April 2024

# HYPERBARIC MONTHLY MEETING

SerenaGroup
Building the Nation's Leading Wound Care Team

# TOPIC:

**March** - Barotrauma (catch up)

**April** - Medical Necessity

# PRESENTED BY:

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Chambersburg Hospital

# Medical Necessity

# Overview:

- Medical Necessity is how we reference the requirements that are unique to each condition that help us to qualify a patient for hyperbaric. Medical necessity was created to dictate when certain treatments are appropriate. SerenaGroup makes this easy with the Pre-Treatment Assessment Tool (PAT). The PAT outlines all the elements of medical necessity for the variety of diagnosis that we treat in our centers. The PAT was created with CMS regulations in mind.

**SerenaGroup Hyperbaric Oxygen Therapy Checklist**

**Hyperbaric Oxygen Therapy - Eval, Criteria and Pre-Treatment Checklist (Refer to either NCD 20.29 or regional LCD for correct ICD 10 codes)**

Consult must be done, and each Pertinent Criteria below MUST be clearly described in Hyperbaric Evaluation

| | | |
|---|---|---|
| **Actinomycosis** | | |
| | Need | Prolonged administration of antibiotics |
| | Need | Must document that disease is refractory to antibiotics and surgery. |
| | Need | Documentation of actinomyces israelli infection |
| **Crush Injuries and Suturing of Severed Limb** | | |
| ** RE-EVAL after 12 treatments* | | |
| | Need | Documentation of loss of function, limb or life being threatened |
| | Supports | TCOM <30 mm/Hg |
| **Diabetic Foot Ulcers (regardless of grade)** | | |
| **RE-EVAL Q 30 Days - Must show signs of measureable improvement to continue past 30 days* | | |
| | Need | Documentation of Type I or Type II diabetes with lower extremity diabetic wound |
| | Need | Documentation of Wagner III or higher |
| | Need | Documentation of standard wound care for 30 days with no measureable signs of healing. |
| **Standard wound care must include all the following:** | | |
| | Need | Vascular Assessment and correction of issue |
| | Need | Optimization of glucose & education |
| | Need | Optimization of nutritional status & education |
| | Need | Debridement by any means to remove devitalized tissue |
| | Need | Maintenance of a clean moist wound bed |
| | Need | Appropriate offloading |
| | Need | Treatment to resolve infection |
| | Support | ABI >.6 |
| **Diabetic Ulcer Wagner III (must meet SOC for 30 days)** | | |
| | Need | Documentation of one or more: Tendonitis, Osteomyelitis, Osteitis, Abscess, Pyarthrosis |
| **Diabetic Ulcer Wagner IV** | | |
| | Need | Documentation of Wet or Dry gangrene of the toes or forefoot |
| **Diabetic Ulcer Wagner V** | | |
| | Need | Documentation of gangrene involving entire foot |
| **Soft Tissue Radionecrosis-Late Effects of Radiation** | | |
| | Need | Documented dates, dosage, anatomical site, and # of treatments of prior radiation. Must be ≥ 6 months post radiation |
| | Need | Documentation of treatment with conventional therapy |

| | | |
|---|---|---|
| **Acute Peripheral Arterial Insufficiency** | | |
| | Need | Documentation of sudden occlusion of a major artery-Which: |
| | Need | Vascular study to confirm i.e. CTA/MRA/Arteriogram |
| | Need | Revascularization Candidate? Yes / No |
| ** If ND: reason in Hyperbaric evaluation note* | | |
| | Supports | In Chamber, TCOM to show response to O2 w/ 1st TX |
| **Acute Traumatic Peripheral Ischemia** | | |
| | Need | Documentation of loss of function, limb, or life threatened (i.e. injury that compromises circulation) |
| | Supports | TCOM <30 mm/Hg, LUNA, SPP/PVR |
| **Gas Gangrene** | | |
| **Adjunct to antibiotic therapy & surgery* | | |
| | Need | Clinical sign and symptoms |
| | Supports | X-ray findings |
| **Progressive Necrotizing Infections** | | |
| | Need | Documentation of laboratory reports that confirms the diagnosis of progressive necrotizing infection |
| | Need | Culture or gram stain that confirms diagnosis of Meleney Ulcer |
| **Skin Graft/Flap Failure** | | |
| | Need | Documentation of graft date |
| | Need | Documentation of compromised state of graft site |
| **Complications of Reattachment Extremity or Body Part** | | |
| | Need | Documentation of flap date |
| | Need | Documentation of compromised state of flap site |
| **Chronic Refractory Osteomyelitis** | | |
| | Need | Definitive evidence condition is chronic & unresponsive to conventional tx (ABX/wound care) |
| | Need | Definitive imaging (i.e. MRI, X-ray, Bone Scan) and bone culture with C&S |
| | Need | Failed appropriate antibiotic regimen |
| | Need | Bone debridement (when possible) |
| **Osteoradionecrosis** | | |
| | Need | Documented dates, dosage, anatomical site, and # of treatments of prior radiation. Must be ≥ 6 months post radiation |
| | Need | Diagnosis from referring physician |
| | Need | Plan to or documented debridement/resection of non-viable tissue if present in conjunction w/ antibiotics |

# Diabetic Foot Ulcers

- Documentation of Type 1 or Type 2 diabetes with lower extremity diabetic wound
- Documentation of wagner 3 or higher
- Documentation of standard wound care for 30 days with no measurable signs of healing
  - Vascular Assessment and correction of issue
  - Optimization of glucose & education
  - Debridement by any means to remove devitalized tissue
  - Maintenance of a clean moist wound bed
  - Appropriate offloading
  - Treatment to resolve infection
  - Documentation of one or more: Tendonitis,Osteomyelitis, Osteitis, Abscess, Pyarthrosis, Gangrene (wet or dry)

# Defining Standard of Care

**Vascular assessment and correction of issue:**

- Ideally, an ABI of >.6
- Any vascular assessment that shows inadequate blood flow, will require medical records that show evidence of correction of the issue (revascularization)

**Optimization of glucose and education**

- A1c of 8% or lower
- Glucose education documented by WC provider, PCP, endocrinologist, nutritionist

**Debridement**

- By any means to remove devitalized tissue

**Maintenance of a clean, moist wound bed**

- Wound documentation supported by debridement

**Appropriate offloading**

- Foot wear: surgical shoe, camwalker, orthowedge, etc.
- Device: Crutches, kneewalker/scooter, wheelchair, etc.

**Treatment to resolve infection**

- Antibiotic regimen(s) throughout the course of THIS wound

**Documentation/proof of Wagner Grade 3 or higher**

- Tendonitis, Osteomyelitis, Osteitis, Abscess, Pyarthrosis, Gangrene (wet or dry)
- If gangrene, must be well-documented including photographic evidence
- If other infection, must include proof via imaging or biopsy

# Chronic Refractory Osteomyelitis

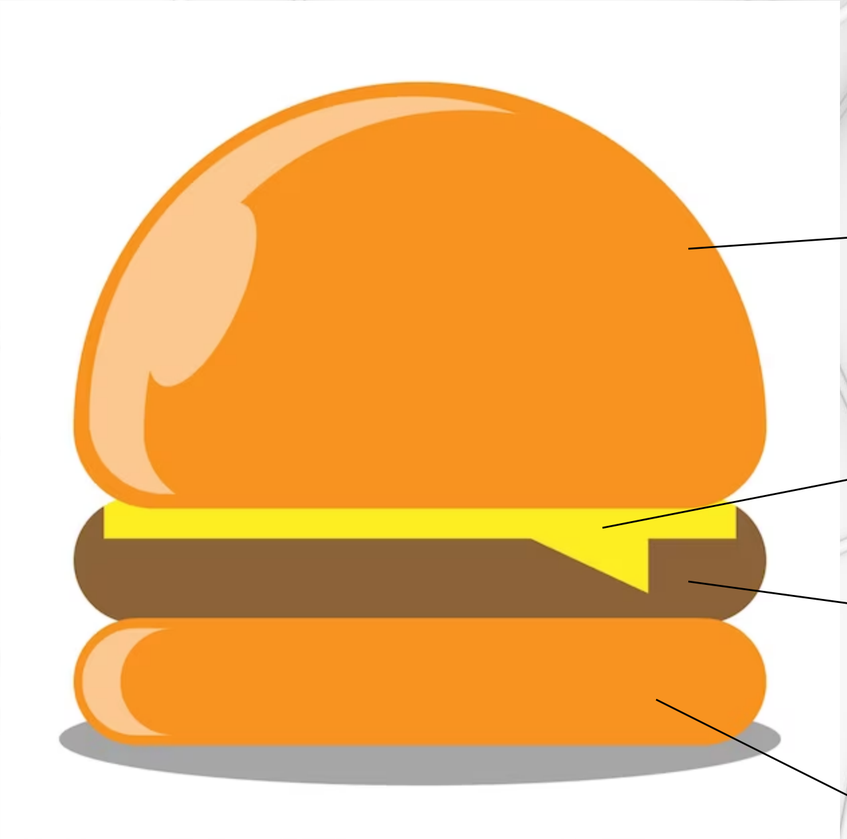
1. • Definitive diagnosis (MRI, X-ray, Bone Scan, CT, or bone biopsy)
2. • Failed appropriate antibiotic regimen
3. • Bone debridement (when possible)
4. • Definitive evidence condition is chronic & unresponsive to conventional tx (abx/wound care)

# “The Osteomyelitis Sandwich”

There are many question marks and areas of confusion about when osteomyelitis becomes chronic refractory osteomyelitis and qualifies for HBOT.

Imaging may say “osteomyelitis could not be excluded” or “suspicious for osteomyelitis”, we would deduce that this means there’s evidence to support a positive diagnosis when correlating clinically.

We’ve all heard Ally simplify this down to the “Osteo Sandwich” which is a very black and white way to show proof of chronic osteo by having all the parts of the sandwich.



Top Bun: Proof of osteomyelitis (XR, Bone scan, MRI, CT, Bone biopsy)

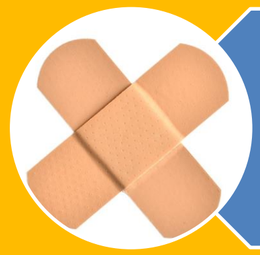
Cheese: Appropriate antibiotic therapy. Medically attempted to treat the infection.

Meat: Debridement or removal of infected bone. Surgically attempted to treat the infection. (If applicable, not every patient is a surgical candidate and that would need to be documented.)

Bottom Bun: (The last step. Same as the top bun.) Proof of osteomyelitis AFTER it has been medically and surgically treated.

# Skin Graft/ Failed Flap

Documentation of graft/flap including procedure and date (operative report)



Documentation of compromised state of flap/graft site (“necrotic”, “dusky”, “dehiscence”)


Within 30 days of procedure

# Osteoradionecrosis

- Documented dates, dosage, anatomical site, and # of treatments of prior radiation. Must be >6 months post radiation.
- Diagnosis from referring physician
- Plan to or documented debridement/resection of nonviable tissue, if present, in conjunction with antibiotics

# Marx Protocol for Osteoradionecrosis

**Prophylactic ORN**

- 20/10
- Not approved by Medicare, but common approved indication in commercial plans

**Established ORN**

- 30/10
- Approved by Medicare

# Soft Tissue Radionecrosis (STRI)

- Documented dates, dosage, anatomical site, and # of treatments of prior radiation. Must be >6 months post radiation
- Documentation of treatment with conventional treatment

Soft tissue radiation injury also includes non-wound diagnoses, such as radiation cystitis, proctitis, enteritis, or brain necrosis. How do we prove that there is radiation damage when we cannot see a wound? Signs, symptoms, and related imaging or procedures to visualize the field.

For example, a patient with a history of prostate cancer treated with radiation reports to the urologist with recurrent hematuria. A cystoscopy conducted reveals areas of extreme pallor between erythematous areas and petechiae that the urologists attributes to radiation damage. This is sufficient evidence to support the diagnosis. Imaging can also be considered for proving radiation damage.

| | |
|---|---|
| Radiation Cystitis | • Proof of radiation<br>• Cystoscopy |
| Radiation Proctitis/Enteritis | • Proof of radiation<br>• Colonoscopy |
| Radiation Wound | • Proof of radiation<br>• Documentation of wound type |
| Brain Necrosis | • Proof of radiation<br>• Imaging |

Medical Necessity for additional indications can be found on SerenaGroup Pre-Treatment Assessment Tool (PAT) checklist.

Each Insurance plan may have its own specific caveats to meet medical necessity so if there is any question, consult the medical policy. If you need further assistance, use SerenaGroup as a resource and phone a friend

# Barotrauma

# 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:

1. Valsalva Manuever – pinch your nostrils and blow through your nose.
2. Tonybee Manuever – 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.
3. Lowry Technique – While closing your nostrils, blow and swallow at the same time.
4. Edmonds Technique – While tensing the soft palate and throat muscles, push the jaw forward and down.
5. 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.
6. 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 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

# Sources

CMS.gov

Eric P. Kindwall, Hyperbaric Medicine Practice, Chapter 4 pp. 51 Larson-Lohr, Norvell, Hyperbaric Nursing, pp. 87,127,140 : https://www.ncbi.nlm.nih.gov/books/NBK499851/

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# QUESTIONS?

# QUIZ

# QUESTION 1

1.) How do you prove a patient with Osteomyelitis has chronic refractory Osteomyelitis?

# Answer

Positive diagnosis AFTER having failed medical and surgical intervention.
Imaging or bone biopsy can be used to make the diagnosis.

# QUESTION 2

We need to prove osteomyelitis to qualify a patient as a Wagner Grade 3.

True or False?

# Answer

Trick question! It’s true, but could also be false. You do not NEED to prove osteomyelitis to be a Wagner Grade 3. The ulcer could have Tendonitis, Osteitis, Abscess, or Pyarthrosis.

# QUESTION 3

3.) Which of the following is NOT an element of medical necessity for a Wagner Grade 3 Diabetic Ulcer?

a. Glucose optimization
b. Nutrition optimization
c. Hemoglobin optimization
d. Vascular optimization

# Answer

C- Hemoglobin Optimization

# QUESTION 4

4.) Radiation damage must be
> or = to ____ months to qualify for HBOT

# Answer

6 months

# QUESTION 5

What is the most common complication of hyperbaric oxygen therapy?

# Answer

Ear barotrauma

# QUESTION 6

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

# Answer

“3 strikes, you’re out.”

# ROUND TABLE?

- Upcoming course registration link: https://www.clevelandclinicmeded.com/live/courses/hbo/default.asp
  July 22-26, 2024 in Akron, Ohio

- Blankets in the chamber

# COMING UP NEXT MONTH

**Topic: Clinical and Non-Clinical Emergencies and Preparedness**

**Presenter: Memorial Hermann The Woodlands**

**Date: May 14, 2024 @ 12pm est**

# HYPERBARIC CONTACTS

# THANK YOU!

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