

# Seizures in the Hyperbaric Chamber

DECEMBER 2021

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# Oxygen Toxicity Seizures



Initially described by **Paul Bert** in the late 19th century, exposure to high levels of oxygen can lead to acute oxygen toxicity. The manifestations of which are neurologic in nature. The early signs are nonspecific such as twitching of the lip, changes in vision, tinnitus, or a sudden change in behavior. Left untreated the toxicity will progress to seizures.

Oxygen toxicity seizures are uncommon, occurring only 0.52 times per 10,000 hyperbaric treatments. Air breaks reduce the potential for acute oxygen toxicity. If a patient undergoing HBOT exhibits the early signs of oxygen toxicity give him or her an air break, and consider lowering the pressure in the chamber. Alternatively, the physician can choose to end the treatment. In addition, eliminating fluorescent lighting in the chamber room decreases the risk of seizure.

# Signs & Symptoms



Oxygen toxicity can lead to mild symptoms or progress rapidly to a seizure without prodromal symptoms. Careful attention to the patient throughout the treatment is key to identifying oxygen toxicity and intervening in a timely fashion.

The acronym **VENTID** identifies the early signs of oxygen toxicity:

V=changes in vision

E= ears including symptoms such as tinnitus

N=nausea

T=twitching

I=irritability

D=dizziness

# Differential Diagnosis



FEVER

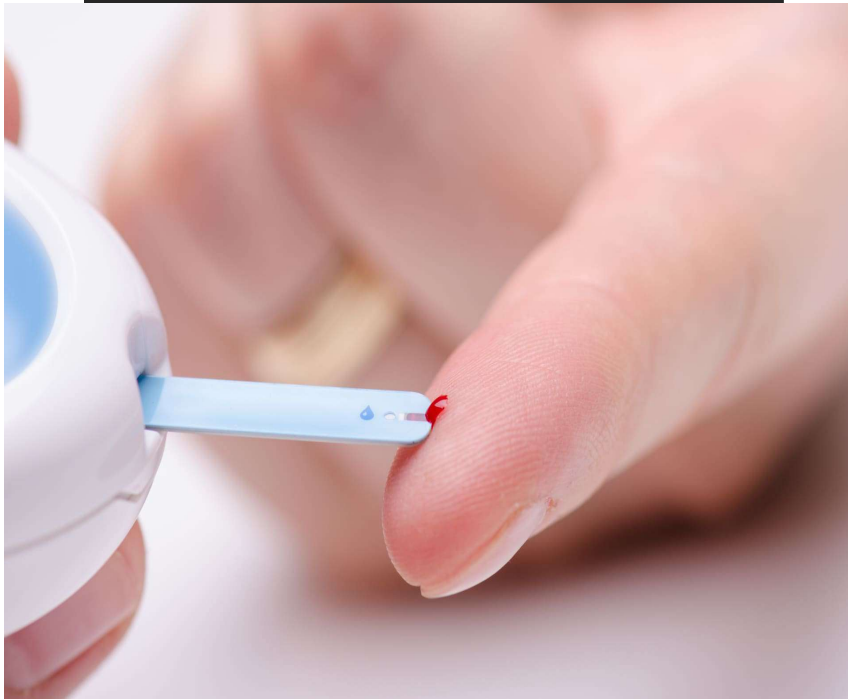
Most Seizures in a hyperbaric environment are not due to oxygen toxicity. The differential diagnosis includes hypoglycemia, fever, new seizure disorder, medications that lower the seizure threshold, electrolyte abnormalities and chemical or alcohol abuse.

## Procedure

If the patient is observed or complains of any unusual neurologic symptoms have the patient take an air break. Immediately notify the physician supervising the treatment. Under the direction of the physician consider decreasing the pressure in the chamber or discontinuing the treatment. In the case of a seizure do not decompress the patient until seizure activity ceases.



## Procedure



In diabetic patients check a blood glucose level to rule out hypoglycemia as the source of the seizure. The patient is sent to the emergency room for a seizure work up. If the seizure is secondary to oxygen toxicity the patient can resume HBOT. Prior to the next treatment incorporate an air break in the treatment protocol.



QWZ!

# QUIZ

1. Patients will always exhibit one or more signs/symptoms prior to having a seizure in the chamber.





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## QUIZ

2. Initially described by \_\_\_\_\_ in the late 19<sup>th</sup> century, exposure to high levels of oxygen can lead to acute oxygen toxicity.

- A. Dan Kelly
- B. Antonine Lavoisier.
- C. Paul Bert
- D. Ida Boerema

# QUIZ

2. Initially described by \_\_\_\_\_ in the late 19<sup>th</sup> century, exposure to high levels of oxygen can lead to acute oxygen toxicity.

- A. Dan Kelly
- B. Antonine Lavoisier.
- C. **Paul Bert**
- D. Ida Boerema



# QUIZ

3. Immediately decompress the patient if they are actively seizing?



# QUIZ

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# QUIZ

4. Most seizures in a hyperbaric environment are not due to oxygen toxicity?





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## QUIZ

5. Name 3 causes of seizures other than oxygen toxicity.



# QUIZ

**5. Name 3 causes of seizures other than oxygen toxicity.**

1. Hypoglycemia.
2. Fever.
3. New seizure disorder.
4. Medications that lower the seizure threshold.
5. Electrolyte abnormalities.
6. Chemical or alcohol abuse.



THANK YOU ALL SO MUCH!

HAVE A WONDERFUL HOLIDAY  
SEASON!

-FROM: HENRY FORD HBO STAFF

# SERENAGROUP HYPERBARIC LEADERSHIP

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# HBO Show Rate November 2021


Center	Program Director	Show Rate Percentage
Akron	Nick	96%
ACMH	Lisa	--
Berkshire	Sean	93%
CHI Health CUMC/Bergan	Joe	--
CHI Health Mercy	Joe	--
Deborah	Megan	--
Fairview	Jamie	100%
Henry Ford	Eliece	100%
Jackson	Dean	83%
St. Mary's	Katie	100%
St. Joseph Medical Center	Christine	83%
Via Christi	Nancy	99%
MH The Woodlands	Andrea	No Patients Yet
Inspira – Elmer	Ally	100%



# 2022 Clinic Elf



**Facebook:** SerenaGroupWC  
**Twitter:** SerenaGroup4  
**LinkedIn:** SerenaGroup Advanced  
Wound Care & Hyperbaric Medicine  
**Instagram:** serenagroup1



## The Clinic Elf

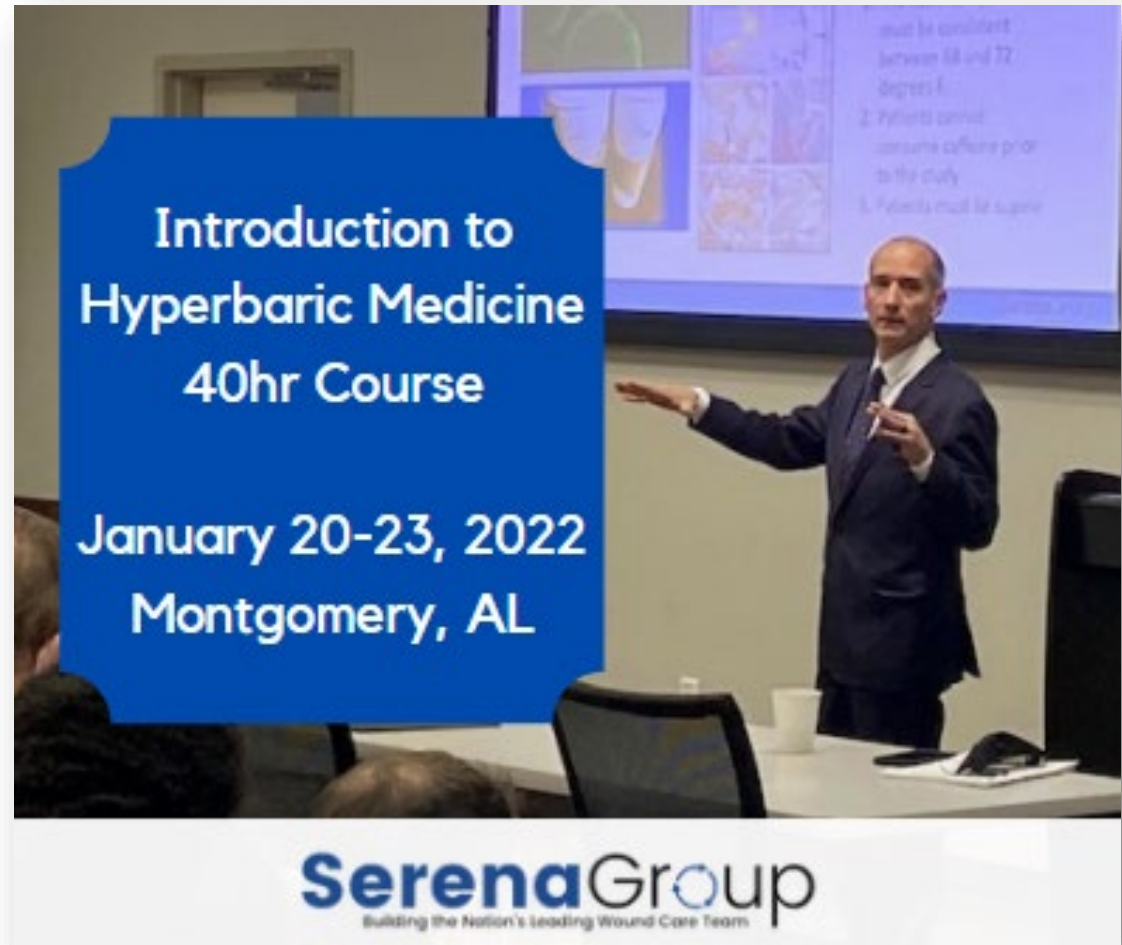
### HOW DOES HBOT WORK FOR CHRONIC REFRACTORY OSTEOMYELITIS?

- Induce angiogenesis & osteogenesis
- Augment antibiotic therapy
- Increase osteoclast function
- And potential for More!

**SerenaGroup**  
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# HBO Upcoming Courses

Register at  
[www.serenagroupinc.com](http://www.serenagroupinc.com)



**Introduction to  
Hyperbaric Medicine  
40hr Course**

**January 20-23, 2022  
Montgomery, AL**

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must be conducted  
between 18 and 72  
degrees F  
2. Patients cannot  
consume caffeine prior  
to the study  
3. Patients must be supine



# 2022 Monthly HBO Safety Webinar



- **JANUARY**
  - AKRON - NFPA Guidelines and SerenaGroup® Quality Metrics and Measures
- **FEBRUARY**
  - CHI HEALTH BERGAN: Identifying Hyperbaric Candidates in the Wound Care Center
- **MARCH**
  - DEBORAH - Baratrauma
- **APRIL**
  - HENRY FORD - To Dive or NOT to Dive?
- **MAY**
  - JACKSON - Clinical and Non-Clinical Emergencies and Preparedness
- **JUNE**
  - ST. MARYS - Diabetes Management for the Hyperbaric Patient
- **JULY**
  - THE WOODLANDS - What can and cannot go into the chamber?
- **AUGUST**
  - ST. JOSEPH - Know the Resources Available for You and Your Patients
- **SEPTEMBER**
  - VIA CHRISTI - Clean Chambers are Safe Chambers
- **OCTOBER**
  - INSPIRA HEALTH ELMER - Physiology of HBOT for Each Indication and When to Consider Continuation
- **NOVEMBER**
  - CHI HEALTH MERCY - Creating a Safe and Comfortable Environment
- **DECEMBER**
  - ACMH - Patient Education and Compliance

Who's Next?



**Date:** January 18, 2022

**Presenting:** Cleveland Clinic – Akron  
General

**Topic:** NFPA Guidelines and  
SerenaGroup® Quality Metrics and  
Measures