

Oxygen Use in Adults in Healthcare Setting

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Background

- Oxygen is a commonly used inpatient drug but accurate oxygen prescription and target saturation remains an ongoing issue.
- Previous British Thoracic Society audit showed that 14% of hospital inpatients were on oxygen, with 42.5% of these not having a valid prescription.^[1]
- This could lead to under or over oxygenation which can cause more complications.
- In DGRI, baseline data suggested that the quality of oxygen prescription and target saturations in the acute admissions ward have been below national standards.

Aims

- To improve the oxygen prescription rate and target saturation accuracy in Combined Assessment Unit (CAU) of Dumfries and Galloway Royal Infirmary (DGRI) to $\geq 80\%$ in 6 weeks.
 - Oxygen should be prescribed in the electronic prescribing system.
 - Target saturations should be accurately documented either electronically or on the observations chart.

Method

- Baseline data was collected for all patients admitted to CAU over a single day.
- The electronic prescribing system, patients' clinical notes and observation charts were reviewed retrospectively.
- The data collected included:
 - if the patient was currently receiving oxygen,
 - whether oxygen had been prescribed,
 - whether a target range had been specified.
- Interventions were applied and data was recollected after two weeks, and the cycle repeated. A fourth cycle was performed for data collection only.

Results

PDSA Cycle 1 (19/10/2020 – 02/11/2020)

- We designed reminder stickers for new medical admission booklets. This was a passive but time-consuming approach.

PDSA Cycle 2 (03/11/2020 – 16/11/2020)

- We intermittently provided verbal reminders and education through surveys (results in Figure 1) and handouts targeted towards clinicians. No reminder stickers were used.

PDSA Cycle 3 (17/11/2020 – 30/11/2020)

- We involved regular ward and nursing staff to raise awareness and repeated the survey (Figure 1). The idea was that involving them would be more effective as they were regularly involved in monitoring patients' saturations and administering oxygen.
- We also mass-produced reminder stickers and distributed reminder emails.

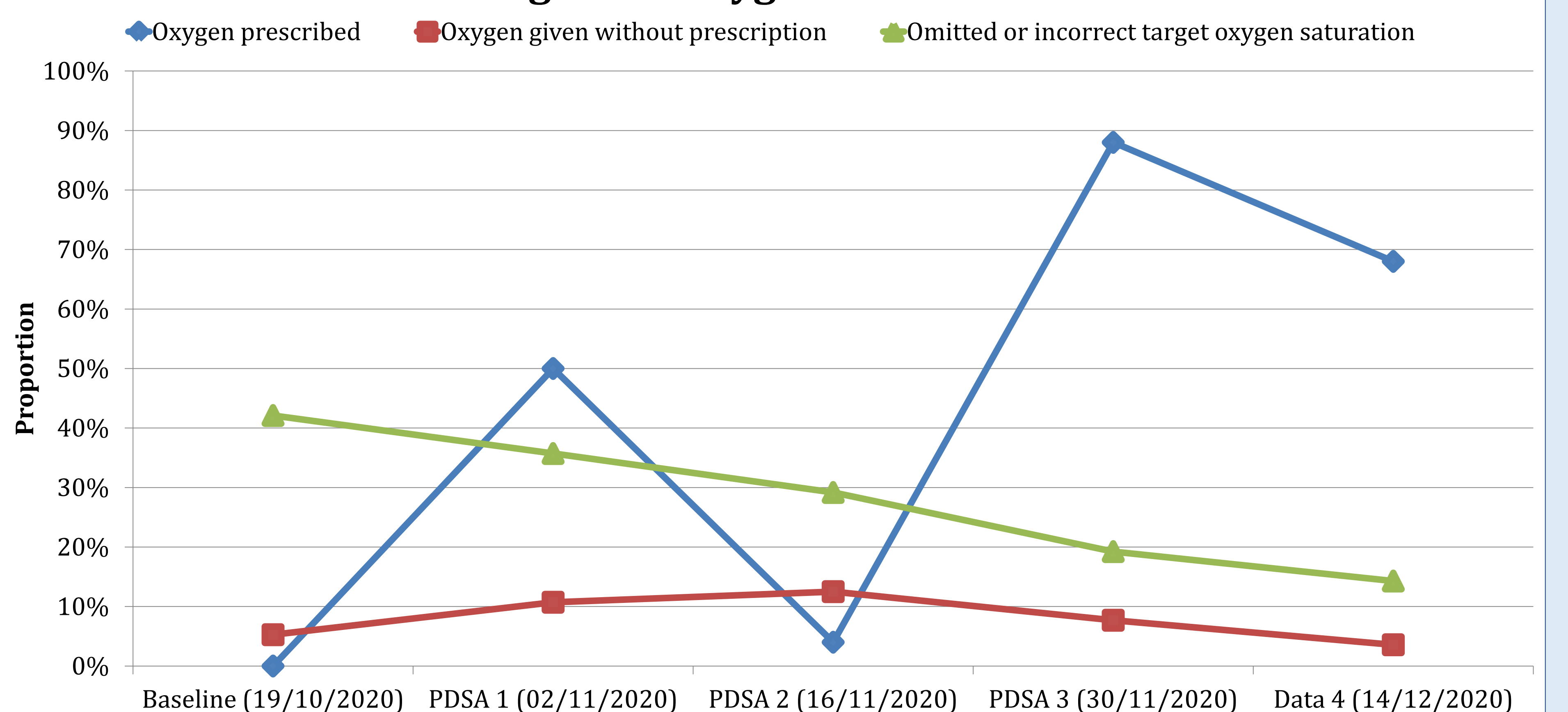
Cycle 4 – Data collection only (14/12/2020)

- No new interventions were introduced. Figure 2 summarizes the overall results.

Figure 1: Pre-education survey regarding oxygen use in CAU

Questions ($\geq 80\%$ as acceptable cut-off)	Clinicians % correct (n = 23)	Nurses % correct (n = 31)
All patients should be prescribed oxygen.	70%	77%
Oxygen should be prescribed on admission.	70%	58%
Oxygen should be prescribed on the electronic prescribing system.	39%	65%
All clinical staff have a responsibility to ensure correct oxygen use.	70%	84%
Target saturation for most patients.	100%	94%
Target saturation for patients at risk of hypercapnic respiratory failure.	100%	90%
Target saturation for COVID-19 patients.	39%	42%
Is oxygen status and target saturation clearly identified at handover?	48% agree	42% agree

Figure 2: Oxygen Use in CAU



Discussion

- We did not consistently achieve the target to improve the oxygen prescription rate and the accuracy of target saturation in CAU to $\geq 80\%$ over 6 weeks, let alone to achieve 100% targets as per national guidelines.
- The challenges have been that staff were not aware and did not prioritise oxygen prescribing, especially when busy or when patients were clinically stable.
- Nonetheless, we identified several simple, low cost and sustainable interventions that improved the accuracy of oxygen prescriptions and target saturation. Interventions involving regular ward staff have a greater impact.

Conclusion

- Our results demonstrated varying degrees of improvement after interventions, which highlights the need to raise further awareness and education about correct oxygen use.
- Further interventions should be more widely implemented across other wards and over a longer period of time to improve the accuracy of oxygen prescription and target saturation.

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