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To:

All Regional Delivery Directors
All NHS Trust Chief Executive Officers
All NHS Trust Intensive Care Consultants
All NHS Trust Directors and Manager of Estates and Facilities
All NHS Trust COVID-19 Planning Leads
All NHS Trust Chief Pharmacists
All NHS Trusts Clinical Engineering Leads
and Clinical Engineering teams

12 April 2020

Dear colleague,

Oxygen supply

Hospital trusts are responsible for ensuring the resilience of supply within their estate of both bulk and cylinder oxygen, working closely with their supplier, estates team, and clinical engineers. Working with the oxygen suppliers, we have introduced a number of measures nationally, but there are important measures that trusts must take to ensure that we do not place unnecessary demand or pressure on the supply chain at this time.

Two CAS alerts that have been issued in recent days:

www.cas.mhra.gov.uk/ViewandAcknowledgment/ViewAlert.aspx?AlertID=103013

www.cas.mhra.gov.uk/ViewandAcknowledgment/ViewAlert.aspx?AlertID=103020

For bulk liquid oxygen deliveries

Suppliers have taken proactive steps to ensure oxygen levels are maintained. They remotely monitor oxygen tanks and initiate a resupply delivery when the level falls below a set trigger point.

These trigger points have been increased, which increases the frequency of delivery and ensures oxygen tanks are always well filled to manage any sudden increase in demand.



Reduction in demand from other industries means the drivers who normally deliver to those customers are available to make deliveries of medical oxygen in bulk tanker and cylinder form. Suppliers are also converting more tankers to transport liquid oxygen and have trained some military drivers to make oxygen deliveries.

Cylinder oxygen deliveries

Cylinder oxygen deliveries are made on a full for empty basis. Every empty cylinder left at the agreed cylinder store will be replaced by a full cylinder. Suppliers can arrange more frequent deliveries to assist with the availability of oxygen.

Actions specifically for NHS trusts

To ensure the supply and distribution of oxygen continue to meet NHS needs we are asking all trusts to assist us by taking the **following actions**:

Oxygen cylinders

Please ensure empty cylinders are returned to cylinder store(s) decontaminated, in line with supplier's guidelines for collection. Staff should be reminded that if they have requested more frequent deliveries, these may be made at different times than they are used to. Please consider additional cylinder rounds throughout hospital wards and departments to ensure that empty cylinders are available for collection whenever your supplier makes your delivery. This will maximise the patient oxygen supply.

Please contact your usual supplier account manager to discuss options to increase frequency of deliveries. Emergency deliveries can still be requested by the usual process, but this should not be used in place of speaking to your supplier in advance and planning for increased demand. Emergency deliveries are strictly on a full for empty basis and trusts must ensure empties have been returned to the store. If empties are not returned, or they are not decontaminated after use, this reduces the number of cylinders the supplier has moving between trusts, which increases the risk that the suppliers won't be able to meet demand.

NHS ambulance trusts, please be mindful that there are different cylinder oxygen supply companies in different areas and leaving an empty cylinder at a site that doesn't use that supplier removes that cylinder from circulation until it can be returned to the owning supplier. Where possible, please return empty cylinders to the correct trust cylinder store.

Trust must ensure that access to Bottle Oxygen Stores on sites remain clear, or their deliveries will be adversely impacted. Delivery Drivers will not remove clinical waste bins and beds to get to the compounds.

Works, upgrades and installations survey

NHS Estates has led a survey across all acute trusts to support the prioritisation of oxygen works needed. This is now complete, and the returns are being prioritised by the region to ensure supplier equipment and resources will be used where they will have the best impact. Not all trusts completed the survey by the deadline. If works are required and no return was submitted trusts should complete the survey and return through the normal EPRR cascade route as a priority.

Trusts should not make direct contact with suppliers to request installation of new bulk oxygen supply equipment. Their capacity for upgrades is being directed centrally, through regional prioritisation, and it is critical they are allowed to focus their limited resource where it will bring the greatest value.

Existing vacuum insulated evaporator (VIE) installations

Bulk oxygen VIE installations

Flow meters are not installed on bulk oxygen systems. Trusts must physically inspect the Vaporiser on an hourly basis for icing and be aware of the readings on the controls.

Trusts must ensure they understand the maximum sustained flow rate their bulk oxygen system can supply and ensure that this is not exceeded. Drawing more oxygen from a VIE bulk system than it is designed for can lead to icing and/or damage causing unexpected drops in flow. Exceeding the sustained flow limit is unsafe. It compromises oxygen flow to all patients and equipment. Where there is any doubt make contact with your supplier, BOC or Air Products, for advice.

Trusts and regions must consider maximum sustainable flow rate from oxygen systems to be a constraint when planning capacity for oxygen treatment. Do not assume more oxygen infrastructure will be available unless the works have been confirmed following the prioritisation process.

Increasing flow capacity

Ensure you follow the advice from the supplier of the equipment on increasing flow capacity if VIE installations. We have included the advice from BOC and Air Products for ease of reference. For advice on maximising flow from your oxygen system,

contact your supplier using the contact details in the attached, being mindful of the number of requests they are receiving.

The attached supplier guidance must be followed. Under no circumstances should trust staff make other changes to bulk oxygen supply systems. Suppliers are aware of several instances of trusts making changes to attempt to increase flow which had the effect of reducing sustainable flow. Unapproved changes can be dangerous. Suppliers are available to assist with changes to get maximum safe flow.

BOC and Air Products bulk oxygen systems are able to remotely monitor tank fill levels and system flow. Estates teams will receive further guidance on how to gain access to this telemetry.

Check building piping system

Trusts should be mindful that the VIE system flow capacity is not the sole constraint on oxygen flow. The building piping system has a significant impact, particularly where ventilators or other treatment equipment is being used some distance away from the VIE installation. Your trust will have an approved person and authorising engineer for medical gases. It is critical that clinicians and managers engage with them, along with local and regional estates teams, to ensure plans do not exceed oxygen flow capacity.

VIE installations at new NHS hospitals

At the time of writing, VIE bulk oxygen supply systems have been secured for all the confirmed new hospital sites at ExCeL London, NEC Birmingham, Manchester Central, Harrogate, and Bristol. If any additional new hospitals are approved, VIE equipment will be secured centrally, through the region's priority lists, and contact should not be made with suppliers at trust level.

Further guidance

Queries or escalations should be directed through regional delivery teams who will prioritise these requests with regional and national estates teams. Contact details are attached.

Thank you for your support.

Kind regards



**Professor Keith Willett
NHS Strategic Incident Director
NHS England and NHS Improvement**



**Emily Lawson
Chief Commercial Officer
NHS England and NHS Improvement**