RTS4020 RADIOBIOLOGY AND DOSIMETRY

Leader: Dr Ray Budd
Credit points: 6
Prerequisites: RTS4000, RTS4010, NMS4021
Co-requisites: RTS4012, RTS4022

Synopsis:
Introduction to biological effects of ionizing radiation on cells & tissues and mechanisms repairing sustained biological damage, study of systemic and total body responses to early and late effects of radiation, hereditary effects and effects on the embryo & foetus. Detailed study of principles of radiation protection and possible risks associated with irradiation during diagnostic and therapeutic application from a risk vs. benefit perspective. Study of risk assessment based evaluation of radiation dose.

Objectives:
On successful completion of this unit students will be able to:

1. Discuss the known biological effects of radiation on cells and tissues;
2. Describe the difference in effectiveness of various types of ionising radiation;
3. Recognise and explain the mechanisms of cellular repair radiation damage;
4. Explain the difference between early and late effects of radiation damage;
5. Discuss the principles and practices used to minimise occupation radiation exposure,
6. Calculate radiation dose in selected diagnostic and therapeutic nuclear medicine scenarios; and
7. Discuss the current scientific theories relating to the risk associated with dose.

Assessment:
One three hour written examination (60%) + two assignments (40%)