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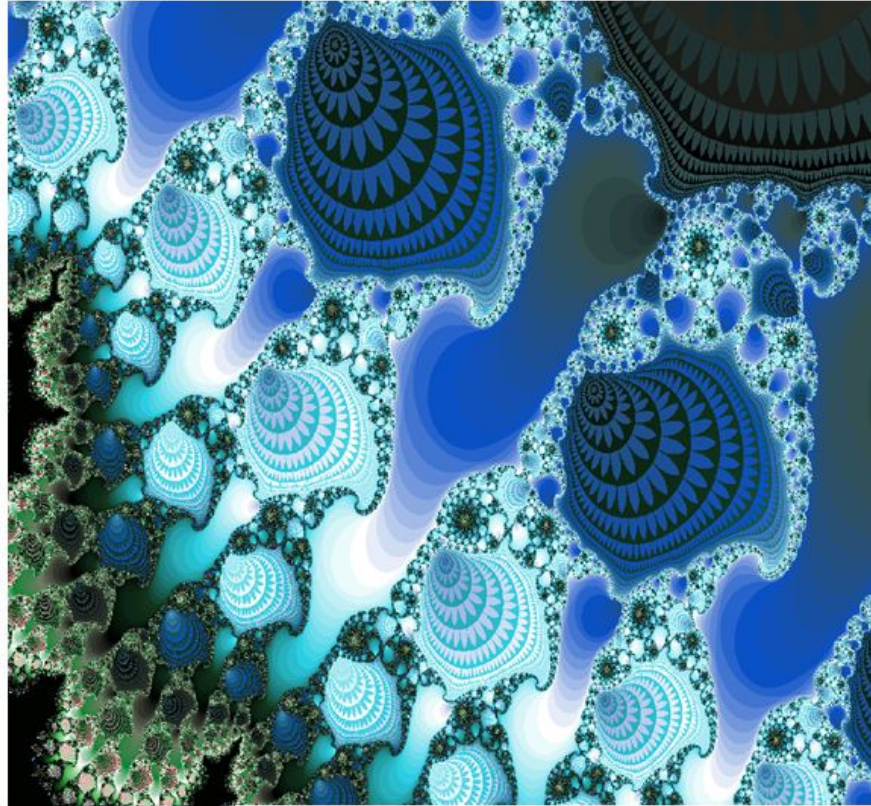


2014 Radiation Protection Survey

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ASRT Chief Academic Officer**

Radiation Protection Survey 2014

A Nationwide Survey of Radiologic Technologists
Conducted by the American Society of Radiologic Technologists



American Society of Radiologic Technologists



Survey

- November 2013.
- Sent via e-mail to 6,000 radiographers and all Cardiovascular Interventional technologists, Vascular Interventional technologists, and Registered Radiologist Assistants in the ASRT membership database.
- A total of 1,102 completed the questionnaire, resulting in a response rate of 12.7%.
- The sample size of 1,102 yields a $\pm 2.95\%$ margin of error at its widest for overall percentages (at the 95% confidence level).

Survey

- Goal: Assess the R.T. knowledge gap in technology as it relates to patient dose.
- Does not identify causality.
- Does not assign blame.

“Knowledge Gap”

Definitions:

- The difference between actual knowledge and desired knowledge.
- The difference between actual experiences and desired experiences.
- A cumulative process of societal change; slow at first, followed by increasingly faster rates of change.
- A socioeconomic gap brought on by different levels of access to mass media and communication technologies.

Example of Knowledge Gap



Place to rest ahead.



Do not enter or you will die.



Hole in road.



It looks like the road ends, but it really doesn't.



Watch out for snakes.

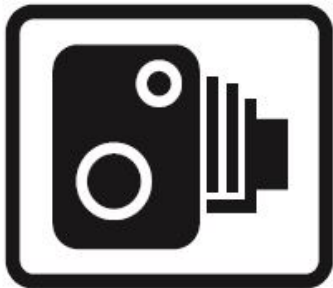
Your Turn



Riverbank ahead.



Cars carrying explosives not allowed.



Cameras used to enforce traffic regulations.



Yield to oncoming vehicles.



Do not pass.



Motorway ends.

Bonus



Exit in:

300 yards

200 yards

100 yards

Knowledge Gaps

- Complex.
- Multifaceted.
- Affected by access to information.
- Affected by experience.

Endangered species -vs.- extinct



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Demographics

What is your primary discipline?

	Frequency	Valid Percent
Radiography	578	52.5%
Vascular Interventional Radiography	156	14.2%
Cardiac Interventional Radiography	114	10.3%
Radiologist Assistant or RPA	38	3.4%
Other (please specify below)	216	19.6%
Total	1102	100.0%

Please specify the “other” primary discipline.
(Coded from verbatim responses.)

	Frequency	Valid Percent
CT	54	25.0%
Mammography	34	15.7%
MRI	32	14.8%
Radiation therapy	25	11.6%
Management and Administration	23	10.6%
Ultrasound/Sonography	10	4.6%
Nuclear Medicine Technology	7	3.2%
Education	5	2.3%
Other	26	12.0%
Total	216	100.0%

Primary Cross-tabulation Variable

	Frequency	Valid Percent
Radiography	578	65.2%
Cardiovascular, vascular interventional, and radiologist assistant	308	34.8%
Total	886	100.0%

Demographic Profile

The typical respondent to the survey:

Radiography

- is a staff technologist
- **is 48 years old**
- **has 22 years of experience**
- **earned an Associate Degree**
- works in a hospital with **200-299 beds**

Cardiovascular, vascular interventional, and radiologist assistant

- is a staff technologist
- **is 49 years old**
- **has 25 years of experience**
- **earned a Bachelor's Degree**
- works in a hospital with over **300 beds**

In which employment setting do you practice most of the time?

		Radiography	Cardiovascular, vascular interventional, and radiologist assistant	Overall
Hospital (not-for-profit)	Frequency	180	234	414
	%	31.2%	76.2%	46.8%
Hospital (for-profit)	Frequency	75	48	123
	%	13.0%	15.6%	13.9%
Hospital (Rural Critical Access)	Frequency	17	1	18
	%	2.9%	.3%	2.0%
Imaging center/outpatient imaging facility	Frequency	78	10	88
	%	13.5%	3.3%	10.0%
Physician's office	Frequency	70	1	71
	%	12.1%	.3%	8.0%
Small clinic	Frequency	43	4	47
	%	7.5%	1.3%	5.3%
Large clinic	Frequency	42	0	42
	%	7.3%	.0%	4.8%
Government/VA hospital	Frequency	11	5	16
	%	1.9%	1.6%	1.8%
Mobile unit	Frequency	10	0	10
	%	1.7%	.0%	1.1%
Other (please specify below)	Frequency	51	4	55
	%	8.8%	1.3%	6.2%
Total	Frequency	577	307	884
	%	100.0%	100.0%	100.0%

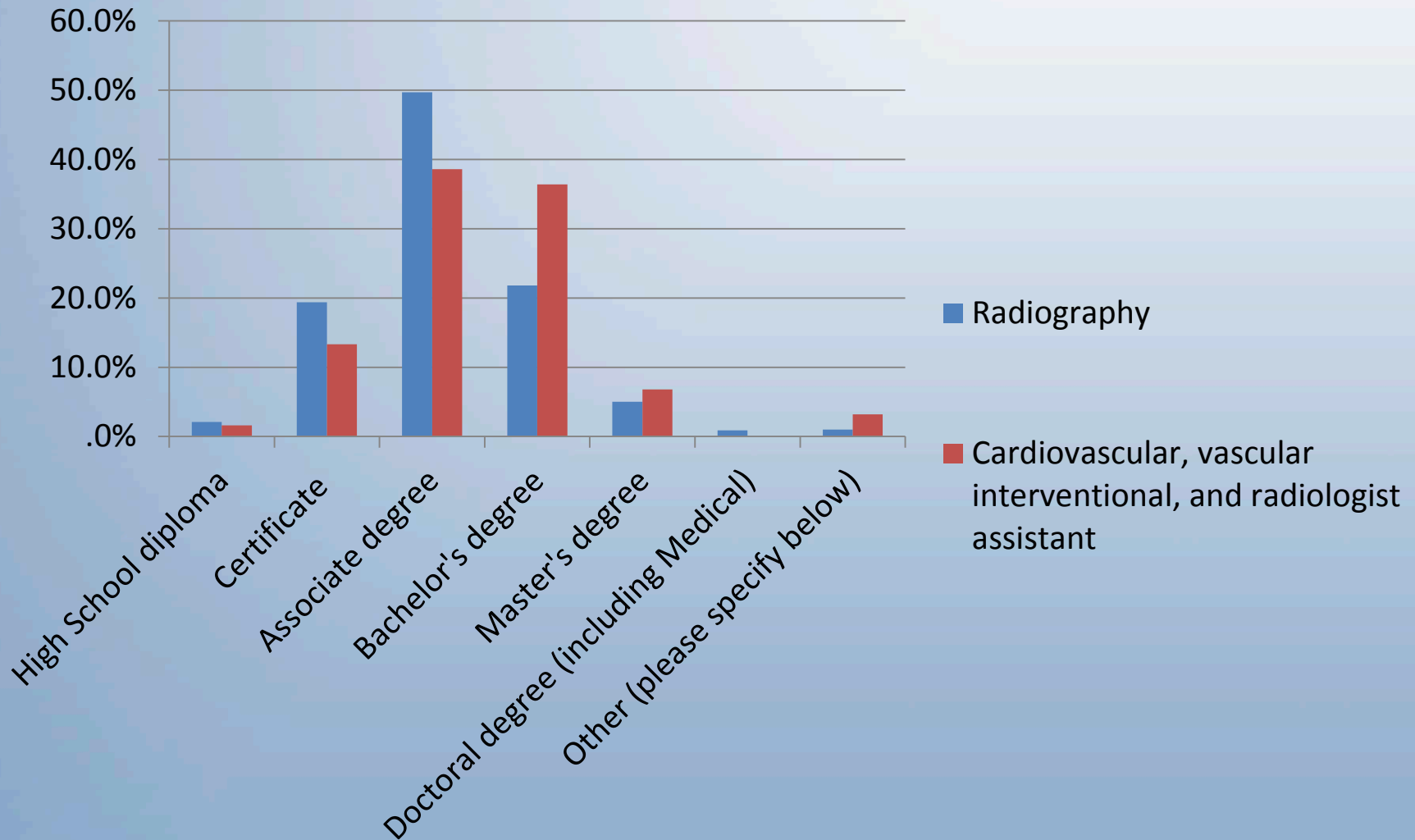


What is your job title?

		Radiography	Cardiovascular, vascular interventional, and radiologist assistant	Overall
Staff Technologist or Senior Staff Technologist	Frequency	447	207	654
	%	78.0%	68.3%	74.7%
Supervisor or Assistant Chief Technologist	Frequency	21	23	44
	%	3.7%	7.6%	5.0%
Chief Technologist	Frequency	22	20	42
	%	3.8%	6.6%	4.8%
Administrator or Manager	Frequency	36	12	48
	%	6.3%	4.0%	5.5%
Educational Program Faculty (Other than Program Director)	Frequency	16	1	17
	%	2.8%	.3%	1.9%
Educational Program Director	Frequency	10	0	10
	%	1.7%	.0%	1.1%
Locum Tenens (Traveling temporary employee)	Frequency	2	5	7
	%	.3%	1.7%	.8%
Other (please specify below)	Frequency	19	35	54
	%	3.3%	11.6%	6.2%
Total	Frequency	573	303	876
	%	100.0%	100.0%	100.0%

What is your highest level of education?

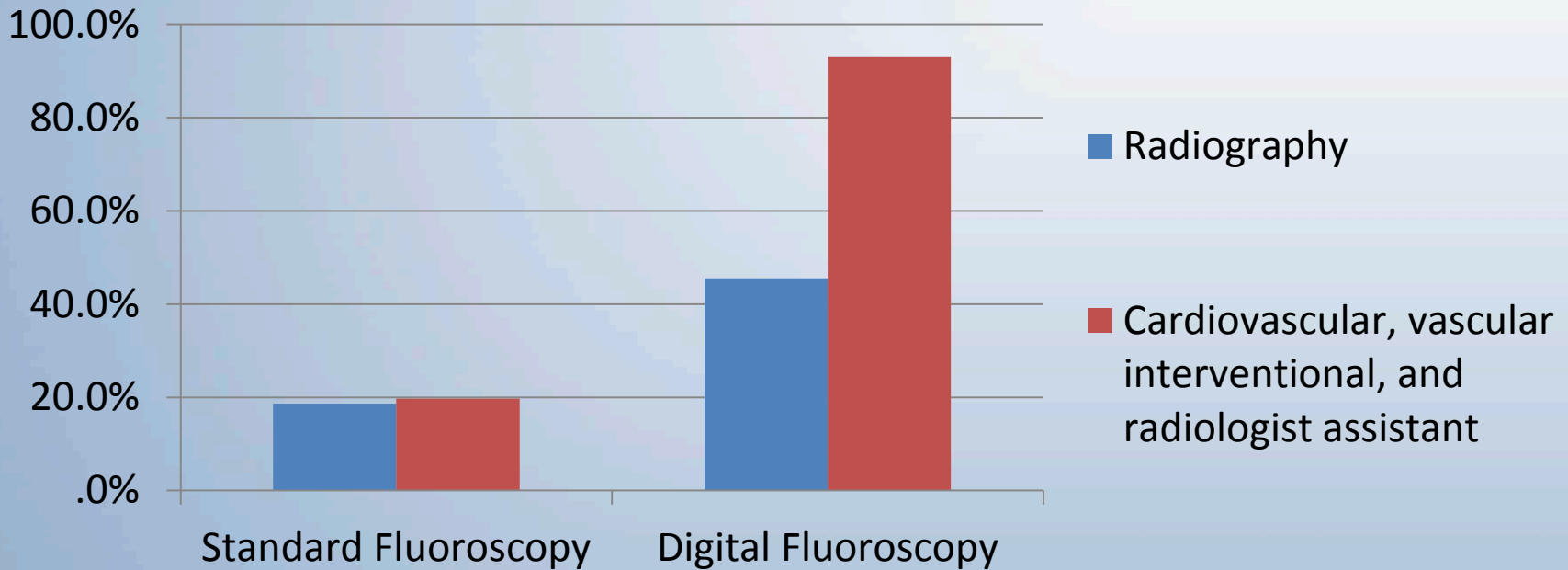
What is your highest level of education?



Please select the type of patient your facility performs exams on:

		Radiography	Cardiovascular, vascular interventional, and radiologist assistant	Overall
Adult only	Frequency	68	111	179
	%	12.7%	38.3%	21.7%
Pediatric only	Frequency	5	5	10
	%	.9%	1.7%	1.2%
Adult and Pediatric	Frequency	462	174	636
	%	86.4%	60.0%	77.1%
Total	Frequency	535	290	825
	%	100.0%	100.0%	100.0%

Which fluoroscopy technology is available for use at your facility?



		Radiography	Cardiovascular, vascular interventional, and radiologist assistant	Overall	Statistical Significance
Standard Fluoroscopy	Frequency	101	57	158	None
	%	18.6%	19.7%	19.0%	
Digital Fluoroscopy	Frequency	247	269	516	IR/RA > R P < .001
	%	45.6%	93.1%	62.1%	
Total	Count	542	289	831	-

In what state is your facility located?

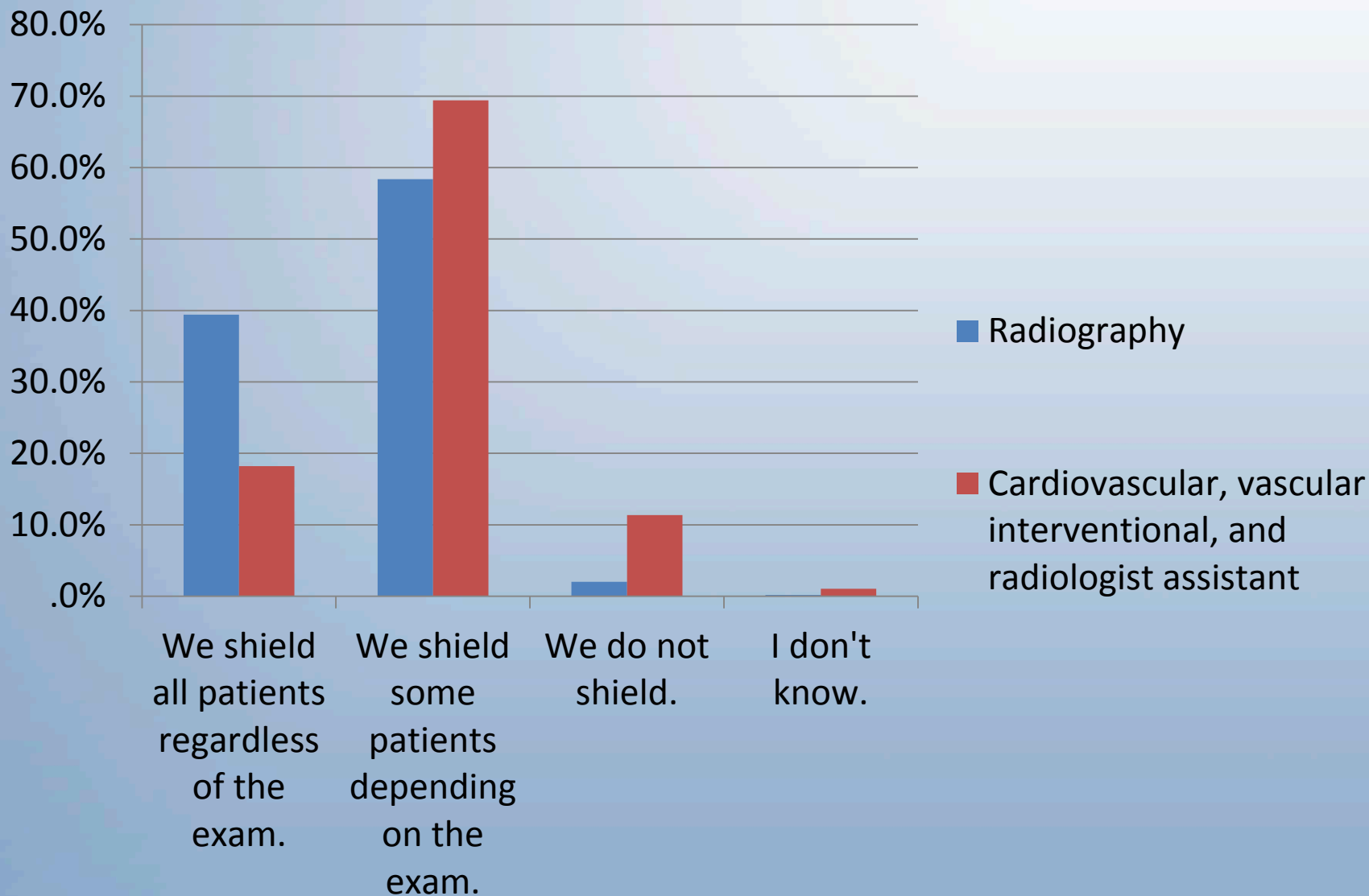
State	N	State	N	State	N	State	N	State	N
California	65	Wisconsin	31	South Carolina	20	Iowa	7	Utah	4
North Carolina	49	Minnesota	29	Tennessee	17	North Dakota	7	Kentucky	3
New York	45	Georgia	28	Colorado	14	Oklahoma	7	Maine	3
Massachusetts	41	Indiana	25	Nebraska	12	Idaho	6	Mississippi	3
Michigan	38	Virginia	25	Missouri	11	Alabama	5	Nevada	3
Ohio	38	Illinois	24	Kansas	10	Hawaii	5	Vermont	2
Florida	35	Maryland/District of Columbia	23	Rhode Island	9	Delaware	4	West Virginia	1
Connecticut	34	New Jersey	23	Louisiana	8	Montana	4	Wyoming	1
Pennsylvania	32	Arizona	22	Oregon	8	New Hampshire	4	Alaska	0
Texas	32	Washington	22	Arkansas	7	South Dakota	4	New Mexico	0

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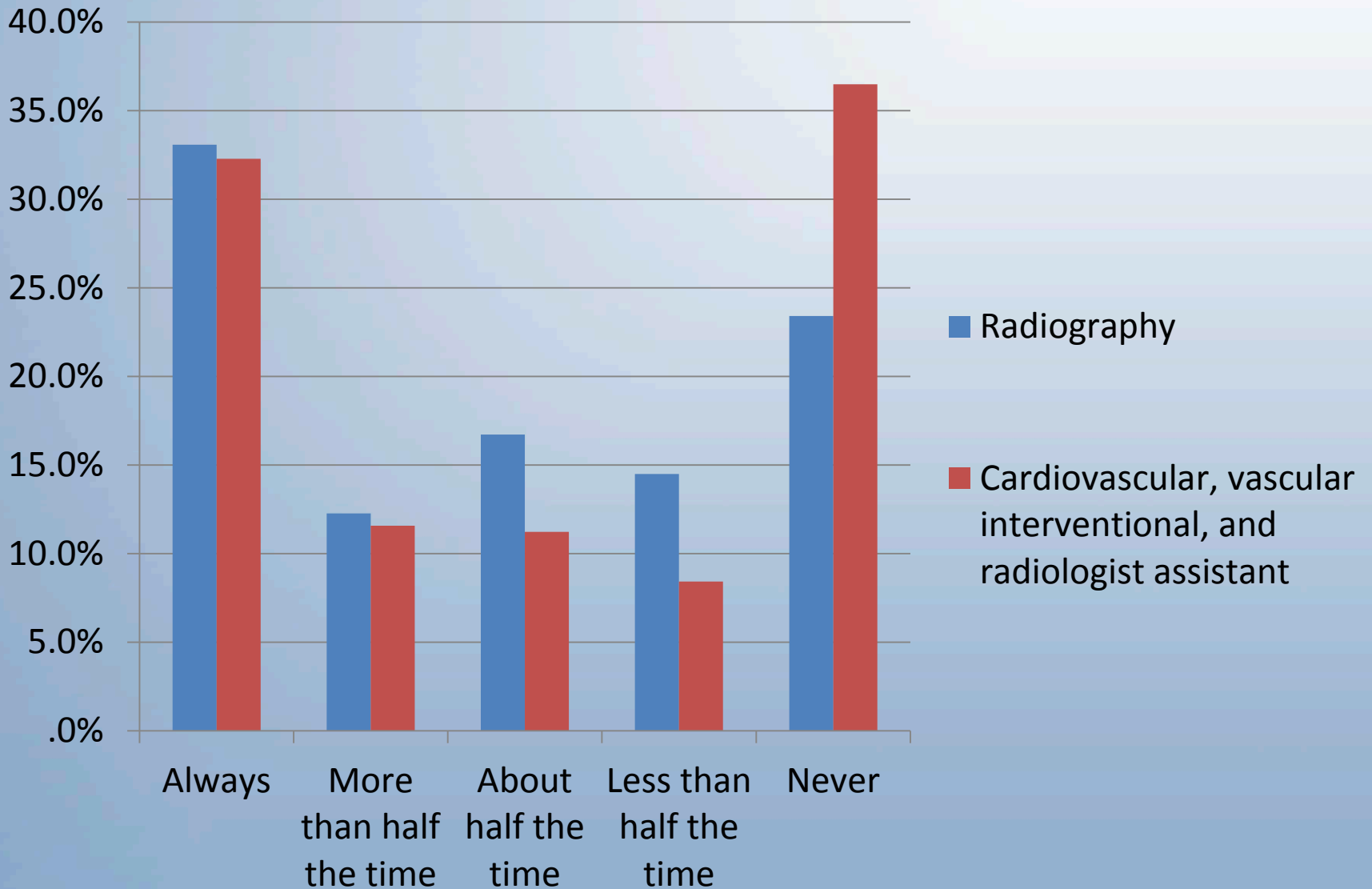


Radiation Safety Practices

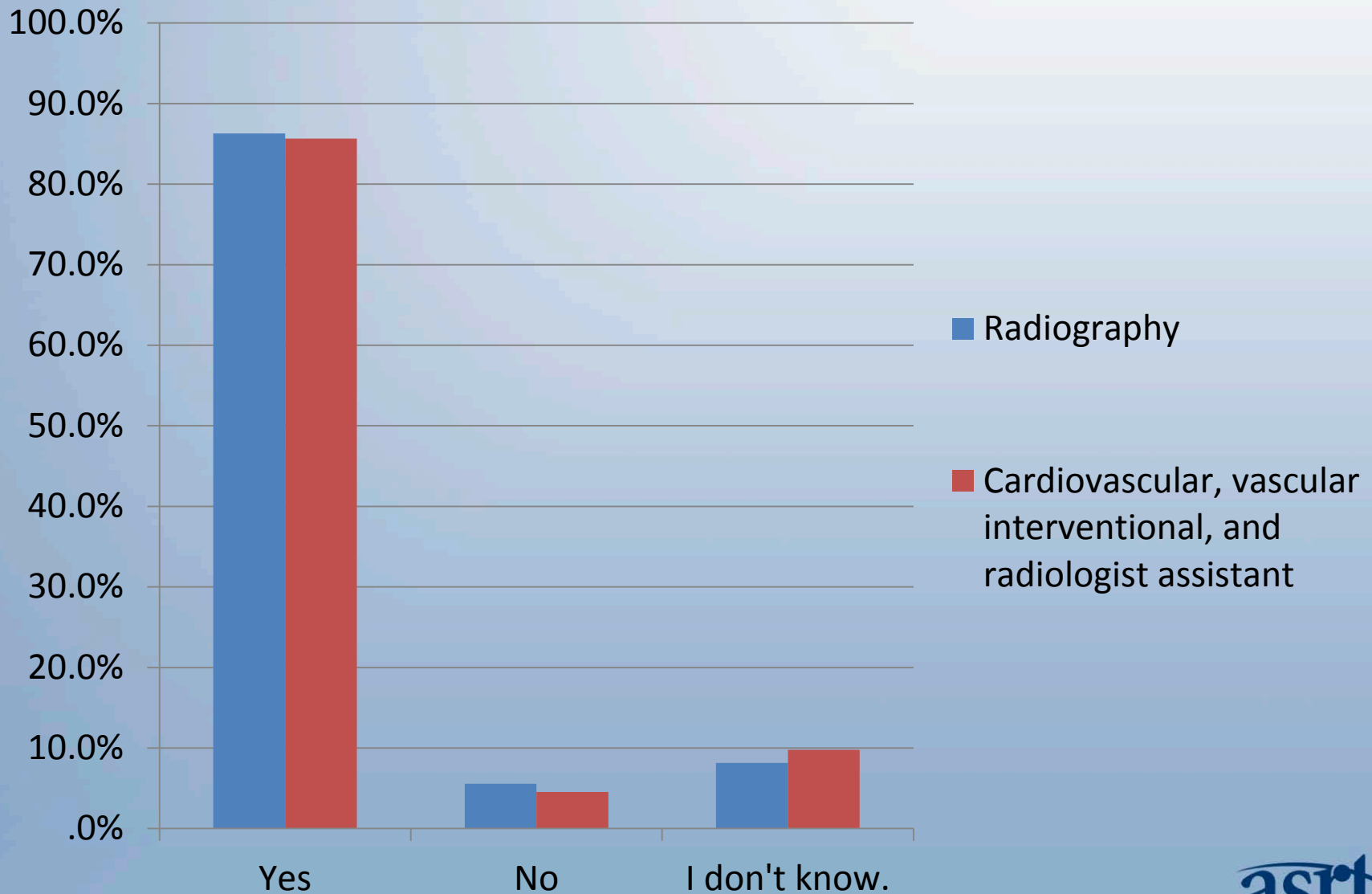
When does your facility use shielding?



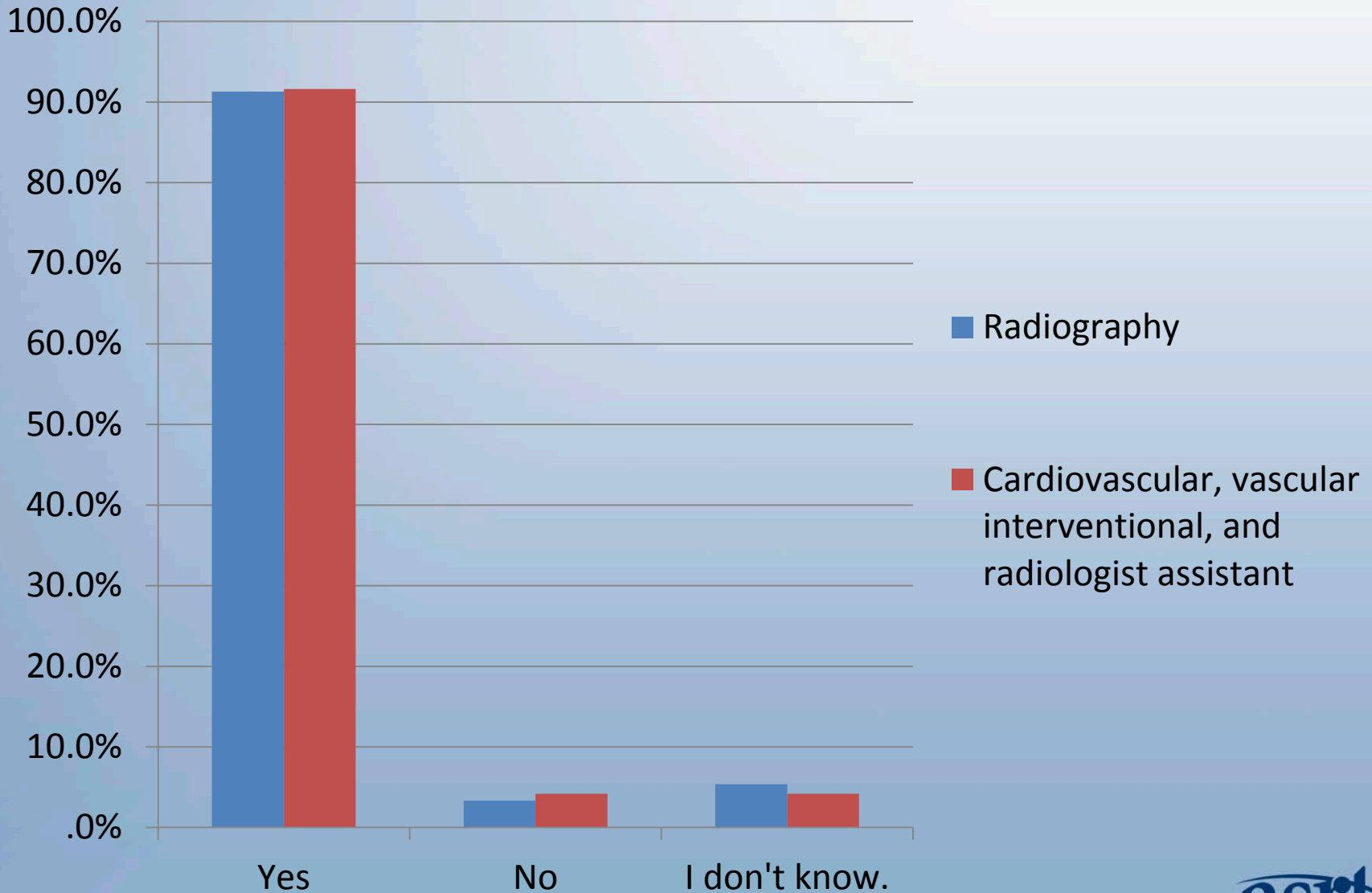
Do you document shielding?



Does your facility have policies in place that minimize radiation exposure to *patients*?



Does your facility have policies in place that minimize radiation exposure to personnel?

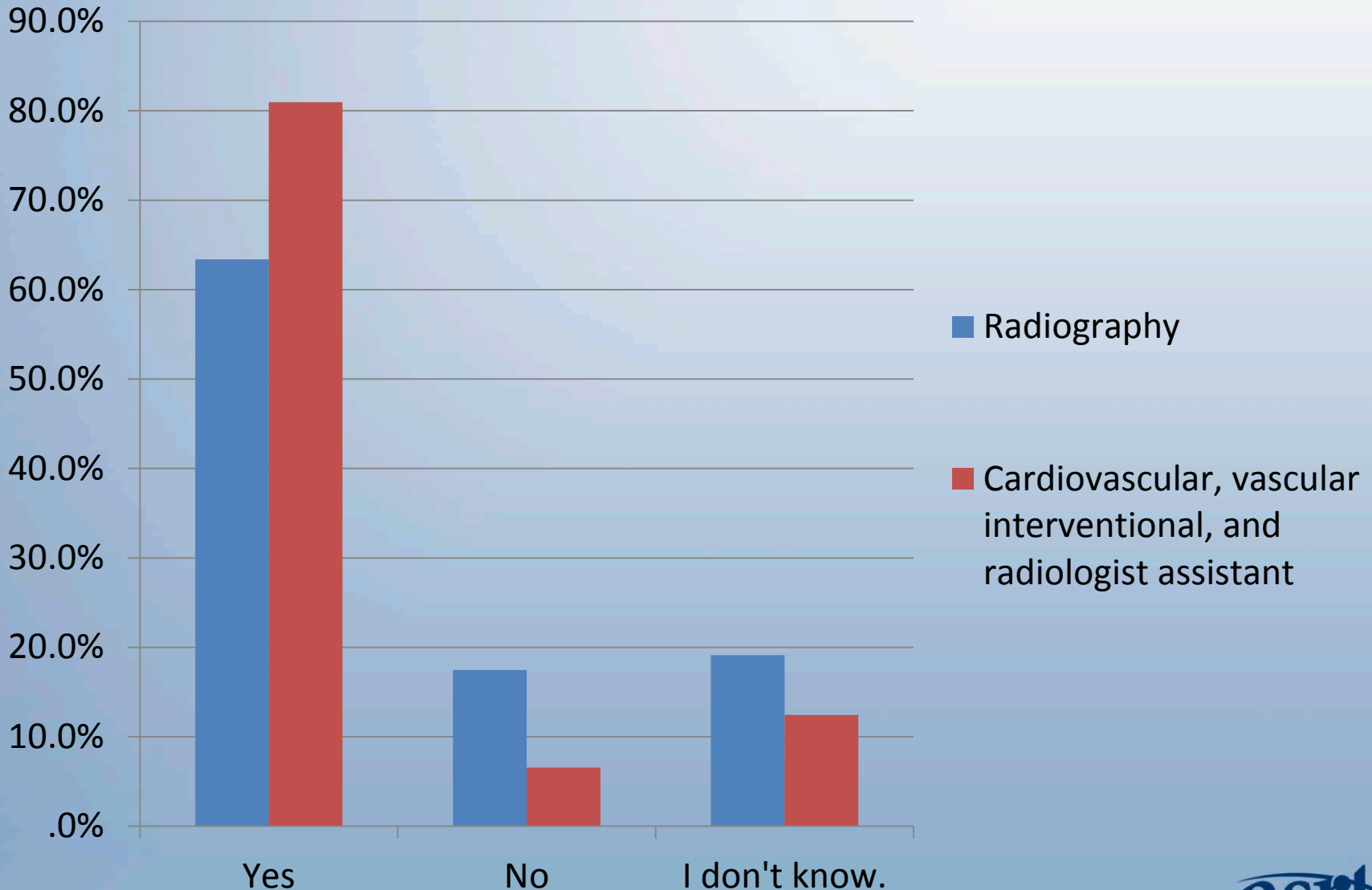


Does your facility have policies in place that minimize radiation exposure to personnel? (By State Licensure Status)

		Non-licensed State	Licensed State	Overall
Yes	Frequency	117	782	899
	%	85.4%	91.9%	91.0%
No	Frequency	9	32	41
	%	6.6%	3.8%	4.1%
I don't know.	Frequency	11	37	48
	%	8.0%	4.3%	4.9%
Total	Frequency	137	851	988
	%	100.0%	100.0%	100.0%

The difference is statistically significant, $\chi^2 (2, N = 988) = 6.08, p = .048$.

Does your facility monitor exposure index numbers for digital imaging?

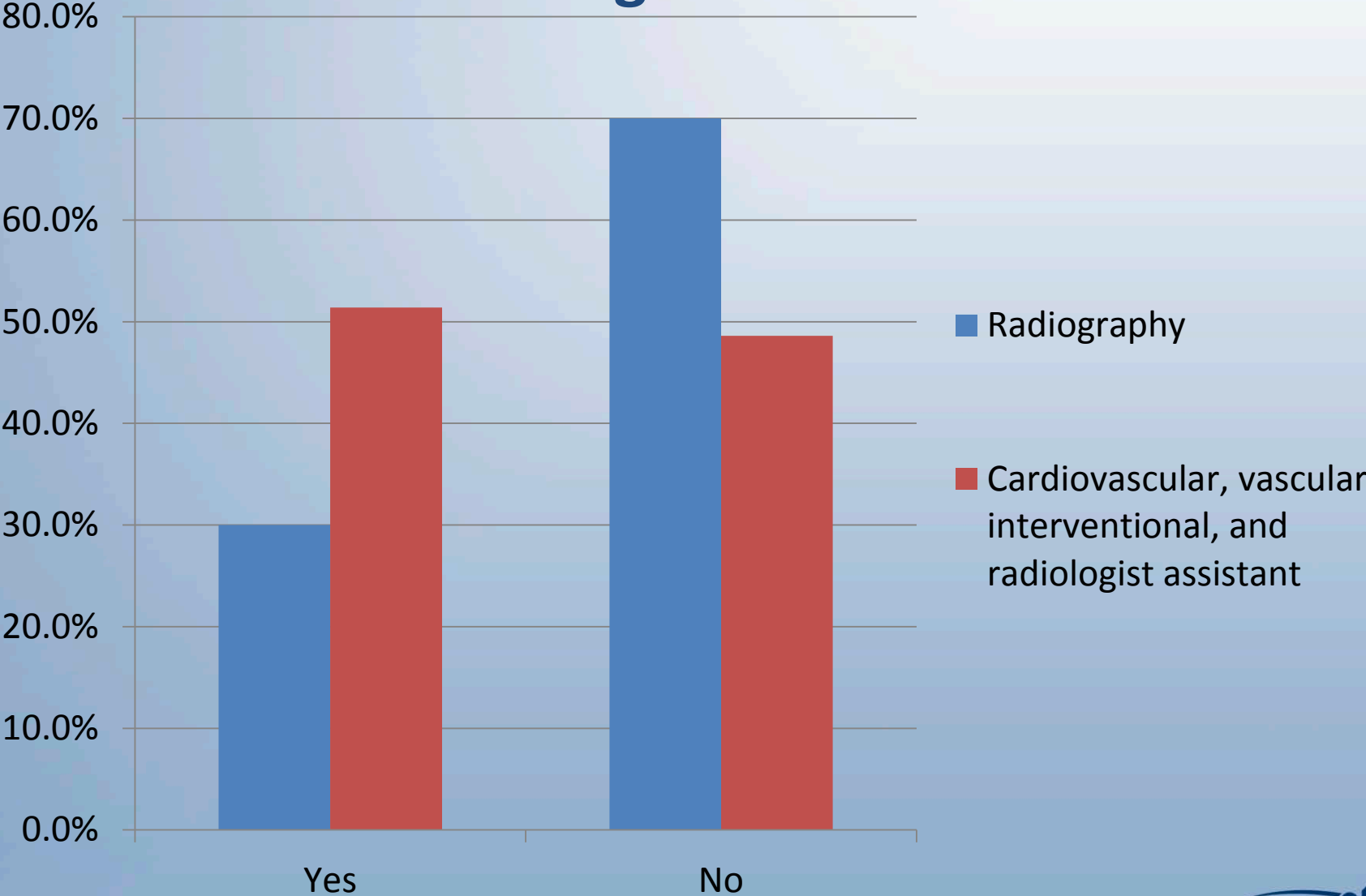


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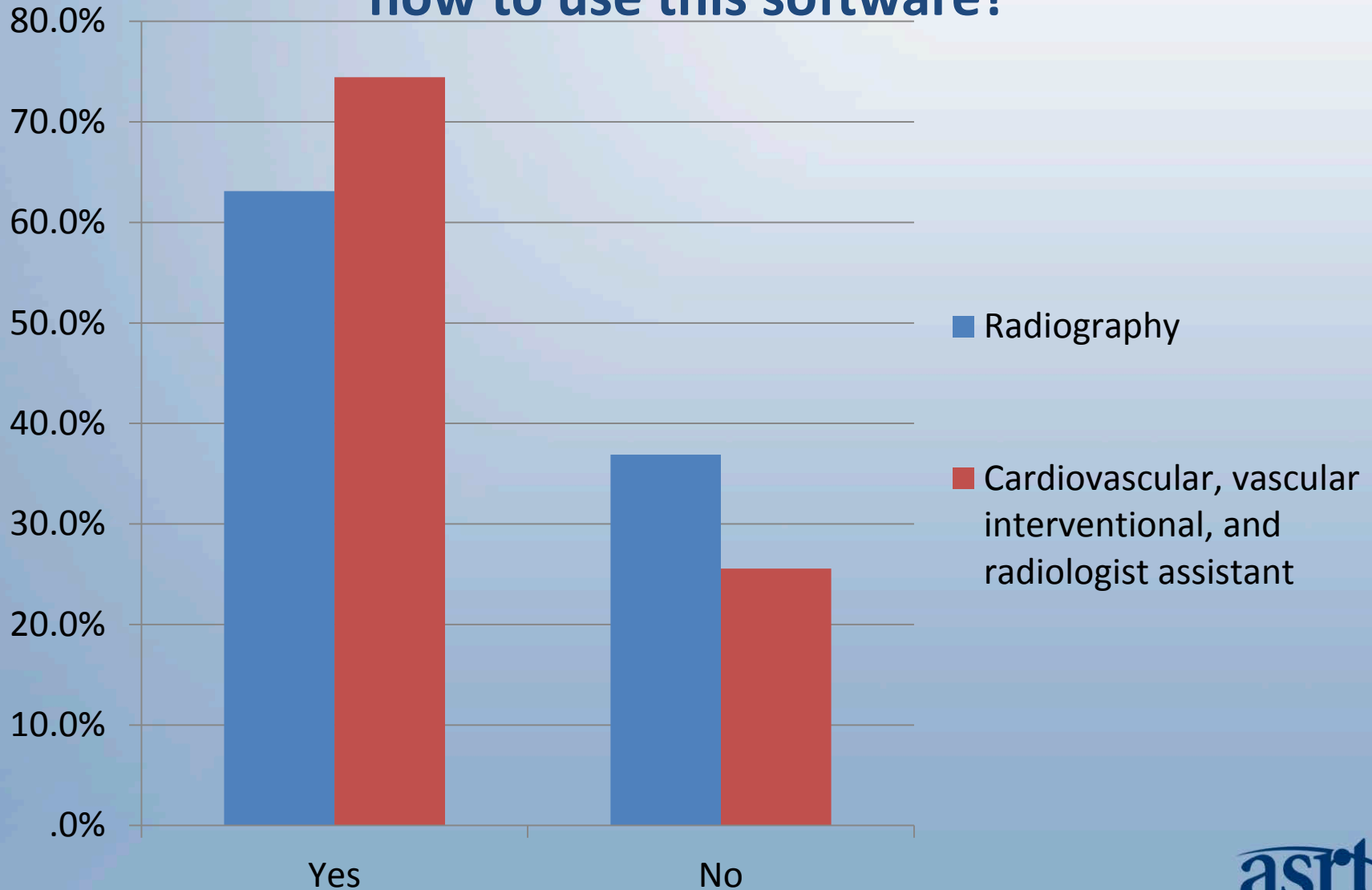


Imaging Equipment Safety

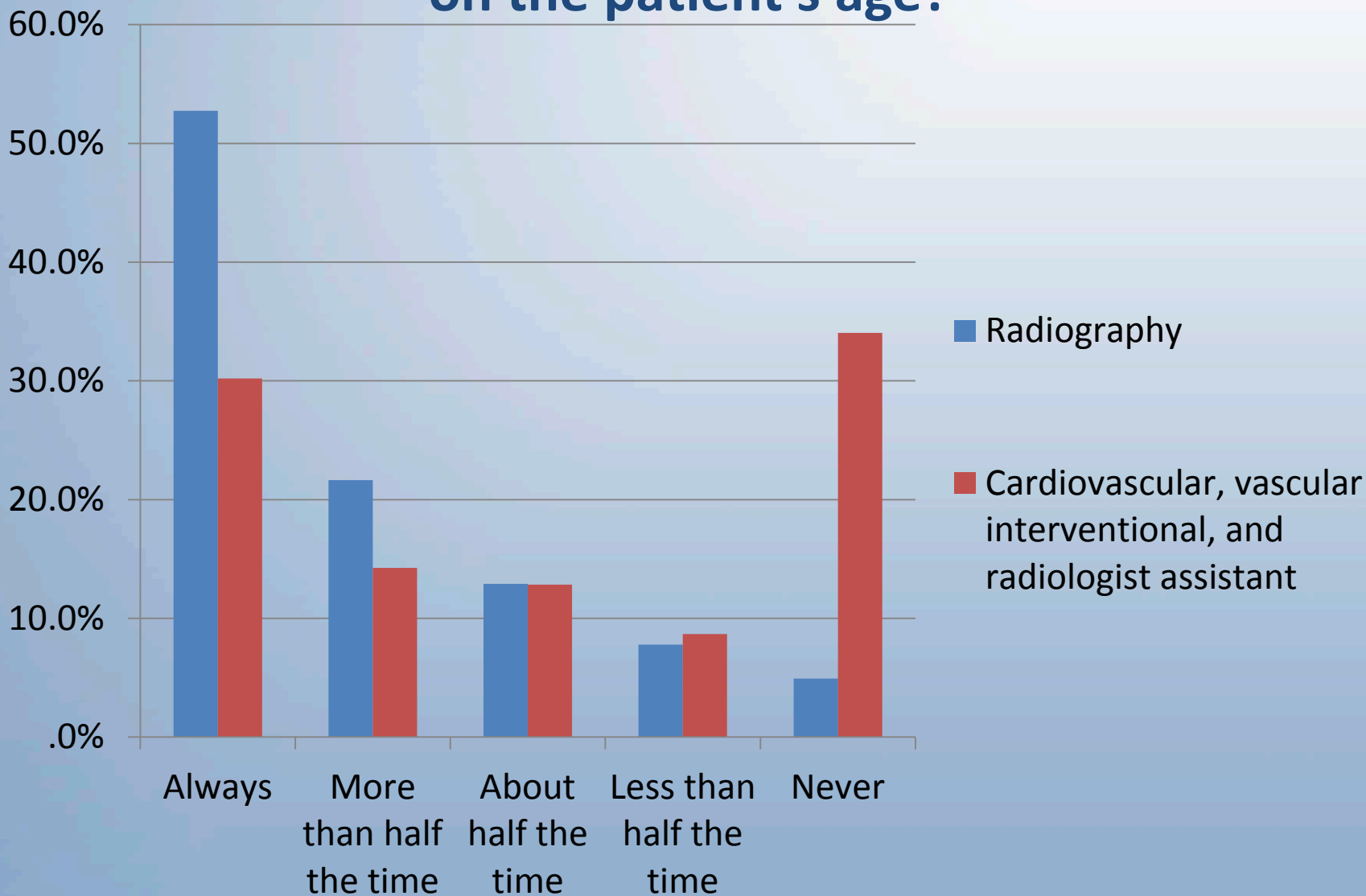
Does your imaging equipment have dose-limiting software?



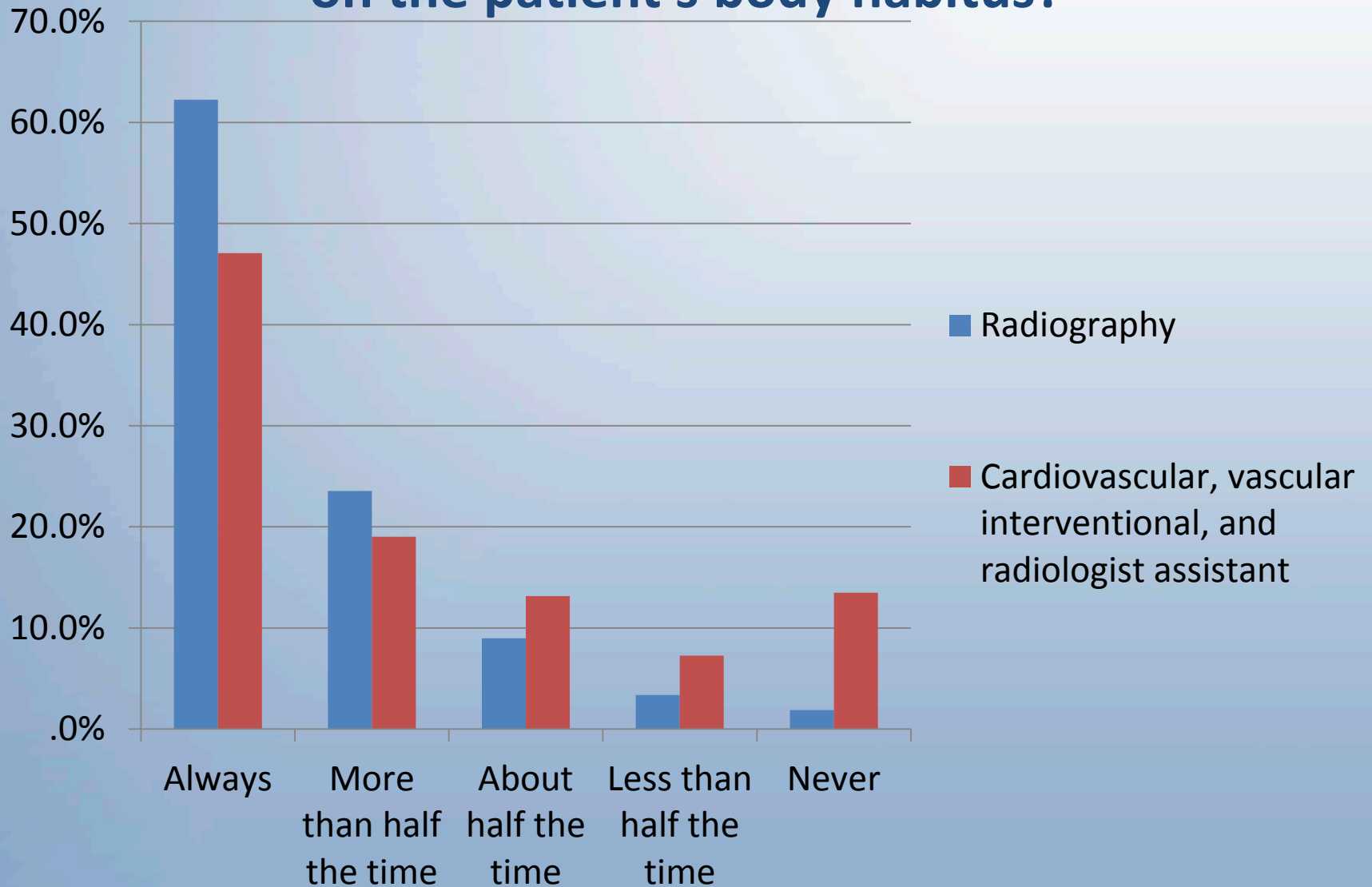
If your imaging equipment has dose-limiting software, did you receive applications training on how to use this software?



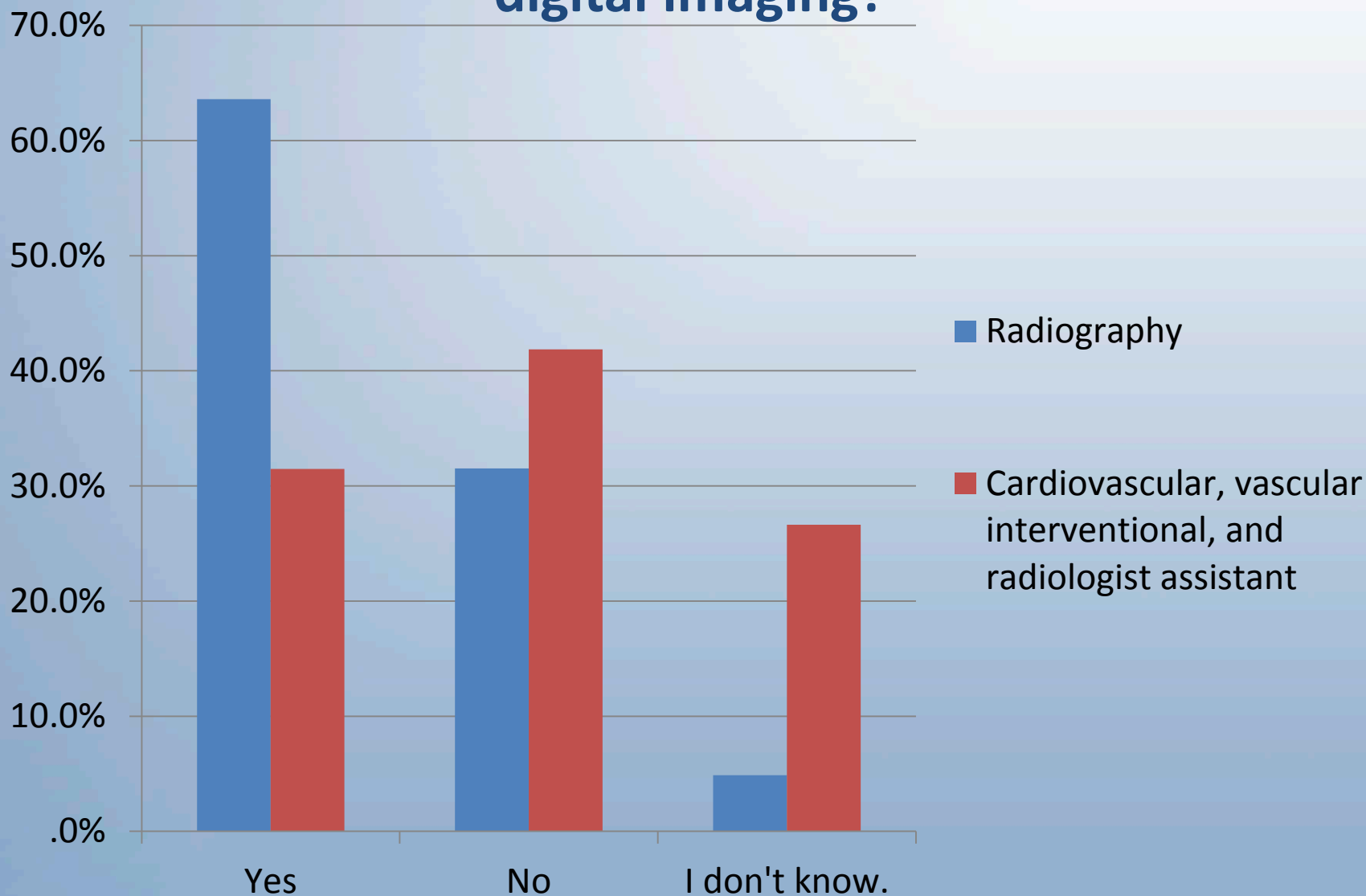
How often do you adjust exposure parameters based on the patient's age?



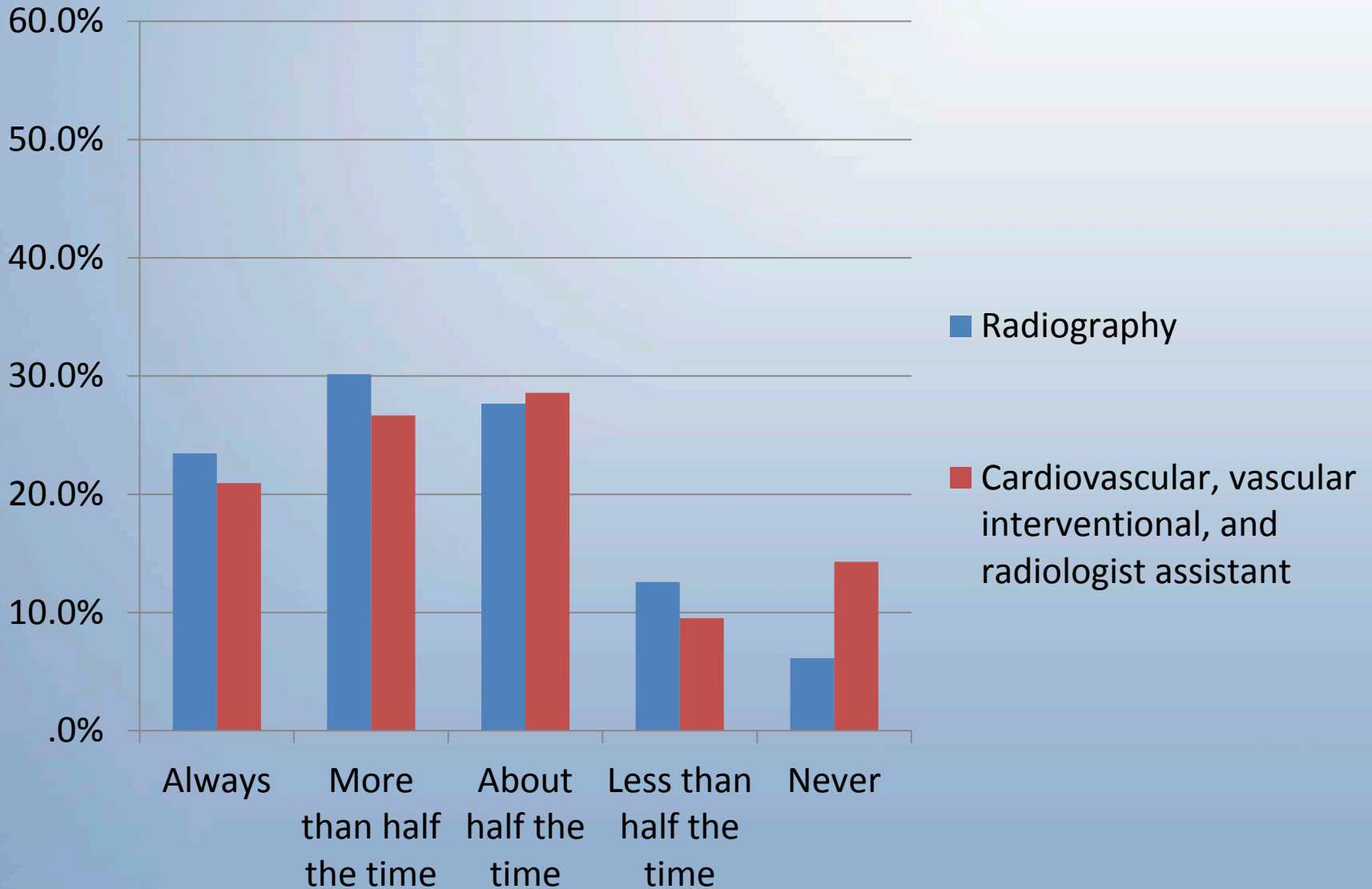
How often do you adjust exposure parameters based on the patient's body habitus?



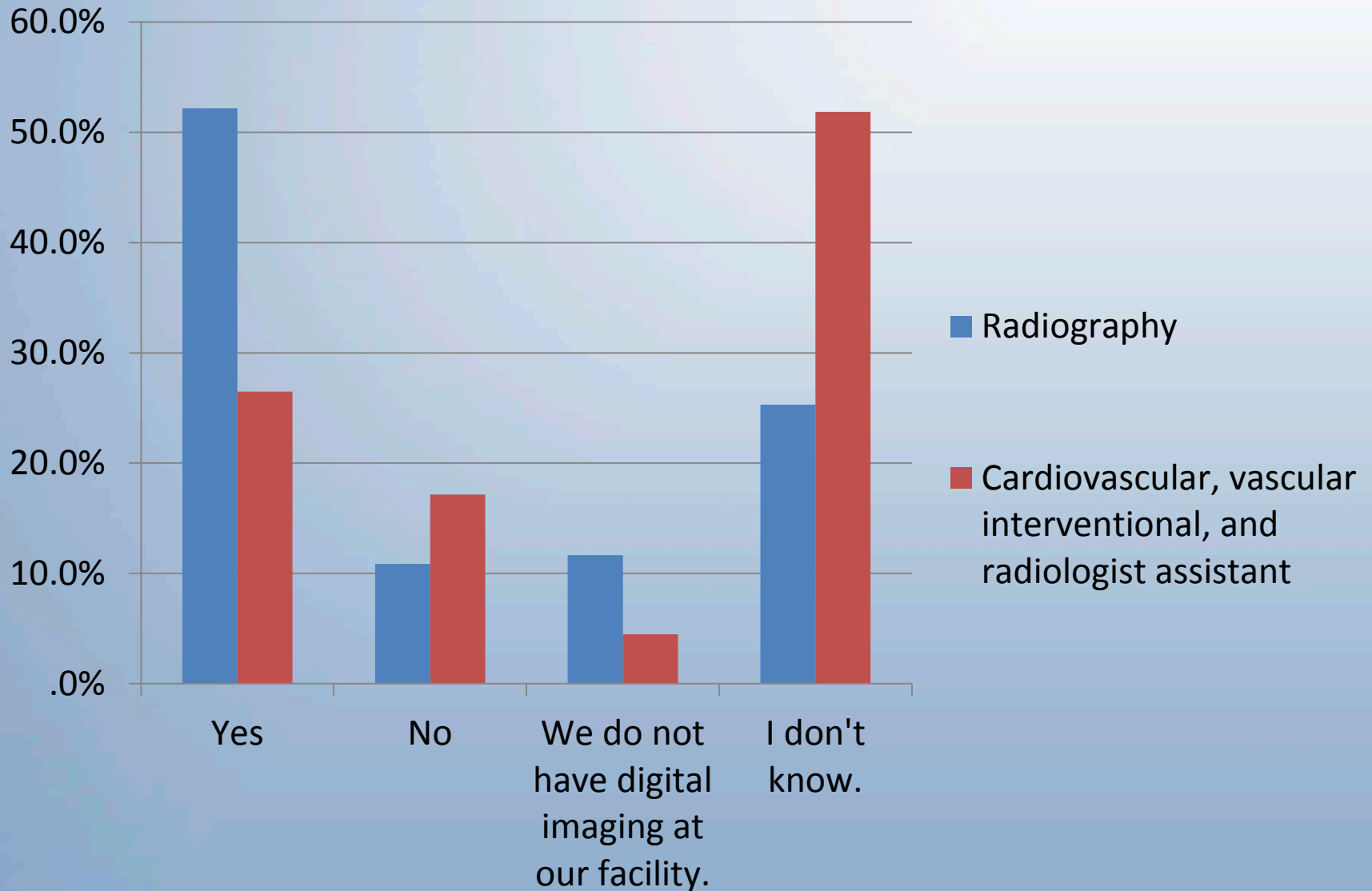
Does your facility have posted technique charts for digital imaging?



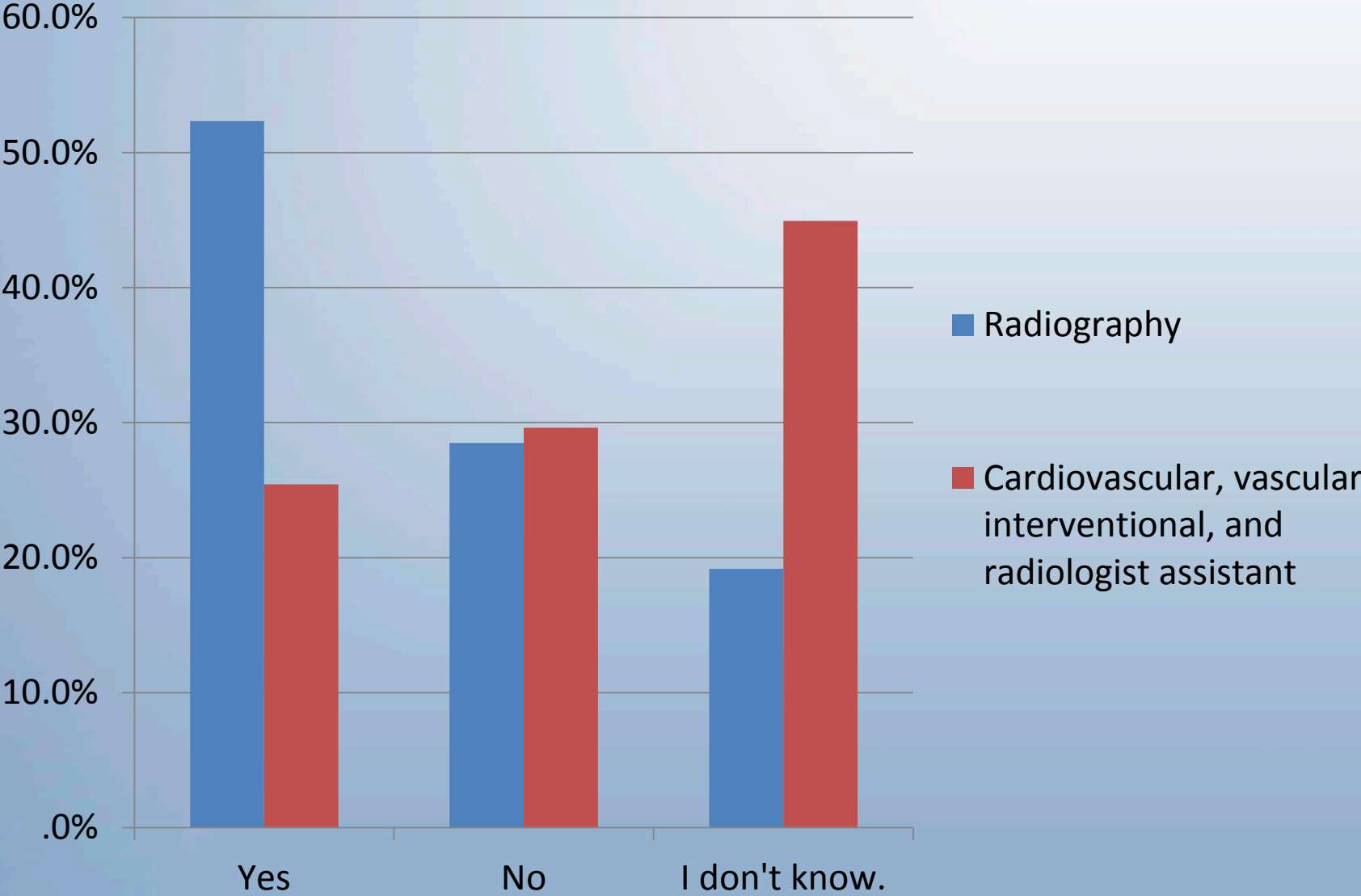
If you selected "Yes" on the question above, how often are the posted technique charts for digital imaging utilized?



If your facility uses digital imaging, were the technique charts revised when this technology was added?



Do you perform a repeat/reject analysis at your facility?



If you selected “Yes” to the question above, what is the threshold percentage for a repeat/reject analysis at your facility?

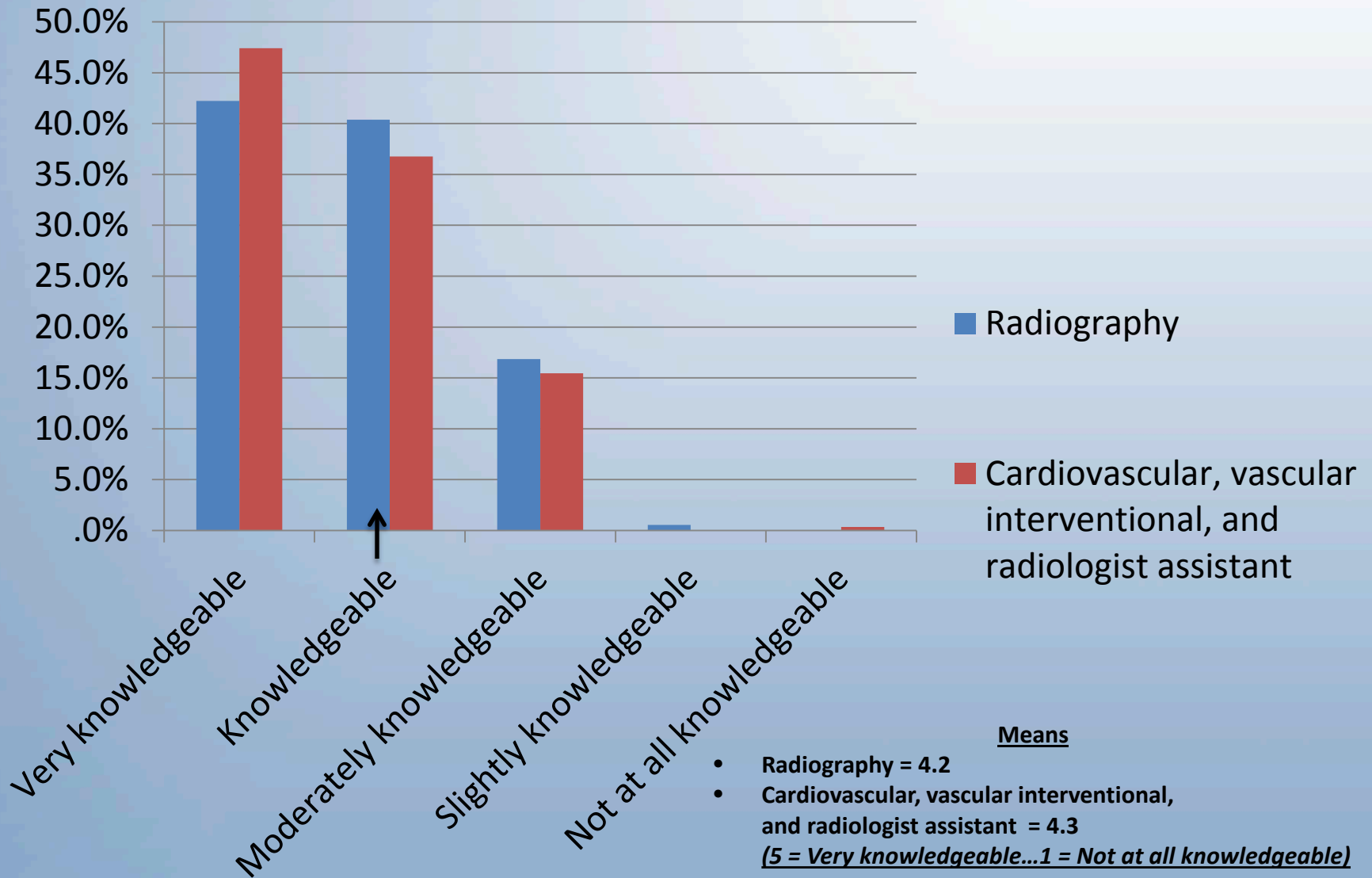
Overall Means

- **Films Screen = 4.2%**
- **Digital = 4.4%**

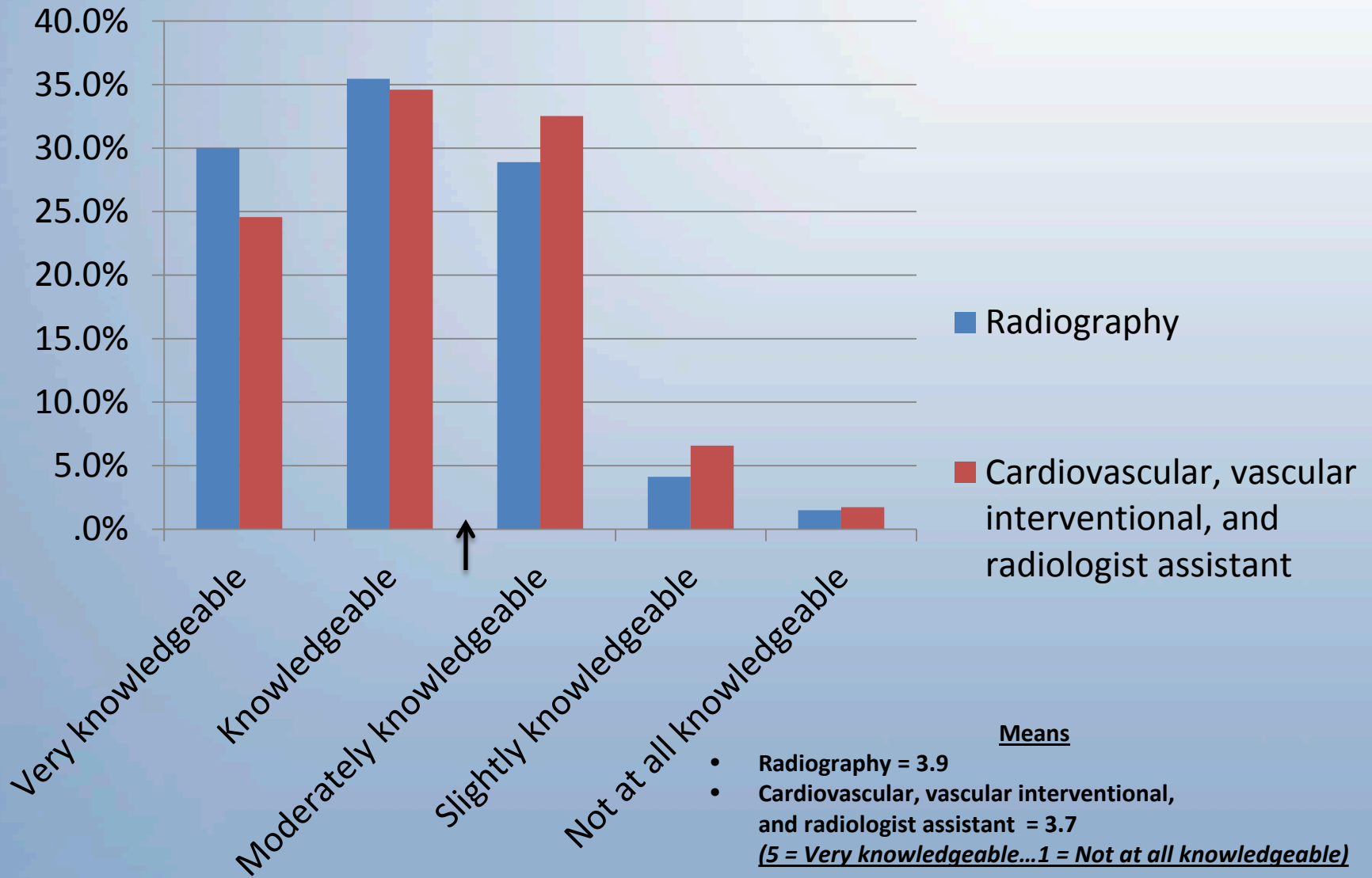
I don't know

- **Radiography = 39.1%**
- **Cardiovascular, vascular interventional, and radiologist assistant = 30.3%**

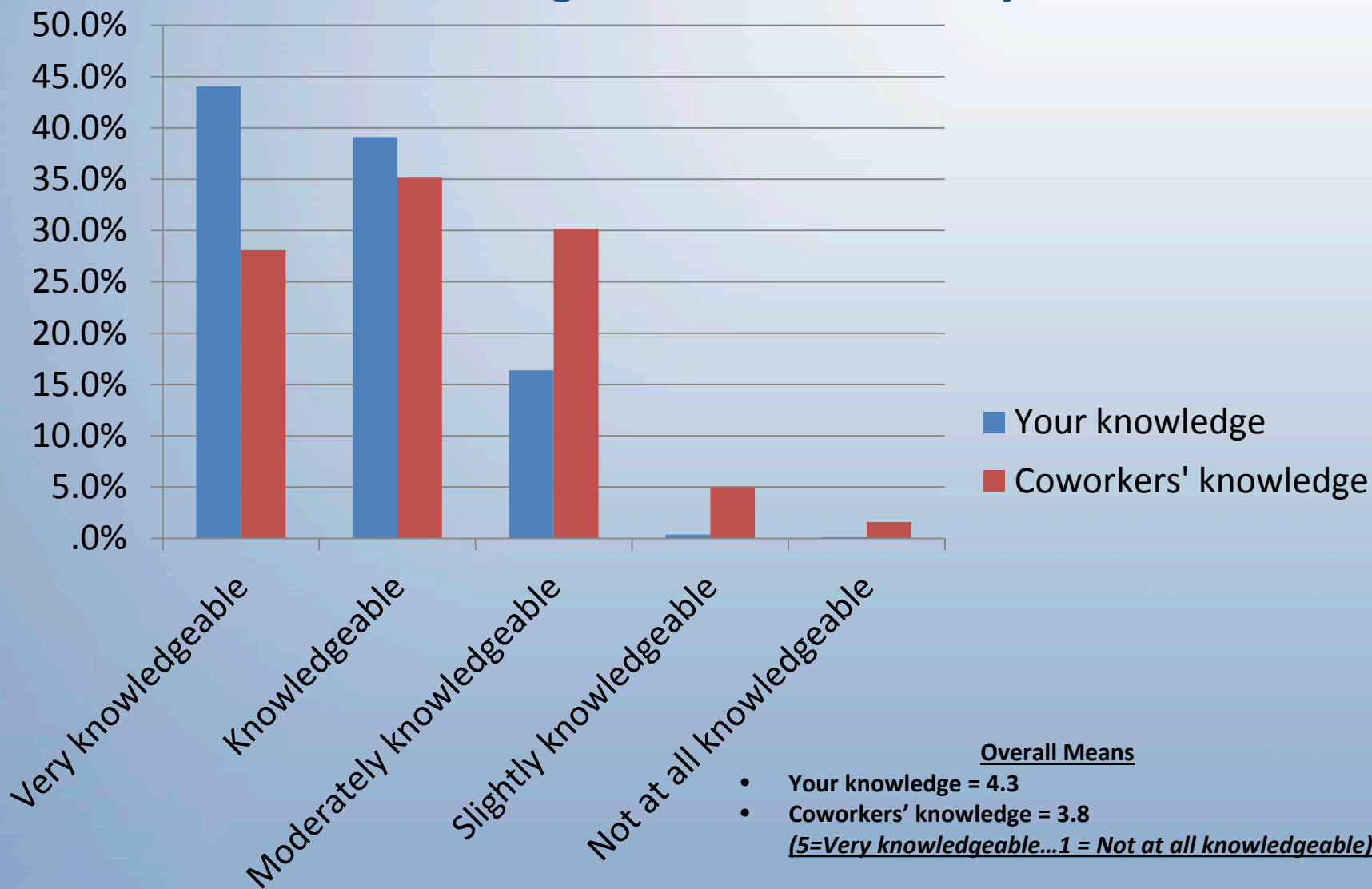
Please rate your knowledge of radiation safety.



Please rate your coworkers' knowledge of radiation safety.



Overall “Your knowledge” compared to “Coworkers’ knowledge” of radiation safety.

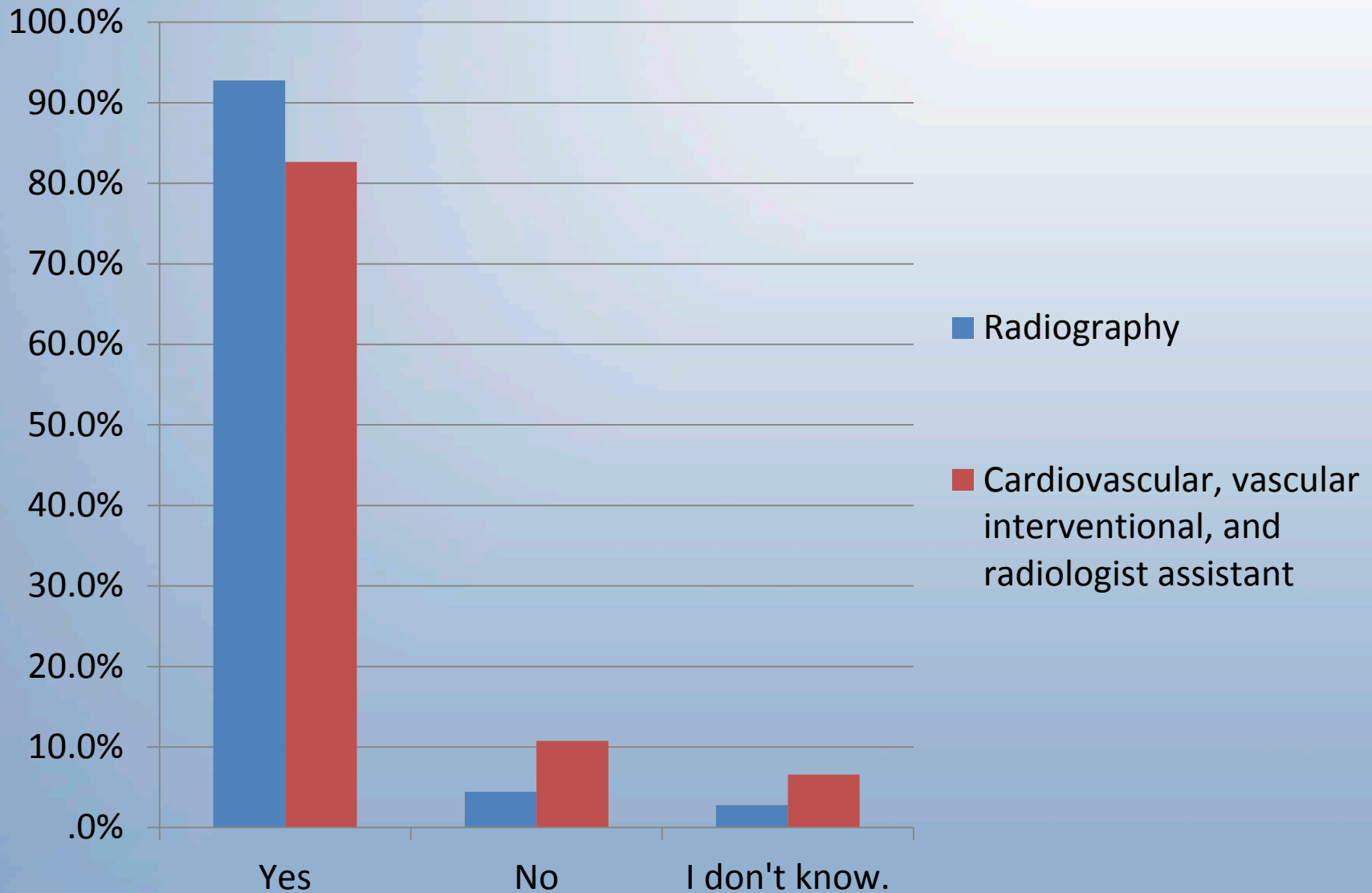


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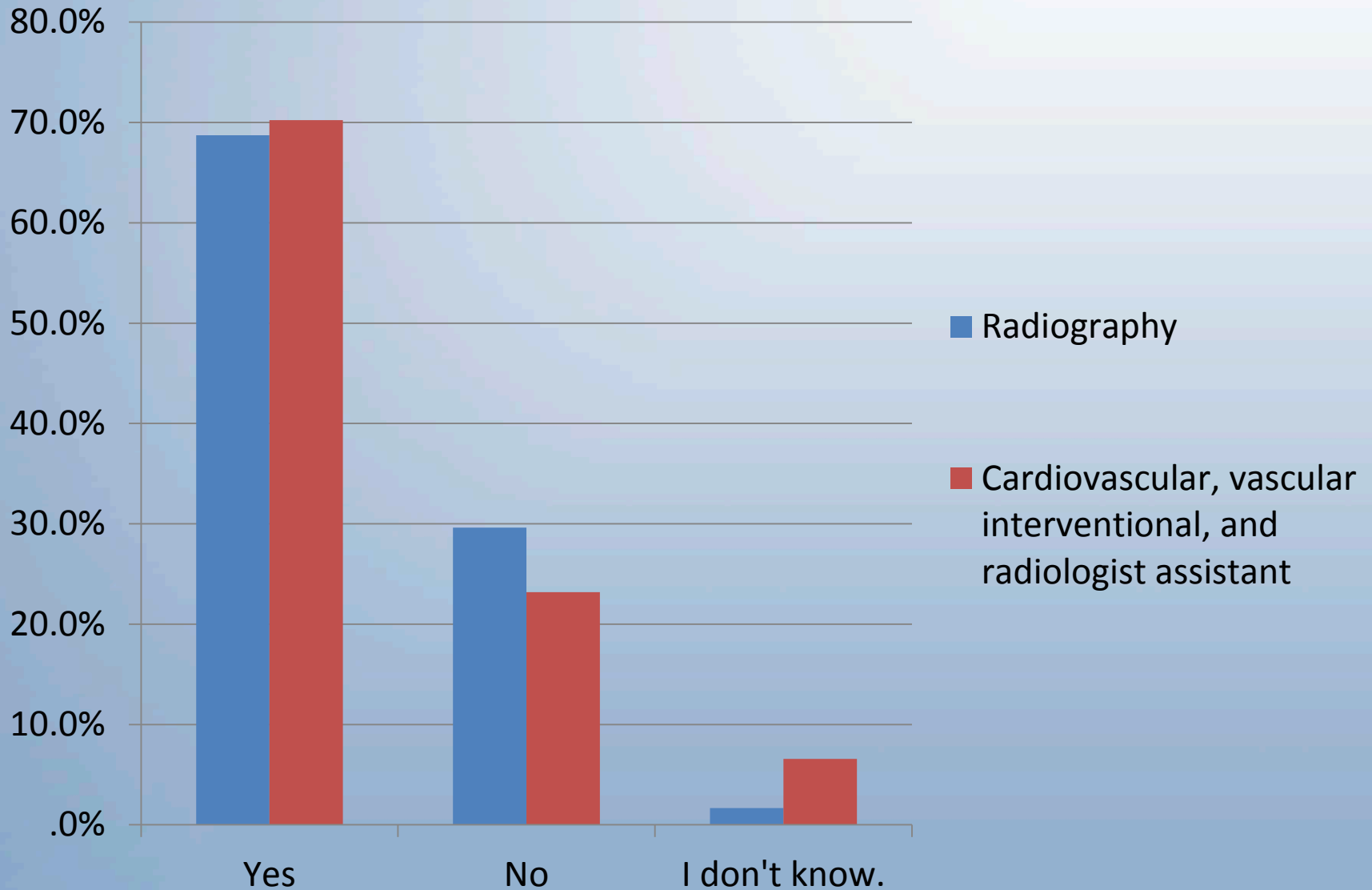


Exam Appropriateness

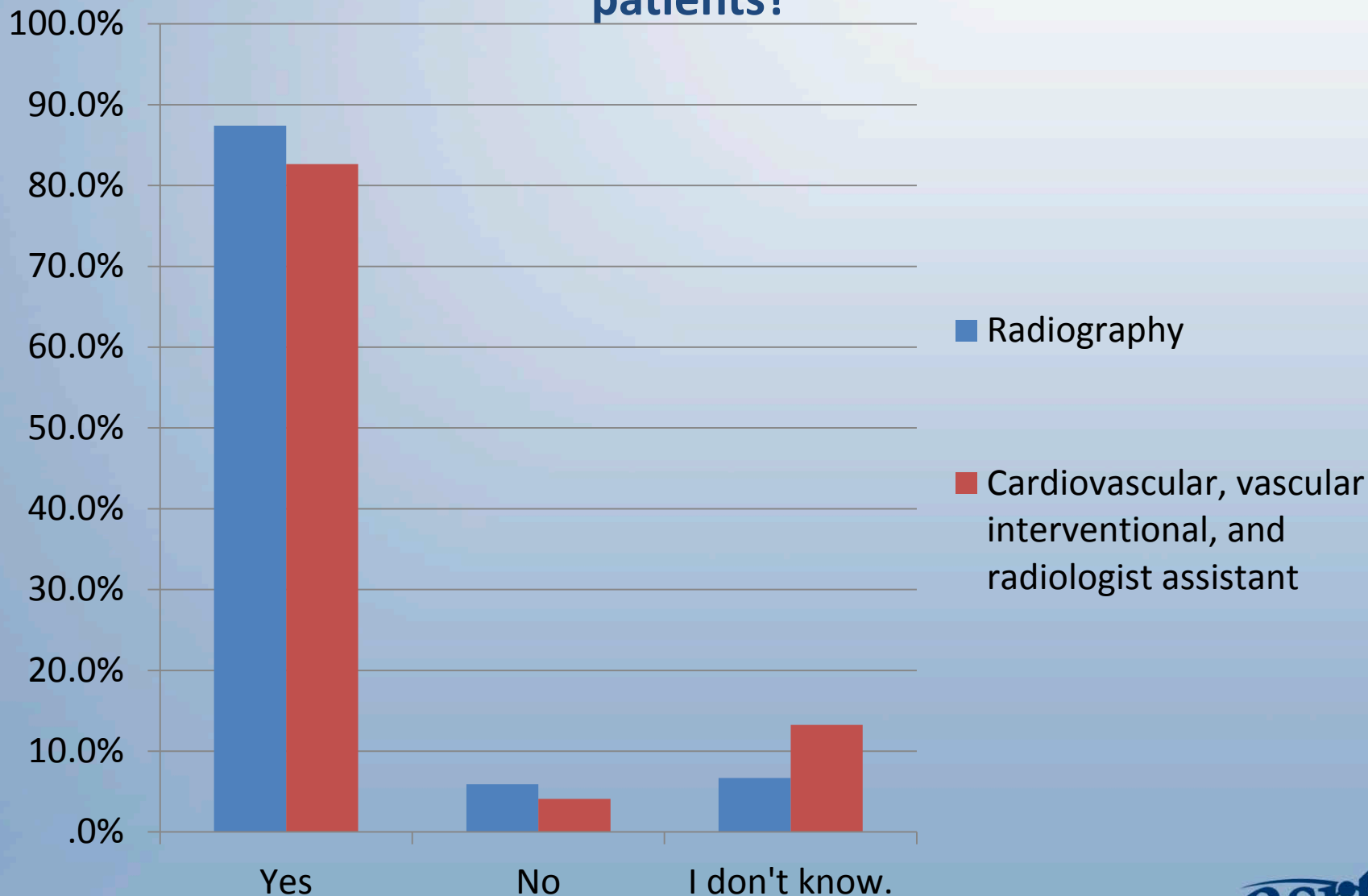
Do you have a shielding policy for female patients of childbearing age?



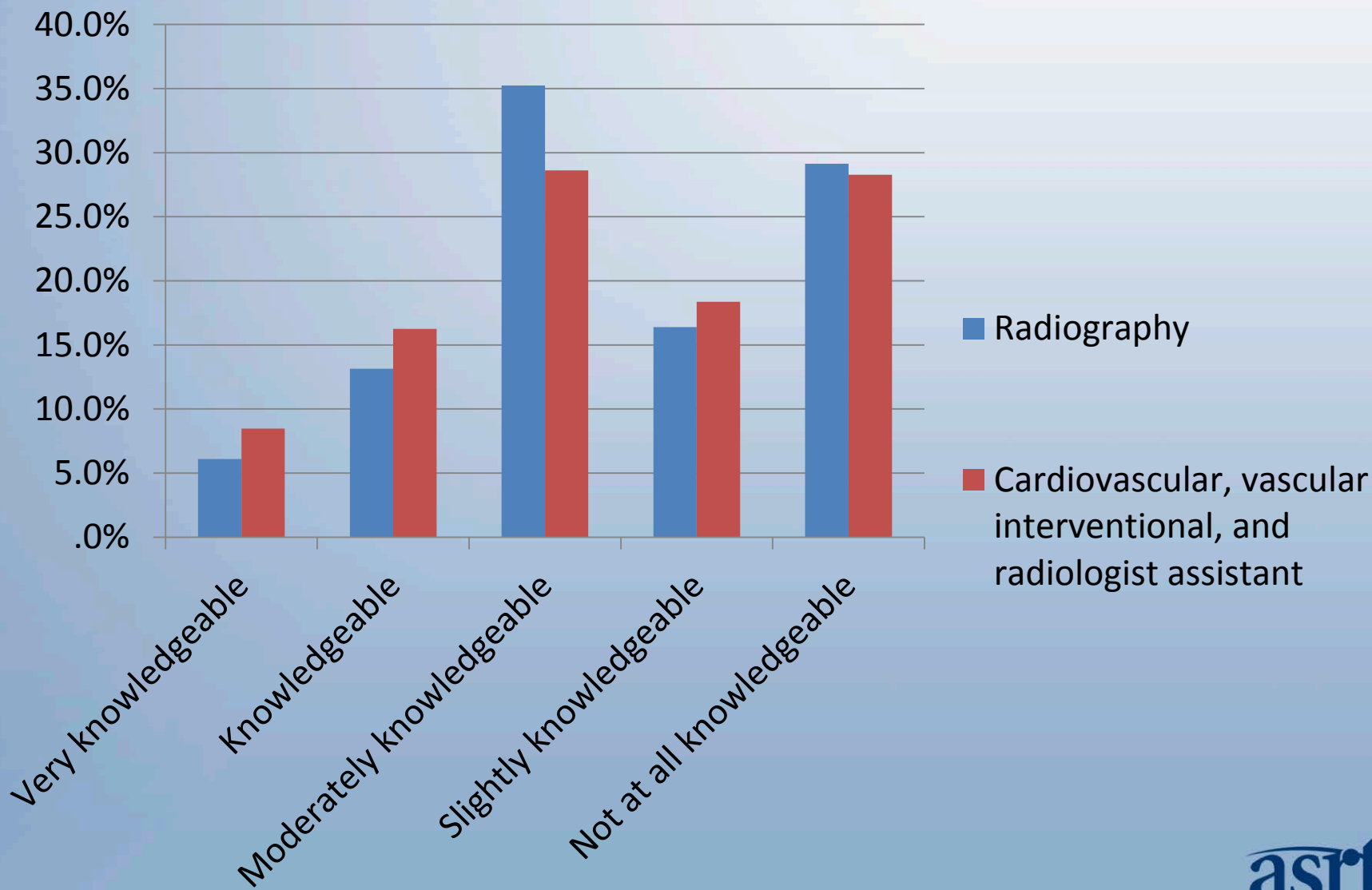
Do you image pregnant patients at your facility?



If you answered "Yes" on the question above, does your facility have radiation safety policies specific to pregnant patients?



How knowledgeable are you of the American College of Radiology's Appropriateness Criteria® as it relates to imaging and treatment decisions?

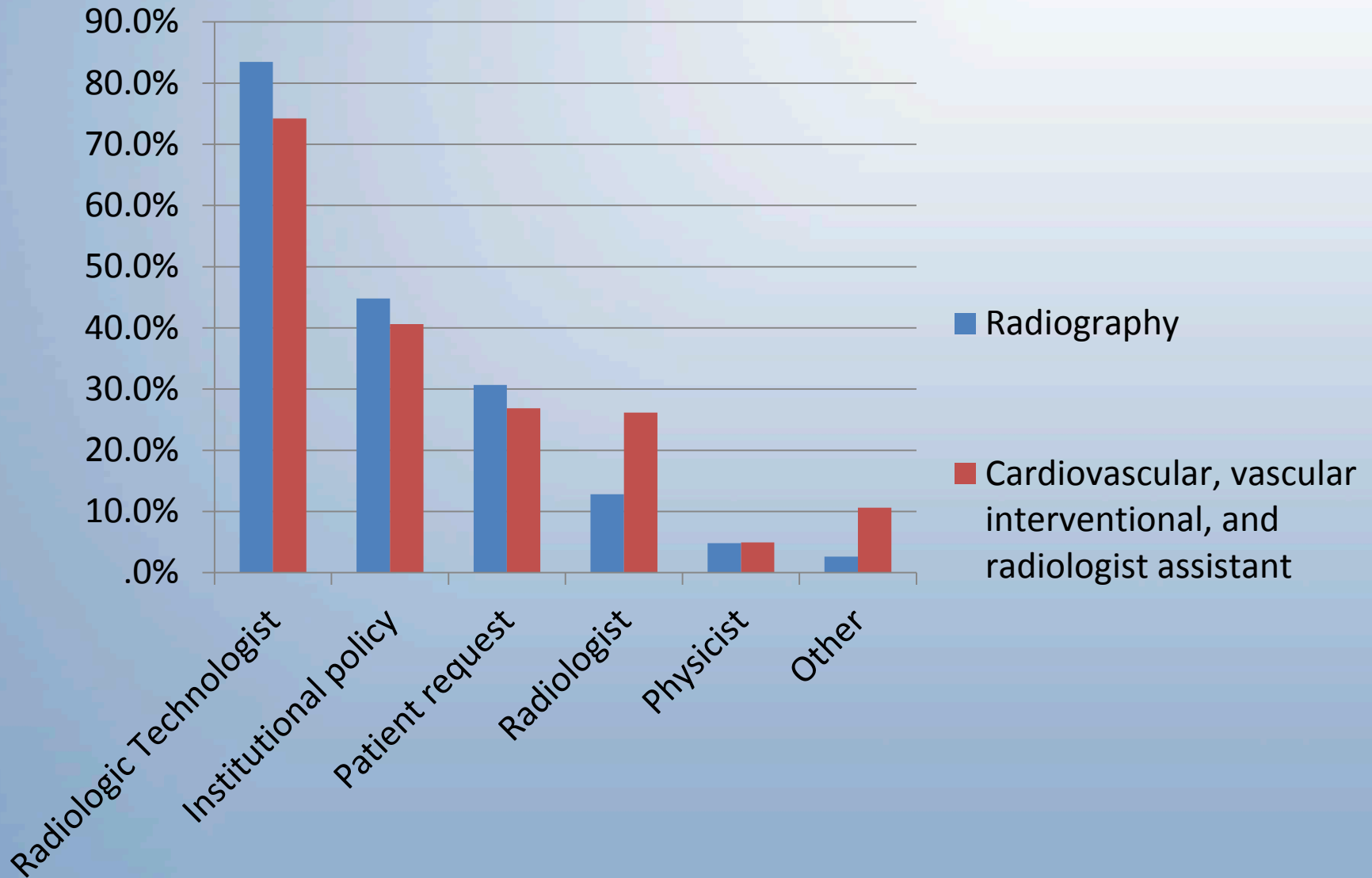


What percent of patient indications do not match the ordered exam?

Means

- Radiography = 13.5%
- Cardiovascular, vascular interventional, and radiologist assistant = 11.1%

Who decides whether to shield? (Select all that apply.)



What type of dose reduction is used at your facility? (Select all that apply.)

	Statistic	Total
Physical shielding equipment (e.g., lead apron)	Frequency	787
	%	94.4%
Collimation	Frequency	776
	%	93.0%
Technique charts	Frequency	408
	%	48.9%
Dose-limiting software	Frequency	312
	%	37.4%
We do not use any.	Frequency	1
	%	0.1%
I don't know.	Frequency	8
	%	1.0%
Total	Count	834

**Do you follow any of the radiation safety guidelines of the following organizations?
(Select all that apply.)**

	Statistic	Total
American College of Radiology (ACR)	Frequency	527
	%	64.7%
American Association of Physicists in Medicine (AAPM)	Frequency	122
	%	15.0%
Intersocietal Accreditation Commission (IAC)	Frequency	32
	%	3.9%
None of the above.	Frequency	33
	%	4.0%
I don't know.	Frequency	243
	%	29.8%
Total	Count	815

Gaps / Areas for Improvement

- Only 1/3 of technologists *always* document shielding.
- 15% of facilities do not have or technologists do not know they have radiation safety policies for patients.
- 30% of technologists state that they did not receive applications training on dose limiting software.
- 1/3 of interventional technologists do not adjust parameters based on patient age and 12% do not adjust based on body habitus.

Gaps / Areas for Improvement

- A relatively large knowledge gaps exists regarding technologists' familiarity with the ACR's Appropriateness Criteria®.
- 13.5% of radiography and 11.1% of interventional patient indications do not match the ordered exam.
- A large knowledge gap exists related to repeat / reject analysis.
- Statistically Significant knowledge gaps exist between technologists in licensure and non-licensure states.

Good News!

- The majority of technologists consider themselves to be knowledgeable or very knowledgeable about radiation safety.
- The vast majority of technologists are knowledgeable about their institution's radiation safety policies for patients and personnel.
- Technologists take the lead in the area of radiation protection (e.g. shielding, adjusting technical factors, exam appropriateness, etc.).

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