A wide spectrum of fluoroscopic medical procedures and the machines used to perform these procedures exists. The range of doses applied for the spectrum of procedures reflects the diversity of use, and sometimes misuse, from trivial doses to doses sufficient to induce deep necrosis.

A “biological effect” usually means an induced biological change that can result in an adverse health outcome or a detectable cosmetic effect. All doses of radiation applied by fluoroscopy result in ionization of biologic material, but doses at less than 100 mGy have not been conclusively linked to adverse health effects, although the strongest evidence for effects at this level are associated increases in leukemia observed from prenatal exposures.

Fluoroscopically guided complex interventional procedures and some other fluoroscopically guided procedures have been shown to induce short-term (days to months) effects ranging from mild erythema and depilation to deep tissue necrosis. When short term effects are sufficiently severe, long-term (months to decades) associated effects such as scarring, pain, and osteonecrosis may occur. In addition, potential long-term ocular, and digestive tract effects may exist; and the ever-present possibility of long-term stochastic risks remains.

In this presentation the characteristics, causes, temporal patterns and dose-response relationships will be reviewed. Also reviewed will be potential effects on the concepti of pregnant patients. The presentation will conclude with a discussion of physicists’ roles in patient management before, during, and after procedures.

Learning objectives:

1. To be able to recognize radiation injury due to fluoroscopy
2. To provide relevant perspectives on stochastic risks from fluoroscopy
3. To gain perspective on risks to a conceptus of a patient during fluoroscopy