

# REDUCING WRONG GAS DELIVERY TO PATIENTS

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**INTRODUCTION:** Accidental delivery of the wrong gas to patients is a world wide<sup>1</sup> problem that can result in severe adverse patient outcomes. Air and oxygen are often located side by side at bedsides in hospitals being indexed incompatible until they reach the end of each flow meter where the threads, hose nipples and patient tubing are interchangeable. Air or oxygen can be delivered incorrectly to patients.

**BACKGROUND:** Flinders Medical Centre has identified and tracked wrong gas delivery to patients over the past 2 years. There have been 12 Advanced Incident Management System (AIMS) reports of adverse events: 8 involved MET (Medical Emergency Team) intervention and 1 required admission to ICU. Personally witnessing an incident during installation of “AIR Guards” and medical staff feedback indicate the mix up of gases occurs far more frequently than reported. The majority of incorrect connections occurred when patients returned from a procedure or were transferred from another clinical unit. Contributing factors include incorrect nipple colours on 30% of flow meters involved in incidents, poor lighting and equipment or curtains obscuring the gas panel.

**METHODS:** A team of various disciplines investigated solutions to this problem. A number of strategies of error proofing and error reduction were considered each with varying risks, barriers and costs.

**RESULTS:** The preferred error reduction option chosen was “AIR Guard” developed through Flinders Biomedical Engineering (FBE). The prototype “AIR Guard” was developed and 500 units produced and deployed throughout Flinders Medical Centre. The aim was to produce a simple operating, permanent, strong, cleanable, clearly labelled, colour coded and physical barrier able to be post-fitted to all common flow meter brands.



*Fig. 1: Air clearly different to oxygen*



*Fig. 2: Attaching patient tube with AIR Guard*

**DISCUSSION & CONCLUSIONS:** The FBE “AIR Guard” creates a permanent and obvious difference between air and oxygen by providing a strong visual and physical barrier for users of medical flow meters, to assist with a more conscious choice of gases. Oxygen has been left unchanged and is freely accessible for emergency use.

“AIR Guards” were implemented in July 2007 and are now in the evaluation phase. AIMS reports will monitor further incidents to evaluate the effectiveness of “AIR Guards” and a user satisfaction questionnaire will be undertaken 6 months from installation.

## REFERENCES:

<sup>1</sup> Laura Landro, The Wall Street Journal, Hospitals Scramble To Prevent Errors, Redesign Devices, June 27, 2007; Page D3