SIMPLY… Oxygen Therapy

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Plan

- Indications
- Delivery methods
- CPAP vs BiPAP

SIMPLY FINALS

Oxygen Devices

Classified by

- ***Performance*** (variable or fixed)
- Duration (short term or long term)
- ***Flow*** (low or high)
- Non-invasive or invasive

Low Flow Devices

All deliver VARIABLE O2

- Nasal cannulae
- Simple Face Mask
- Reservoir Mask

High Flow Devices

Deliver FIXED O2

- Venturi Mask

Oxygen masks

- Variable O_2 of 35-60%.
- Flow 5-10 L/min

- Comfortable
- Low cost

- Interfere with eating
- Easy displacement
- Increased aspiration by concealment of vomitus

Nasal cannula

- Variable O_2 of 24-50%
- Flow 2-6L/min

- Convenient
- Patient preference
- Easily tolerated

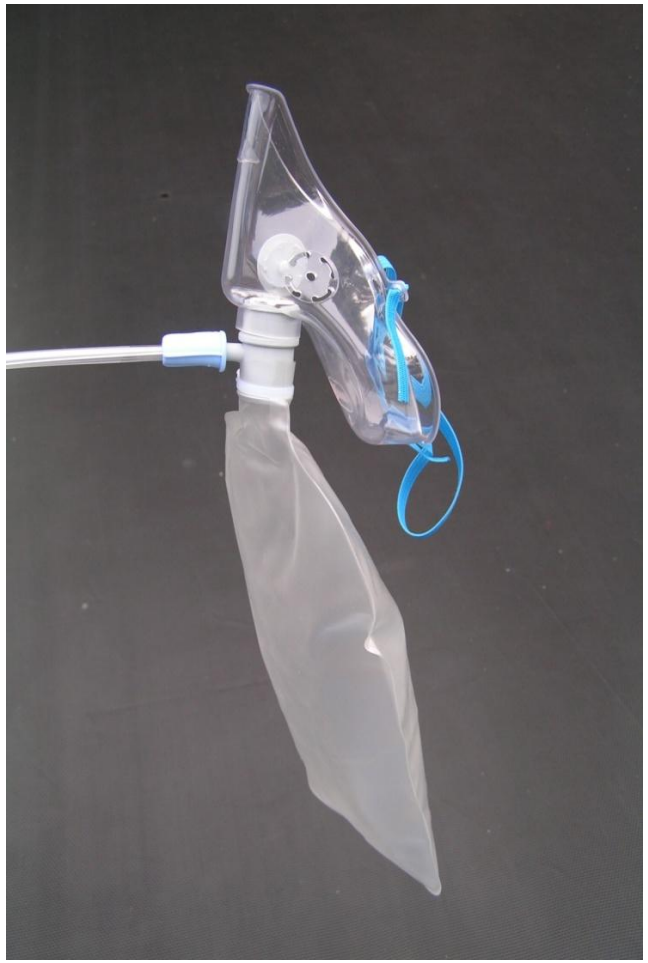
- Nasal breathing
- Drying of mucosa and epistaxis

Non-Rebreath Reservoir

- Variable O_2 of 60-80%
- Flow 15L/min

- Effective for short term treatment

- Uncomfortable
- High Flow



Tracheostomy masks

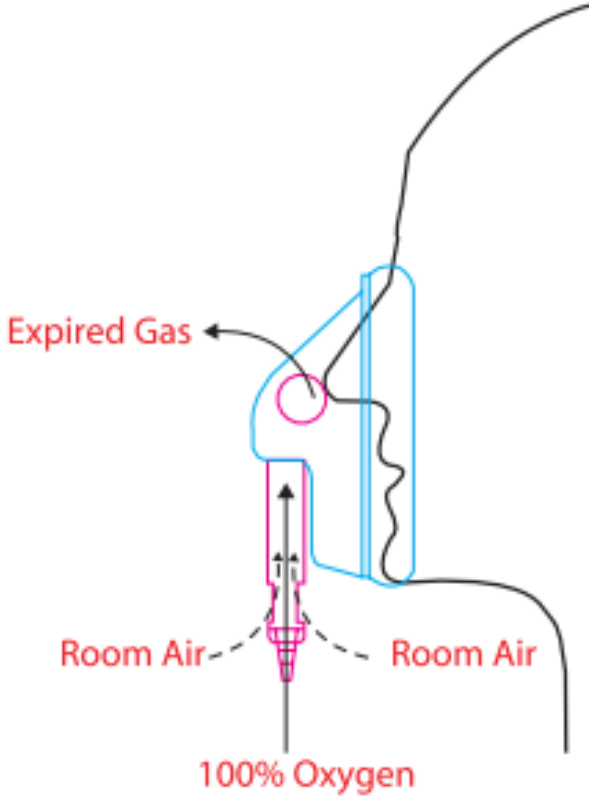
What is this used for?

SIMPLY FINALS

Venturi Masks

Deliver constant/Fixed O_2 of 24-40%
Increasing flow does not increase oxygen Concentration

Fixed delivery of Oxygen



SIMPLY FINALS

Colour Coded Venturi Masks

Colour of Mask attachment	Oxygen (%)	Rate of Oxygen L/Min
Blue	24	2
White	28	4
Yellow	35	8
Red	40	10
Green	60	15

Question…

- 68yo woman walks into A&E with mild breathlessness and productive cough. She has known COPD and has had previous ITU admissions with *"problems with the gases in my blood"*

- Ex- widespread polyphonic wheeze
  - BP 145/90 HR 120 RR 20 Sats 87%

- ABCDE
- Hx- as above

SIMPLY FINALS

Oxygen Therapy

68yo COPD. Mild SOB/cough. Wheeze. RR20 HR120 Sats 87% OA

What is "critically ill"?

Is the patient critically ill or 0_2 sats <85% ?

NO

Is patient at risk of hypercapnia?

	Target Sats	Starting Device
NO	94-98%	Nasal Cannula (2-6L/m) or Face Mask (5-10L/m)
YES	88-92%	Venturi 24%

SIMPLY FINALS

… and do ABG

- *If CO_2 elevated (>6.0kPa) and pH normal*
  Continue with target sats 88-92%

- *If CO_2 normal and not acidotic*
  Change to target sats 94-98%
  (As now not considered in low risk hypercapnia group)

- *If CO_2 elevated (>6.0kPa) and acidotic*
  Then consider NIV … i.e. Get help!

DO NOT STOP THEIR OXYGEN due to hypercapnia.
HYPOXIA KILLS! HYPOXIA KILLS! HYPOXIA KILLS!

Repeat ABG in 30-60mins

SIMPLY FINALS

Question…

Write down management of a 68yo man who is BIBA to A&E. Wife called ambulance as concerned that husband very unwell and breathless.

Has known COPD

(sx similar to previous exacerbation)

- Ex- widespread polyphonic wheeze
  - BP 125/85 HR 110 RR 29 Sats 78%
- ABCDE
- Hx- as above

HYPOXIA KILLS

SIMPLY FINALS

Oxygen Therapy

68yo COPD. SOB. Wheeze. RR 29 HR 110 Sats 78% OA.

Is the patient critically ill or 0_2 sats <85% ?

YES

High Flow/NRM
15L/min O2

Then do ABG

HYPOXIA KILLS

SIMPLY FINALS

Question…

Write down management of a 68yo man with acute exacerbation of his known COPD.

What does this ABG show?

pH	7.20	*(7.35 – 7.45)*
$PaCO_2$	10.9 KPa	*(4.7 – 6.0kPa)*
$Pa0_2$	7.6KPa	*(>10kPa)*
HCO_3	30mmol/l	*(22-26mmol/l)*
BE	3.0	*(+/-2.0mmol/l)*
(on 15L/min)		

Does this change the management?

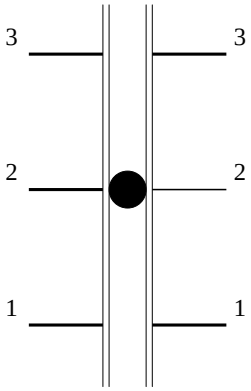
Yes!

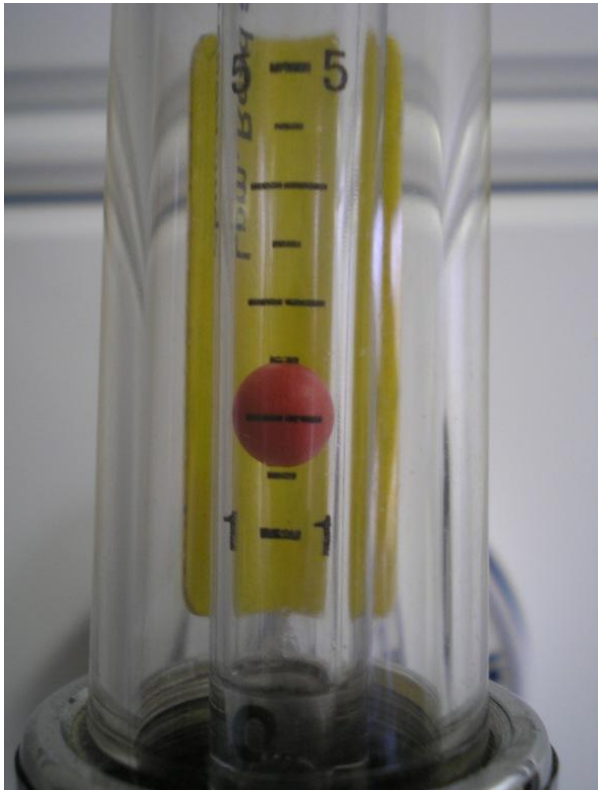
SIMPLY FINALS

Prescribe

DRUG **OXYGEN** (Refer To Trust Oxygen Policy)		
Circle target oxygen saturation **88-92%** **94-98%** **Other___**	STOP DATE	
Starting device/flow rate_____ **PRN / Continuous**		
	PHARM	
(Saturation is indicated in almost all cases except for palliative terminal care)		
SIGNATURE / PRINT NAME	DATE ddmmyy	

Oxygen Flow Meter





SIMPLY FINALS

Non-Invasive Ventilation

Avoids intubation.
Can easily apply/remove.

Indications

- Acute T1 or T2 RF
- Chronic T2 RF/ Sleep Apnoea
- Uncontrolled acidosis or hypercapnia

Contraindications

- Patient declines- is v.uncomfortable
- Patient very confused
- High Aspiration Risk
- Facial Trauma

Should show ABG or clinical improvement within 2 hours

SIMPLY FINALS

Non-Invasive Positive Pressure Ventilation

CPAP

Continuous Positive Airway pressure ventilation

BiPAP

Bilevel Positive Airway Pressure ventilation device

Both deliver oxygen above estimated Peak End Expiratory Pressure (PEEP)

SIMPLY FINALS

CPAP or BiPAP?

You are FY1 on August 6th 2014

Nurse calls…

"68yo COPD patient becoming unwell and now very short of breath. What would you like to do doctor, CPAP or BiPAP?"

What would you do??

SIMPLY FINALS

Management

- ABCDE
- Give high flow O2

- See the notes / involve the patient
- Hx / Ex / Ix

- Basic investigations – ? CXR, ABGs, ECG, Bloods

- Institute initial management

- Get Help!

SIMPLY FINALS

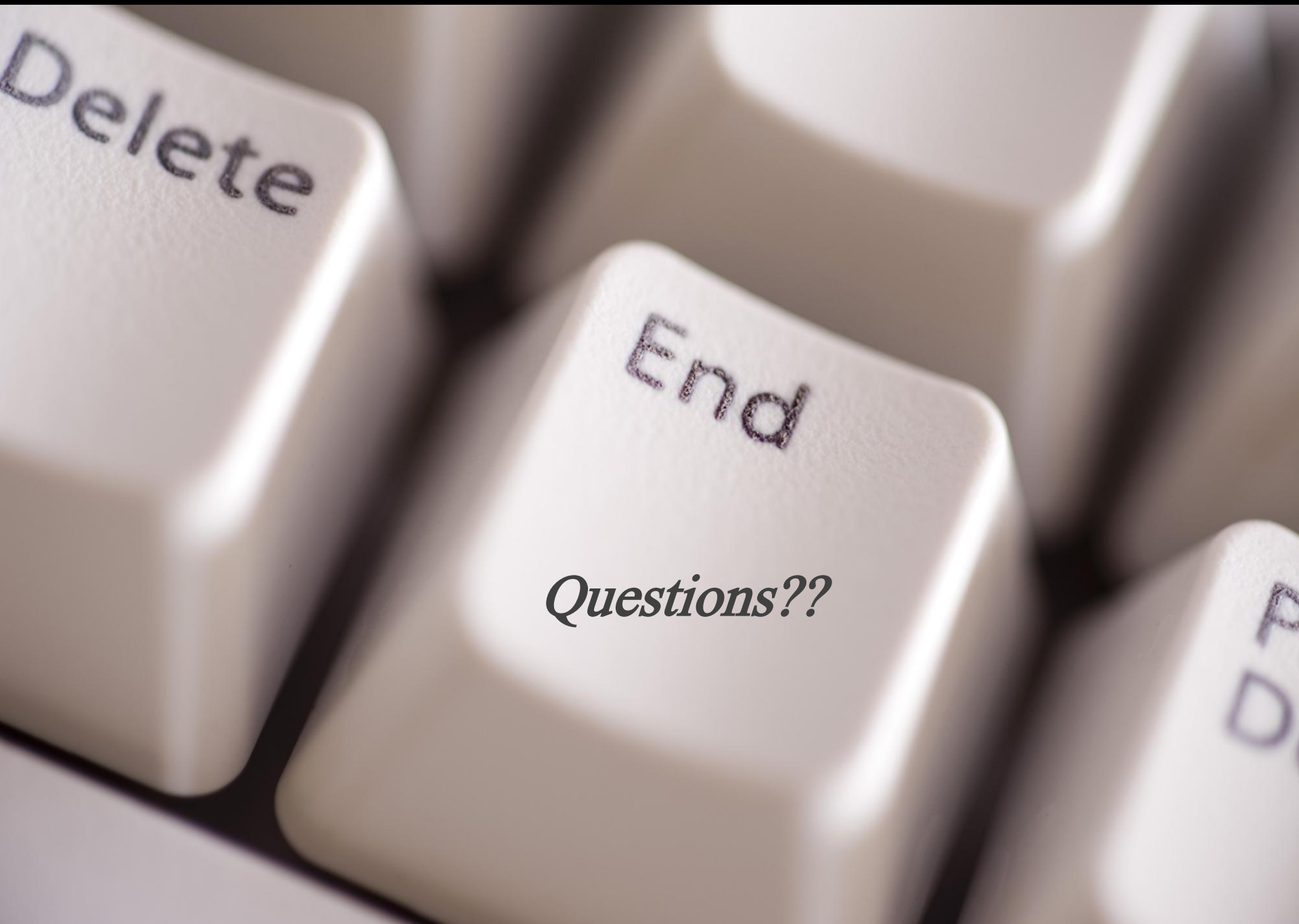
NIV

CPAP
Oxygenation
Type 1 RF
e.g. LVF/CCF
Chest wall trauma

Continuous pressures
"Breathing into wind tunnel"

BiPAP
Ventilation
Type 2 RF
e.g. COPD with Acidosis
Decompensated OSA

IPAP/EPAP pressures
"Senses inspiration"
Pushes O_2 in and CO_2 out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End
Questions??

What delivery system will you choose? What other important management steps will you take?

1. A previously fit and well 61yo man who is 8 hours post hemi-colectomy.
2. A 23yo Asthmatic with an acute asthma attack who has O_2 sats of 93% on room air.
3. A 67yo COPD patient with type II respiratory failure.
4. A 91yo man with severe gram negative sepsis and dehydration; O_2 sats are 92% on air.
5. 17yo Asthmatic with type II respiratory failure.

Patient	Oxygen therapy	Other management
61yo man post hemi-colectomy	Depending on his O_2 sats you would start with low flow oxygen device delivering 25 – 40% O_2 e.g. nasal cannulae	• Fluid balance; regular obs • Analgesia • Anti-emetics • NBM ; IV fluids
23yo asthmatic	Sats are 93% on room air – you could give O_2 via simple face mask or even nasal cannnuae	• Oral steroids • Nebulised salbutamol • Monitor clinical response and PEFR • Treat any underlying exacerbating factors
67yo COPD with type II respiratory failure	Depending on O_2 sats and clinical stautus start with 40% Venturi mask and see the clinical and ABG response; may require NIV	• Nebulised salbutamol and atrovent • Oral steroids • Treat underlying cause
91yo man with sepsis and dehydration	Use nasal cannulae or simple face mask [He may not tolerate either if very confused] O_2 set at 2 – 4 l/min	• Treat sepsis aggressively with IV antibiotics e.g. cefuroxime and gentamicin • Correct dehydration • Skin care • Fluid balance; regular obs
17yo asthmatic with type II respiratory failure	Highest O_2 you can employ – then put out a call for the anaesthetist! You may need to 'bag' the patient!	•Get the crash trolley; Back to Back nebulisers •Monitor all vital signs •Examine patient for possible reversible causes