Reusable Pulse Oximeters Could Result in Significant Cost Savings and Waste Reductions

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Background

- Climate change is perhaps the greatest threat to humanity
- If US health care were its own entity, it would rank 13th in total greenhouse gas emissions worldwide, more than the entire United Kingdom[1]
- The health of our environment ties directly into the health of individuals, therefore we have the ethical obligation to reduce our environmental impact
- One of the biggest opportunities for health systems to improve their environmental footprint is to opt for reusable equipment to reduce demand for resources and waste production[1]
- The goal of this project was to evaluate whether implementing reusable pulse oximeters impacts patient care, is financially feasible, and generally supported

Reduce Reuse Recycle

Efficacy

Baseline Metrics

- Prior to COVID-19, Thomas Jefferson University Emergency Department (ED) saw roughly 65,000 patients annually, upwards of 90% of which are equipped with a single-use pulse oximeter
- This equates to **more than 55,000 single-use pulse oximeters every year**
- $7.60 per disposable device vs. $162.40 per reusable device
- Before reusable pulse oximeters can be cost-effective, they need to be used ~22 times
- **Potential to save ~$129,000 annually in the ED**
- We surveyed ED staff to evaluate their perceptions on reusable devices and how it could impact patient care

References

1. Eckelman MJ, Sherman J. Environmental Impacts of the U.S. Health Care System and Effects on Public Health. *PLoS ONE*. 2016;11(6):e0157014. doi:10.1371/journal.pone.0157014
2. Climate Effects on Health | CDC. Published March 3, 2021. Accessed April 11, 2022. https://www.cdc.gov/climateandhealth/effects/default.htm

Interventions

LNCS Adtx-3
Single-Use Pulse Ox

LNCS DC-I
Reusable Pulse Ox

Fig. 1 Current single-use Masimo pulse oximeter used inpatient vs. reusable Masimo pulse oximeter

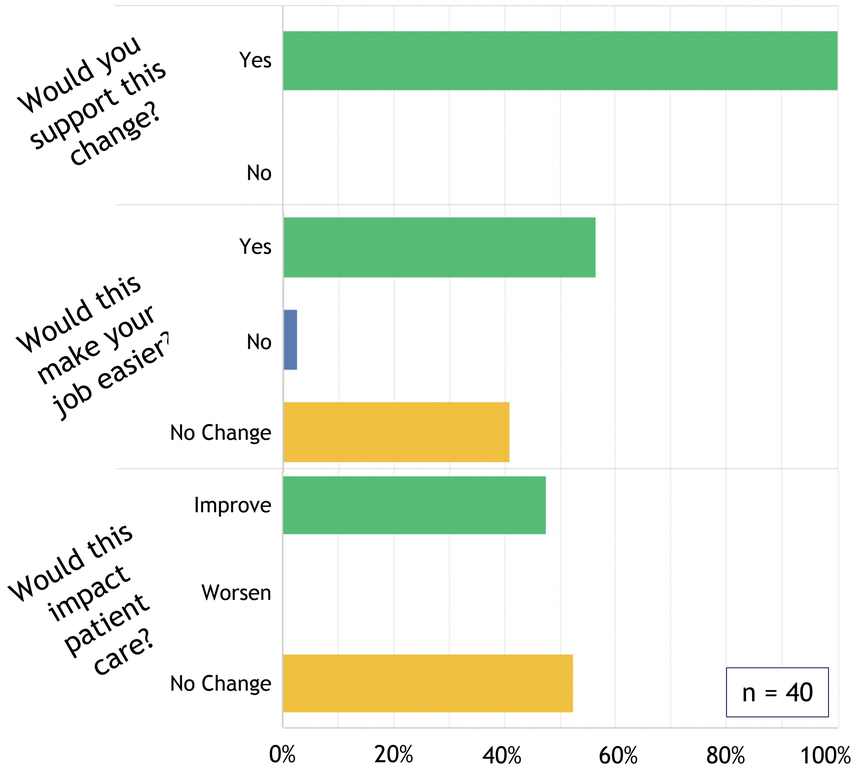

Fig. 2 Provider perceptions on changing pulse oximeters

Fig. 3 Word cloud of cited barriers to implementation

Challenges and Lessons Learned

- Our providers view sustainable changes positively; in general, ED staff seem supportive of green initiatives
- Sanitation is the one of the biggest concerns regarding reusable equipment → must communicate with Environmental Services prior to implementation
- Loss of or damage to equipment dramatically impacts cost effectiveness of the intervention → need adequate measures to keep pulse oximeters in their respective rooms
- Sustainable initiatives **must** be cost effective for them to be considered

Future Directions

- Communication with Infectious Disease and EVS
- Implementing pulse oximeters in phased approach beginning with ED rooms 1 - 10
- Working with Central Supply to implement partially reusable pulse oximeters throughout various departments
- Other sustainability projects at Jefferson (adding signs to trash bins, reducing food waste, etc...)

Linkage to Healthcare Disparities

- The purchasing habits of modern health systems directly contribute to climate change — **of which vulnerable populations will experience the most severe effects**[2]
  - Increased zoonotic range
  - Increased incidence of respiratory diseases
  - Poorer water quality
  - Flooding and other natural disasters
  - Mass migrations and overcrowding
- As health care providers and members of larger health systems, we have the obligation to do our part to mitigate the effects of climate change for the health of our patients — **this requires sustainable choices**

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