

# SAFE PRESCRIBING & ADMINISTRATION OF MEDICINES IN SCOTTISH HOSPITALS

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TUESDAY 1 OCTOBER 2013  
RCPE Symposium

**Royal College of  
Physicians of Edinburgh**

Representing physicians, maintaining standards.



tweeting? [#rcpeSafeMeds13](#)

# Delivering safe prescribing of oxygen

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# CLINICAL DECISION MAKING



- ◆ **BENEFIT** to the patient from using the treatment
- ◆ **RISK** to the patient from using the treatment and to the health care system if resources are wasted – opportunity costs
- ◆ **BOTH** factors apply to different patients at different times with oxygen therapy

# OUR USUAL VIEW OF OXYGEN THERAPY



# SOME MISCONCEPTIONS ABOUT OXYGEN –THE 3 BEARS EFFECT



- ◆ Acute hypoxaemia kills quickly
- ◆ Chronic hypoxaemia causes complications and accelerates mortality from the underlying condition

**BUT**

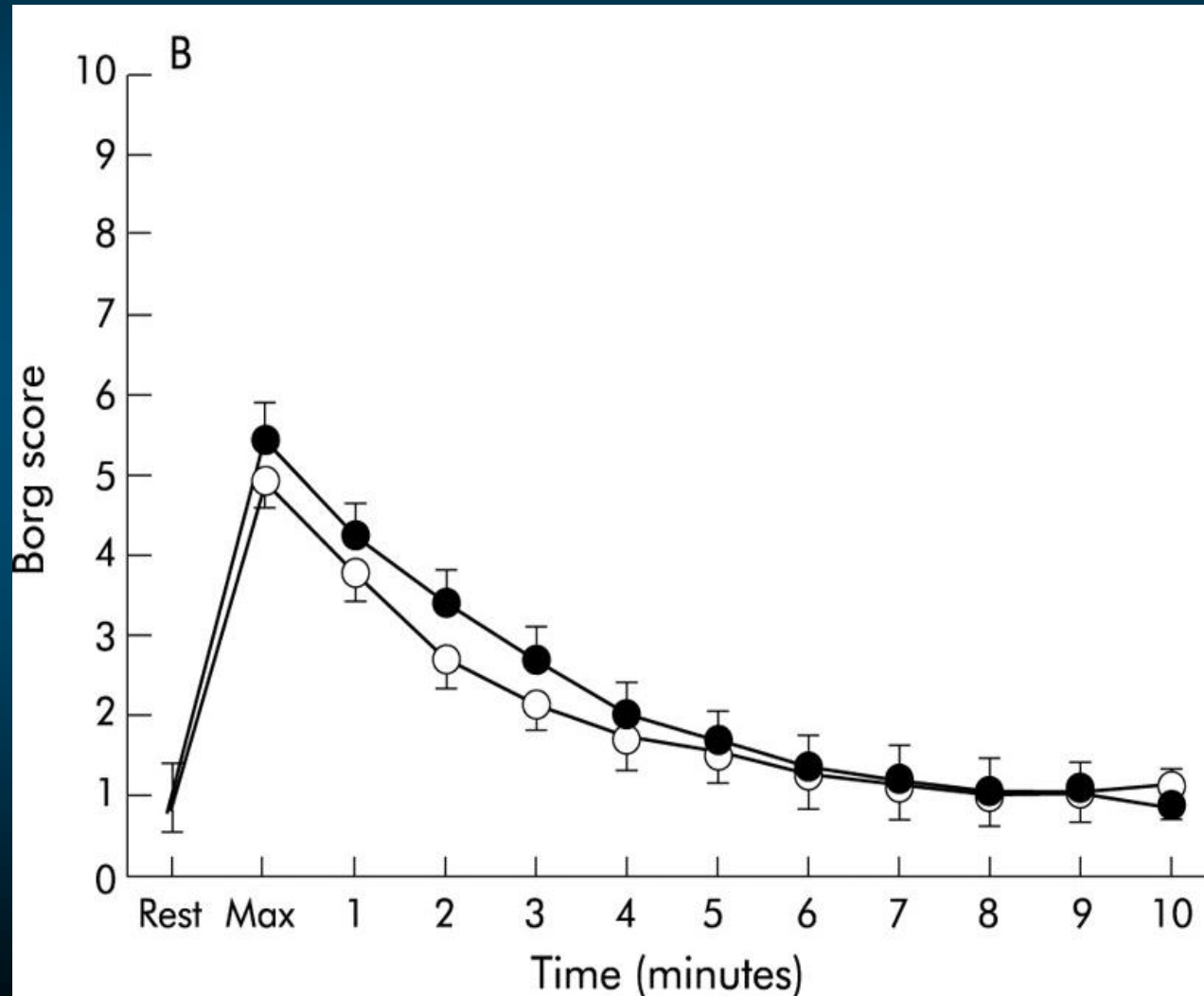
- ◆ Hyperoxia is dangerous to neonates and ventilated patients
- ◆ Relative hyperoxia is dangerous to sick COPD patients with hypercapnia

# MORE MISCONCEPTIONS

- ◆ Breathlessness is due to lack of oxygen at sea level
- ◆ The PaO<sub>2</sub> is a good reflection of tissue oxygenation - major influence of CO and Hb
- ◆ O<sub>2</sub> is not a drug and does not need to be prescribed
  - but it is manufactured to a specified level of purity
  - it is delivered (often badly) at a pre-specified dose
  - its use should involve thought as there are rational reasons for its prescription

# Borg score for breathlessness pre and post exercise in patients breathing oxygen (open circle) or air (solid circle)

Stevenson, N J, Calverley PMA Thorax 2004;59:668-672



With face mask

# OXYGEN IS NOT MUCH USE TO TREAT DYSPNOEA

**Effect of palliative oxygen versus room air in relief of breathlessness in patients with refractory dyspnoea: a double-blind, randomised controlled trial**

*Amy P Abernethy, Christine F McDonald, Peter A Frith, Katherine Clark, James E Herndon II, Jennifer Marcello, Iven H Young, Janet Bull, Andrew Wilcock, Sara Booth, Jane L Wheeler, James A Tulsky, Alan J Crockett, David C Currow*

**Lancet 2010; 376: 784-93**

- ◆ Ambulatory oxygen works in the lab but much less well with nasal prongs
- ◆ Correcting exercise hypoxaemia is reasonable but not very evidence based



# WHY SHOULD WE PRESCRIBE OXYGEN?

## Acutely

- ◆ to raise SpO<sub>2</sub> to a 'safe' level to maintain oxygen delivery to the tissues (Grade 0 evidence)

## Chronically

- ◆ to maintain PaO<sub>2</sub> >8.0 kPA to reduce risk of death and complications (Grade 2 evidence)
- ◆ To maintain oxygenation in hypoxaemic subjects or those who desaturate with exercise
- ◆ In palliative care
- ◆ For cluster headaches

**In practice because we always give it, especially to sick people!**

2010

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**Effect of high flow oxygen on mortality in chronic obstructive pulmonary disease patients in prehospital setting: randomised controlled trial**

Michael A Austin, honorary associate,<sup>1</sup> emergency medicine registrar,<sup>2</sup> wilderness helicopter, intensive care paramedic,<sup>3</sup> Karen E Wills, biostatistician,<sup>1</sup> Leigh Blizzard, senior biostatistician,<sup>1</sup> Eugene H Walters, professorial fellow,<sup>1</sup> Richard Wood-Baker, honorary fellow,<sup>1</sup> director<sup>2</sup>

- ◆ Cluster randomised controlled trial in Tasmanian ambulance service of usual uncontrolled O<sub>2</sub> therapy vs O<sub>2</sub> targeted 88-92% in presumed COPD exacerbations
- ◆ Usual care mortality 9% vs 5% in targeted group; pH 7.19 vs 7.41; Pa CO<sub>2</sub> 4kPa different

## BTS guideline for emergency oxygen use in adult patients

*Thorax* 2008;**63**(Suppl VI):vi1–vi68.

B R O'Driscoll,<sup>1</sup> L S Howard,<sup>2</sup> A G Davison<sup>3</sup> on behalf of the British Thoracic Society

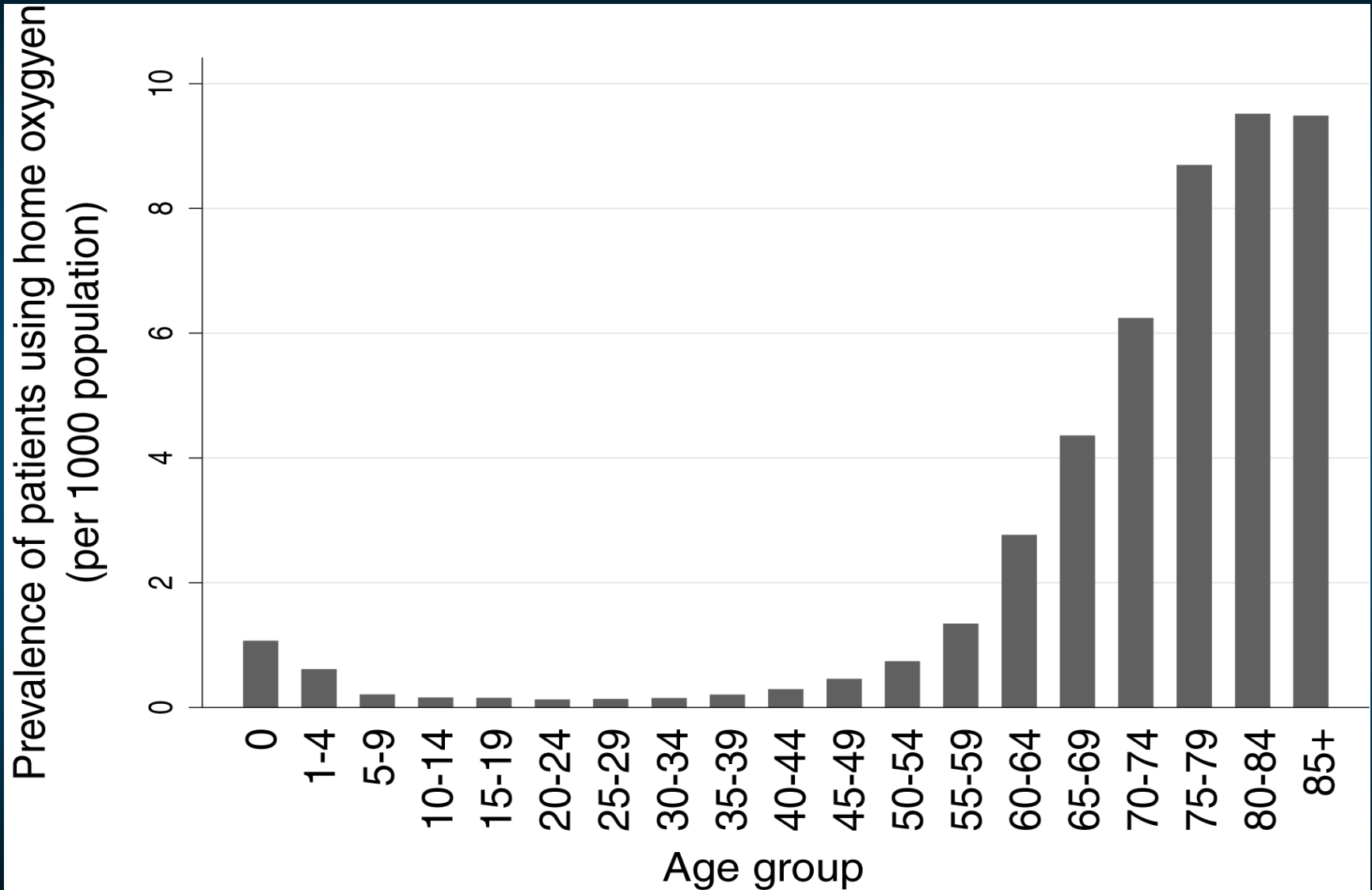
Oxygen should be prescribed to achieve a target saturation of 94–98% for most acutely ill patients or 88–92% for those at risk of hypercapnic respiratory failure (tables 1–3).

The target saturation should be written (or ringed) on the drug chart (guidance in fig 1).

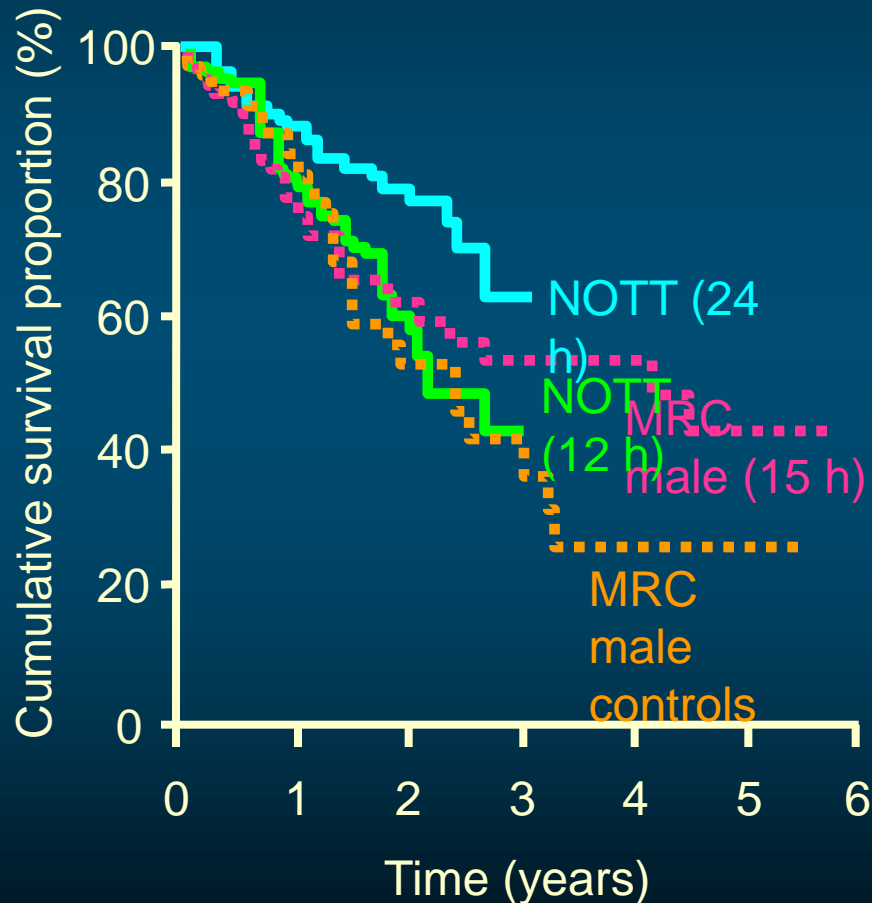
Oxygen saturation and delivery system should be recorded on the patient's monitoring chart alongside the oximetry result.

Oxygen should be signed for on the drug chart on each drug round.

# WHO USES OXYGEN AT HOME?



# Chronic Oxygen therapy in COPD



- ◆ The only good evidence we have
- ◆ Data extrapolated to other diseases
- ◆ no benefit if  $\text{PaO}_2 > 55 \text{ mmHg}$
- ◆ no benefit if only night desat.

# OPPORTUNITY COSTS WITH AMBULATORY OXYGEN

Lacasse et al ERJ 2005

- ◆ Poor ambulatory oxygen use - 7.5 cylinders/3months in oxygen group and 7.4 cylinders in placebo group
- ◆ Patients went out for about 2 hours/day and 3 times more often without oxygen
- ◆ No impact on dyspnoea in daily life
- ◆ Not a popular conclusion with patient groups or O2 providers
- ◆ A clear indication that specialist assessment is needed before ambulatory oxygen is prescribed

# Palliative Care

- ◆ Severe disabling breathlessness
- ◆ End stage chronic lung or heart disease
- ◆ Cancer
- ◆ Formal assessment not indicated. Oxygen concentrator provided as an urgent prescription (HOOF)
- ◆ A very grey area - large RCT presented at ERS in 2009 found no effect

## Appendix 7



### Scottish Home Oxygen Order Form (SHOOF)

(After specialist/paediatric oxygen assessment)

All fields marked with a "\*" are mandatory and the HOOF will be rejected if not completed

1. Patient Details		1.1 CHI Number*	
1.2 Hosp Number*		1.8 Permanent Address*	1.11 Tel No*
1.3 Title			1.12 Mobile No
1.4 Surname*			1.13 E-Mail
1.5 First Name*			1.14 1 <sup>st</sup> Language if not English*
1.6 DOB*			1.9 Postcode**
1.7 Gender	Male <input type="checkbox"/> Female <input type="checkbox"/>	1.10 Funding Health board*	1.15 Interpreter needed?* Yes <input type="checkbox"/> No <input type="checkbox"/>
2 Carer Details (if applicable)			
2.1 Name		2.2 Tel No	2.3 Mobile No
3 Clinical Details (clinical codes see over)		4 Patient's Registered GP Information	
3.1 Clinical Code(s)*		4.1 Main Practice Name*	
3.2 Patient on NIV/CPAP*	Yes <input type="checkbox"/> No <input type="checkbox"/>	4.2 Practice Address*	
3.3 Paediatric Order*	Yes <input type="checkbox"/> No <input type="checkbox"/>	4.3 Postcode*	
3.4 Conserver Appropriate*	Yes <input type="checkbox"/> No <input type="checkbox"/>	4.4 Telephone No*	



# SHOOF (continued)

5 Assessment Service (Hospital or Clinical Service)			6 Ward Details (if applicable)		
5.1 Hospital or Clinic Name			6.1 Name		
5.2 Address			6.2 Tel No		
			6.3 Discharge Date:        /        /		
5.3 Postcode		5.4 Telephone No			
7 Respiratory Contact					
7.1 Name		7.2 Tel No		7.3 Mobile	
8 Order*		9 Equipment*		10 Consumables*	
		For further guidance on choosing modalities, please see reverse of form		(tick selection for each equipment type)	
Litres/Min	Hours/Day	Types*		Nasal Cannula)	Medium Concentration Mask
		9.1 Static Concentrator with back up cylinder(s) <i>Should be prescribed for use &gt;= 1.5hrs/day</i>		<input type="checkbox"/>	<input type="checkbox"/>
		9.2 Static Cylinder(s) <i>Should be prescribed for use &lt; 1.5hrs/day</i>		<input type="checkbox"/>	<input type="checkbox"/>
		9.3 Standard Ambulatory Cylinder(s) <i>Low flow, low usage occasional ambulatory needs</i>		<input type="checkbox"/>	<input type="checkbox"/>
		9.4 Standard Ambulatory Cylinder(s) & Conserver <i>Medium flow high usage active patients</i>		<input type="checkbox"/>	<input type="checkbox"/>
Specialist high usage ambulatory equipment (Please check with HFS for availability before ordering)					
		9.5 Home filling Concentrator System <i>Should be prescribed for high usage active patients</i>		<input type="checkbox"/>	<input type="checkbox"/>
		9.6 Liquid Oxygen (LOX) Dewar & Flask <i>Specialist use, high flow &amp; very active patients or when other modalities not appropriate</i>		<input type="checkbox"/>	<input type="checkbox"/>
		9.7 Portable Concentrator (trolley based) <i>Specialist use, temporary locations, active patients</i>		<input type="checkbox"/>	<input type="checkbox"/>

# SAFE PRESCRIBING ACUTELY

- ◆ Follow the acute oxygen guidelines in acute care settings
- ◆ Specify an appropriate delivery system and check that the patient is using it
- ◆ Have clear and consistent local policies for oxygen use
- ◆ Educate the staff regularly

