



REDUCTION OF CO₂ UTILISATION IN ENDOSCOPY PROCEDURES, 2020

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Aim: To reduce excess use of CO₂ in the Endoscopy unit.

Background:

Carbon dioxide gas is used for insufflation of the gastrointestinal tract during endoscopic procedures in the endoscopy department. On learning during the Green Ward workshop that carbon dioxide is a greenhouse gas and therefore contributes to climate change, members of staff realised that reducing the waste of carbon dioxide in the department could be an important way to reduce the department's carbon footprint.

Staff identified two potential methods of reducing CO₂ use:

1. **Lean procedures** - Changing routine practice of leaving the tap of CO₂ cylinders open in between procedures to stop litres of CO₂ gas escaping.
2. **Low carbon alternatives** - exploring the possibility of using air or water during the procedure, rather than CO₂.

Strategic choice of project:

In order to reduce carbon emissions by 80% in line with the Climate Change Act 2008, everyone has a responsibility to act and reduce carbon emissions in the workplace.

Reducing carbon dioxide waste in the department will reduce the departmental climate change impact i.e. carbon footprint.

Approach:

- **Engaged colleagues/patients:**
 - The team encouraged all the staff members working in the procedures rooms to switch off CO₂ in between procedures. The whole team in the unit was included (endoscopists, technicians and nurses).



- The team also used the daily handover meetings to remind staff about the change in procedure.
- Nursing staff worked with a hospital librarian (who is also a member of the quality improvement community and had volunteered to support the competition) to run a literature search on the evidence base for the alternatives to CO₂ use.
- **Robust measurement of impact:**
 - The team measured the number of CO₂ cylinders used as a baseline (in August and September) and, after the changes they had introduced (in October and November). They then noted the difference in the number of CO₂ cylinders used in both timeframes as a measure of how much CO₂ was being used by the endoscopy department.
- **Steps taken to ensure lasting change:**
 - Plan to continue to monitor amount of CO₂ used in endoscopic procedures.

Evidence of Impact:

At baseline 60 cylinders were used over 2 months. After the change was implemented, only 33 cylinders were used over the same period.

Environmental benefit:

- The carbon footprint due to CO₂ use in the department dropped from 202kgCO₂e over 2 months at baseline to 111kgCO₂ after the change, a saving of 91kgCO₂e.
- The annual forecast saving is 546kgCO₂e.

Social sustainability:

They surveyed staff satisfaction in the endoscopy unit during the competition. Of 15 respondents:

- 93% of staff thought that the green ward project was effective & beneficial to their work, the service and environment (1 person did not respond to this question).
- 75% of staff members thought that their project contributed to their professional development.
- 86% of staff thought they had learnt more about the reduction of carbon footprint through participating in the project.

Financial benefit:

There was £204.30 saving over 2 months. This gives a forecast saving of £1,226 per year.

Low carbon alternatives

It was clear from the literature search and discussion with consultant colleagues that air would not be a good alternative to carbon dioxide as air is less readily absorbed into the bowel and the patients experience more discomfort when it is used. This poorer patient experience may also increase resource use (analgesia and longer length of stay).

Water is an emerging alternative in the literature and used for some endoscopic cases at St Mark's Hospital, London. Water is not suitable for all cases and is not currently the practice at Frimley Health.