OP19 A SUSTAINABLE OXYGEN SYSTEM: MITIGATION FOR IMPROVEMENT AMIDST A PANDEMIC

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Introduction:

The COVID-19 pandemic caused an overwhelming strain to the healthcare system. Amid this, our tertiary healthcare centre encountered an unprecedented hospital disaster.

Case:

On July 12th 2021, the oxygen pressure in our Emergency & Trauma Department (ETD) dropped. That evening, there were 18 patients in the critical respiratory zone - 4 ventilated, 2 on high-flow nasal cannula, and others on non-rebreather masks. The incident became apparent when patients gradually desaturated. We then realised that the ventilators generated only 21% oxygen and the oxygen pressure alarm had been beeping. The hospital disaster alert was activated. Ventilated patients were manually bagged, while patients on high-flow nasal cannula were intubated and ventilated using transport ventilators. Patients on non-rebreather masks were connected to oxygen cylinders. Oxygen usage was adjusted to achieve minimal oxygen requirement. Troubleshooting by the engineering team was unsuccessful. The patients in our ETD were transferred to an ad-hoc critical area, and manpower was reshuffled to accommodate the change. Our ETD had to stop accepting new patients, and the Medical Emergency Coordination Centre was informed. Investigation by the engineering team eventually revealed a major oxygen pressure drop from a sudden surge in oxygen demand.

Discussion:

Oxygen is a common lifesaving treatment and yet many clinicians are not aware of the necessity to monitor its pressure. Amongst the healthcare providers, we raised awareness on optimal oxygen usage, de-escalation, end points of oxygen therapy, oxygen pressure alarm and leak detection. A daily Google sheet was created as a real-time update on oxygen usage. The use of oxygen concentrators was explored and subsequently procured. In future, we hope to implement complimentary surge calculators proposed by the World Health Organization as a more objective system for resource planning. There is room for innovation and research opportunities for oxygen conservation to provide solutions towards better care.

Conclusion:

This experience enlightened us on oxygen management and provided an opportunity in developing a sustainable oxygen system for future outbreak response. Co-operation between non-clinical and clinical services is pivotal for multimodal logistics in disaster relief.

Keywords: Oxygen sustainability, Disaster