

**SUMMARY OF SUBMISSIONS AND RESPONSES
DRAFT SAFETY GUIDE FOR DIAGNOSTIC AND INTERVENTIONAL RADIOLOGY**

	COMMENT	RESPONSE
1.2 Background		
	Submission No. 14	
	<p>Safety Guides Two of the safety guides contain the same background statement. “This Safety Guide has been prepared as a supplement to the Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation. It provides advice and guidance on measures that can be employed to assist in meeting the requirements of the Code.” In the Radiotherapy Safety Guide the wording is slightly different; “The information is intended to provide practice specific guidance in radiotherapy on achieving the requirements of the Code”.</p> <p>In all there is the implication that the emphasis is on meeting regulatory requirements, rather than just the simple statement of providing advice on good practice.</p>	<p>Change effected and wording referred to Radiotherapy WG.</p> <p>Noted.</p>
1.4 Scope		
	Submission No. 3	
	<p>3. With particular reference to the ‘Diagnostic and Interventional Radiology’ safety guide, I believe the scope should be amended from just describing PET/CT to ‘various Molecular Imaging and Nuclear Medicine CT systems’ to ensure SPECT/CT and pQCT are included. (reference line 38).</p>	Done.
	Submission No. 22	
	<p><i>Line 38</i> CT/PET and CT/SPECT</p>	Done
	Submission No. 31	
	<p><i>Line 38</i> It is felt that the term ‘hybrid imaging’ may better represent PET and SPECT/CT. SPECT is not</p>	Done

currently included in the Scope.	
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2 Justification

<p style="text-align: center;">Submission No. 14</p> <p>Section 2 (line 127) "... radiology for pre-employment medical can not be justified." In WA at least it is currently legal, including for some Government positions, and employment can be refused on ground of refusal to participate. There are also Federal Government requirements for x-ray screening for Visa applications. These are performed on all applicants including those from extremely low risk populations. The College recommends that this statement should not be included until existing legislation and government requirements are altered.</p> <p>lines 127-8, Justification - in trauma: some referrers may regard this section as inflammatory. In at least some cases there is a reasonable argument for radiographic screening before detailed examination.</p> <p style="text-align: center;">Submission No. 20</p> <p>NATA’s feedback, detailed below, raises issues from an accreditation point of view. The Code and associated safety guidelines compliment the radiation safety aspects of the current RANZCR/NATA accreditation standards.</p> <p>The following issues are raised for consideration:</p> <p><u>Safety Guide Diagnostic and Interventional Radiology</u></p> <p>60-64 Suggest that each procedure be justified by medical practitioner and procedure documented. Any changes from the documented procedure need to be justified on a case-by-case basis by medical practitioner.</p> <p style="text-align: center;">Submission No. 22</p> <p><i>Lines 70/71</i> Other health detriments should be mentioned eg. CTCA may be higher dose but less risk than</p>	<p>Deleted.</p> <p>Text modified with the clause “Within the demands of clinical urgency, “ added to the beginning. Further, this is a “should” statement, not a “must” as per a Code.</p> <p>“This applies to both new and existing procedures” added to the first level of justification point. .</p> <p>Extra sentence to that effect added.</p>
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<p>Coronary Angio.</p> <p><i>Lines 127-131</i> Strong words – legal standing?</p> <p style="text-align: center;">Submission No. 31</p> <p><i>Line 104</i> National Statement on Ethical Conduct in Human Research (2007) is the current Code. Not the 1999 one.</p> <p><i>Line 111</i> There have been studies done to show that CT cardiac scoring can be useful and therefore should not be included here.</p> <p><i>Line 127</i> It is felt that this whole paragraph could be inserted below (e) and made into point (f).</p>	<p>“cannot”s changed to “should”s</p> <p>Changed (including the reference section).</p> <p>Deleted, and paragraph amended for flow.</p> <p>Done.</p>
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3.2 Radiation Management Plan

<p style="text-align: center;">Submission No. 14</p> <p>3.2 (lines 236 – 245), Radiation management plan: This should be deleted. The College considers it is beyond the scope of ARPANSA to recommend standards related to reporting of diagnostic images with PACS.</p> <p style="text-align: center;">Submission No. 22</p> <p><i>Lines 185-245</i> Belongs under a different heading – not directly related to Radiation Management Plan.</p> <p style="text-align: center;">Submission No. 31</p> <p><i>Line 193</i> It is felt that suggesting the service interval be stipulated by the equipment manufacturer creates the danger that servicing may be carried out more frequently than required.</p>	<p>Disagreed. This is an important issue and repeat radiography due to poor diagnostic quality of the image results in unnecessary extra dose to the patient.</p> <p>Extra headings added throughout the Section.</p> <p>Agreed, but this is a “should”. The relevant regulatory authority will have the final say on the frequency.</p>
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	<p><i>Line 196</i> The term portable or mobile equipment does not make it clear whether this may or may not apply to mobile fluoroscopy. Mobile fluoroscopy does not require the same restrictions.</p> <p><i>Line 206</i> This sentence seems in conflict with the rest of the paragraph. It should be removed or a note provided to better explain what it means.</p> <p><i>Line 221</i> This sentence may be more helpful if a specific level below extremity dose limits is provided or if it is locally defined by RP.</p> <p>The last sentence should be removed as there may be other equally suitable types of monitors and it is up to the RP to decide.</p>	<p>Again, this is only a “should”.</p> <p>The second sentence clarifies the issue.</p> <p>Noted. “a quarter of the deterministic pro rata dose limit for the extremities” added in as an example.</p> <p>Sentence amended.</p>
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3.3 Referrers

	<p style="text-align: center;">Submission No. 14</p> <p>3.3 (line 249) Referrers: Remove “frequently”</p> <p>3.3 (lines 293 – 294) The Medical Practitioner: This should be deleted. The College considers it is beyond the scope of ARPANSA to recommend standards related to informed consent.</p> <p style="text-align: center;">Submission No. 22</p> <p><i>Line 253</i> Perhaps “request” should be replaced by “referral” to be consistent with Code.</p> <p style="text-align: center;">Submission No. 31</p> <p><i>Line 275</i> Patient should also be identified by gender.</p>	<p>Done.</p> <p>Disagreed. This should be done to ensure that the patient is aware of the radiation risk involved with their procedure.</p> <p>Done.</p> <p>Done.</p>
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3.4 Operators

	<p style="text-align: center;">Submission No. 17</p> <p>Lines 256 to 308 - 3.4 Operators and 3.5 The Medical Practitioner In many rural and remote locations in Australia there is limited access to a Medical Practitioner (Radiation). This limits the capacity for discussion between the Referrer and the Medical Practitioner (Radiation) regarding a request for an examination that is deemed to be inappropriate or where it is felt that a more appropriate examination that exposes the patient to less radiation will provide the equivalent diagnostic information.</p> <p>Radiographers, having high levels of education and training in the appropriate and safe use of radiation in medical imaging, as such are more than competent to raise concerns regarding inappropriate examination requests with the Referrer and discuss the background related to the concern and to provide advice to Referrers on more appropriate imaging examinations. The AIR would like to see a reference to this in either 3.4 or 3.5 of the safety guide.</p> <p style="text-align: center;">Submission No. 27</p> <p>I object to the terminology ‘operator’ used in this draft document, Section 3.4 etc.</p> <p>As a medical radiation technologist/radiographer registered with my state authority (MRTBQ), holder of a Qld Radiation Health Licence and member of Australian Institute of Radiography, I would prefer the term ‘operator’ to be replaced by medical radiation technologist/radiographer, which better reflects my professional status and of my fellows who perform the majority of medical radiation imaging.</p> <p>Please give this submission your consideration in formulating the final document.</p> <p>PS. I am aware that there are also a number of individuals who are licenced to perform limited medical radiation imaging.</p>	<p>This paragraph added to the “Operator” section.</p> <p>Noted. Examples of the operator now provided and responsibilities defined.</p> <p>Noted.</p>
3.5 The Medical Practitioner		
	<p style="text-align: center;">Submission No. 14</p> <p>3.5 (lines 295 – 299) The Medical Practitioner: It would be appreciated if ARPANSA provided a clear example to illustrate how “potential risk from the radiation exposure can be explained in a meaningful way with respect to deterministic</p>	<p>Stochastic removed. “skin” and “deterministic” inserted to clarify what needs to be done.</p>

<p>and stochastic risks”.</p> <p>Recording technical factors eg source-skin distance, filtration etc: This is not considered possible in a busy clinical practice, without significant reduction in operator efficiency.</p> <p style="text-align: center;">Submission No. 30</p> <p>One looming problem with the ARPANSA document is that it mandates physician follow-up for patients who receive a skin entry dose > 3Gy. There are many objections to this:</p> <ol style="list-style-type: none"> 1. This threshold would trigger review of many dozens of patients, in cardiology, neuro IR, endovascular surgery, and general interventional radiology. 2. At this threshold the risk of a dose-related effect (skin burns, hair loss) would be very low. 3. These dose related effects are usually self limiting and of minor clinical consequence. 4. Clinical review does not prevent or ameliorate these effects. 5. The risk of malignancy from such a dose is extremely difficult to judge, and is the subject of considerable debate, even amongst radiation professionals. Patient counselling is therefore very difficult. 6. Review is supposed to be done by the referring doctor, who is less likely to have the knowledge to counsel the patient about the risk of malignancy. 7. The review would be a source of anxiety for the patient, who will be understandably concerned about the risk of malignancy. No therapy or treatment is available to reduce this risk once the dose has been given, and so clinical review does nothing to assist the patient in this regard. 8. Any subsequent malignancy developed by the patient may well be blamed on the 'excessive' radiation dose received at fluoroscopy. Litigation becomes more likely, and will be complex, because of the biological considerations above. <p>I would suggest that this clause (lines 304-306, http://www.arpansa.gov.au/pubs/comment/dr_sg_radiology2.pdf) should be the subject of further</p>	<p>Now only need to keep that data that can allow skin doses to be estimated.</p> <p>It is not mandated, it is only a “should”.</p> <p>Agreed.</p> <p>Agreed.</p> <p>Agreed.</p> <p>“counselling is also warranted ” changed to “counselling may also be warranted”. Reference to “stochastic effects” have been removed.</p> <p>Reference to “stochastic effects” have been removed.</p> <p>Reference to “stochastic effects” have been removed.</p> <p>Reference to “stochastic effects” have been removed.</p> <p>Noted.</p>
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	<p>discussion. In view of the fact that physician review post exposure has no clinical benefit, and possibly will induce psychological harm, I would suggest that physician time and energy would be better spent in ensuring that exposures are really necessary, and conform to the ALARA principle.</p> <p style="text-align: center;">Submission No. 31</p> <p><i>Line 293</i> The need to have consent is acknowledged. Is this just verbal or is it required to be written? Clarification of this requirement would be useful as a simple x-ray may require a very different degree of consent to an interventional procedure as described further on in this paragraph.</p>	<p>The safety guide is silent on whether the consent needs to be written or verbal although “consistent with the institution’s policies” now added.</p>
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3.6 Radiation Safety Officer (RSO)

	<p style="text-align: center;">Submission No. 14</p> <p>3.6 “If the RSO is a medical radiation physicist, their responsibility should also extend to the image quality assessment”: NB this should only be in conjunction with the radiologist, particularly with respect to CT. Measurement of line-pairs and contrast resolution are only part of image quality, and radiologist subjective assessment is an extremely important part of assessing imaging quality, and is performed on a daily ongoing basis while they report images. This needs to be acknowledged.</p> <p style="text-align: center;">Submission No. 20</p> <p>316-317 Are there specific training/competency requirements for an RSO? Do training requirements need to be on-going? e.g. annual/biannual refresher course.</p> <p style="text-align: center;">Submission No. 22</p> <p><i>Line 337</i> <u>Please</u> replace Radiation Medical Physicist with Radiology Medical Physicist (here and elsewhere)</p> <p style="text-align: center;">Submission No. 31</p>	<p>RSO Section amended and RMP section added.</p> <p>Only those requirements specified in Annex C.</p> <p>Done</p>
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	<p>Generally it is felt that the Code and safety guides adequately cover the relevant area of medical radiation practice. There however appears to be inconsistencies in the way various sections are addressed.</p> <p>An example of this is the treatment of radiation safety officers. In most safety guides it appears in the body of the document where as in the Diagnostic and Interventional Safety Guide it is an annex. Generic wording for common practice could be used within the safety guides.</p> <p>Thank you for the opportunity for DECC to provide input into these documents.</p> <p><i>Line 337</i> ‘Diagnostic’ should be placed in front of radiation medical physicist as this is the standard title used.</p> <p><i>Line 342</i> Craig et al 2001 has been superseded by ‘Reference: line1530 McLean et al 2007’.</p>	<p>Noted</p> <p>Noted. This is now consistent with the Nuclear Medicine SG</p> <p>Now called “Radiology Medical Physicist”.</p> <p>All Craig et al 2001 references removed.</p>
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4.1 General Considerations

	<p style="text-align: center;">Submission No. 22</p> <p><i>Line 386</i> “Constraint” should not be highlighted</p> <p><i>Line 394</i> Suggest replace “patients under the age of 18 years” with “paediatrics”</p> <p style="text-align: center;">Submission No. 31</p> <p><i>4.1 (Line 423) & 7.6 (Line 837)</i> These paragraphs address the need for reject analysis. With modern digital systems it is very easy just to delete images not required or that are suboptimal. A requirement to keep a record (electronic or manual) of all digital images taken should be included.</p>	<p>Highlighted as it is defined in the document.</p> <p>No.</p> <p>Sentence added.</p>
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4.2 Fluoroscopic Examinations

	<p>Submission No. 22</p>	
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	<p><i>Line 448</i> Pulsed fluoro does not always imply low dose. Suggest add “low frame rate” to the description.</p> <p><i>Line 453</i> Suggest replace “imaging device” with “image receptor”.</p> <p><i>Line 462</i> Same issue with pulsed fluoro – eg. 30fps pulsed fluoro often set to higher doses than continuous.</p> <p><i>Line 475</i> Delete “k edge”. Traditional filters may work just as well.</p> <p><i>Line 481</i> “sparing”</p> <p><i>Lines 483-486</i> Suggest deleting the “note”. It is unnecessary and detracts from the primary statement.</p>	<p>Added,</p> <p>Done.</p> <p>No change made.</p> <p>No, it has a different function to “additional” filtration, particularly for paediatrics.</p> <p>Done.</p> <p>Done</p>
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4.3 Interventional Procedures

Submission No. 31

Line 510
It is felt that for or certain diagnostic and interventional studies where high skin doses may occur, a note should be included in the report to the referring medical practitioner that they should be aware that their patient may at a later time present with radiation induced skin damage.

Inserted.

4.4 CT Examinations

Submission No. 14

4.4 Multislice CT:
The College considers that it is somewhat inflammatory to state that these CTs are “prone to administering excess dose” and “default protocols provided by manufacturers are rarely optimized for even the average patient”.

Text modified.

This is not true certainly of at least the manufacturers Fellows have reported dealing with

	<p>recently. If it ARPANSA wishes to make a comment about optimizing default protocols, it should be done in a more constructive manner, unless there is proof this is still true of the majority of suppliers.</p> <p style="text-align: center;">Submission No. 17</p> <p>Line 573 - 4.4 CT Examinations The reference to multislice CT scanners being ‘particularly prone to delivering high patient doses unless technical factors are carefully selected by the operator’ should be reviewed.</p> <p>If the multislice CT scanner is being operated by a Radiographer with the appropriate skills and training in CT scanning, there should be no significant increase in the radiation dose that the patient is exposed to.</p> <p style="text-align: center;">Submission No. 22</p> <p><i>Line 536</i> Delete “effective” – applies to Philips and Siemens only and pitch is mentioned elsewhere.</p>	<p>Text modified.</p> <p>Deleted.</p>
4.5 Protective Devices for the Patient		
	<p style="text-align: center;">Submission No. 22</p> <p><i>Line 584</i> I’m not convinced that 0.5mm lead equivalence is always justified. My preference would be to delete.</p>	<p>No change. AS/NZS requirement.</p>
5 Pregnancy and Protection of the Embryo/Fetus		
	<p style="text-align: center;">Submission No. 17</p> <p>Line 615 - 5 Pregnancy and Protection of the Embryo/Fetus The AIR is concerned regarding the statement that ‘The Code puts the onus on the Medical Practitioner (Radiation) to advise a pregnant patient of the potential risks to the embryo/fetus associated with in-utero exposure.’ As stated previously in this submission in emergency, out of hours and rural and remote situations where there is no Medical Practitioner (Radiation) present</p>	<p>Change to the paragraph has been made to also incorporate the referrer..</p>

	<p>in the department available this creates problems.</p> <p>The role of identification of a patient’s current pregnancy status in almost all cases is only determined through questioning by the Radiographer (or Operator) in preparation for an examination. This information is then conveyed to Referrer and a discussion regarding the urgency and importance of the examination ensures. If it is determined by the referrer, understanding the risks associated with radiation exposure to the fetus in-utero, that the requested examination or a modified version of the examination is still required, the responsibility of informing the patient of the risks associated with radiation exposure to the fetus in-utero most commonly falls on the Radiographer. This scenario not only takes place in emergency, out of hours and rural and remote situations, it commonly occurs in all Radiology practices.</p> <p style="text-align: center;">Submission No. 22</p> <p><i>Line 644</i> Why does 0.3mSv creep in here??</p> <p><i>Lines 650-652</i> If “in any event” dose estimation requires specific technical details, why are tables (annex) with fetal dose provided (see comments below).</p>	<p>Changed to 1 mSv.</p> <p>Text modified slightly. It should be noted that Annex B only provides indicative data.</p>
6. Equipment		
	<p style="text-align: center;">Submission No. 22</p> <p>I think this section needs a major overhaul which considers the role that Australian Standards plays in providing this information. Some of this belongs in text books and/or standards but not in a safety guide.</p>	<p>The role of the Safety Guide is to provide useful information on all aspects of a radiology practice. This Section contains general information of X-ray equipment..</p>
6.1 General Requirements		
	<p style="text-align: center;">Submission No. 31</p> <p><i>Line 657</i> This sentence strongly suggests that the NDRP will contain uniform testing criteria. Is this correct?</p>	<p>Ultimately, that is correct.</p>

6.2 Specialised Equipment		
	Submission No. 31	
	<p><i>Line 691</i> Here and elsewhere in the document the Australian Standard and New Zealand Standards are referred to as SA and SNZ. It is thought that it should be AS and NZS.</p> <p><i>Line 704</i> The fitting of DAP meters should be made mandatory pre-empting AS and NZS.</p>	<p>Changed.</p> <p>Noted</p>
6.3 New Equipment		
	Submission No. 22	
	<p><i>Line 756</i> Should be talking about CTDIvol and DLP – not CTDIw.</p>	Noted
	Submission No. 31	
	<p><i>Line 753</i> It should be recommended that the CTDI is recorded in some way. It should also be noted that in the reference to CT that the DLP (dose length product) should be used rather than DAP (dose area product).</p>	<p>Clause added.</p> <p>Noted.</p>
6.4 Ancillary Equipment		
	Submission No. 14	
	<p>6.4 (lines 760 – 768) Ancillary Equipment: The College considers that this should be removed as it is not relevant material for inclusion in a safety guide.</p>	Clause deleted.
7.1 General		
	Submission No. 31	
	<p><i>Line 779</i></p>	

	It is thought that this first sentence should be removed as this should be rectified by the time the SG is released. In the next line the word endeavour should be removed.	Done
7.2 Acceptance Testing of X-ray Equipment		
	<p style="text-align: center;">Submission No. 14</p> <p>Section 7.2 (lines 785-96) Acceptance testing: The College notes that there is no single standard of reference in this document although the Australian Standard is mentioned as one possible source of test.</p>	Noted
7.3 Constancy Testing of X-ray Equipment		
	<p style="text-align: center;">Submission No. 14</p> <p>Section 7.3 (line 802) Phantom testing: The College notes that there is no single standard of reference in this document.</p>	Noted
	<p style="text-align: center;">Submission No. 31</p> <p><i>Line 813</i> The last word of this sentence should be changed to ‘essential’.</p>	Done.
7.4 Testing Frequency		
	<p style="text-align: center;">Submission No. 22</p> <p>Dealt with in an ACPSEM position paper – consistent?</p>	This will ultimately be prescribed in the NDRP.
7.8 Patient Dose Surveys and Diagnostic Reference Levels (DRLs)		
	<p style="text-align: center;">Submission No. 14</p> <p>Section 7.8 (line 875) Patient Dose Surveys and Diagnostic Reference Levels (DRLs): This appears very confused and should be substantially revised.</p> <p>The College agrees with the need for dose surveys and has a number of on-going projects with the aim of developing local DRLs for Australian practices. The College queries the inclusion of the suggestion that “compliance with DRLs for a core set of examinations be included as an</p>	<p>Noted.</p> <p>DRLs to be discussed with the RANZCR.</p>

	<p>element in achieving accreditation”. The College is considering inclusion of a “maximum dose level” for a range of CT examinations as part of the revised accreditation for CT but the levels chosen are clearly not DRLs. This is not the purpose of DRLs. They should be used as a guide to good practice and not as a regulated maximum dose level. Further, it is not appropriate for ARPANSA to advise the College on matters related to Professional accreditation, particularly in a document of this nature.</p> <p style="text-align: center;">Submission No. 22</p> <p>Wording needs to be modified to reflect the Code’s requirement (must) that DRL analysis occurs.</p> <p style="text-align: center;">Submission No. 31</p> <p><i>Line 891</i> It is felt that the note referenced by ‘4’ could be removed as it appears in the text.</p>	Footnote removed.
8.2 Interventional Procedures		
	<p style="text-align: center;">Submission No. 31</p> <p><i>Line 940a</i> An additional sentence/paragraph should be inserted with a requirement: if a DAP meter is fitted the value shown is monitored during a procedure to forecast possible skin damage that may occur.</p>	Done.
9.1 General Considerations		
	<p style="text-align: center;">Submission No. 17</p> <p>Line 979 The line states that testing of protective clothing should ‘be tested at least annually to confirm its shielding integrity’</p> <p>The current recommendation for the testing of protective garments is 12 - 18 months, which unless the garment is mistreated would represent a sufficient time frame in most instances.</p>	<p>Noted</p> <p>Noted</p>

	<p style="text-align: center;">Submission No. 31</p> <p><i>Lines 960 and 977</i> It is accepted that AS gives 0.25 mm as the requirement however all States require 0.3 mm. Would it not be better to recommend this?</p>	<p>Would need to check with all States.</p>
9.3 Interventional Radiology		
	<p style="text-align: center;">Submission No. 31</p> <p><i>Line 1031</i> These two sentences could be combined to stress the use of ceiling mounted lead class shielding.</p>	<p>“Ideally” is probably sufficient although “since they offer superior radiation protection” added to the end of the second sentence to strengthen..</p>
10.1 Radiation Shielding		
	<p style="text-align: center;">Submission No. 22</p> <p><i>Line 1064</i> The language of this suggestion should be strengthened</p> <p style="text-align: center;">Submission No. 31</p> <p><i>Line 1068</i> Most regulatory authorities mandate a 2.1 metre high shielding barrier.</p> <p><i>Line 1083</i> The caution/warning sign has created confusion as in different safety guides different wording is used. Warning, danger and caution have different meanings. Does there need to be standardisation between the codes and guides. Does the trefoil require to be in a triangle or not?</p>	<p>Done.</p> <p>Noted. Change to wording made to allow for that.</p> <p>Noted, yes and yes.</p>
11.1 Radiation Health Professionals		
	<p style="text-align: center;">Submission No. 20</p> <p>1090-1098 Radiologists and MIT’s are “deemed knowledgeable” regarding radiation safety. How does this ensure currency of information? Consideration should be given to</p>	<p>Noted. Change to wording made.</p>

	including some on-going refresher training e.g. annual update from RSO.	
11.2 Other Professional Groups		
	<p style="text-align: center;">Submission No. 17</p> <p>Lines 1099 to 1118 -11.2 Other Professional Groups The AIR is concerned that given the length and detail provided in the Code of Practice and the Safety Guides designed to protect the patient, healthcare staff and the public from exposure to ionizing radiation, it appears grossly inadequate to allow ‘Other Professional Groups’ the right to order and administer ionizing radiation following only ONE day of training. The AIR is also concerned that given the extensive list of ‘core knowledge; that these ‘other professional groups’ are required to gain that ONE day would not provide sufficient time to learn such information and be able to safely apply this knowledge in the delivery of ionizing radiation for diagnostic and interventional procedures. Perhaps ARPANSA should consider the inclusion of a list of the limited equipment that the ‘other professional bodies’ are able to use and a list of limited examinations that they are able to request.</p>	The “at least one day” removed. Courses will ultimately be included in the NDRP.
11.3 Users of Interventional Radiology Equipment		
	<p style="text-align: center;">Submission No. 31</p> <p><i>Line 1123</i> Additional and continuing training is desirable or another stronger word than ‘warranted’.</p> <p><i>Line 1136</i> It is thought that wording indicating that skin damage may also be unavoidable due to the length and difficulty of a procedure should be included.</p>	<p>“necessary”</p> <p>It is believed that all documented cases of skin burns from interventional radiology procedures could have been avoided. No change made.</p>
11.4 Users of CT Equipment		
	<p style="text-align: center;">Submission No. 31</p> <p><i>Line 1152</i> Include after CTDI or DLP. It is also noted that the w in CTDI_w is not required</p>	To be made consistent throughout the SG.
Annex B		

	<p style="text-align: center;">Submission No. 22</p> <p>I am concerned that the fetal dosimetry aspect of this Annex will be used to replace individual dose assessment, particularly for higher dose exams. Whilst it uses the term “indicative only” it is easy to see that a medical practitioner or operator may simply take a value from this table and then personally apply (probably ill-informed) risk assessment data. The data supplied in such an Annex should simply group procedures into those that could reasonably be expected to result in fetal doses in excess of 1mSv, and those that won’t. That way the medical practitioner is armed with the information necessary to know when to apply Schedule B of the Code, but will discourage guess work in terms of specific fetal dosimetry and risk assessment.</p>	<p>“Where a fetal exposure has occurred and the dose is likely to be in excess of 1 mSv, calculations using patient specific parameters need to be undertaken.” now added before the second table in Annex 2</p>
Annex C		
	<p style="text-align: center;">Submission No. 31</p> <p>It is felt that it should be stated that the RSO has the power to stop dangerous practices that may be occurring within the RSO’s sphere of responsibility. It is also noted that the section on RSO appears in the body of the other safety guides whereas it is an annex in this one.</p>	<p>Noted.</p>
References		
	<p style="text-align: center;">Submission No. 14</p> <p>General Comments: It is disappointing that in the references ARPANSA has ignored the recent IAEA publication: <i>IAEA safety report series 39, 2006. “Applying radiation safety standards in diagnostic radiology and interventional procedures using x-rays.”</i> The IAEA is an international authority on radiation safety matters and for ARPANSA to ignore such an important publication seems strange.</p>	<p>Noted.</p>
Glossary		
	<p style="text-align: center;">Submission No. 17</p> <p>As in the Code of Practice document the AIR does not agree with the use of the term ‘operator’ in the Safety guides for Diagnostic and Interventional Radiology. The use of the term ‘operator</p>	<p>Noted</p>

<p>degrades the Degree level education and technical knowledge of Radiographers. Whilst the AIR is aware that a generic term has been selected for use to incorporate those persons working as licensed operators in remote and rural areas of Australia, we recommend that the definition in the glossary be changed to read as follows:</p> <p><i>Radiographer or Operator</i></p> <p><i>Any natural person who is authorised by the relevant regulatory authority to administer radiation to a patient for diagnostic imaging or interventional purposes.</i></p> <p><i>The administration of radiation is performed by a qualified Radiographer who holds a Bachelor of Applied Science in Medical Radiation Science or equivalent in a course that has been accredited by the Australian Institute of Radiography and the graduate is eligible for accreditation by the AIR and registration or licensing by the appropriate State Regulating Authority. Where access to such practitioners is not possible (remote and/or rural practice) the examination must be performed by an appropriately trained person who works within their licence conditions and who holds a current appropriate licence issued by the relevant regulatory authority.</i></p> <p>Line 1780 - 1793</p> <p>The use of ‘...or other health professional who is entitled...’ in reference to medical or healthcare practitioners who have the right to request examinations or procedures that involve the exposure of a patient to ionizing radiation is too loose. This should be removed and replaced with a comprehensive list of those persons who are entitled through their education and training to request such examinations or procedures.</p> <p style="text-align: center;">Submission No. 19</p> <p>Stochastic effect <i>(line 1808)</i></p> <p>I think that the definition is poor.</p> <p>An effect which is randomly determined, its likelihood follows some random probability distribution or pattern. Its likelihood may be analysed statistically but not predicted precisely. Frequently, radiation based effects may be predicted on a population basis, but not on an individual basis.</p> <p>Ref: http://dictionary.oed.com</p> <p style="text-align: center;">Submission No. 22</p>	<p>Noted</p> <p>Noted.</p>
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	<p><i>Line 1762</i> <u>Radiology</u> Medical Physicist. ROMPs and NMPs are also Radiation Medical Physicists.</p> <p style="text-align: center;">Submission No. 31</p> <p><i>Line 1756</i> On this page the entries are not all in alphabetical order. ‘R’ comes before ‘O’.</p>	<p>Done.</p> <p>Amended.</p>
General		
	<p style="text-align: center;">Submission No. 14</p> <p>Overall the College considers this document provides helpful advice which should be of assistance to radiological practices. It is written in a style that discusses the pros and cons about various issues and the emphasis is on providing advice in an authoritative and helpful way, although there are some areas of concern.</p> <p>Radiation in pregnancy: In our previous submission the College commented about radiation in pregnancy drawing ARPANSA’s attention to the RANZCR statement on that matter, available on the RANZCR website. For ARPANSA to ignore that or not include it in the references is disappointing.</p> <p>The College draws ARPANSA’s attention to the recent ICRP publication 102, 2007. “Managing patient dose in multi-detector computed tomography (MDCT).”</p> <p style="text-align: center;">Submission No. 17</p> <p>The Australian Institute of Radiography (AIR) appreciates the opportunity to comment on the Australian Radiation Protection and Nuclear Safety Agency’s (ARPANSA) draft Code of Practice for ‘<i>Radiation Protection in the Medical Applications of Ionizing Radiation</i>’ and the accompanying Safety Guides for Radiation Protection in Diagnostic and Interventional Radiology, Radiotherapy (<i>should read Radiation Therapy</i>) and Nuclear Medicine.</p> <p>AIR representatives were in attendance at the recent ARPANSA National Conference on</p>	<p>Noted.</p> <p>Noted.</p> <p>Noted.</p>

<p>Radiation Protection in Medicine held in Melbourne on the 3rd October 2007. In keeping with ARPANSA’s request for public comment on the current draft documents as part of the consultation process, the following recommendations are submitted by the AIR.</p> <p>The AIR commends ARPANSA on the development of the single Code of Practice with separate Safety Guides for each discipline. We believe that this format is very logical and simplifies the application within the individual disciplines. In keeping with this format the AIR has provided comments separately (attached) for the Code of Practice and the Safety Guides for Diagnostic Imaging and Radiation Therapy.</p> <p>Thank you for considering this submission and we look forward to further correspondence once the public consultation period has been completed.</p> <p><u>General Comments</u></p> <p>Although not strictly in the Code of Practice, the AIR is concerned with the interpretation that ARPANSA places on radiation incident and that they do not fully appreciate the distinction between a ‘radiation incident’ as outlined in legislation and the numerous other types of incidents that are associated with the delivery of radiation for therapeutic or diagnostic purposes, which may or may not also involve radiation. Not all ‘incidents’ within a department are reportable under legislation but are still dealt with in a timely manner including ‘near misses’.</p> <p>Of further concern is that ARPANSA considers their organization as the most appropriate body to manage/monitor any Radiation Oncology Incident Monitoring agency that may be established in the future. It is felt that ARPANSA’s approach is too pure, too idealistic and too remote from the clinical environment to fully appreciate the complexity of the issues that may arise. Such incidents require proactive and rapid action to alert the appropriate service providers and authorities of a potential problem.</p> <p>Radiation safety (occupational, medical and public) is the responsibility of everyone. Health workers involved in the therapeutic use of radiation have a responsibility to maintain and promote radiation safety because of their knowledge and training. It therefore concerns the AIR that professional groups such as physicists are defined in this document as having a greater control and responsibility than other trained and qualified radiation workers.</p> <p style="text-align: center;">Submission No. 19</p> <p>It is important that the requirements within the Radiology Safety Guide are stated to apply only</p>	<p>Noted</p> <p>Noted</p> <p>Noted</p>
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<p>to devices used for diagnostic purposes (perhaps where the films are reported on) and that the use of radiological equipment for radiotherapy purposes (such as planning, cone beam CT, position verification, etc.) are not required to conform with the Radiology Safety Guide.</p> <p style="text-align: center;">Submission No. 22</p> <p>I have not reviewed this document at the same detail level as the Code, but nevertheless provide some preliminary thoughts below. The whole document has the look and feel of work that is some way off completion eg. Page 8 Duties and Responsibilities of a “Radiation Management Plan”; and use of terms shall and should in the Guide. I feel that the document needs two rounds of feedback and modification before completion.</p> <p style="text-align: center;">Submission No. 23</p> <p>I would like to relate some significant radiation dose savings that we have achieved in the past months for Interventional Radiology Procedures at the Flinders Medical Centre, Adelaide. The safety guide document has only been brought to my attention in the past few days and therefore my late notice.</p> <p>We have reduced radiation dose by at least 70 percent over our complete range of Interventional Procedures. This has been achieved by a variety of ways, but the most significant factor in our savings has not been discussed in the safety guide. Our savings have been mostly achieved by using a separate acquisition protocol when performing Interventional Procedures.</p> <p>Therefore we have normal dose settings for diagnostic imaging and minimum dose settings for interventional imaging.</p> <p>We can achieve satisfactory quality acquisitions to perform our Interventional procedures without using the normal settings.</p> <p>Using our normal settings we would achieve dose levels in line with those indicated in “Annex B”</p> <p>Since changing our methods our procedure dose levels are significantly lower.</p> <p>We have performed lengthy procedures such as TIPS, embolisations and stent insertions in the</p>	<p>Noted</p> <p>Noted. “Shall” has not been used in the Safety Guide.</p>
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<p>low to mid range dose levels. We have not gone above low to mid range dose levels even with fluoroscopy times in the order of 60min on a large patient with over 200 acquisitions.</p> <p>Average dose for ERCP is now equivalent to 0.2mSv. Permacath Inserts, IVC Filter Inserts, PICC Inserts now average at dose levels less than a chest x-ray.</p> <p>I have seen no discussion of other centres achieving such low dose. I have seen a reference to the concept of low dose Interventional Radiology at www.medicalnewstoday.com/articles/42529.php.</p> <p style="text-align: center;">Submission No. 31</p> <p><u>General Comment</u></p> <p>The Safety Guide reads well and covers all areas of radiation safety in diagnostic and interventional radiology. The overall guide appears to be a reasonable document.</p>	<p>Noted</p> <p>Noted.</p>
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