

APPENDIX 1

Awareness and Knowledge of Clinical Phase Medical Students at Hail University about Common Imaging Modalities, Radiation Risk, and Protection Applied in Radiology

We are medical students in the college of medicine at University of Hail, conducting a research study about the awareness and knowledge of Hail University clinical years' medical students about radiation risks and safety measures. Our objective is evaluation of awareness and knowledge of these students to assess the need for basic radiation safety course.

You have been chosen randomly through research randomizer website although this, your participation in this study, is voluntary. Your participation is very important to us and remember your response will be kept confidential, only the research team involved in this study will read your response. Filling out the questionnaire will take only few minutes.

For any inquiry, please contact us via me.shaal2010@hotmail.com

I have read the above information and I consent to take part in the study

1st section

- Q1. Gender:
- Female
 - Male
- Q2. Which clinical year you're in?
- 4th year
 - 5th year
 - 6th year
- Q3. Nationality:
- Saudi
 - Non-Saudi
- Q4. Marital status:
- single
 - married
 - divorced
 - widow
- Q5. Have you attended a radiation protection course?
- Yes, I have
 - No, I have not
- Q6. Do think that you have adequate information about radiation risks?
- yes

- No
- Maybe

- Q7. Do think that you have adequate information about radiation protection measures?
- yes
 - No
 - Maybe

2nd section

- Q8. A medical imaging technology that combines multiple X-ray projections taken from different angles to produce detailed cross-sectional images of areas inside the body
- CT
 - MRI
 - Ultrasound
 - X-ray
 - I do not know
- Q9. A medical imaging technology that uses radio waves and a magnetic field to create detailed images of organs and tissues
- CT
 - MRI
 - Ultrasound
 - X-ray
 - I do not know
- Q10. A medical imaging technology that uses high-frequency sound waves to create images of the inside of the body
- Nuclear medicine
 - MRI
 - Ultrasound
 - X-ray
 - I do not know
- Q11. The oldest and most commonly used form of medical imaging that uses ionizing radiation to produce images of the internal structure
- Nuclear medicine
 - MRI
 - Ultrasound
 - X-ray
 - I do not know
- Q12. A medical imaging technology that uses a radioactive material (radiopharmaceutical) to produce images of the internal structure
- CT
 - MRI
 - Ultrasound
 - Nuclear medicine
 - I do not know

- Q13. All the following imaging modalities use ionizing radiation except:
- CT
 - X-ray
 - Ultrasound
 - Mammography
 - I do not know
- Q14. What is the approximate effective radiation dose from a chest x-ray?
- 0.1 mSv
 - 0.9 mSv
 - 1 mSv
 - 3 mSv
 - I do not know
- Q15. Chest X-ray when compared to natural background radiation is equal to:
- 10 days
 - 2 months
 - 1 year
 - 3 years
 - I do not know
- Q16. What is the approximate effective radiation dose of abdomen and pelvis computed tomography (CT) scan?
- 10 mSv
 - 20 mSv
 - 30 mSv
 - 50 mSv
 - I do not know
- Q17. What is the approximate effective radiation dose from a Computed Tomography (CT) exam of the Head?
- 1mSv
 - 2 mSv
 - 3 mSv
 - 4 mSv
 - I do not know
- Q19. Which of the following tissues is more radiosensitive to ionizing radiation damage?
- Kidney
 - Breast
 - Liver
 - Muscle
 - I do not know
- Q20. Which of the following diseases may be a result of stochastic effects of exposure to ionizing radiation?
- Dermatitis
 - Leukemia
 - Cataract
 - All of the above
 - I do not know
- Q21. As a result of eye exposure to radiation the patient might be at risk of which of the following:
- Glaucoma
 - cataract
 - optic neuritis
 - corneal ulcers
 - I do not know
- Q22. At which of the following periods the fetus is more sensitive to radiation:
- 2nd week until 18th week
 - 4th week until the 20th week
 - 5th week until 14th week
 - 6th week until 16th week
 - I do not know
- Q23. Deterministic effects of radiation exposure during pregnancy depend only on the radiation dose
- True
 - False
 - I do not know
- Q24. Pregnant women should avoid **all types of medical imaging**
- true
 - false
 - I do not know
- Q25. Is it safe for pregnant women to have a mammography?
- yes
 - No
 - I do not know
- Q26. Hair loss is one of the localized short-term injuries that might happen after radiation exposure. At which dose you will expect it to be a result of the radiation exposure?
- 1 Gy
 - 2 Gy
 - 3 Gy

3rd section

- Q18. Regarding the risk of cancer as long-term effect of radiation exposure, which statement of the following is true:
- cancer will not always occur, but its likelihood is proportional to the radiation dose
 - cancer will not always occur, and its likelihood is **not** proportional to the radiation dose
 - Cancer risk is one of the deterministic effects of radiation exposure
 - Cancer after radiation exposure occurs in children only
 - I do not know

- 4 Gy
 - I do not know
- Q27. Cutaneous necrosis is one of the localized short-term injuries that might happen after radiation exposure. At which dose you will expect it to be a result of the radiation exposure?
- 30 Gy
 - 40 Gy
 - 50 Gy
 - 60 Gy
 - I do not know
- Q28. The dose threshold for acute radiation syndrome is about:
- 1 Sv
 - 3 Sv
 - 6 Sv
 - 10 Sv
 - I do not know
- Q29. Any metal device is considered as a contraindication to use in which of the followings medical imaging modalities?
- CT scan
 - MRI
 - ultrasonography
 - X-ray
 - I do not know
- Q30. The metformin should be withheld at the time of intervenous contrast administration in patients who are known to have kidney disease and discontinued for
- 12 h afterward
 - 24 h afterward
 - 48 h afterward
 - 72 h afterward
 - I do not know
- 4th section**
- Q31. Which of the following substances are used to coat the walls of a CT scan room for radiation shielding?
- Tungsten
 - Glass
 - Lead
 - Iron
 - I do not know
- Q32. Dosimeter is:
- a device that measures exposure to ionizing radiation
 - a device that measures the distance from the source of ionizing radiation
 - a device that provides physical protection from ionizing radiation
 - a device that measures the safe area
 - I do not know
- Q33. Which one of the International Commission on Radiological Protection (ICRP) principles can't be applied in medical radiation exposure?
- justification
 - Dose limit
 - optimization
 - All of the above
 - I do not know
- Q34. As low as reasonably achievable (ALARA) principle is equivalent to which one of the following ICRP principles?
- justification
 - Dose limit
 - optimization
 - None of the above
 - I do not know
- Q35. All the following are methods used to reduce the amount of exposure to ionizing radiation except:
- Time
 - Distance
 - Source
 - None of the above
 - I do not know
- Q36. How far from the X-ray, should you stand without any protection during the radiological-guided procedure (e.g.,C-arm)?
- 1 m
 - 2 m
 - 5 m
 - 8 m
 - I do not know
- Q37. What is the annual effective dose limit for occupational exposure?
- 10 mSv
 - 20 mSv
 - 30 mSv
 - 40 mSv
 - I do not know
- Q38. The use of diagnostic reference levels is an important tool in which of the following ICRP radiation protection principles
- justification
 - Dose limit
 - optimization
 - None of the above
 - I do not know