The COVID-19 pandemic of 2020 saw increased numbers of patients with respiratory disease. Such patients require oxygen and other more advanced forms of respiratory support such as continuous positive airway pressure (CPAP) and invasive ventilation. The more advanced forms of respiratory support can utilise high flows of oxygen (particularly CPAP) and, depending on how many patients are admitted requiring support, this may put too much demand on our vacuum insulated evaporator (VIE) that supplies oxygen to the hospital. This Standard Operating Procedure (SOP) determines what the Trust’s actions will be if the demand for oxygen starts to outstrip supply and is a phased approach.

**The maximum safe oxygen delivery without risk of critical failure from the VIE is 1275L/min**

Oxygen output is monitored daily by Estates through either: the VIE reading at the oxygen tank, a manual snapshot audit and/or the automated dashboard. Estates are responsible for escalation to initiate the processes and actions below.

1. **Escalation Thresholds and Actions**

|  |
| --- |
| * 1. **GREEN STATUS - <1000 L/min Reading - via Live Telemetry via Estates**
 |
| 1. At this level standard BAU processes would take place and no alarms for intervention would be raised.
 |
| * 1. **AMBER STATUS - 1150 L/min Reading - via** **Live Telemetry via Estates**
 |
| 1. Amber warning alarm’s in Switchboardwho inform Silver Command (In Hours) if Major Incident command arrangements already established or Site Matron (Out of Hours or non-Major Incident) and escalates to Bronze and Silver On Call.
2. A Trust-wide email advising Consultant clinical review of all High Flow Nasal Oxygen/NIV reviewed **ASAP** *(template outline below).*
3. Oxygen ward round to take place at the next ward round with senior nursing and consultant representation. Confirm the Oxygen has been prescribed and target Oxygen saturation has been documented for all patients. Identification of appropriate patients for use of Oxygen concentrator machines (<5 l/pm) (\*If available)
4. Initiate daily oxygen meetings to include: Estates, Medical Director/DMD, Critical Care and Respiratory medics and nursing representatives
5. Communications department initiate on-going general communication regarding oxygen usage to raise awareness *(template outline below)*.

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| * 1. **RED STATUS - 1300 L/min Reading - via Live Telemetry via Estates**
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| 1. Red warning alarm’s in Switchboard to escalate to Site Matron who informs On Call Estates Manager and Associate Director of Estates (BFS) to review Oxygen supply on site. Site Matron to escalate status to Bronze and Silver & Gold On Call or Silver & Gold Command if Major Incident command arrangements already established. In hours silver
2. Silver on call/Command to initiate **immediate** Oxygen Ward Round across all wards utilising Onsite/On Call Consultant and senior nursing representation (Out of Hours - Site Matron and Acute Response Team). Review of all High Flow Nasal Oxygen/NIV and consideration of other options with senior review undertaken by Intensivist (for Critical Care) and Respiratory/GIM Consultant (medical wards) REG on site – Consultant informed (when off site) MR. Confirm the Oxygen has been prescribed and target Oxygen saturation has been documented for all patients. Identification of appropriate patients for use of Oxygen concentrator machines (<5 l/pm).
3. GOLD considerations including:
	1. Review oxygen levels and seek support from Estates in considering condition of plant, ice build-up and availability from both the Primary and Secondary Vapour Insulated Evaporators (VIE).
	2. Potential ED divert
	3. Potential to re-locate patients to other hospitals
4. Send a Trust-wide communication regarding the current critical Oxygen status.
5. Consider diversion for any new Critical Care patients to neighboring Trusts.

**Please note:** At this level **any further high pressure oxygen such as Airvo/Whisper Flow/Trilogy CPAPs/HFNO** would risk reducing overall oxygen pressure and supply. |
| **d) Sudden Pressure Drop or Primary VIE failure**  |
| * Majax declared;
* Follow oxygen control measures above;
* Secondary VIE and oxygen cylinders/manifolds will support pressure drop or main failure; dependent upon flow or pressure drop. There are a number of variables regarding pressure availability and secondary VIE capacity subject to demand and site loading. At 1500 L/M and a 50% fill up this would provide in the region of 12 hours backup. This will be further reinforced by the high flow ‘w’ sized manifold once installed.
* Urgent assessment from Estates and BOC contacted to investigate and refill as appropriate.
* Immediate Ambulance Divert.
* Diversion of Critical Care patients to neighboring Trusts until situation is understood and resolved.

Clinical perspectiveWard level too?**Medical Gas Alarm Process**With pictures. |

**Reviewed by:**
**Approved by:**
**Approved date:** 2020
**Review date:** 2021