Penn State

SLEIC 3T MRI Investigator Initial Safety Quiz

Name ***Date*** **Score PSU email_____ ex: (ase1@psu.edu)**

Lab group or SLEIC Project ID: (e.g., sjw42_sema, ase1_pilt):_____

You must pass the safety quiz to work in the control room or the scanner room. There are 18 questions. You may miss 3 and still pass. You may ask for clarification and retake the test.

1. The magnet is turned off
    - a. At the end of the work day
    - a. Between participants
    - a. On weekends
    - a. Never
2. Which of the following conditions should prevent a person from entering the scanner room?
    - a. Pregnancy
    - a. Hip replacement
    - a. Surgical clips
    - a. Cardiac pacemaker
3. Small ferrous objects in your pocket are
    - a. a danger only during a scan
    - a. at risk of becoming projectiles as you approach the magnet
    - a. shielded from the magnetic field
    - a. are not a problem because they are in your pocket
4. The characteristic banging noise during an MRI scan
    - a. is the result of rapidly expanding liquid helium
    - a. may distort time and space
    - a. results from the twisting force of the rapidly changing gradient fields
    - a. increases in frequency as patient weight increases
5. Rapidly changing magnetic fields during a scan
    - a. may induce electrical currents in coiled or crossed wires
    - a. increase the range of telemetry
    - a. routinely cause visual hallucinations

    - a. produce helium gas
6. What effects can the rapidly changing gradients have on patients during an EPI scan
    - a. diplopia
    - a. magneto-hemodynamic effect
    - a. tissue heating
    - a. involuntary muscle contractions
7. The strength of the magnetic field
    - a. is only important when the magnet is scanning
    - a. increases with little warning as you approach the magnet
    - a. repels most large metallic objects
    - a. is only important when dealing with nonferrous objects
8. Radio frequency waves in MRI
    - a. are used in X-rays
    - a. maintain helium in a liquid state
    - a. are usually turned to a local station
    - a. are converted to heat in the participant's tissue
9. The term "quench" as used in an MRI setting describes
    - a. the thirst a participant experiences from a contrast injection
    - a. a daily procedure used to tune the RF settings
    - a. a failure of the helium containment system
    - a. a procedure that happens at the end of the day
10. A participant lets you know they have been scanned many times so there is no reason to fill out the screening form.
    - a. True
    - a. False
11. During an EPI sequence, what can you do to reduce the effects of peripheral nerve stimulation?
    - a. Change the participant into scrubs
    - a. Using sandbags and/or immobilization pads
    - a. Have the participant remove their eye makeup
    - a. Have the participant uncross their extremities (arms & legs)
12. When would you need to push the quench button?
    - a. There is a fire in the scanner
    - a. An OPP employee walked into the room with a tool belt and a hammer flew into the magnet and is stuck
    - a. A floor buffer was taken into the room and has pinned someone to the magnet
    - a. All of the above
13. Who needs to be screened before entering the scanner room?

    - a. The participant
    - a. The researcher
    - a. The MRI technologist
    - a. All individuals must be screened prior to entering the scanner room
14. Which of the following could cause a participant to be burned?
    - a. Tattoos
    - a. Skin touching the bore of the magnet
    - a. Conductive loop of wire on the body surface
    - a. All of the above
15. A bobby pin flies into the magnet. No one was injured, and the MRI technologist removed the bobby pin. You would
    - a. Report this to the SLEIC Director and MRI Safety Officer
    - a. Since there were no injuries there is no need to report this
    - a. Assume the MRI technologist will report this to the MRI Safety Officer
16. Two OPP personnel have entered the control room with all of their tools. You would
    - a. assume they must be safety trained if they are in the control room, so it must be fine
    - a. ask them if they are here to work on the magnet and let them in the scanner room
    - a. ask them to wait in the waiting area until you find a SLEIC staff member to handle the situation
    - a. The 3T door is closed so there is no danger
17. Which of the following objects could become projectiles in the scanner room?
    - a. Hair pins
    - a. Scissors
    - a. Pens
    - a. Oxygen tanks
    - a. All of the above
18. If a participant has an object implanted that is deemed MR Safe at 1.5 T, but has not yet been tested in the 3T environment. You would
    - a. Scan the participant since it is MR safe for a 1.5 T
    - a. Scan the participant but check in with them after each sequence to make sure they feel ok
    - a. Scan the participant only after verifying on www.mrisafety.com that the object is safe at 1.5T
    - a. Not scan the participant since the object has not been deemed safe at 3T