Radiation Protection & Musculoskeletal Disorders

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Contributory Factors

- **Work** -
  - Static Postures and long interventions
  - Poor postures – leaning, twisting and a combination
  - Pushing trolleys
  - Lead Aprons

- **Home** –
  - Leisure activities
  - Posture
  - Domestic workload
Epidemiology

- 52% of respondents who estimated that their lead apron use was greater than 10 hours per week and 46% of respondents who wore lead aprons for less than 10 hours per week, reported back pain, (Moore et al 1992).

- Cardiologists who wore lead aprons, had a significantly higher incidence of skeletal complaints, and more days missed from work, because of back pain, (Pelz 1999, Ross et al, 1997 Goldstein et al 2004).

- Association between back, neck and upper extremity musculoskeletal pain and wearing body armour for longer than 4 hrs, (Kanitzer et al 2008)
Eliminate the Hazard

• Remove it completely from the workplace

Substitute the Hazard

• With a safer alternative

Use Personal Protective Equipment

• Back Belts
The Pinkerton “Hang ‘em High” apron support system; B, Wearing the apron system; C, Performing angiography whilst wearing the apron
Eliminate the Hazard
• Remove it completely from the workplace

Substitute the Hazard
• With a safer alternative

Use Personal Protective Equipment
• Back Belts
Types of Radiation Protection, (Aprons)

- Full-length lead Radiation Protection, (approximately 8kg)
- Full-length lead replacement apron, (approximately 5kg)
- Two-piece lead replacement aprons, consisting of skirt and top, (Approximately 5kg. Weight distribution 60% shoulders, 40% on the hips).
Hierarchy of Controls

Eliminate the Hazard

• Remove it completely from the workplace

Substitute the Hazard

• With a safer alternative

Use Personal Protective Equipment

• Back Belts
Back Belts

- RCN Guidelines – Best Practice Guidance on radiation protection and the use of radiation protective equipment – recommends protective lumbar support belts
- Healthsafe recommends support belts amongst other solutions.

- Research suggests that there is no evidence that back belts will provide support and reduce the risk of lower back pain, (Wassell et al 2000).
Other solutions

- Time limit – Maximum duration of 2 hours with a minimum of 1hr rest period in between.
- Definition of a rest period - A rest break is a period where lead aprons are not worn for a minimum of one hour. A rest break may involve other work activities, i.e. Ultrasound or CT scanning etc. and also include refreshment and comfort breaks.
- Only put the protection on at the last possible moment and remove as early as possible.
- National Guidance
I think I've found the root of your bad posture... you're still wearing the lead apron from your dentist appointment...

• [www.healthsafe.uab.edu/pages/radiationsafety/apronleadpolicyupdated2.pdf](http://www.healthsafe.uab.edu/pages/radiationsafety/apronleadpolicyupdated2.pdf)


