

**DIAGNOSTIC
RADIOGRAPHY ANSWERS**
For Medical Students

**Clare Hawkins Superintendent
Radiographer**

ANSWERS

1. Which fish bones are visible on x-rays and why?

Cole fish, gurnard, monk fish, plaice, red snapper, cod, haddock, grey mullet and lemon sole

S.R. Ell, A. Sprigg The radio-opacity of fishbones — Species variation Clinical Radiology Volume 44, Issue 2, August 1991, Pages 104-107

This may be related to the habitat of the fish, with salt water fish having increased radio-opacity compared to fresh water fish.

Dunn R. ENT and faciomaxillary. In: Dunn R, Dilley S, Brookes J, et al, editors. The emergency medicine manual. 4th ed. Adelaide: Venom Publishing, 2006: 267.

ANSWERS

2. What is the dose of a CXR, AXR, Hand x-ray, CT abdomen, Contrast swallow?

CXR 0.02mSv

AXR 0.7mSv

Hand 0.005mSv

CT AXR 10.0mSv

Contrast Swallow 1.5mSv

<http://www.hps.org/documents/mediagimaging.pdf>

ANSWERS

3. What are the background radiation dose equivalents to the above?

CXR 2.4 days

AXR 84 days

Hand 10.4 hours

CT AXR 2.7 years

Contrast Swallow 168 days

[http://www.fda.gov/radiationemittingproducts/
radiationemittingproductsandprocedures/medicalimaging/medicalx-rays/
ucm115329.htm](http://www.fda.gov/radiationemittingproducts/radiationemittingproductsandprocedures/medicalimaging/medicalx-rays/ucm115329.htm)

ANSWERS

4. What is the advantage of a high KVp chest x-ray technique?

Increasing the KVp increases the energy of the radiation which then has higher penetration and therefore greater quality. The contrast is reduced between air and bone and therefore more detail is seen

ANSWERS

5. What is the difference between CR and DR radiography?

CR is Computerised Radiography and the traditional film in an imaging plate is replaced with a detector that is "read" by a processor. The image is generated by a computer relative to the amount of radiation detected on the detector and displayed on a computer screen.

DR is Digital Radiography and there are no traditional imaging plates. The digital detector is placed under the area to be examined and the radiation detected by the detector produces an image directly onto a monitor.

ANSWERS

6. What is the impact on radiation dose to the general public of the above?

The high processing capabilities of the computerised system means that there is potential for higher exposure factors to be used and the image quality remain high. Therefore potentially there could be an increase in diagnostic exposure levels.

ANSWERS

7 . What are the radiographic signs of a bowel perforation on a supine AXR?

Rigler's double wall sign

Visible falciform ligament

Football sign

http://radiologymasterclass.co.uk/tutorials/abdo/abdomen_x-ray_abnormalities/pathology_bowel_gas_perforation_pitfalls.html

ANSWERS

8. How would you know the difference between a PA and AP CXR and why would you need to know?

On an AP the scapulae are likely to be visible, there is increased magnification of the heart, the chest may be lordotic and ribs may appear horizontal and the chin may be superimposed on the upper chest.

An AP projection does not allow accurate assessment of the heart and for this a PA CXR must be performed.

ANSWERS

9. What is IRMER and IRR99? What is the difference?

IRMER – Ionising Radiation Medical Exposure regulations (2000) deals with the safe and effective use of ionising radiation when exposing patients. It protects patients from unintended, excessive, incorrect medical exposure, ensures the benefits outweigh the risks and makes certain patients receive no more than the required exposure.

IRR99 – Ionising Radiation Regulations 1999 are aimed at the protection and health of staff working with ionising radiation. It deals with the health and safety of those working with ionising radiation.

*Ionising Radiation (Medical Exposure) Regulations 2000 (SI 2000 No 1059), London, HMSO,
<http://www.opsi.gov.uk/si/si2000/20001059.htm> (sourced 10th March 2009)*

Ionising Radiations Regulations 1999 SI 1999/3232 The Stationery Office 1999 ISBN 0 11 085614 7

ANSWERS

10. What is the patient identification protocol prior to ionising radiation exposure?

Ask the patient to give their:

Full name

Date of birth

First line of their address

ANSWERS

11. What is the name of the council responsible for the registration of radiographers?

Health and care professions council (HCPC)

www.hpc-uk.org