

# Hyperbaric oxygen in patients with delayed ventilation

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## BACKGROUND

Delayed ventilation may increase a patient's risk for pulmonary barotrauma (PBT) during hyperbaric oxygen (HBO<sub>2</sub>) therapy decompression, which can be lethal. Pulmonary risk stratification to screen for delayed ventilation in patients eligible to undergo HBO<sub>2</sub> has not been formalized, perhaps because PBT occurrence in HBO<sub>2</sub> is low.

## METHODS

We developed an algorithm for pulmonary risk assessment of HBO<sub>2</sub> patients in 2005 to include ventilation scanning. To determine its adherence and utility, we performed a retrospective review of patients treated at two hyperbaric facilities (Intermountain LDS Hospital and Intermountain Medical Center). For patients identified as at-risk for PBT (history of emphysema, asthma, radiation therapy, lung cancer, nodules, pneumonia, lung trauma, surgery, and smoking), we assessed algorithm adherence, evaluation results, and complications with HBO<sub>2</sub>.

## RESULTS

From 1/2005 to 2/2014 we identified 92 patients at risk for PBT by medical history. These patients subsequently underwent chest radiography (65), Pulmonary Function Testing (32), chest CT (29), and/or ventilation scans (44) to evaluate PBT risk. Of these 92 patients, 26 were not treated with HBO<sub>2</sub>, 7 for compromised pulmonary status prior to formal PBT risk assessment; the other 19 did not have an indication, had cardiac risk, or were lost to follow-up.

Of 66 patients receiving HBO<sub>2</sub>, 10 discontinued HBO<sub>2</sub> early with 2 for possible pulmonary issues (1 acute pulmonary edema, 1 "breathlessness").

Of 92 patients, 44 had ventilation scans for air trapping, with 28 patients showing delayed ventilation (>5 minute delayed washout). Of the 28 patients with delayed ventilation, 26 had uneventful HBO<sub>2</sub> treatments (726 total sessions), while the remaining two did not receive HBO<sub>2</sub>. One of them had >40 minutes of washout and cardiac risk factors; the other had >20 minutes washout, and declined HBO<sub>2</sub> because of bullous disease.



## CONCLUSIONS

Carefully screened patients with delayed ventilation may be treated safely with HBO<sub>2</sub>.