

July 2024



# HYPERBARIC MONTHLY MEETING

**SerenaGroup**  
Building the Nation's Leading Wound Care Team

## **TOPIC:**

**July-** What Can and Cannot Go in the Chamber?

## **PRESENTED BY:**

**Brandi & Alana**  
Inspira- Elmer



# What Can and Cannot Go in the Chamber?

This question can confound HBO techs daily. Some have gone to the extreme of removing all medical related dressings and skin barriers prior to HBOT; of course, you cannot be too safe, right?

Well, not really. You do run the risk of making the patient's wound worse by drying it out and exposing it to the atmosphere, as well as denying the patient a treatment that a physician has deemed necessary.



## What Do The NFPA Guidelines Suggest?

“The physician or surgeon in charge, with the concurrence of the safety director, shall be permitted to use prohibited items in the chamber that are one of the following?



1. Suture Material
2. Alloplastic Devices
3. Bacterial Barriers
4. Surgical Dressings
5. Biological Interfaces”

(NFPA 14.3.5.4.3)



# Threats We Must Omit From The Chamber

1. Any material or product that can contain/release gas (fuel and/or could ignite)
2. Any material that could create or hold a static charge (ignition source)
3. Any product that could damage or scratch the acrylic (physical damage)
4. Any object that could block the air passage (choking hazard)

## Materials That Could Contain or Release Gas

- Alcohol based dressings
- Petroleum based dressings
- Benzine based dressings
- Personal clothes/fabrics
  - Hand warmers
  - Batteries
- Lotions, perfumes, hair products, fresh nail polish, etc.

## Materials That Could Create Or Hold Static

- Matches
- Lighter
- Scissors
- Toys
- Mobile phones
- E-cigarettes
- Linens that are not 100% cotton or anti-static blends, including personal clothes or undergarments

## Materials That Could Become A Choking Hazard

- Dentures
- Partial plates
  - Retainers
- Dental guards
  - Gum
  - Candy
  - Food
- Emesis (vomit)



## Materials That Could Damage the Acrylic

- Non-approved chemical cleaners
  - Casts
  - Prosthetics
- External fixators
  - Jewelry



When evaluating if a product is safe, it is important to first understand the role of fuel in the chemical reaction known as fire. Normally, this reaction is between oxygen in the atmosphere and some sort of fuel (wood, gasoline, blankets, for example). Of course, wood and gasoline do not spontaneously catch on fire just because they are surrounded by oxygen. Fuel must be heated to its ignition temperature for combustion to occur. The reaction will keep going as long as there is enough heat, fuel, and oxygen. This is known as the fire triangle.

# Fuels



**Solids**



**Liquid**



**Gas**

Fuels can be solids, liquids, or gas. During the chemical reaction that produces fire, fuel is heated to such an extent that (if not already a gas) it releases gases from its surface. Only gas forms can be used as a fuel. Gas is made up of molecules (groups of atoms). When these gases are hot enough, the heated molecules are loosened, moving apart to form a gas. The gas molecules combine with oxygen in the air resulting in fire. This is important to us for two reasons:

- First, the hyperbaric environment is 100 percent oxygen under pressure. There are 15 times more molecules of oxygen available to “mix” with molecules of fuel. This lowers the heat required for combustion, or the “flash point”.
- The second factor is the need to convert fuel to gas, meaning that any product that evaporates or “off gases” at room temperature becomes exceptionally rich fuel as no heat is required to convert the solid or liquid to gas. An example of this can be found in the oily rags left in the attic that on a hot summer day, spontaneously combust. This happens at temperatures as low as 120 degrees Fahrenheit in room air (21 percent oxygen).

# Assessing the risks

When answering the question of “Is a dressing safe to go in the chamber?”, there is a balance between the risks associated with the dressing and its potential benefits in treating the wound.

First ask, “Is the dressing necessary?” If the answer is no, the dressing is removed prior to treatment. If the answer is yes, decide whether to cancel the treatment or mitigate the risk.





Many skin and wound care products have petroleum, alcohol, or benzene bases. These are all rich fuels and according to our prohibited items list should not enter the chamber.

These highly flammable products are used in most cases as “carriers”; in other words they keep the product moist or pliable for storage and once exposed to air they evaporate. Once they evaporate, they are no longer a “rich fuel” and no longer pose an unacceptable fire risk.

# FOR EVERYONES SAFETY PLEASE DO NOT TAKE THE FOLLOWING ITEMS INTO THE CHAMBER

## BATTERIES

- \* remote control
- \* Dexcom
- \* Libre
- \* Pagers
- \* Hearing Aids

- \* BOOKS
- \* NEWSPAPERS
- \* MONEY

- \* CIGARETTES
- \* CIGARS
- \* VAPE PENS

- \* MATCHES
- \* LIGHTERS

## METAL OBJECTS

- \* Jewelry (can be covered with tape if they can't be removed)
- \* prosthetics
- \* Watches
- \* Keys

## ELECTRONICS

- \* Cell Phones
- \* Game Systems
- \* CD players
- \* Ear Buds
- \* Tablets
- \* Laptops

- \* SHOES
- \* SNEAKERS
- \* FLIP FLOPS
- \* SANDLES
- \* BOOTIES

## MEDICATION

- \* Pills
- \* Pain or other forms of medical patches

- \* HAND WARMERS
- \* HEATED BLANKETS

## COSEMETICS

- \* Makeup
- \* Lip Stick
- \* Lip Balm
- \* Eyelashes

## HAIR PRODUCTS

- \* Gel
- \* Hair Spray
- \* Dry Shampoo
- \* Hair Oils
- \* Mousse

## HAIR ACCESSORIES

- \* Clips
- \* Barrettes
- \* Bobby Pins
- Scrunchies
- \* Hair Ties
- Hair Extension
- \* Wigs

- \* STOCKINGS
- \* NYLONS
- \* SYNTHETIC CLOTHING
- \* SOCKS
- \* ZIPPERS
- \* BUTTONS
- \* VELCRO
- \* METALLIC FASTENERS

- \* NAIL POLISH (24 hours must have passed since application)

- \* Hair Dye or Perms (24 hours must have passed since application)

- \* LOTIONS
- \* CREAMS
- \* OILS
- \* DEODORANT

- DIAPERS WITH VELCRO (cut off Velcro tabs and replace with tape or use pull-ups)

- IMPLANTED MEDICAL DEVICES (Should be verified)

- \* PETROLEUM BASED OINTMENTS
- \* CERTAIN DRESSING

- \* PERFUME
- \* COLOGNE
- \* AFTER SHAVE
- \* BODY SPRAYS

- \* HARD CONTACTS
- \* GLASSES



**It's easier to list what can go in the chamber!**

# WHAT CAN GO IN THE CHAMBER – easy

Facility provided attire  
\*gown  
\*scrubs

Facility provided  
linens  
\*anti-static blend  
\*cotton

Water bottle  
that can be vented

Incontinence  
briefs (without  
Velcro tabs)

Dry dressings

Water, juice, Glucerna,  
or other non-  
carbonated, non-  
alcoholic beverages can  
be put in the water  
bottle

ONE facility provided  
blanket

Urinal

Feminine Hygiene  
\*Tampons  
\*diapers

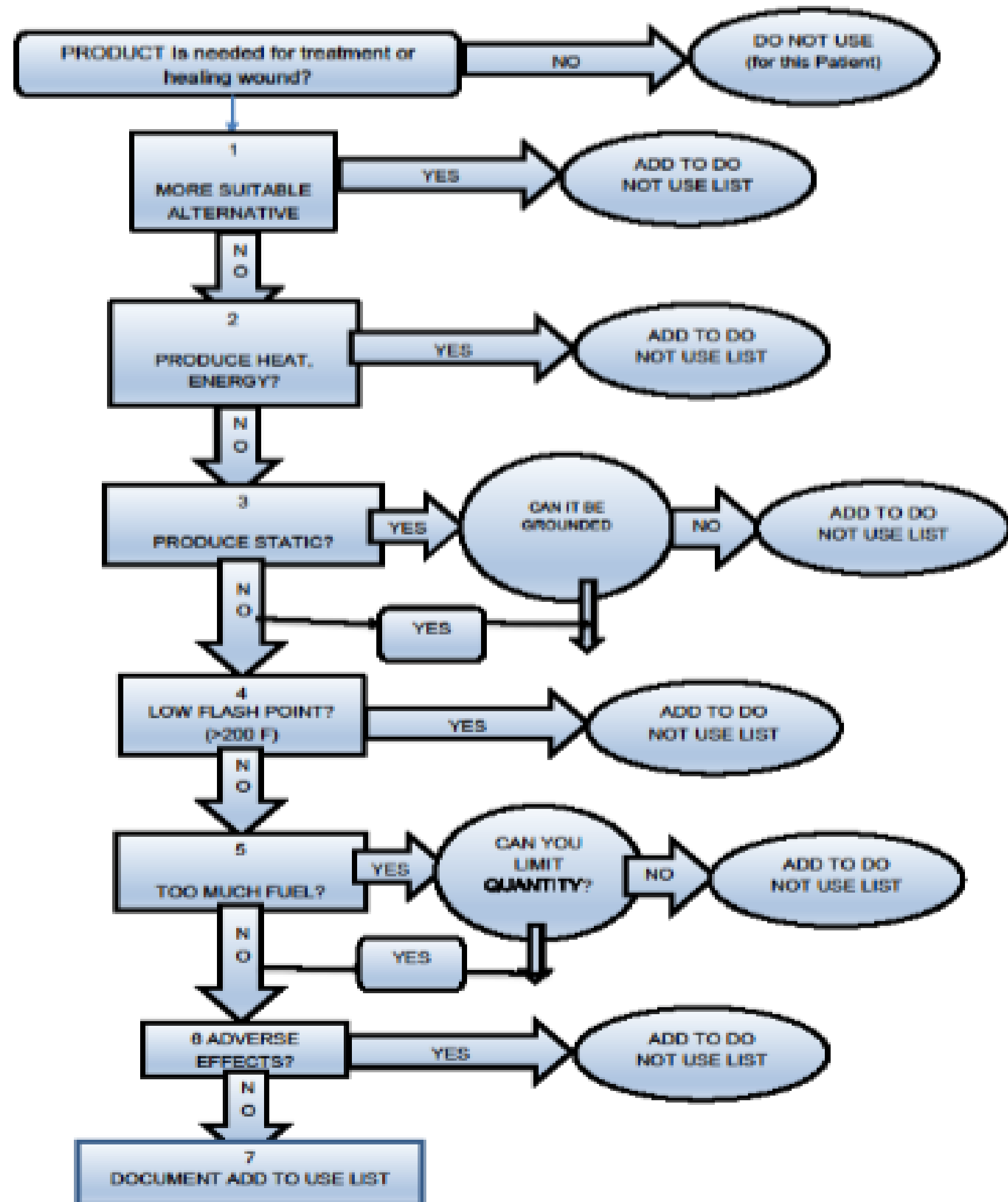




When developing a “go” or “no go” list, it is also important to consider ways to mitigate risk, minimizing the likelihood of an incident. Mitigating risk can include covering a dressing with a damp cotton cloth, increasing the vent rate, padding over a device, and substitution with a compatible product. Utilizing the decision tree on the next slide, let’s walk through a go/no-go list.

# Flowchart

Available on the member's portal



## **PERMITTED:**

- Linen or hospital gown that are 50% or greater cotton blend
- Approved mattress/wedge/pillow
  - Only those recommended by chamber manufacturer
- Breathable contact lenses
- IV catheters and lines, PICC
- Wound Care Dressings
  - Cotton gauze
  - Alginate
  - Hydrocolloid
  - Hydrogel
  - Silver and foam dressings
  - Multi-layer compression wraps
  - Hydrofera blue
  - Transparent film
- Enzymatic debriding agents
  - Possible HBO inactivation—a fresh dose must be applied after HBO
- All casting materials which have dried for more than 24 hours
- Clean cast (cover with pillowcase to protect chamber)
- Negative pressure dressing, unclamped
- Cellular or tissue products for wound care
- Sutures & Surgical dressing
  - with supporting letter from Medical & Safety Directors in accordance with NFPA
- Penrose or Peritoneal drains
- Fixation devices (external fixations, metal hardware)—as deemed essential and is wrapped with padding)
- Ostomy appliance
- Ventriculoperitoneal (VP) shunt
- Naso gastric tube
- Plastic water bottle, water
- Approved adult disposable briefs/diaper, plastic urinal/fracture pan
- Tampons and diapers if necessary
- Implanted devices that are supported by the manufacturer for use in hyperbaric environment at the prescribed pressure
- Trachs/Foley Catheters
  - If air filled cuff—replace air with equivalent volume of liquid and remove post treatment
  - If dynamic foam filled, no fluid replacement required
- Implanted devices (approved by manufacturer or GAP Analysis performed)
- Feeding tube

# How can we make our environment safer?

- Increase humidity in the room to reduce static
- Ensure prohibited items are not brought into the chamber area
- Prior to going into the chamber, stop everything for 60 seconds of safety
- Pre-dive checklist
- Cover casts or ex-fix to protect chamber
- Cover unna boots with moist HBO approved linen (pillowcase)
- Advise patients not to put any products on after they bathe
- Perform wound dressing changes AFTER hyperbaric treatment

## Things to note:

- Unna boots
- Santyl
- The business of checking patient's underwear
- Removing glasses from the approved list
- Ideal time for dressing changes
- Wound vac (disposable and bridge dressings)
- Lotions
- Unna Boots with Zinc



Exception to protocol form must be utilized if you need to move forward with a prohibited item after weighing risk versus benefit and mitigating risk, you will complete an Exception to Protocol form. (Located in the policy and procedures or send an email to Ally) Once completed, this will need to be signed by Dr. Serena and the program director prior to the prohibited item going into the chamber. The signed form will be scanned into the patient's chart, as it is patient specific and not an exception made for every patient.

# IN CONCLUSION:

**Procedure:** When evaluating a dressing for use in HBOT, employ a logical method and document the reasoning underpinning the decision. To lesser extent, consider the psychosocial results when considering low risk personal item; however, never compromise safety: when in doubt leave it out.

**References:** Hyperbaric Medicine Practice 2<sup>nd</sup> edition by Dr. Kindwall (pp. 417). NFPA 99, 2012 addition chapter 14 SerenaGroup policy and procedure. 2020





**QUESTIONS?**



A graphic for a quiz. The word "QUIZ" is written in large, bold, yellow letters with a blue outline. Above it are three blue speech bubble icons: one with an exclamation mark, one with a checkmark, and one with a question mark. The background features a white geometric pattern of interconnected lines. A large yellow diagonal stripe runs from the top right towards the bottom left. On the right side, there is a blurred image of a person in a blue shirt standing in front of a group of people, some of whom have their hands raised.

# QUIZ

# QUESTION 1

If the doctor orders a dressing, than it is safe to do in the chamber without further investigation.

True or False



# Answer

False

## QUESTION 2

Per the NFPA, the physician or surgeon in charge, with the concurrence of the safety director, shall be permitted to use prohibited items in the chamber that are one of the following: (List two)



OUTPATIENT

# Answer

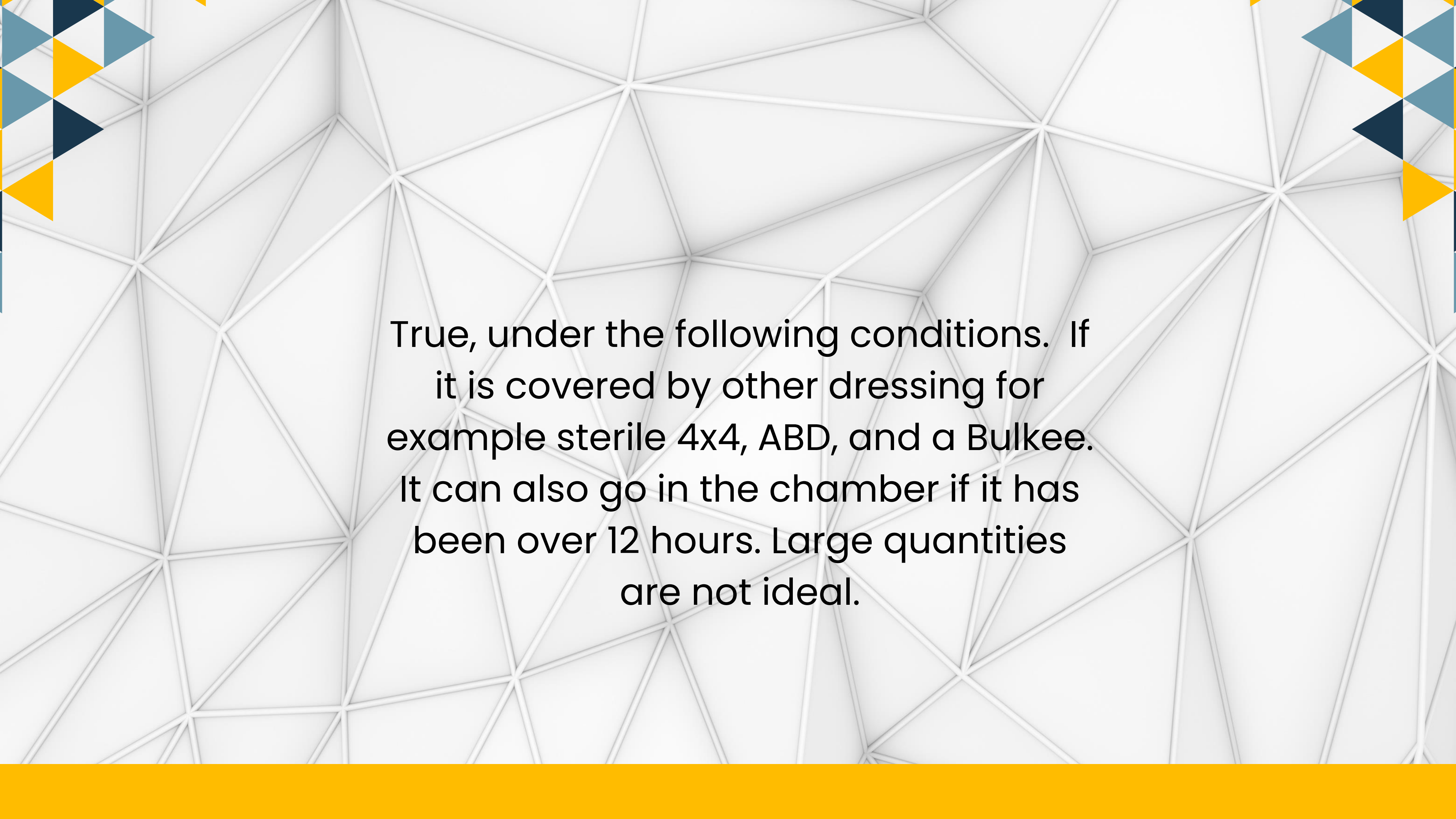
Suture Material  
Alloplastic Devices  
Bacterial Barriers  
Surgical Dressings  
Biological interfaces

# QUESTION 3

A 2x2 Vaseline gauze dressing may be permitted in the monoplace chamber.



OUTPATIENT



True, under the following conditions. If it is covered by other dressing for example sterile 4x4, ABD, and a Bulkee. It can also go in the chamber if it has been over 12 hours. Large quantities are not ideal.

# ROUND TABLE?





# COMING UP NEXT MONTH

**Topic: August – To Dive or Not to Dive?**

**Presenter: Henry Ford**

 **August 6, 2024**

# HYPERBARIC CONTACTS

# THANK YOU!



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