

EDUCATION FOR LIFE

WE-FG-207-3 **Gonadal & Fetal Shielding Update:**

A Technologist's View of Patient Shielding

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Section Objective

- Learn about the role radiologic technologists have in implementing clinical changes their perspectives about patient shielding.
- Paradigm Shift
 - Dictionary.com: a fundamental change in approach or underlying assumptions.



Change: Transtheoretical Model (TTM)

- Change is difficult
- What fosters a behavioral change?

Example: Effective July 1, 2022, UI Health Care https://medcom.uiowa.edu/theloop/news/why-wecan-ditch-the-apron-radiology-professor-explainsradiation-shielding

Figure based on Transtheoretical Model (TTM) https://www.researchgate.net/publication/267096772_Using_the_Transtheoretical_Model_to_Examine_the_Effects_of_Exergaming_on_Physical_Activity_Among_Children/figures?lo=1

Six Stages of Behavior Change Model



Change: Socioecological Model (SEM)

Change is difficult



Figure based on McLeroy Socioecological Model

McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. Health Education Quarterly, 15(4), 351-377.

Moore, Q. T., Walker, D. A., Frush, D. P., Daniel, M., & Pavkov, T. W. (2022). Intrapersonal and Institutional Influences On Overall Perception of Radiation Safety Among Radiologic Technologists. Radiologic technology, 93(3), 255-267.

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Socioecological Model

Shielding Change Challenges (via SEM)

- Policy:
 - Navigating state and federal regulations
- Community:
 - *Imaging community: Change initiated here via AAPM (2019); NCRP (2021)
 - practice
 - Patient community: Patient-facing questions and concerns (radiophobia)
 - Medical community: Understanding the change
- Institutional:
 - Organizational/department policy
 - Navigating department culture: practices, expectations
 - Leadership actions drive practices
- Interpersonal:
 - Peer actions and applications
- Intrapersonal:
 - Awareness of the science the "why". TTM considerations

Technologist community: Paradigm shift occurring within the technologist's scope of



Primary R.T. Challenge

Change is appropriate, but change is complicated

- Utilization of patient shields is an engrained practice
- Educational practices
- Disciplinary actions
- Workflow changes
- Psychological safety
- Dose understanding

nplicated ained practice



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Need for Education

Who? What? When? Why?

- Who? R.T.s
- What? Comprehensive requirements
- When? Now
- Why? Practice change and workflow adoption take time, energy, and understanding



Strategy 1 Craft the Message

- Clear, consistent, trusted, and understood
- Primary patient-facing stakeholders
 - Technologists
 - Ordering providers



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Strategy 2 **Improve Communication**



Engagement

- Science lays the groundwork for data-driven discussions across imaging stakeholders
- Communicate routinely & purposefully •



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Strategy 3 Be intentional

- Commit to a culture of safety
- Provide education
- Identify your coaches and champions
- Engage in PQI



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Strategy 4

Foster Interdisciplinary Collaboration

- Each member of the imaging community brings a unique vantage point
- All members must be at the table as practice change is contemplated, particularly those that have a direct and specific impact on the work of another group
 - Approach to safety, workflow, and patient engagement
- Form a one team mentality
 - Implementing another specialties practice change within the technologist's scope of practice
 - Recognize power and "silos"



from the Noun Project

Collaborative Actions Bring in R.T.s

- Institutional-level
- **Community-level**
 - Co-branded practice parameters and technical standards
 - ASRT?



Source: https://www.acr.org/Clinical-Resources/Practice-Parameters-and-Technical-Standards

	Lifelong Learning and CME	Member Resources	Practice Management, Quality, Informatics	Research	Log I
	Results: 184				
	Document Type: All All Collaborative So	Category: All Area	: All Modality: All Organ:	All Standing	g Comr
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Radiation Safety Culture Determinants and Outcomes

Radiologic Technologist's Overall Perception of Radiation Safety (OPRS)

- Personal Accountability 1.
- 2. Teamwork in Imaging
- **Teamwork Across** 3 Imaging Stakeholders
- 4. Questioning Attitude
- 5. Feedback Loops
- Organizational Learning 6.
- 7. Leadership Actions
- Nonpunitive Response 8.
- 9. Error Reporting
- **10. Radiation Policy**

Moore, Q. T. (2021). Validity and reliability of a radiation safety culture survey instrument for radiologic technologists. Radiologic Technology, 92(6), 547-560.

Moore, Q. T. (2021). Determinants of overall perception of radiation safety among radiologic technologists. Radiologic Technology, 93(1), 8-24.

Each correlate to OPRS

OPRS and Determinant Correlation

Independent variable	p value	r	Correlation	r ²	Effect size	Result
H1: Personal accountability	<.001	.29	low-positive	0.08	n/a	Reject null
H2: Teamwork in imaging	<.001	.44	moderate-positive	0.19	Small	Reject null
H3: Teamwork across imaging stakeholders	<.001	.66	moderate-positive	0.43	Medium	Reject null
H4: Questioning attitude	<.001	.56	moderate-positive	0.31	Medium	Reject null
H5: Feedback loops	<.001	.57	moderate-positive	0.33	Medium	Reject null
H6: Organizational learning	<.001	.57	moderate-positive	0.33	Medium	Reject null
H7: Leadership actions	<.001	.71	high-positive	0.50	Large	Reject null
H8: Nonpunitive response	<.001	.36	low-positive	0.13	Small	Reject null
H9: Error reporting	<.001	.39	low-positive	0.15	Small	Reject null
H10: Radiation policy	<.001	.57	moderate-positive	0.33	Medium	Reject null

Multiple Regression: Leadership actions (β = .402, p < .001), teamwork across imaging stakeholders (β = .304, p = .011), organizational learning (β = .121, p = .007), and questioning attitude (β = .110, p = .001) significantly predicted the overall perception of radiation safety.



Determinant Scores – Descending Mean

Determinant

Personal accountability Teamwork in imaging Leadership actions Questioning attitude **Radiation policy** Teamwork across imaging stakeholders **Overall perception of radiation safety Organizational learning** Feedback loops Nonpunitive response Error reporting

N	/lean	Standard Deviation
4	.57	.42
4	.22	.76
3	.97	.81
3	.92	.79
3	.91	.76
3	.88	.80
3	.85	.83
3	6.68	.77
3	6.67	1.08
3	3.41	.87
3	.29	1.04

Moore, Q. T. (2021). Determinants of overall perception of radiation safety among radiologic technologists. Radiologic

Teamwork across imaging stakeholders

Descriptive Statistics

Teamwork across	Item	Mean	Std Dev
imaging stakeholders	There is good cooperation among Technologists, Radiologists, and Medical Physicists.	3.96	0.9
	Technologists, Radiologists, and Medical Physicists work well together to provide the best radiation safety practices for patients.	3.92	1.04
	It is often unpleasant to work with Radiologists and Medical Physicists on radiation safety improvement.	3.77+	0.9

Moore, Q. T. (2021). Determinants of overall perception of radiation safety among radiologic technologists. Radiologic Technology, 93(1), 8-24.



So many variables...



On Overall Perception of Radiation Safety Among Radiologic Technologists. Radiologic technology, 93(3), 255-267.

Approaching Practice Change

Establishing a culture of safety requires:

- **Committed leadership support**
- Teamwork
 - Stakeholder engagement
 - Mutual respect
 - 3 roles come together under a single vision
- Dedicated organizational learning





Tuckman's Team Theory Teaming takes time



Tuckman, B. W., & Jensen, M. A. C. (2010). Stages of small-group development revisited. Group Facilitation: A Research & Applications Journal, 10(1), 43-48.

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Work that Remains

- Education:
 - Training and curricula
 - Technologist understanding of change
 - Patient education (1 patient educated at a time is not an effective practice)
 - Provider education
- - Reduction of shielding vs. elimination of shielding
- One-team mentality
 - Siloed Work/Territorial
 - Mutual respect/mutual support
- Compliance vs. Improvement
- Impact on patient satisfaction
- ASRT advancing the initiative
 - Continued reinforcement (Education and Clinical) <u>shielding@asrt.org</u>



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Thank you!

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