

Hyperbaric Chamber Emergency Procedures

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HYPERBARIC OXYGEN EMERGENCY PROCEDURES



Emergency Procedure Cards posted at each chamber, per NFPA 99



Safety Drills Conducted & Documented Monthly

EMERGENCY DECOMPRESSION PROCEDURE

Any situation where rapid CONTROLLED patient access is crucial

Examples:

CARDIAC ARREST
VENTILATOR DISCONNECT



EMERGENCY DECOMPRESSION PROCEDURE (“Controlled”)

| | | | | | |
|---|--|---|---|---|---|
|  |  |  |  |  |  |
| Set the chamber pressure to zero | Inform patient to NOT hold breath | Turn master valve to EMERGENCY VENT | Press EMERGENCY VENT, hold 3 secs on then 3 secs off | Repeat until the chamber reaches 1 ATA | Open chamber door & remove patient |



Consider STAT chest X-ray if pulmonary barotrauma is suspected

EMERGENCY VENT SETTING





FIRE SAFETY

Rescue

Alarm

Confine

Extinguish/
Evacuate



Pull pin

Aim hose

Squeeze handle

Sweep

FIRE SAFETY

? Actions to take for a fire should be determined by:

-  **The patient census/acuity**
-  **The size and proximity of the fire**
-  **The current staff capability**



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FIRE SAFETY

A. Fire in the Adjacent Area (or if fire alarm system rings):

- ✓ • Ensure doors to HBO unit are closed
- ✓ • Determine proximity or degree of danger;

FIRE

PUSH IN THEN PULL DOWN

If imminent, proceed as follows:

- 1. Inform patient; "I'm taking you out, breathe normally. I will not leave you"
- 2. Decompress at 5psi/min
- 3. Activate fire signaling device, if not already in progress

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FIRE SAFETY

A. Fire in the Adjacent Area (continued)

-  4. Don the smoke hood, if warranted
-  5. Evacuate, if warranted
-  6. Close the oxygen zone valve upon exit.




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FIRE SAFETY

B. In the HBO Facility

1. **Rescue** those in immediate danger. Alert patient in chamber of plan to abort treatment; "I'm bringing you out, breathe normally, I will not leave you"



2. **Assess** degree of danger. Don smoke hood, if needed. Decompress at 5psi/min or initiate emergency decompression procedure, if indicated



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FIRE SAFETY

B. In the HBO Facility (continued)

-  3. At IATA, turn off chamber, open door & rescue patient. Close O2 valve at chambers
-  4. **Activate** fire signaling device
-  5. **Contain** fire by extinguisher or by closing the door and evacuating the unit
-  6. Close oxygen zone valve upon **exit**




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FIRE SAFETY

c. Fire in the Chamber (Extreme Danger)

-  1. Turn master valve to emergency vent;
-  2. Push and Hold Button (or Flip Automatic Switch) to Emergently decompress chamber
-  3. Activate fire signaling device. Avoid standing at ends of chamber
-  4. Don smoke hood, have fire extinguisher ready, open chamber door, remove patient



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FIRE SAFETY

c. Fire in the Chamber (Extreme Danger)

5. Shut off oxygen at chamber

6. Shut dept doors and turn off zone valve upon exiting

7. Seek proper medical care for patient(s) once in a safe area



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MECHANICAL PROBLEMS

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Scenario #1

- ▶ You are treating a patient at 2ATA (14.7psig).
- ▶ During a wellness check you notice the SET PRESSURE gauge is reading 8 psig & the CHAMBER PRESSURE gauge is reading 11 psig and each are steadily dropping. An audible alarm begins ringing.
- ▶ *What is happening and explain how you would respond?*



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OXYGEN SUPPLY FAILURE

Hospital gas sensors detect loss of oxygen pressure. HBO facility gas alarm is activated



Normal chamber oxygen pressure is 50-70psi



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OXYGEN SUPPLY FAILURE (continued)

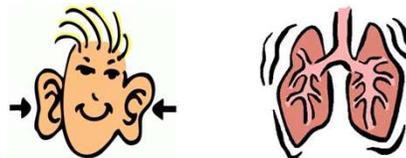
1. Without causing undue concern, inform patient that the chamber is decompressing.
2. Caution patient: "DO NOT hold your breath"
3. Depending on location of leak, chamber will decompress 3-5psi/min (the closer the leak is to the chamber, the faster the rate)
4. Turn SET PRESSURE gauge to zero
5. At 1ATA, turn off MASTER VALVE, remove patient from chamber



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OXYGEN SUPPLY FAILURE (continued)

6. Inform provider. Assess patient for barotrauma and document



7. Report failure to safety director and engineering. Document in Unit log

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CHAMBER DOOR SAFETY PIN JAM

At the end of the treatment with the patient inside

If the chamber door will not open & the chamber pressure gauge reads 0psig

The safety pin may be jammed in the extended position.

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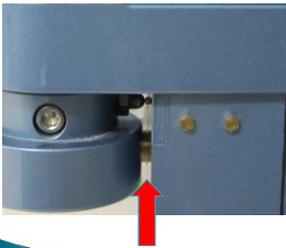
RELEASE SAFETY LOCK PIN

1. Insert a blunt instrument into the hole; such as the eraser head of a pencil
2. Push the pin back into the retracted position.
3. Note incident in the chamber maintenance log and inform Safety Director.

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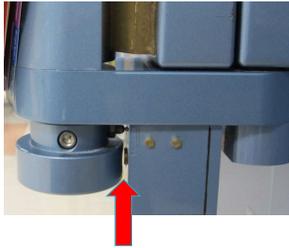
Safety Pin Engaged

Pressurized for treatment or
Jammed after treatment



Safety Pin Retracted

After treatment. Able to open
the chamber door



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Blunt Instrument Entry



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COMMUNICATION FAILURE

1. The chamber phone is not working
2. Communication failure occurs from a dead battery, power outage, damaged or disconnected charger, phone or cord
3. Make rectifications, if able
4. Use cue cards to advise patient of communication failure



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Cue Cards (English and Spanish)



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COMMUNICATION FAILURE

-  Assess patient's level of comfort
-  Notify provider
-  Determine whether to continue with treatment
-  If treatment is to be aborted, begin normal ascent while communicating with the patient via cue cards
-  Note incident in the chamber log; inform Safety Director

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PATIENT RELATED EMERGENCIES



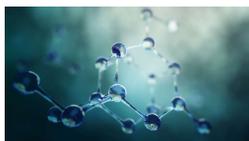
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SCENARIO #1

You are treating an 80yo male with a history of diabetes & acute necrotizing fasciitis. Pretreatment blood glucose was 135. Temperature 101.3 °F.

The EKG monitor alarms; pulse increased from 59 to 130bpm. He complains of anxiety and seeing green flies in the chamber with him.

*What is happening?
What is your first action?*



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OXYGEN TOXICITY

Signs and Symptoms

- CON – convulsions
- V – visual/auditory hallucinations
- I – irritability
- N – nausea/vomiting
- T – tachycardia/twitching
- E – ear tinnitus
- D – dizziness/disoriented)



CONVINTED OR VINTED C

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OXYGEN TOXICITY (response)



Immediately convert patient to a mask air-break; note time. Notify provider.

Within **two minutes**, ask patient if symptoms have resolved, improved, remained the same or worsened?

If **resolved**, patient to complete 10-minute air-break. Provider orders tx modification or aborts therapy.

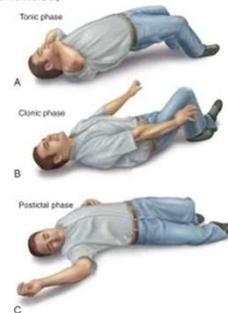
If complaint remains **unresolved**; continue air-break. Provider gives order to abort treatment.

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OXYGEN TOXICITY (continued)

If decompression is planned, maintain patient on air-break during ascent. **Staff must stay at control panel and maintain direct visual observation of patient throughout ascent.**

**If patient Seizes: STOP!
DO NOT alter
chamber pressure!**



Never use the RED emergency vent!

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SCENARIO #2

You're treating a 57yo male with a failed skin graft on his hand from an engine fire.

This was his 4th treatment & has tolerated prior treatments without complications. He is otherwise healthy.

You inform him that he will now begin decompression from 2 ATA.

At 10psi he calls for your attention while holding his chest with one arm. He complains of sharp stabbing pain at his chest, and you observe shortness of breath.

1. What has happened?
2. How do you help your patient?

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PNEUMOTHORAX

Signs and Symptoms



- sudden, stabbing chest pain
- uneven chest excursion during respiration
- deviated trachea (tension)
- acute ECG changes
- increasing respiratory distress, SOB
- distended neck veins (tension)

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PNEUMOTHORAX (continued)



Immediately halt further decompression; note time of complaint



Notify hyperbaric provider



Increase pressure slightly to help alleviate symptoms



Inform pt of suspected pneumothorax and its required management



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PNEUMOTHORAX (continued)

Prepare chest tube tray (possible needle aspiration)

Begin controlled decompression of patient as ordered by provider

At 1 ATA, turn off master valve, remove patient from chamber

Have supplemental oxygen with mask available

Assist provider manage the patient's pneumothorax

Order STAT chest x-ray/arrange for transport if needed



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SCENARIO #3

A 78yo, alert and oriented, female arrives for her 6th HBO treatment for osteoradionecrosis of the mandible.

After 30 minutes into her treatment, you approach the control panel phone to instruct her to start her air break, but instead you observe her drooling and unresponsive to your verbal commands.

The EKG monitor alarms and displays a heart rate of 39bpm and is steadily declining. There are no visible signs of respirations.

- What do you suspect is happening?
- How do you respond?



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CARDIAC ARREST (continued)



Notify provider & activate code blue system; note time of occurrence



Turn set pressure to zero, begin controlled decompression at 5psi, or as ordered



Consider emergency decompression procedure if patient stops breathing, observe patient continually



Once at zero psi, turn off master valve, remove patient.

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CARDIAC ARREST (continued)

- Apply mask oxygen, confirm pulselessness, start CPR
-  Prior to defibrillation, move patient away from chamber
-  Remove material saturated with 100% oxygen; pillow, mattress, linen, gown from patient (if possible, move patient to another stretcher with back board)
-  Assist code team as required and prepare to transport to ER
-  Complete documentation as time permits

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CARDIAC ARREST (continued)



NOTE:

Consider chest tube set up and
STAT chest x-ray

NOTE: Defibrillation/Cardioversion should be held until the patient is moved away from the chamber entrance and all oxygen saturated linens and mattress are removed



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Hyperbaric Oxygen Emergency Procedures

▶ QUESTIONS?

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