

Understanding Radiation Risk 3 CE
Test Questions

RADIATION BIOLOGY REVIEW

1. Ionizing radiation can cause tissue damage.
A. TRUE
B. FALSE

2. The **major** contributor to damage from radiation is through radiation changing a water molecule into a new form called a "_____".
A. non-ionization
B. magnetization
C. free radical
D. pair production

3. The changes from radiation damage to the DNA encoding that lead to other adverse changes are termed "_____".
A. Photo-disintegration
B. Stochastic Effects
C. Oxidization
D. none of the above

4. The amount of radiation energy required to cause tissue damage or change in different tissues is called the _____.
A. threshold dose
B. non-threshold dose
C. chemical dose
D. occupational dose

5. Skin can demonstrate which of the following deterministic effects from radiation exposure?
A. Skin reddening (erythema)
B. Hair loss (epilation)
C. Skin cell death with scarring (necrosis)
D. All of the above

6. What is a total acute dose threshold for cataract formation?
A. 5 Gy
B. 10 Gy
C. 15 Gy
D. 20 Gy

7. Reviews of biological and clinical studies have shown that below _____ no deterministic effects from radiation exposure have been proven.
A. 0.1 Gy
B. 10 Gy
C. 100 Gy
D. 1,000 Gy

8. Stochastic effects can be divided into which of the following groups?
A. genetic effects
B. carcinogenic effects
C. psychological effects
D. both A and B

9. _____ induction is arguably the **most** important and the most feared radiation effect.
A. Erythema

- B. Cancer
- C. Epilation
- D. Necrosis

10. What is the latency period of leukemia after radiation exposure according to the studies?

- A. 5 to 10 months
- B. 1 to 2 years
- C. 5 to 15 years
- D. 20 to 40 years

11. The _____ model assumes radiation increases the natural incidence of a cancer and it is expressed as a fraction or multiple of the naturally occurring risk.

- A. absolute risk
- B. risk- free
- C. relative risk
- D. lethal dose

12. Which of the following unit of measurement is used when defining the effective dose from radiation exposure?

- A. Rad
- B. Sievert (Sv)
- C. Rem
- D. becquerel (Bq)

13. Radiation sensitivity is high for the developing embryo/fetus due to which of the following?

- A. rapid cell division and differentiation are occurring
- B. mother's age
- C. fetus gender
- D. none of the above

DOSE METRICS

14. _____ refer to the maximum level of dose that the general public can receive from a source other than natural background radiation levels and those received by occupational workers in their job.

- A. Genetic effects
- B. Carcinogenic effects
- C. Lethal dose limits
- D. Dose limits

15. The Principle of Optimization is analogous to the _____ concept.

- A. absolute risk
- B. risk- free
- C. As Low As Reasonably Achievable (ALARA)
- D. lethal dose

16. What is the diagnostic reference level for adult AP abdomen (22 cm) exam in radiography?

- A. 1.1 mGy
- B. 3.4 mGy
- C. 15 mGy
- D. 20.2 mGy

17. What is the diagnostic reference level for adult upper GI, **without oral contrast** media, with grid exam in fluoroscopy?

- A. 6.9 mGy/min
- B. 54 mGy/min
- C. 77 mGy/min
- D. 90 mGy/min

18. What is an average effective dose values for adult chest x-ray (PA/LAT) exam in radiology?

- A. 0.007 – 0.24 mSv
- B. 0.7 – 3.7 mSv
- C. 1.5 – 12 mSv
- D. 2 – 18 mSv

19. Which of the following exam delivers the highest radiation dose level in adult interventional radiology?

- A. head/Neck angiography
- B. transjugular, intrahepatic, portosystemic shunt (TIPPS)
- C. coronary angiography (diagnostic)
- D. hip replacement

BALANCING BENEFIT AND RISK

20. With an understanding of the effects of radiation and the doses for standard examinations, a physician needs to consider which of the following criteria before ordering exam?

- A. Patient's clinical conditions
- B. Availability of equipment & personnel
- C. Alternative exams
- D. all of the above

21. The _____ has organized several expert panels to develop criteria for determining appropriate imaging examinations for specific medical conditions.

- A. ACR
- B. ARRT
- C. ASRT
- D. CDC

22. What is the **most** appropriate and number one choice of exam in pregnant patient with acute abdominal pain and fever or suspected abdominal abscess?

- A. Nuclear Imaging In-111 WBC abdomen and pelvis
- B. X-ray contrast enema
- C. Ultrasound abdomen
- D. CT abdomen and pelvis w/o contrast and w/contrast

PERCEPTION OF RISK

23. When a risk has a benefit to an individual or to society the risk may be justified with respect to the benefit.

- A. TRUE
- B. FALSE

24. Which of the following things need to be considered in medical situations, when patients and their families are often confused and under high stress?

- A. they have difficulty processing information
- B. they are not listening to what is being said
- C. they give greater weight to negative information than to positive information
- D. all of the above