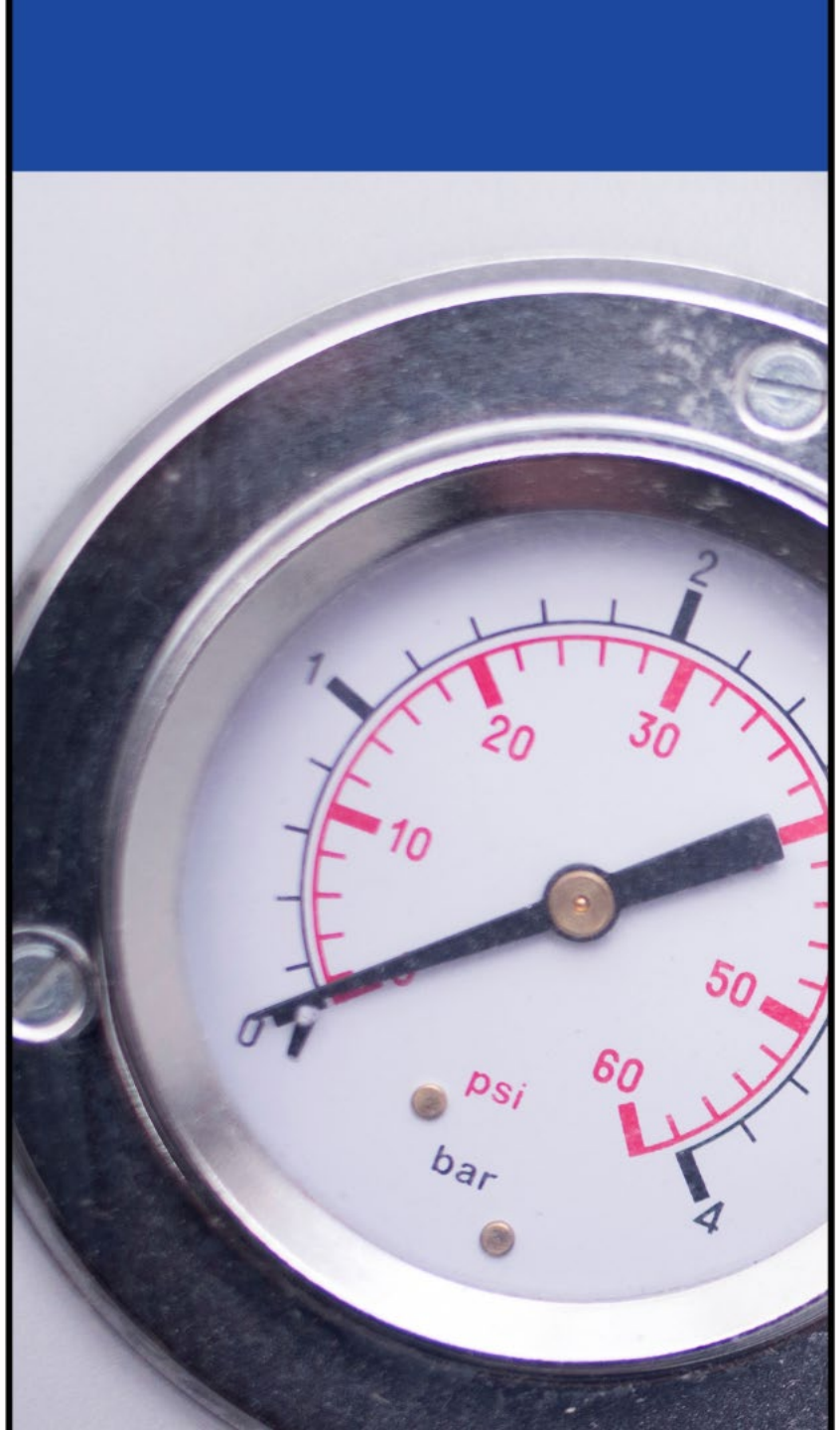
MARCH 2022 MONTHLY HBOT WEBINAR

Barotrauma

PRESENTED BY THE HENRY FORD PROGRAM



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OVERVIEW

Middle ear barotrauma is the most common complication of hyperbaric therapy. During compression, clearing the ears/auto inflation, equalizes the pressure between the middle ear and the pressure in the chamber. Recall from Boyle's Law that as pressure is increased, air-filled spaces will decrease in volume. Auto inflation maneuvers open the eustachian tubes in the nasopharynx permitting communication between the middle ear space and the atmosphere. A patient that cannot equalize the pressure between the middle ear and the chamber by using an auto inflation maneuver or yawning, swallowing, or taking a drink, may experience severe pain and potentially damage the tympanic membrane. Middle ear damage is called BAROTRAUMA. The underlying causes of barotrauma include an inability to auto inflate, artificial airways, and damage to the eustachian tubes.

TECHNIQUES FOR EQUALIZING

- Valsalva Maneuver – Pinch your nostrils and blow through your nose.
- Tonybee Maneuver – With your nostrils pinched, swallow. This will pull open your Eustachian tubes while the movement of the tongue with your nose closed, compresses air against them.
- Lowry Technique – While closing your nostrils, blow and swallow at the same time.
- Edmonds Technique – While tensing the soft palate and throat muscles, push the jaw forward and down.
- Frenzal Maneuver – Close your nostrils and close the back of your throat as if straining to lift weight. Then make the sound of the letter “K” forcing the back of your tongue upward, compressing air against the opening of the Eustachian tubes.
- Voluntary Tubal Opening – Tense the muscles of the soft palate and throat while pushing the jaw forward and down, as if starting to yawn. These muscles pull the Eustachian tubes down

PROCEDURE

If the patient experiences mild to moderate pain during compression, stop the pressurization and decrease the pressure until the patient no longer experiences pain. Advise the patient not to auto inflate while the chamber is decompressing. Once a stable pressure has been reached, have the patient perform several auto inflation maneuvers. Once the patient and technician are satisfied, pressurization can recommence. If patient experiences severe pain that is not relieved by stopping the pressurization or decompressing, remove patient from the chamber and notify the Hyperbaric Physician. It is reasonable to attempt to compress a patient up to three times. If the patient experiences pain on the third attempt at compression, the treatment is aborted. Remember the adage "three strikes and you're out."

EAR EXAMINATION

Ear Exam: The classification system used to grade the appearance of the tympanic membrane following HBOT is called the Teed Scale. It is named for Wallace Teed, a United States Navy Submarine Medical Officer during World War II, who first described middle ear barotrauma related to changes in pressure.

- TEED 0 – Symptoms, such as pain or stuffiness, with no physical findings
- TEED 1 - Erythema or injection around the handle of the malleus, congestion around the umbo
- TEED 2 – Erythema, injection, or congestion of the entire tympanic membrane
- TEED 3 - Hemorrhage into the tympanic membrane appearing as bright red patches
- TEED 4 - Deep blue/black appearance of the tympanic membrane due to blood filling the middle ear with the possibility of rupture present.
- TEED 5 - Perforated ear drum

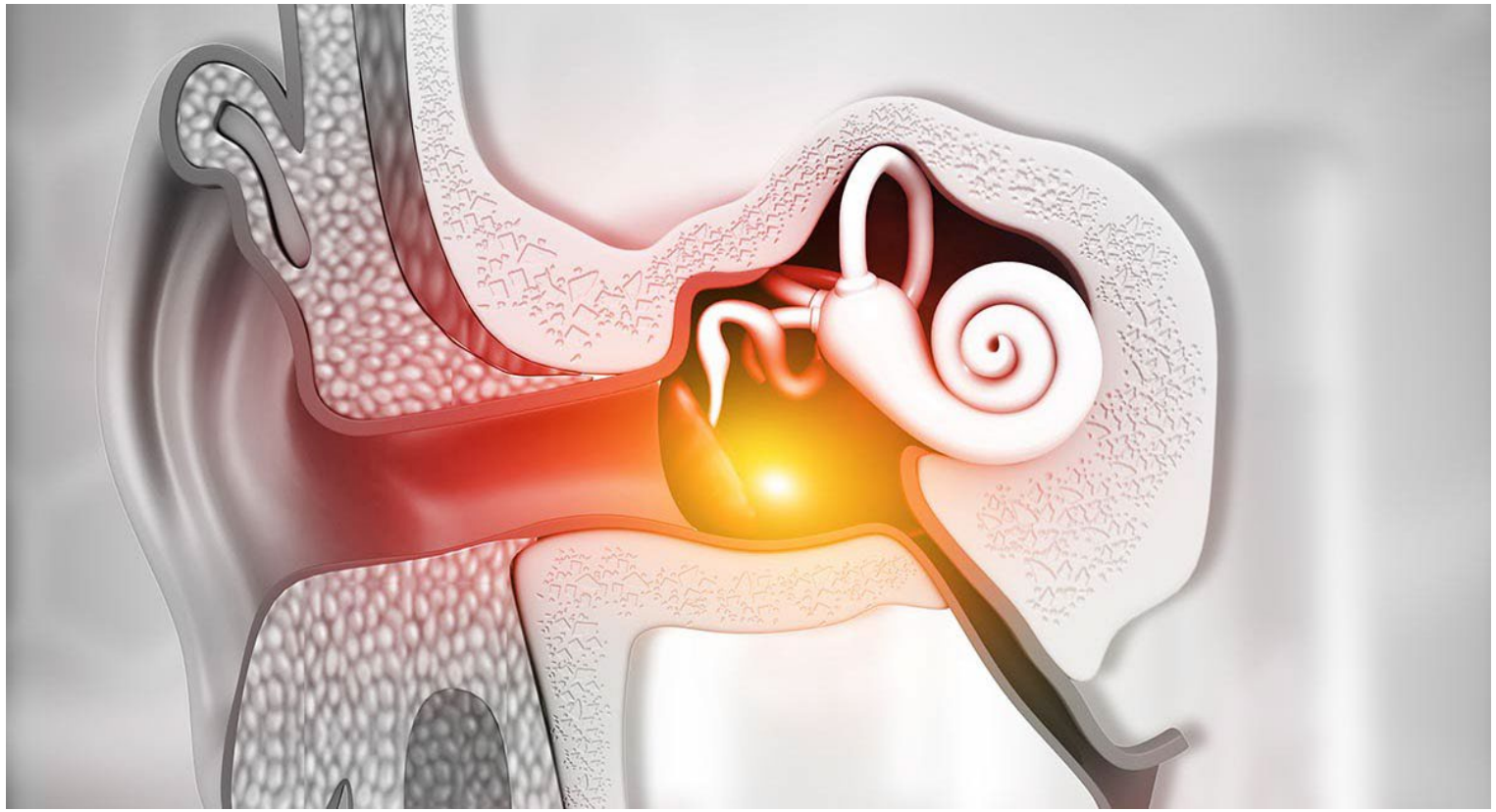

QUIZ

QUESTION 1

- What is the most common complication of hyperbaric oxygen therapy?

ANSWER 1

- Middle Ear Barotrauma.

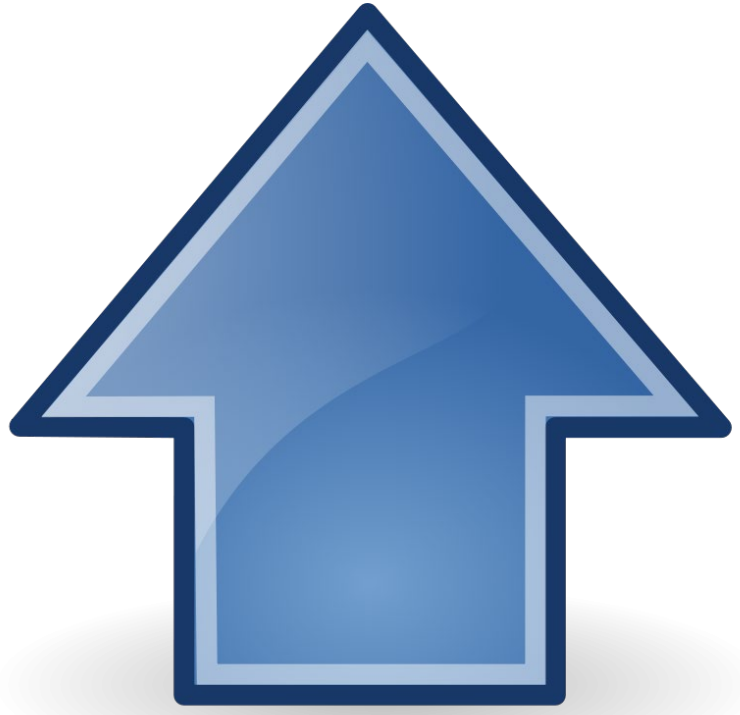


QUESTION 2

- Patients should be instructed **not** to try to equalize during what phase?

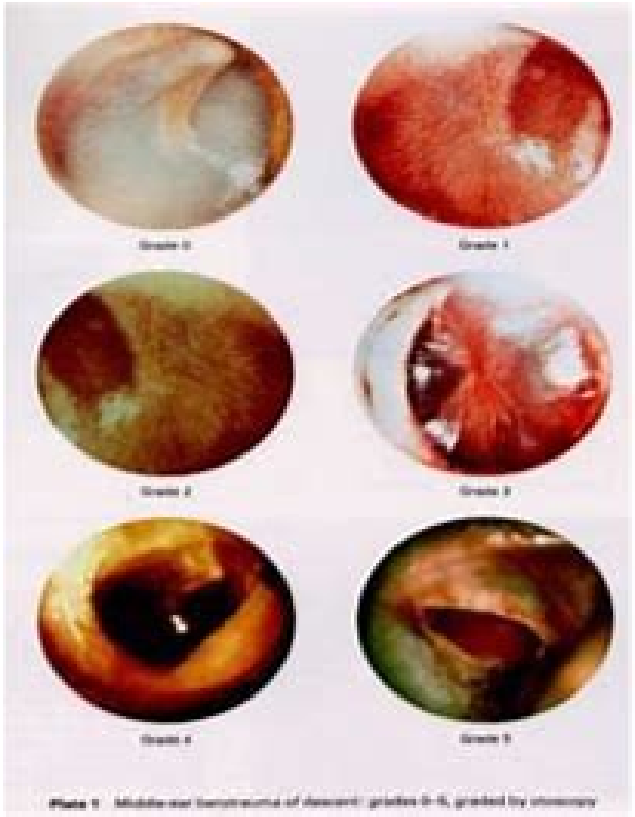
ANSWER 2

- Decompression Phase.



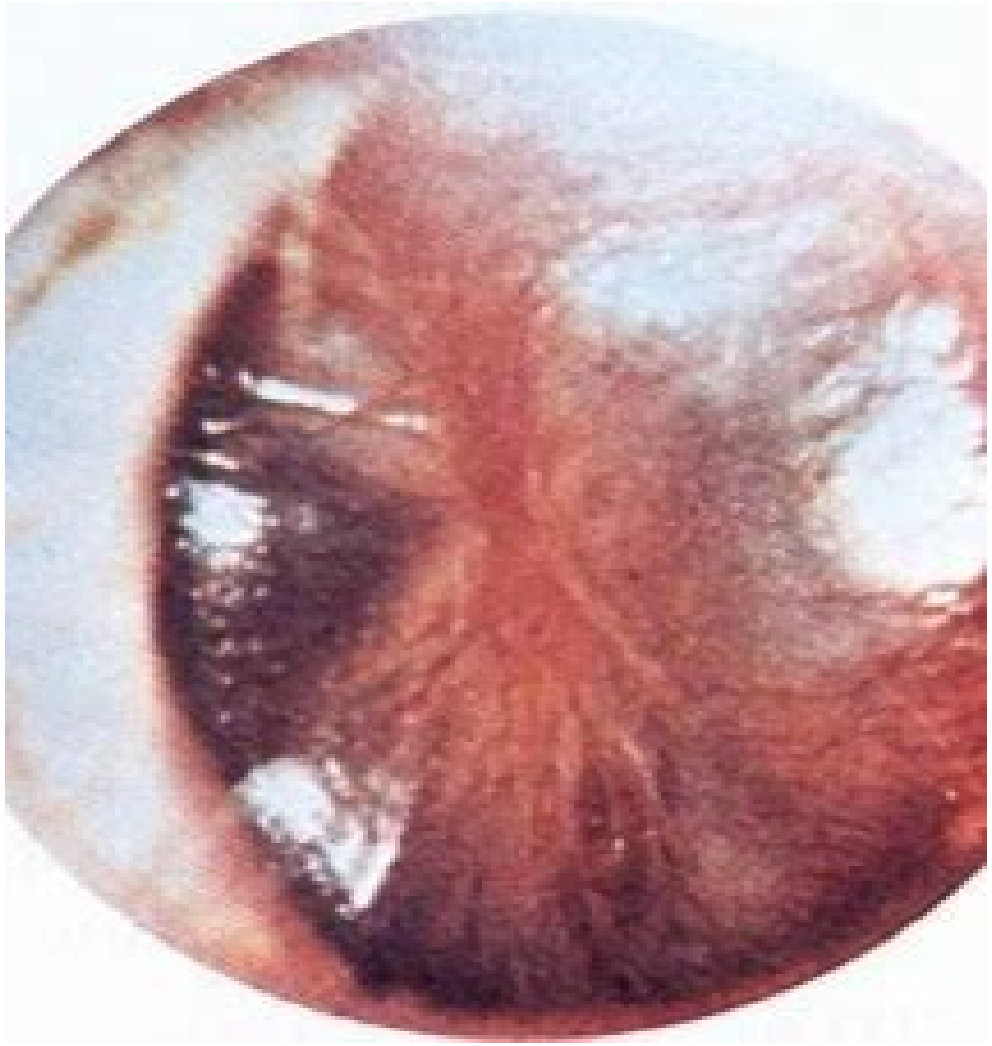
QUESTION 3

- True or False.? Hemorrhage in the tympanic membrane is classified as a TEED 3.



ANSWER 3

- True.



QUESTION 4

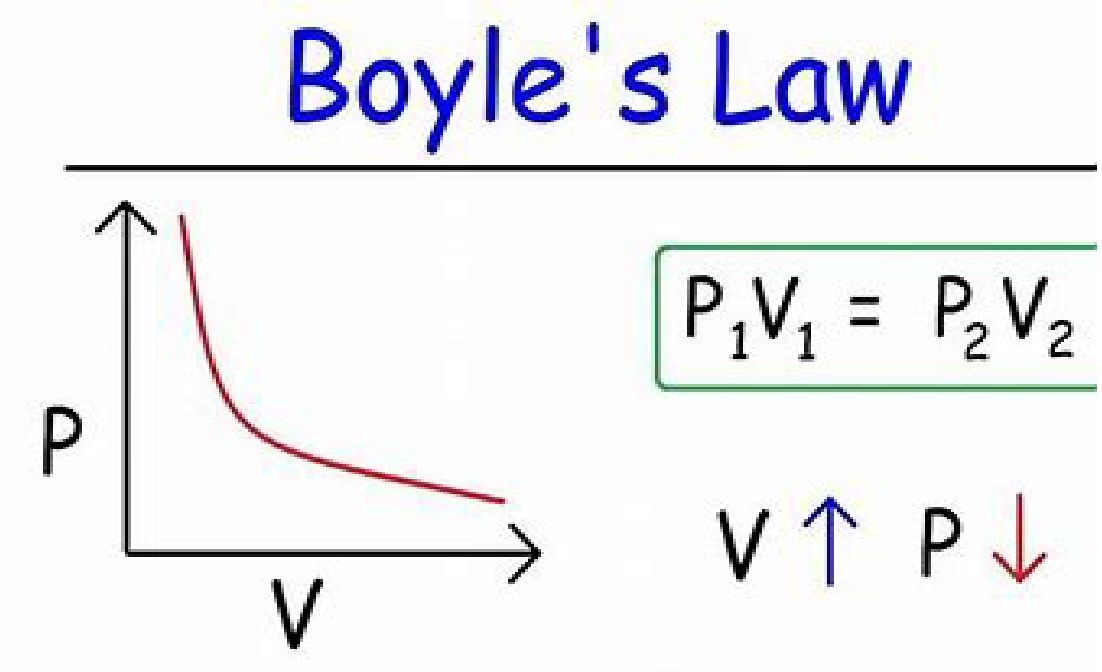
- How many times is considered reasonable to attempt to compress a patient during a single dive?

ANSWER 4

- 3 Times. Remember the adage “3 strikes you’re out.”

QUESTION 5

- Boyle's Law: As pressure is increased, air-filled spaces will_____ in volume?



ANSWER 5

- Decrease.

EXTRA CREDIT QUESTION:

- Have you ever put an inflated glove (like a balloon) into the chamber during a test cycle? What occurs?

EXTRA CREDIT ANSWER:

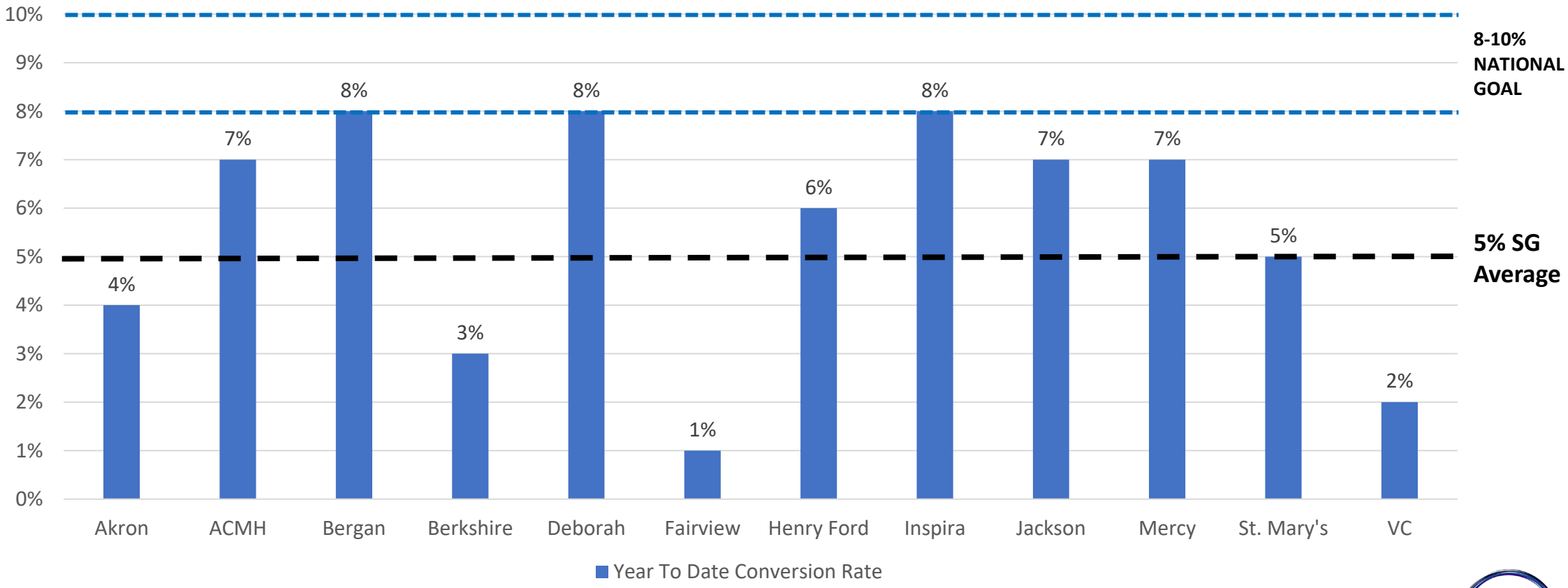
- The glove will deflate on the way down as the chamber is pressurizing but will reinflate on the way up when the chamber is decompressing.


Thank You

SerenaGroup HBOT Monthly Show Rate (February)

Centers	Program Director	HBO Show Rate
Cleveland Clinic Akron	Nick	89%
ACMH	Erika	100%
Berkshire	Sean	86%
CHI Health CUMC Bergan	Joe	98%
CHI Health Mercy	Joe	100%
Deborah	Megan	100%
Fairview	Jamie	
Henry Ford	Eliece	100%
Jackson	Dean	87%
St. Mary's	Katie	100%
St. Joseph Med Ctr	Christine	100%
Via Christi	Nancy	100%
MH The Woodlands	Andrea	90%
Inspira Health – Elmer	Ally	100%

HBO Conversion Rate
Rolling 12 Months (January ‘21 – January ‘22)



SerenaGroup Upcoming HBOT Educational Courses

Nothing is scheduled at this time…

Next Month's Presenter

DATE: Tuesday, April 19th @ noon est

PRESENTING: Deborah

TOPIC: To Dive or NOT to Dive

Round Table

- Cancer patients in HBOT.
- ?

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