Australian Government
Radiation Health Committee

Statement on the use of Dual-Energy X-ray Absorptiometry (DEXA)

June 2016

The Radiation Health Committee has considered issues arising from the use of Dual-Energy X-ray Absorptiometry (DEXA) scans for the determination of relative body tissue composition, and is concerned about its increasing use in the fitness and weight loss industry.

Dual energy X-ray absorptiometry (DEXA) is an X-ray imaging technique primarily used to derive the mass of one material in the presence of another through knowledge of their unique X-ray attenuation at different energies. Two images are made from the attenuation of low and high average X-ray energy spectra and these images are compared electronically to derive body tissue composition measures such as bone mineral content, areal bone mineral density, fat mass, and lean soft tissue mass.

Radiation dose in DEXA scans is typically in the range from 0.001 mSv to 0.01 mSv. Assessment of overall body composition requires total body scans. Additional attention to technique is required for paediatric patients to avoid increased radiation dose.

DEXA scanning to determine body fat mass and lean soft tissue mass without reference to clinical indications is not a justified use of ionising radiation as there is no nett benefit from its use. Alternative methods of measuring lean body mass which do not involve ionising radiation are available.

DEXA scanning as a medical procedure for assessing bone mineral density or other uses is regulated by the ARPANSA Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (RPS14) that mandates appropriate referral, justification and approval by appropriately qualified medical practitioners.

References

1. ARPANSA, Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (RPS14) (2008)
2. IAEA, Dual energy x ray absorptiometry for bone mineral density and body composition assessment, IAEA Human Health Series No. 15 (2010)
3. Thomas et al., Effective Dose of Dual-Energy X-Ray Absorptiometry Scans in Children as a Function of Age, Journal of Clinical Densitometry 8(4) 415-422 (2005)
4. Winzenberg and Jones, Dual energy X-ray absorptiometry, Australian Family Physician 40(1/2) 43-44 18 (2011)

E-mail: info@arpansa.gov.au
Web: www.arpansa.gov.au
Freecall: 1800 022 333 (a free call from fixed phones in Australia)
ABN No: 613 211 951 55

PO Box 655, MIRANDA NSW 1490
Phone: +61 2 9541 8333, **Fax**: +61 2 9541 8314
619 Lower Plenty Road, YALLAMBIE VIC 3085
Phone : +61 3 9433 2211, **Fax**: +61 3 9432 1835