**ST HELIER HOSPITAL – DEMAND MANAGEMENT PLAN FOR PIPED OXYGEN – 30/12/20**

**Introduction**

Increased numbers of COVID-19 patients and admissions have seen a significant increase in oxygen demand in hospitals.

The Hospital has a limited pipped oxygen supply system which can deliver up to 917 litres/minute of oxygen at running at 100% capacity. NHS National engineering advice is that the system should **NOT** operate above 80% of its total capacity.

Therefore the safe operating level is 734 l/m.

**If demand through multiple wall outlets exceeds the maximum capacity, there is a risk of rapid drop in oxygen pipeline supply. This may risk failure or reduction in oxygen supplied to individual patients or ventilators.**

In addition to this, the emergency standby system was **not** designed to support the use of the piped oxygen at 100% capacity, therefore creating a risk around resilience of piped oxygen to patients.

During the last few weeks of December 2020, there has been a significant increase in the use of piped oxygen which has seen the system regularly running between 90 – 100% and at time over 120% of design capacity.

In order to manage the use of piped oxygen the Trust has:

* Installed a high pressure ‘W’ cylinder manifold to increase the ‘back-up’ resilience.
* Ensured all ventilators are the most efficient in terms of oxygen usage
* Rolled out and using up to 60 Oxygen Concentrators for patients need 5 l/m or less
* Regular clinical review of all patients on oxygen to ensure the flow rates provided to patients are clinically appropriate and not delivering excessive oxygen.
* Increased ITU and respiratory bed capacity at Epsom Hospital and the South West London Elective Orthopaedic Centre and transferred some patient on high flow oxygen demand
* Worked with our partners in SWL to support transfer of patients from St Helier to St George’s, Croydon and Kingston
* Stopped the use of high flow NIV devices (opti-flow) across the hospital
* Undertaken a risk assessment and advised the Trust Board of the corporate risk rating of 20.
* Order for the piped oxygen system capacity to be increased. This order was placed in April 2020 and installation is expected for 11th January 2021 by BOC.

**Further control measures**

In order to prevent the risk of rapid drop in pressure or total loss of piped oxygen, it is necessary to restrict the number of patients at any one time receiving oxygen at St Helier Hospital.

In order to reduce the loss of oxygen risk to a low level, the usage should not exceed 734 l/m. However, due the significant operational pressures the NHS and local system are currently working under, it is proposed to run the piped oxygen system at a medium risk. This would allow up to 1,000 l/m capacity.

The medium risk is around the emergency stand-by system, which is not designed to support a high usage of 1,000 l/m and if the main plant failed, the standby/emergency system could not support the demand of oxygen. The consequence is high, but the likelihood is low as long as the main plant is operated at 80% or less of its capacity.

This medium risk would reduce after the engineering upgrade works are undertaken on the 11th January 2021.

In order to ensure that no more than 1,000 l/m is used, there is a requirement to limit the number of patients on oxygen, by delivery method and/or clinical area.

**The following is the maximum number of patients at any one time, that can be on piped oxygen, by delivery method;**

|  |  |  |  |
| --- | --- | --- | --- |
| Device Type | Number of Devices | Suggested device consumption (l/m) | Total Maximum Allowed Flow (l/m) |
| Critical Care Ventilator | 16 | 15 | 240 |
| Anaesthetic Machines – Theatres | 2 | 15 | 30 |
| Low Flow CPAP/NIV Devices | 16 | 15 | 240 |
| Face Mask or Nasal Cannula | 49 | 10 | 490 |
| TOTAL | **83** | **-** | **1,000** |

**PLUS**

|  |  |  |  |
| --- | --- | --- | --- |
| Oxygen Concentrators | 60 | <5 | Not included in totals |
| TOTAL incl. Concentrators | **143** | **-** | **-** |

**To Note:**

1. Three times daily audits of patients will take place to ensure the above numbers are NOT exceeded. These will be recorded.
2. The audits will be review three times a day by the incident control centre. The above number of devices will be reviewed regularly by the ICC and maybe amended to ensure optimisation of the 1,000 l/m is delivered.
3. When the number of devices and/or number of patients is met, then all further patients requiring oxygen therapy will not be admitted to St Helier Hospital and will be transferred to another hospital.
4. Optiflow **must not** be used in any general ward area including A&E. One device may be used under consultant supervision in ITU at STH.
5. All patients prescribed oxygen must have at least daily review by a consultant.
6. Any patient prescribed oxygen by a Registered Nurse (up to 5 l/m) must be put onto an oxygen concentrator.
7. All planned care and day procedures (where a patient may require oxygen) will be stopped at St Helier Hospital until the oxygen system has been upgraded (11th January 2021). These will be transferred to Epsom or if non-urgent rescheduled.
8. Endoscopy can continue as we are now using bottled oxygen.
9. Portable oxygen cylinders should be available for immediate use in all high oxygen-consuming areas. This is part of our Emergency Response / BCP.