Radiation Safety Institute of Canada
Institut de radioprotection du Canada

Radiation Safety & Wellness Webinars

January 25, 2023

Hands-Free Imaging
in Veterinary Practice

RSIC Presenter: Lynn MacDonald
Invited Guest: Julia Bitan

Good Science in Plain Language®

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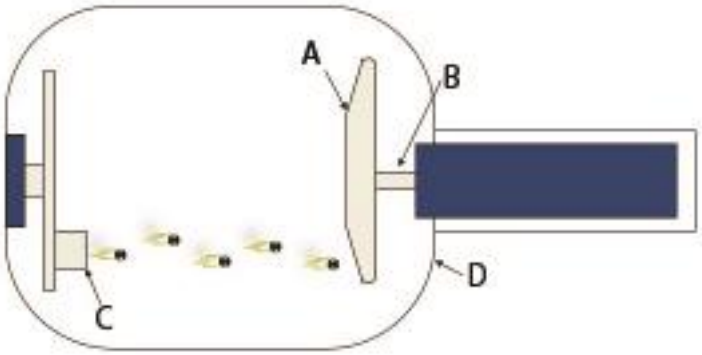
Webinar Functionality

- Audio and video
  - During the presentation, from the presenters only
  - Use computer or telephone (call in)
  - Computer seems to give the best sound quality
- Use the “Chat” feature to enter comments and questions
- Posted on webinar page
  - Video, answers to questions, copy of the slides
- Follow up email will be sent
  - Topics covered, time of attendance
- It may be possible to change your Zoom view if the controls are hiding the closed captioning.

In This Session

- X-Rays
  - Ionizing Radiation
- Linear Non-Threshold
- ALARA Principle
- Radiation Protection Principles
- Components of the X-Ray Beam
- Guest Interview
  - Julia Bitan, RVT
  - Hands-Free Imaging Initiative
- Q&A

X-Rays

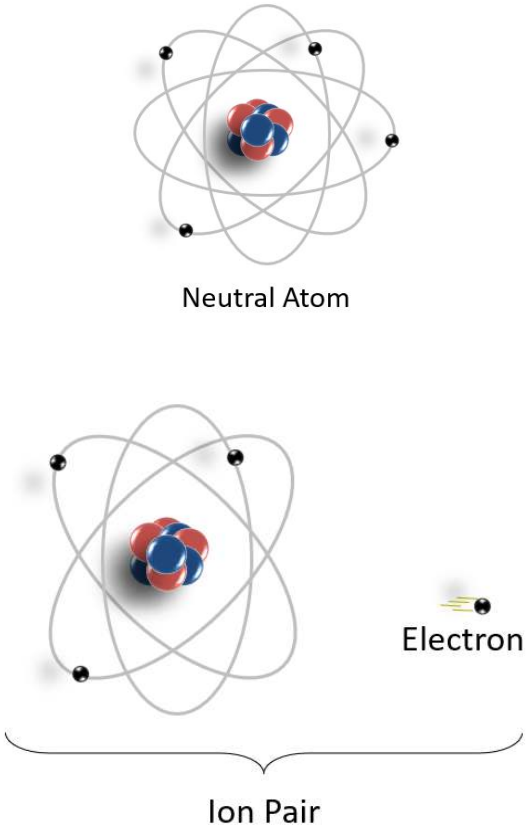


A – Anode
B – Heat Sink
C – Cathode
D – Glass Enclosure

- High energy electromagnetic radiation
- Created when high speed electrons interact with matter
- X-ray tubes accelerate electrons toward a target
- Has enough energy to remove electrons from orbit

Ionizing Radiation

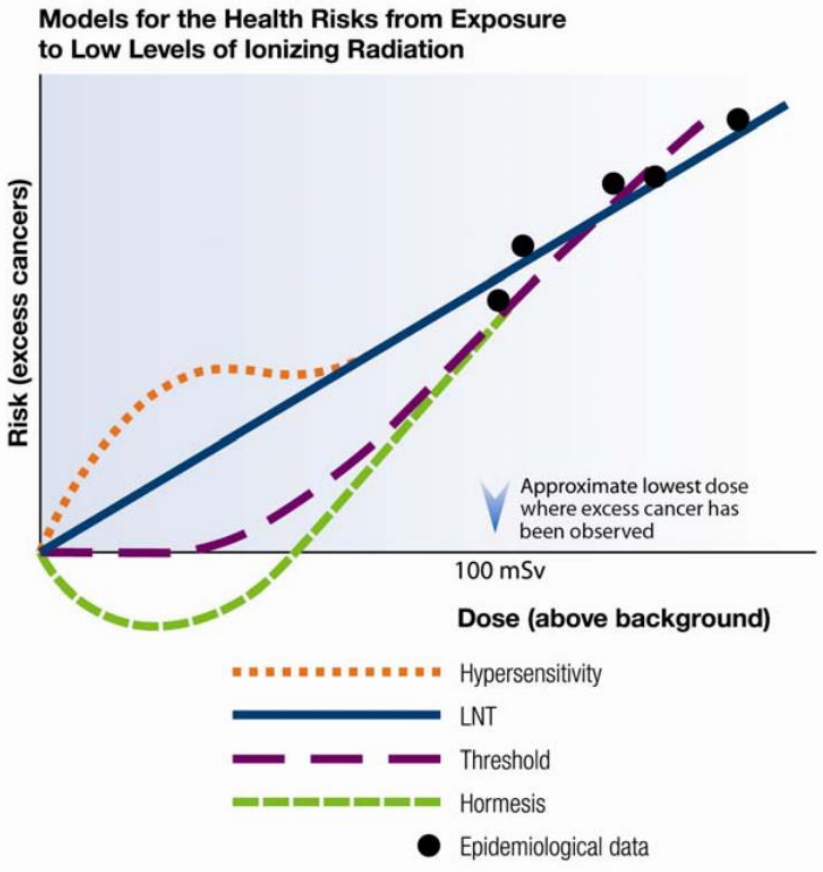
- An ion is a charged particle
- Radiation with enough energy to remove electrons from atoms
- IARC Monographs
  - Group 1: Carcinogenic to humans



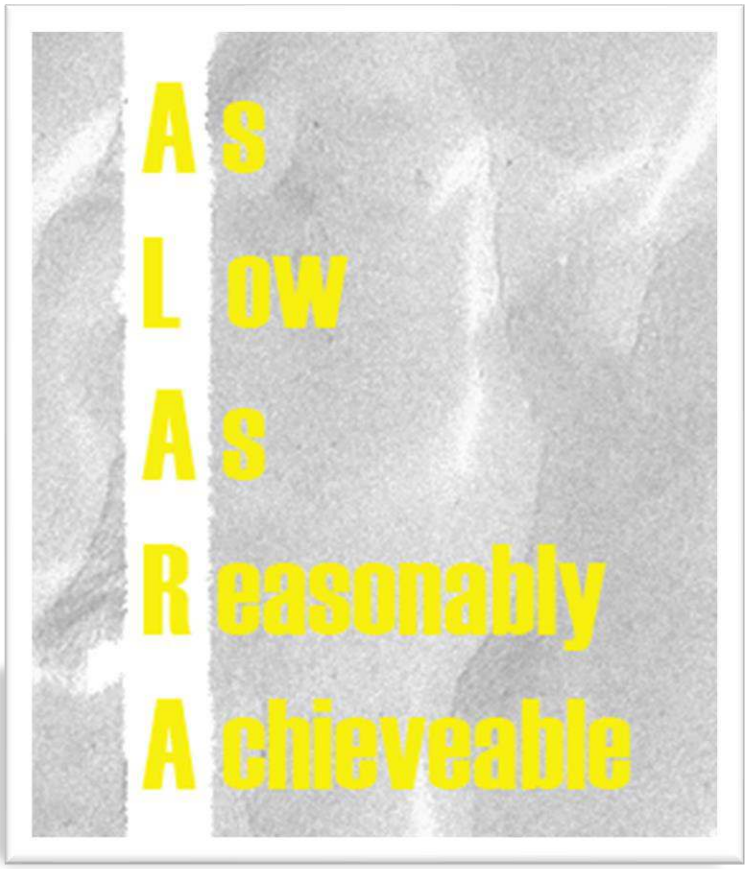
Linear Non-Threshold

- The LNT model to set dose limits for workers and members of the public
- Assumes a direct, proportional relationship between dose and cancer risk
- Risks largely determined based on studies of atomic bomb survivors
  - Linear trend extended down to much lower doses

http://nuclearsafety.gc.ca/eng/pdfs/reading-room/healthstudies/Fact-Sheet-Linear-Non-Threshold-Model-2013.pdf



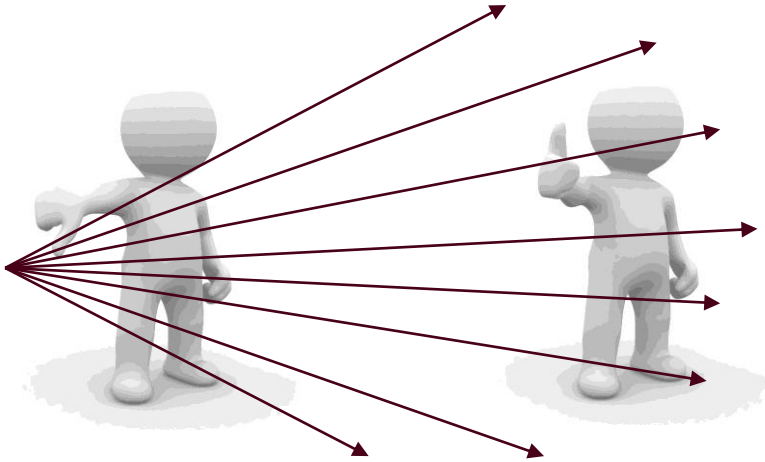
ALARA Principle



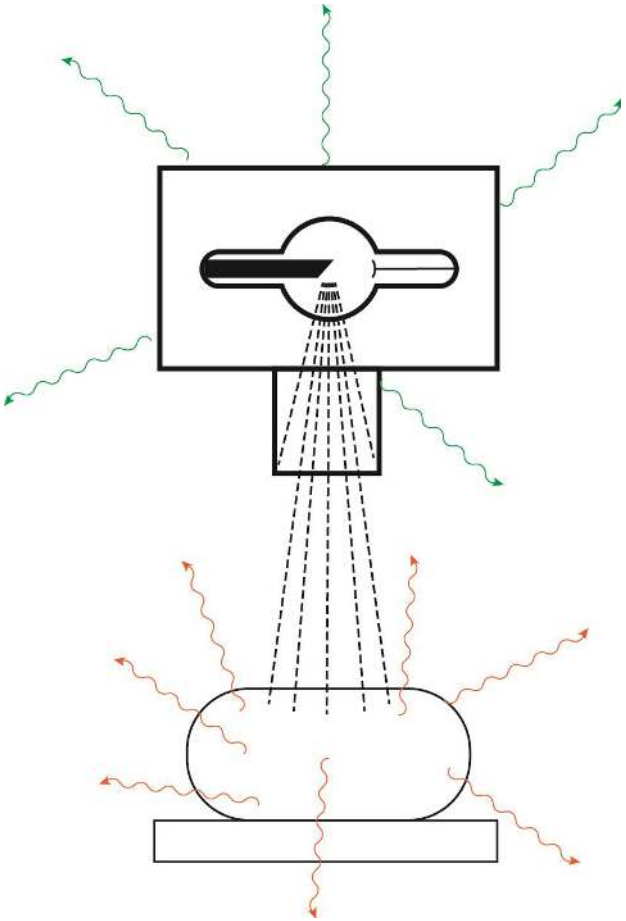
- As Low As Reasonably Achievable
- Not sufficient to just keep below regulatory limits

Radiation Protection Principles

- External source
- Radiation Protection Principles
  - Time
  - Distance
  - Shielding



Components of the X-Ray Beam



- Primary beam
  - Collimated
  - Used for imaging or analysis
- Secondary Radiation
  - Scatter due to interactions of x-rays with the target, i.e. patient
- Leakage
  - That which escapes shielding

Interview

- During the interview, feel free to post questions in the Q&A.

Veterinary Radiography

- Available in most veterinary hospitals
- Great diagnostic tool!
- Can’t ask animal patients to stay
- Manual restraint

Analog to digital

Hands-free imaging

Hands-Free X-Rays inc.

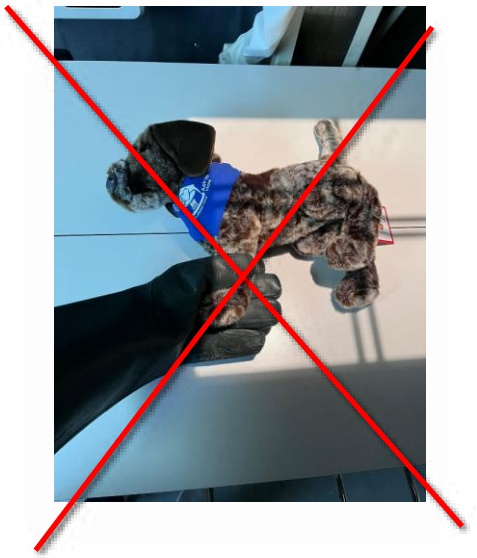
- Training workshops & Positioning devices.
- Established 2016.
- 400+ clinics Canada, U.S. and Europe
- OAVT survey 2016 – 90% of RVTs seek alternatives
- Government support – YEDI Incubator Program
- Doable/Achievable

ALARA

- As Low As Reasonably Achievable
- Distance
- Shielding
- Time

Lead PPE (Personal Protective Equipment)

- Designed to protect from scatter
- Not primary beam
- Gloves must be properly worn – not draped



Hands-Free Radiography: INTRO

- Hands-free techniques help reduce/eliminate hand holding of patients
- Use of proper positioning devices to replace staff hands
- Patient comfort is ESSENTIAL
- Increased distance from x-ray source = lower exposure to staff
- IT IS DOABLE!

Hands-Free Radiography: Benefits

ANY DISTANCE = EXPOSURE REDUCTION

Questions?

- Questions posted in the chat room
- To ask a question verbally
  - use “raise hand” button
  - When asked, press spacebar or unmute to speak
- Questions we do not get to
  - Answers will be posted to our website and link to resources emailed out

Thank you!

For any follow up questions:

info@handsfreexrays.com

+1 (647) 502-4843

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www.handsfreexrays.com

Summary

- Visual aid for x-ray room – Radiation Safety Awareness
- Positive discussion
- It is possible even if you are the only one in your practice
- Lead by example
- Don’t set yourself up for failure - baby steps

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Thank you for listening!

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Wellness Break

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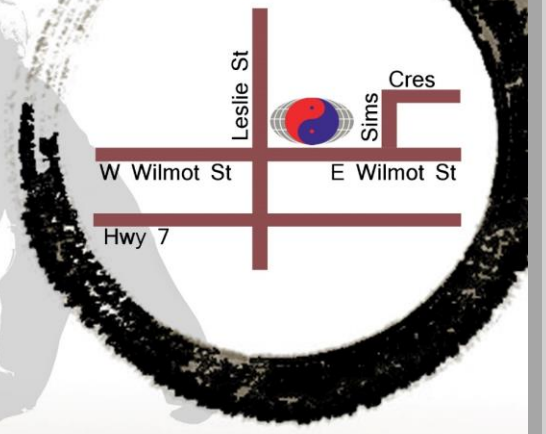

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中文電話 647-388-0083
www.TaiChiOntario.com

總教練 – 梁寶森師傅
Chief Instructor - Bao Sen Liang

10 East Wilmot St. Unit 21
Richmond Hill, Ontario

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