

Oxygen Shortage Tip Sheet – Lessons Learned from COVID-19

The Northwest Healthcare Response Network (NWHRN) continues to work with local response partners to prepare for potential medical oxygen shortages. This Oxygen Shortage Tip Sheet was designed to support facilities and organizations in their medical oxygen planning efforts and to reference if oxygen shortages are anticipated. State and regional responses to a variety of man-made and natural hazards continues prove that organizations are most resilient and effective when partners are pro-active in their planning efforts, share and learn from each other, and most importantly, work together.

Planning for Shortages

Shortages of medical oxygen could be caused by a significant increase in demand, as seen in Southern California during the COVID-19 pandemic; supply-chain disruptions which create shortages in supply of medical oxygen or necessary equipment, such as cylinders; or disruption to the infrastructure necessary to transport liquid oxygen or critical supplies. Western Washington is unlikely to be significantly impacted by individual locality or facility/system shortages; however, regional or state shortages could lead to significant impacts to healthcare operations. The NWHRN and other response agencies will continue to monitor supply and demand for medical oxygen and notify healthcare partners if shortages are anticipated. In the meantime, individual facilities, health systems, and response agencies should incorporate possible oxygen shortages into their planning efforts.

Hospitals should consider the following facility-level vulnerabilities, limitations, and strategies in their planning efforts:

- Oxygen pipe capacity and vulnerabilities.
- Strategies to prevent vaporizers from freezing.
- Hook-up or connection points for external oxygen.
- Understand medical air and oxygen capacity [[support tool](#)].
- Identify and build relationships with multiple backup oxygen vendors.
- Look for opportunities to increase storage capacity.
- Critical oxygen resources – cannulas, tubing, etc.
- Review the NWHRN [oxygen scarce resource card](#) and crisis standards of care protocols.

Pre-hospital EMS providers should consider the following vulnerabilities, limitations, and strategies in their planning efforts:

- Significant patient drop-off delays can [deplete limited oxygen supplies for EMS personnel who depend on smaller cylinders when transporting patients](#).
- Review regulations for storing cylinders. Identify ways to rapidly refill cylinders, appropriate locations for organization/jurisdictional caches, or acquiring additional oxygen generating machinery/refill tanks.
- Identify thresholds of concern – notify key response partners such as the local health jurisdiction (LHJ), emergency management, and NWHRN when those threshold(s) are reached.
- Develop, review, or update resource conservation strategies.

Non-hospital healthcare organizations, such as ambulatory surgery centers, skilled nursing facilities, and other healthcare facilities that utilize medical oxygen should consider the following:

- If part of a cross-jurisdictional organization, identify/understand procedures for intra-system medical oxygen and equipment movement.
- Identify and contact multiple backup oxygen vendors. Ask about where your facility falls in the vendors priority list during critical oxygen shortages.
- Incorporate medical oxygen shortages into your organization’s planning efforts.

During a Shortage

Healthcare organizations and response agencies who are experiencing a shortage in medical oxygen supplies should take additional steps to prepare for direct and indirect impacts:

- Reference key documents the following documents:
 - [Potential Solutions to the COVID-19 Oxygen Crisis – John Hopkins Center for Health Security](#)
 - [NWHRN & WA DOH Scarce Resource Management & Crisis Standards of Care](#)
- Notify the NWHRN **Duty Officer at 425-988-2897** at the first indication of anticipated or immediate oxygen shortage.
- Ensure close communication with vendors. Understanding the scale and scope of the shortage, as well as vendor priority list will support response efforts.
 - Hospitals may consider having an on-site representative to [reduce turnaround time](#).
- Identify potential cascading impacts, such a reduced ability to discharge patients, inability to obtain canisters, drop-off delays. Look for potential solutions to reduce these downstream impacts such as assembling [a discharge coordination team](#) to increase throughput.
- Participate in NWHRN hosted response calls with healthcare systems and response agencies. Ensure provision of oxygen data is shared with WA DOH, NWHRN, and LHJ’s when requested.

Consideration of Regional Vulnerabilities & Strengths

During the COVID-19 pandemic, Washington state has to-date largely avoided medical oxygen shortages due to successful regional coordination, state and local regulation, and community goodwill towards non-pharmaceutical interventions. However, other regional hazards, such as a large earthquake leading to infrastructure damage, could lead to critical shortages.

Looking toward the future, healthcare systems should consider regional vulnerabilities and strengths in their planning efforts, especially in how they could impact system-level supply and demand:

- Multiple healthcare organizations and response agencies relying on the same medical oxygen vendors.
- Critical oxygen generation infrastructure located in lahar, liquefaction, and or tsunami higher-risk areas.
- Statewide transportation infrastructure vulnerabilities, such as unreinforced bridges, preventing resupply of oxygen and supplies.
- Patient movement coordination and level-loading via the [Washington Medical Coordination Center](#) and/or [Disaster Medical Coordination Centers](#).



- Maintaining strong local, regional, and statewide healthcare organization and response agency coordination and collaboration.

Support from NWHRN

If you anticipate or are currently experiencing impacts from extreme heat, [please reach out](#) to NWHRN so we can support you.

NWHRN will:

- Provide situational awareness specific to the event.
- Activate as needed to support healthcare partners which may include:
 - Coordination of information and response activities, including resource requesting, coordination with local public health and emergency management partners.
 - Real-time convening of impacted organizations to share information.
 - Work to collectively problem solve, provide patient tracking support and other assistance as needed.

NWHRN works with partners through the varying organizational and reporting structures specific to their community. NWHRN recognizes that healthcare systems cross-geographical boundaries and are not bound by a specific jurisdiction. Because of this, NWHRN mirrors this multi-jurisdictional, regional healthcare approach and adapts to meet the needs of healthcare while honoring local health jurisdiction oversight. NWHRN maintains updated contact information for healthcare coalition members and will notify appropriate partners upon activation.

Contacting NWHRN:

- **24/7 Duty Officer Line at 425-988-2897.**
- Regular NWHRN Coalition coordination calls such as the All-Hazards call.
- Distribution of situational awareness reports. To join the distribution list, please email info@nwhrn.org.