

Project Title: Perioperative Sustainability-getting to Net Zero

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Topic Category: Clinical

Background: Climate action is a very important topic since 5-8% of carbon footprint is contributed by health care. Operating rooms (OR) contribute 40-50% of a hospital's carbon footprint. This has increased with the ongoing pandemic, given the heavy push for using single-use equipment for enhanced infection control. A major share of the carbon footprint of ORs is based on the use of inhaled anesthetics. Nitrous oxide (often used as an adjunct) and the highly fluorinated gases sevoflurane, isoflurane, and desflurane may not only be greenhouse producing gases but ozone-depleting as well.

Many do not yet understand impact of anesthetics and operating room on the environment. This multiple phase project will involve education around anesthetic gases including carrier gas use and setting up novel salvaging techniques.

OSU is committed to becoming net zero carbon by 2050. The operating room is an area of opportunity to achieve this goal.

Purpose/Objectives: Our main purpose for phase 1 in the operating room setting was to create education/engagement, get data, and start rolling out simple solutions for decreasing environmental effect of gases, pilot gas salvaging program, and write grants to study nitrous pipeline gas leakage.

Methods: We interrogated multiple hospital data systems to obtain aggregate data on all anesthetic gas spend especially desflurane and carrier gas (oxygen). We collaborated with various stakeholders of James operating rooms to set up pilot gas salvaging project. Lastly various education and communication presented at the medical college and departmental level in form of grand rounds, meetings with stakeholders, and updates during faculty meetings.

Outcomes:

PHASE 1:

Education/Engagement: Grand rounds presented for the Anesthesia Department. At the College of Medicine level, there were Perioperative Sustainability lectures at the Ground School. We also mentored an Advanced Perioperative Sustainability Project (Joshua Conner) for advanced elective. There was also resident (Brianna Kossbiel) presenting an abstract on bariatric surgery and various gas environmental and outcome impact at IARS/AUA. We were also part of the planning committee for the Byrd Symposium 2022 and invited keynote speaker Dr. Chesborough. Allotted time has been given during

monthly faculty meeting to discuss and update our sustainability efforts. In addition, communication noted on central anesthesia communication board.

Anesthetic Gases: We worked with epidemiology and created laminated reminders to decrease oxygen flows, avoid desflurane/nitrous and placed in all SDS/UH/James operating rooms. (42) Data request to obtain individual use of various gases. Aggregated data obtained over last 3 years. Also looking into innovative ways such as salvaging prior to WAG to decrease environmental effect. Pilot Program Pending

Discussion:

We will participated in ongoing education programs on sustainability. Education is making an impact and reduction of “blue gas use. Reports pending on individual gas use. Pending is grant submissions for assessing nitrous oxide leakage and single use recycling.

Future

- Roll out multiple projects: medical waste, clean plastic recycling, etc
- Obtain reports for individual and aggregate gas use monthly from epic
- Calculate environmental and cost impact of using “blue gas” and initiatives
- Collaborate with different national, local, and hospital grassroots partners.