P94 DO HEALTHCARE PROFESSIONALS HAVE SUFFICIENT KNOWLEDGE OF INHALER TECHNIQUES IN ORDER TO EDUCATE THEIR PATIENTS EFFECTIVELY IN THEIR USE?

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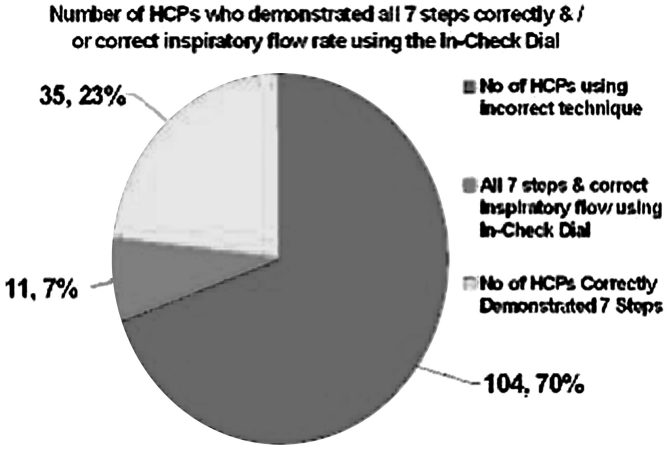
Introduction and objectives Inhalers are widely used in the treatment of asthma and chronic obstructive pulmonary disease (COPD). For patients to gain maximum benefit they need to be educated by competent healthcare professionals (HCPs) whose own competence meets accepted standards. This study looked at HCPs ability to use the commonly prescribed metered dose inhaler (pMDI).

Methods 150 Healthcare professionals (74 Primary Care Trust; 76 Acute Trust) were asked to demonstrate how they would self-administer a pMDI placebo Inhaler. The Group included hospital doctors, hospital nurses, general practitioners, pratice nurses, hospital and community pharmacy staff. Each professional was marked against a standard set by the manufacturer and Education for Health UK.[1] They were also asked to demonstrate the correct inspiratory flow rate using the In-check dial device.[2]

Results Of the **150** HCPs assessed only **11 (7%)** could demonstrate all the recognised steps in administration including assessment of inspiratory flow using the in-check device (Abstract P94 Figure 1). **113 (75%) of the HCPs** said they were involved in the teaching of inhaler technique. Of these 113, **11(9%)** could demonstrate all the recognised Steps (n=10 PCT n=1 acute trust). Of the **150, 72 (48%)** were prescribers or were involved in prescribing. **94 (63%)** had received some training on Inhaler technique in the past of which **64 (67%)** said the training took place more than a year before.



Abstract P94 Figure 1 Number of HCP's who demonstrated all 7 steps correctly &/ or correct inspiratory flow rate using the In-Check Dial.

Conclusion If we are going to adequately educate our patients with regard to their inhaler usage we as HCPs need to be competent in how each device works. Incorrect teaching and assessment will increase use of healthcare resources, waste medication, and mean worsening symptoms and poor control of airways disease for our patients.

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P95 OXYGEN DELIVERY IN AN ACUTE HOSPITAL SETTING

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Background Oxygen is one of the most widely used drugs in secondary care. The National Patient Safety Agency (NPSA), UK issued guidance[1] ensuring safer management of oxygen delivery. Many individuals do not see oxygen as a drug and hence prescribing oxygen within most Trusts has been poor. This study assesses Health Care Professionals (HCPs) knowledge of the basic principles of oxygen delivery in an acute medical setting, to ensure the safe use of oxygen and to inform a Trust Oxygen Steering Group in order to target educational sessions appropriately.

Method A questionnaire listing 10 common scenarios, based on the BTS guidelines[2] was administered to a random selection of doctors and nurses (Abstract P95 Table 1). Responses were evaluated by a panel of Respiratory Physicians. For each scenario respondents indicated whether they would give oxygen, appropriate target saturations, delivery device to be used and the flow rate.

Results 139 HCPs completed the questionnaire (41% junior doctors, 59% nurses). The results are summarised below. Common mistakes included

1. The use of non-rebreather mask instead of bag and mask in cardiac arrest situations
2. Failing to identify the use of high flow oxygen in the conservative management of patients with a pneumothorax and
3. Failing to recognize the use of Venturi masks in COPD patients.

Abstract P95 Table 1 Correct responses (%) to oxygen delivery, target saturations, delivery devices and flow rate

Scenario	D-doctor N-nurse	O2 delivery	Target Sats	Device	Flow rate
Cardiac arrest (GI bleed)	D	100	60	46	91
	N	98	45	39	84
Severe COPD, LTOT, Cardiac arrest	D	96	7	53	86
	N	95	2	33	79
Primary pneumothorax managed conservatively	D	54	35	7	7
	N	40	21	1	2
Severe COPD, rim of pneumothorax, conservative Rx, Sats 94%RA	D	81	11	81	81
	N	80	7	80	80
Acute exacerbation of asthma, Sats 89% on room air	D	100	42	91	88
	N	98	37	99	82
Severe community acquired pneumonia, Sats 87% on room air	D	100	33	79	79
	N	96	9	85	82
COPD, Carcinoma bronchus, Sats 90% on room air	D	100	11	40	91
	N	98	7	27	95
Exacerbation COPD, LTOT, Sats 98% on a non-rebreather	D	77	32	58	47
	N	74	17	30	21
Exacerbation COPD, Sats 86% (2l/min), usual Sats 88%(LTOT)	D	88	46	28	19
	N	84	50	20	18
Infective exacerbation of COPD, Sats 84% on room air	D	98	32	61	44
	N	94	24	44	35

Conclusions Most healthcare professionals understand the indication for the use of oxygen. However, knowledge of the appropriate use of delivery devices and target saturations was noted to be poor. Targeted educational sessions have been developed to address the above issues. We are currently in the process of trialling a new Kardex to ensure that all oxygen used on the ward within our Trust is prescribed. A Hospital Oxygen Steering Group is being set up with the function of overseeing the management and prescription of oxygen.

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Clinical studies in cystic fibrosis

P96 HAPLOTYPE VARIABILITY IN PSEUDOMONAS AERUGINOSA (PSA) STRAINS IN THE ADULT CF POPULATION

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Introduction Morphological type variation in Psa is thought to aid its survival in hostile environments, including the CF lung. Previous studies using PGFE have shown wide heterogeneity in LES strain, despite this, little is known about their phenotypic diversity (haplotypes). To look at this further, we compared the haplotypes of the most successful and prevalent UK transmissible Psa (the Liverpool epidemic strain, LES) with those of sporadic strains and assessed their response to antibiotic pressure.

Methods Sputum from two groups of adult CF patients chronically infected (for at least 4 years) with sporadic single Psa strains or LES was analysed at the beginning and end of an intravenous antibiotic-treated exacerbation, where every patient had subjective and spirometric improvement, and also for LES patients over a period of time (at least 4 months) when they were in a stable state. From each sample, 40 single Psa colonies were selected (with every morphological type proportionately represented), and colony morphology, susceptibility to six antibiotics (ciprofloxacin, ceftazidime, colomycin, meropenem, tobramycin, piperacillin/tazobactam), hypermutability (rate of spontaneous mutation to rifampicin resistance) and auxotrophy (ability to grow on glucose M9 media) determined. Each Psa colony could potentially exhibit any of nine combinations: antibiotic susceptibility patterns, auxotrophy, hypermutability, and six colony morphologies. The resulting haplotypes were compared for LES and unique strains using 'e-burst' software.

Results Overall, 151 unique haplotypes were defined (96 LES, 75 sporadic, 20 shared), with LES demonstrating the greater number (X^2=4.67, p<0.03). Following antibiotic pressure, there was an alteration in haplotypes which was similar in both groups (LES 54%, sporadic 64%, p=0.28): but during the stable state LES demonstrated a significantly greater change in haplotypes (89%, p=0.004).

Conclusion A change in haplotypes occurs in all CF Psa strains during treatment for clinical exacerbations, presumably as a defence mechanism against the challenge of hostile antibiotic therapy. However, the enhanced haplotype variability of transmissible strains with time when there is no antibiotic pressure may be a strategy that confers a survival advantage compared to sporadic strains: studies are under way to explore this further.

P97 DO INTRAVENOUS ANTIBIOTICS INFLUENCE ARTERIAL STIFFNESS IN ADULTS WITH CYSTIC FIBROSIS?

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Introduction and objectives Adults with cystic fibrosis (CF) have evidence of increased arterial stiffness which is associated with a chronic systemic inflammatory status (1). We hypothesised that an intervention which decreased inflammation in patients with CF would improve arterial stiffness and we therefore evaluated a 2-week course of intravenous antibiotics on large artery haemodynamics in adults with CF.

Methods We recruited 18 adult patients with CF immediately preceding (visit 1) and following 14 days of intravenous antibiotics (visit 2); prompted by clinical indication. Arterial stiffness was determined by supine applanation tonometry to obtain augmentation index (AIx) which was heart rate adjusted, and aortic pulse wave velocity (aPWV) (SphygmoCor). In addition, heart rate (HR), blood pressure (BP), spirometry and CRP were measured.

Results Complete data was available for 15 patients (n=3 not suitable); mean (SD) age 28 (6) years and BMI 21.2 (2.4) kg/m^2. All but one patient reported symptomatic improvement following treatment. Percent predicted forced expiratory volume in one second (FEV_1) improved and CRP was reduced at visit 2 (Abstract P97 Table 1). There was a trend towards reduction in HR (p=0.06) whilst peripheral and central BP and aPWV were similar between visits. However, of particular note, HR adjusted AIx was reduced (Abstract P97 Table 1). The change in AIx was related to FEV_1 % predicted (r=0.77) and BMI (r=0.71) at visit 1 (both p<0.01), but not CRP (p=0.13).

Abstract P97 Table 1

Variable	Visit 1	Visit 2
FEV1% predicted	54 (20)	60 (20)*
CRP (mg/l)†	6.9 (6.4)	2.6 (7.6)*
HR (bpm)	75 (15)	70 (12)
Peripheral MAP (mm Hg)	89 (9)	90 (8)
AIx (%)	10.9 (10.9)	8.1 (10.9)*
aPWV (m/s)	6.3 (1.0)	6.1 (1.1)

Values are Mean (SD).
*Represents p<0.05.
†Geometric mean (SD).

Conclusions Intervention with intravenous antibiotics in adults with CF is associated with a reduction in AIx, a composite measure of systemic arterial stiffness and wave reflection. Modulation of systemic inflammation results in beneficial haemodynamic changes that may be key in maintaining cardiovascular health in adults with CF.

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