

Experiences with the Draft ARPANSA X-ray Apparatus Standard

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Our
values



Integrity



Compassion



Accountability



Respect



Excellence



SOUTH
AUSTRALIA
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Background – X-ray Apparatus Testing

- > Everywhere in Australia & New Zealand have some form of x-ray compliance test

2021

'Multijurisdictional Radiation Apparatus'
drafted by committee of unknown skill
mix/geographic distribution/size

Nov 2021

Radiation Health Committee open
consultation on draft

Jan 2022

Consultation closed
Feedback from ARPS and SA EPA
(including SAMI response)

March 2023

Consultation and
standard removed from
ARPANSA site



sahealth.sa.gov.au/sami

National Uniformity

- > Great idea – Shown by mammo
- > Not developed equally
- > NSW, Queensland – updates 10/20, 9/21, 10/23
 - Some key differences – Boost & Manual mode, Site QA
- > Have there been technological advances? And future?
- > Success depends on engagement by everyone

National Compliance Summary - 2020 Snapshot

	RHC	WA	NT	QLD	NSW	ACT	TAS	VIC	SA
C-arm or U-arm Fluoroscopy	24	12	12	12	24	Nil	24	24	Nil
Other Fluoroscopy	24	24				Nil			Nil
Cone Beam CT	24	12	12	12	24	Nil	24	12	Nil
CT	24	24							
Radiography	24	24	12	36	60	Nil	24	24	Nil
Dental	24	36	24	36	60	Nil	36	36	Nil
DEXA	Nil	Nil	Nil	Nil	Per Manufacturer	Nil	48	Nil	Nil
Mammography	12	12	12	12	12	Nil*	12	12	Nil*
Testing before use	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	No
Acceptance Testing	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	Yes

*RANZCR and BSA NAS requirements still result in annual testing for the majority of units

South Australian Legislation

- > Updated from 1982/85 to 2021/22 – Much has changed
- > Consultation ~ 2018 onwards
 - EPA stakeholder meetings, ARPS/ACPSEM
- > Periodic X-ray Apparatus testing introduced
 - Before use & after major component change
- > Adopted the RHC Draft Standard
- > In force from 24 February 2024



Implementation of Test Standard

- > Became CoCs and Test Protocols
- > Testing within 60 days of installation or component failure
- > Availability of qualified testers – Dispersed populus
- > Component failure still requires the full test rather than being optimised to relevant issues for the component
- > Critical Failure - Must stop using it, immediately!
- > Work in Progress – there are issues

CT Dose Index – Volume and CTDI Air



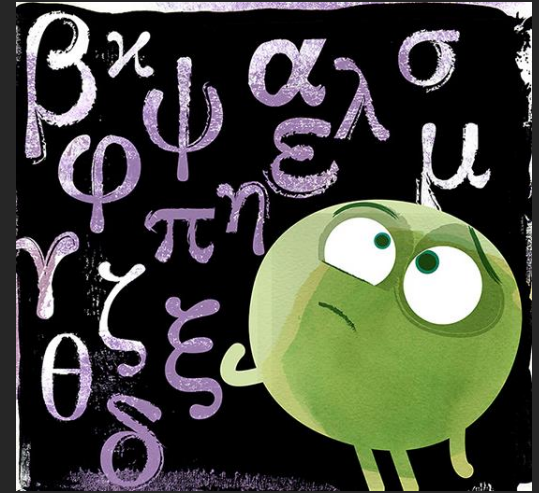
Computed Tomography (CT) Experience

- > Overall:
 - Too long
- > Axial Testing vs Helical Patient Scanning
- > CTDI – at all possible kV & 5+ collimations
- > Laser Alignment ± 2 mm for a diagnostic scanner
- > Does not test AI Recon or alternative filtration (Au, Pt)
- > Radiation Oncology – IAEA TRS 430



Fluoroscopy Experiences

- > Overall:
 - Unclear
- > Testing Frequency is the same for all
 - Screening vs Interventional Radiology
- > Dose per frame exposure limits
- > Limited method information on machine settings & setup
- > Terminology is not clearly defined –
Fluoroscopy/Fluorography/Angiography/Cine/Cardiac/DSA?

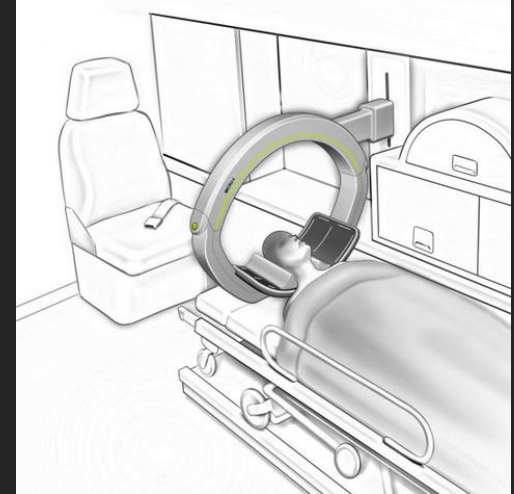


General X-ray Experiences

- > Overall:
 - Pretty good!
- > Marking of the Cathode and Anode
 - Anode heel effect only important for Mammography
- > Testing units every 2 years – far too often for the risk
- > Dental (DEXA?) is 5 yearly – a risk based adaption
- > Westmead Phantom – recommended and limits for some tests are set against phantom

Other Experiences

- > Nuclear Medicine CT (SPECT/CT)
 - Treated as per CT but not used in the same way
- > New technology?
 - O-Arm,
 - Fluoro Spins,
 - Mobile CT,
 - Micro CT



Improvements

Collaborate

- > Consult with all jurisdictions
 - NSW/QLD most recent reviews. Why?
- > Critical failures that are *actually critical*
- > Risk based testing frequency
- > Greater emphasis on image quality is needed
- > Keep testing focused/relevant for patient outcomes
- > Definitions by MBS item numbers (fluoro/cardiac/angio)





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