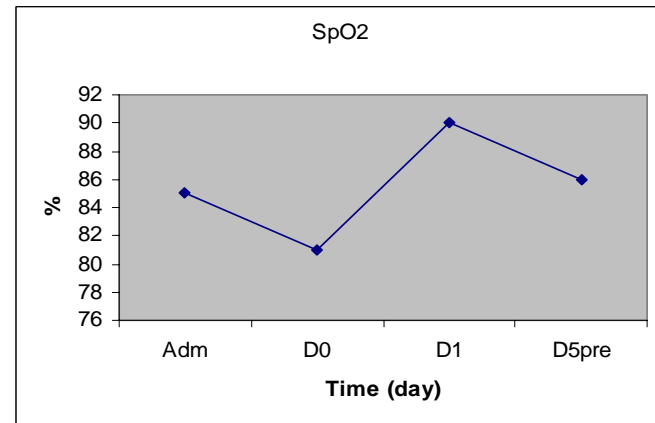
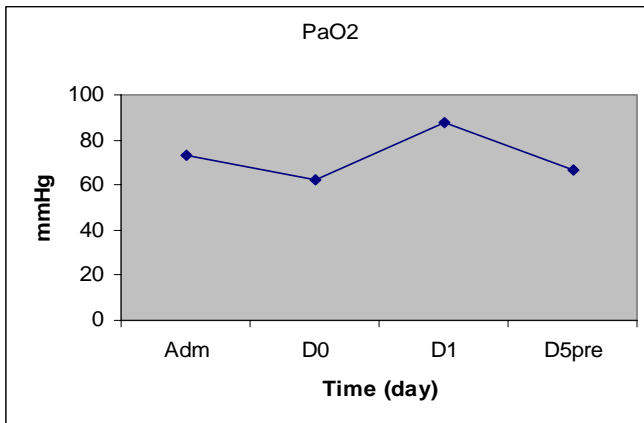
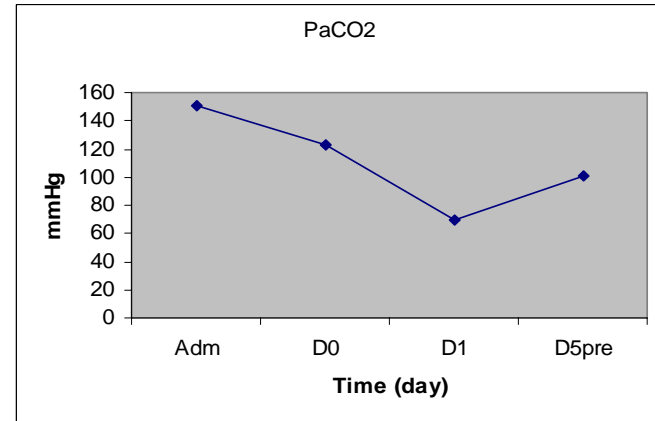
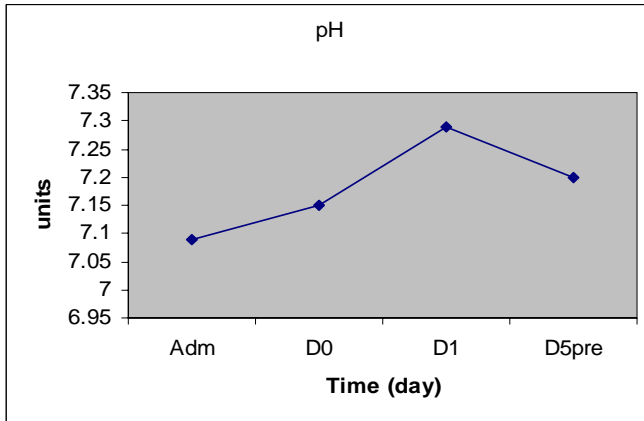
- GK presents with infective exacerbation of COPD
- PaCO₂ 151 mmHg; PaO₂ 73 mmHg (inspired O₂ 50%, CPAP)
- Co-morbidities
 - IHD; HT; Type II Diabetes; truncal obesity; ETOH excessive
- GK is combatant and non-compliant

Initial management Day 1 to 5



- HDU
- BiPAP
- Antibiotics
- Salbutamol
- Corticosteroids
- CP = DB + C in sitting
(first year graduate)
- (no communication
between doctor and
physio)

Journey to Day 5



Day 5



- ❑ Deteriorating CXR / gas exchange
- ❑ Ward round discussion – involving physio staff for first time
- ❑ Intubation deemed inappropriate
- ❑ Request for more aggressive physiotherapy

Clinical dilemma

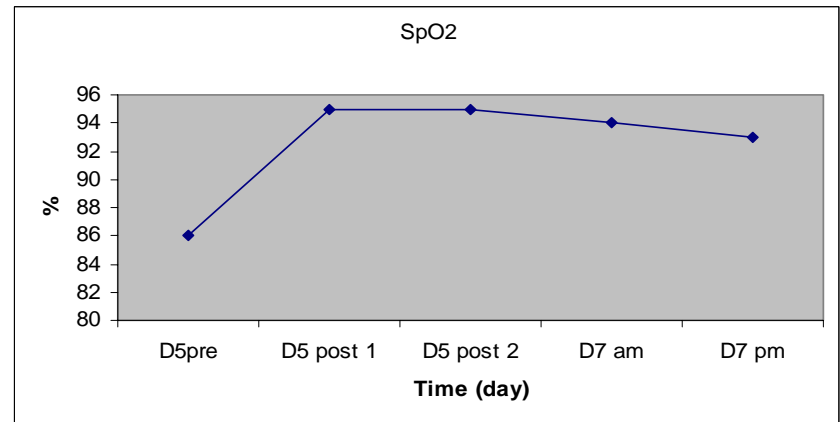
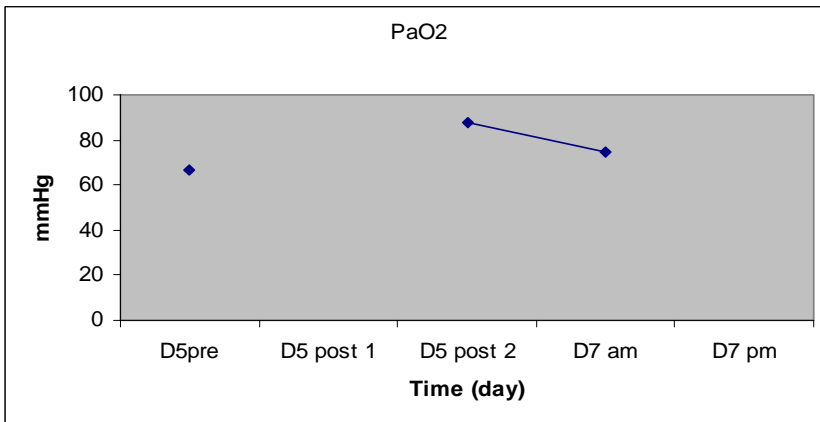
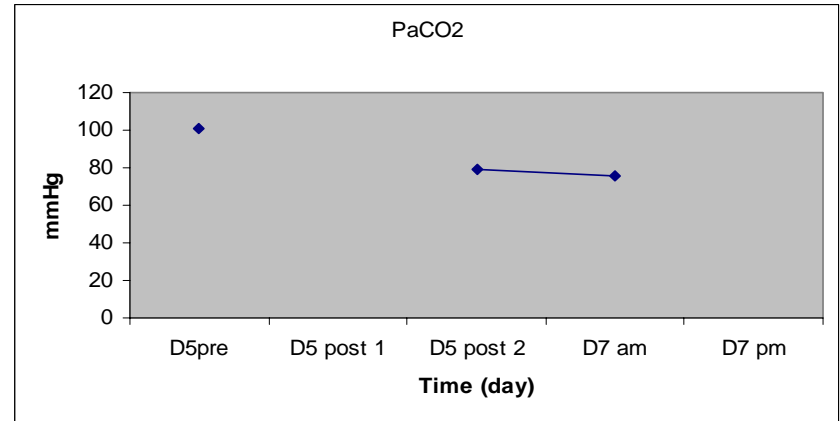
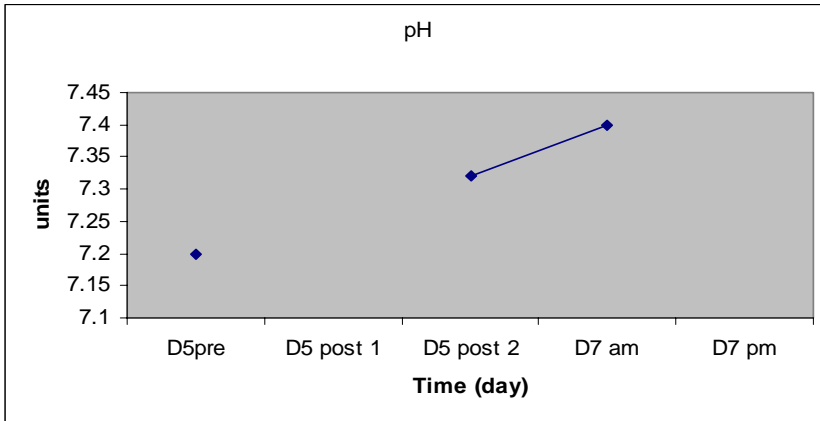
- Worsening clinical status
- Need to trial more aggressive CP, however no evidence of effect
- Risks
 - HT and IHD are precautions to CP
- Confounding factors
 - Non-compliance / confusion
- Issue of consent

Treatment plan and execution



- Team approach - all accountable
- Consent by family
- Patient restrained
- Nasopharyngeal airway inserted
- Close monitoring
- HDPD, vibrations, suction with BIPAP insitu

Treatment response Day 5 to 7



Outcome

- Day 7
 - Patient able to mobilise and clear own secretions (Flutter_{TM})
 - Able to maintain SpO₂ with more conservative regimen
- Day 10
 - D/C to medical ward
- Day 15
 - D/C to rehab unit

Summary & Conclusion

- Patient with acute COPD is not responding to fairly typical management approach – leading to a crisis
- Aggressive physiotherapy intervention is last resort, but evidence in support of this is lacking, and the patient is high risk
- Good outcome is achieved once clinical team takes a multidisciplinary approach (collective accountability)
- If communication was better, crisis may have been averted?

Google Images

- www.smenovironmental.co.uk – slide 4
- www.emedicine.com – slide 5,7
- www.aic.cuhk.edu.hk – slide 6
- www.netterimage.com – slides 7, 15
- www.socanesthesia.cl – slide 11
- www.bluegrass.kctcs.edu – slide 11
- www.wrongdiagnosis.com – slide 13

Reference

- West JB, 1987 Pulmonary Pathophysiology, 3rd ed. Baltimore, Williams & Wilkins – slide 5.