



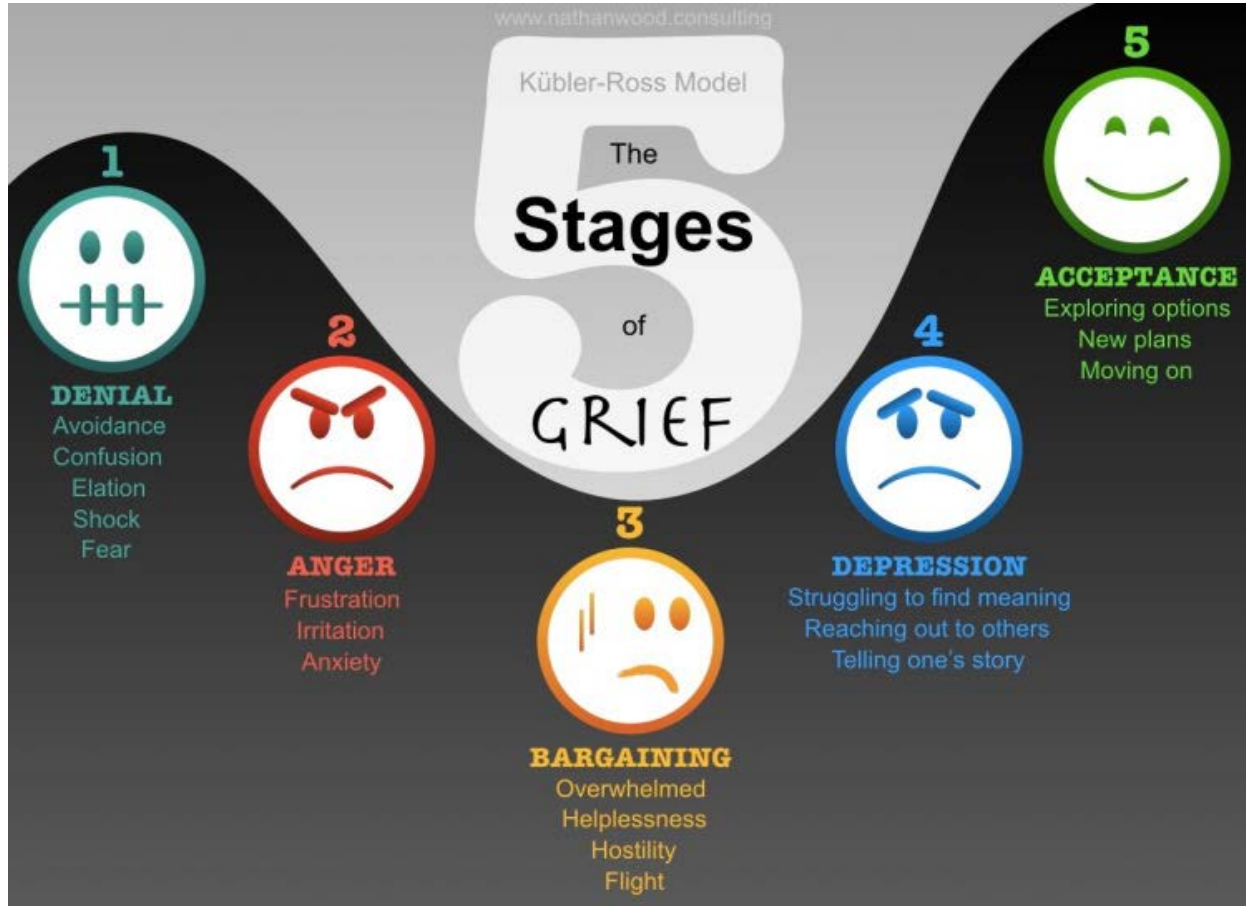
**IMPACT OF THE AAPM STATEMENT FOR EDUCATORS**  
**KELLI WELCH HAYNES, Ed.D., RT(R)**

## CHANGING PRACTICE

- ❖ Due to technological advancements, the efficacy of patient shielding must be reconsidered.
- ❖ Recommendations are driven by research.
- ❖ Radiation doses used in diagnostic imaging are not associated with measurable harm to the gonads or fetus.
- ❖ Patient shielding is not effective at reducing internal scatter.
- ❖ Shielding may compromise the exam, requiring repeat exposures. ...  
The patient receives a higher radiation dose, and image quality is corrupted.

## AAPM POSITION STATEMENT ON THE USE OF PATIENT GONADAL AND FETAL SHIELDING

- ❖ Patient gonadal and fetal shielding during X-ray based diagnostic imaging should be discontinued as routine practice.
- ❖ Patient shielding may jeopardize the benefits of undergoing radiological imaging. Use of these shields during X-ray based diagnostic imaging may obscure anatomic information or interfere with the automatic exposure control of the imaging system.
- ❖ These effects can compromise the diagnostic efficacy of the exam, or actually result in an increase in the patient's radiation dose.
- ❖ Because of these risks and the minimal to nonexistent benefit associated with fetal and gonadal shielding, AAPM recommends that the use of such shielding should be discontinued.



## HISTORICAL PERSPECTIVE

- ❖ Radiation doses from diagnostic x-ray examinations are  
~ 20 - 25<sup>1</sup> times less radiation today: 1951 vs 2020
- ❖ Adult KUB:            1951 ~ 11 – 12 mGy<sup>2</sup>  
                                  2020 ~ 0.5 mGy air Kerma
- ❖ Newborn KUB:        1951 ~ 1.4 mGy<sup>3</sup>  
                                  2020 ~ 0.07 mGy air Kerma

<sup>1</sup>Jeukens C, et.al. Gonadal shielding in pelvic radiography: modern optimized x-ray systems might allow discontinuance. Insights Imaging. 2020;11(1):15.

<sup>2</sup>Handloser JS, Love RA. Radiation Doses from Diagnostic Studies. Radiology 57: 1951, pp. 252-254.

<sup>3</sup>Billings MS, Norman A, Greenfield MA. Gonad Dose During Routine Roentgenography 69: 1957, pp. 37-41

## RECONSIDERING THE VALUE OF GONADAL SHIELDING

- ❖ Believed reduced radiosensitivity of gonads
  - ❖ ICRP 103:
    - ❖ Gonadal tissue weighting factor reduced from 0.2 to 0.08
    - ❖ Colon, stomach, liver, and bone marrow same at 0.12.
  - ❖ Why are we shielding a less sensitive organ at the expense of more sensitive organs?

## CODE OF FEDERAL REGULATIONS 20.10

- ❖ U.S. NRC (Nuclear Regulatory Commission)
  - ❖ “Shielding Patients” removed
  - ❖ Less than 2 millirems in any one hour from external radiation sources in any unrestricted area
  - ❖ Less than 100 millirems in a calendar year from both external and internal sources of radiation in unrestricted and controlled areas

## NATIONAL IMPACT

- ❖ Changes in Federal guidelines, NCRP and CFR 21.10, will impact:
- ❖ State regulations/legislation
- ❖ National agencies: ARRT & ACR
- ❖ National and State societies: ASRT, AHRA, CSRT
- ❖ Educational curriculum: ASRT & JRCERT
- ❖ Educational programmatic accreditation
- ❖ Credentialing requirements



## ARRT

- ❖ Didactic and Clinical Competency Requirements: Effective 2017
  - ❖ Radiation Safety
- ❖ Examination Content Specifications: Effective 2017
  - ❖ Radiation Protection-
    - ❖ Minimizing Patient Exposure
    - ❖ Personnel Protection
- ❖ Code of Ethics: Effective 2017
  - ❖ “minimizing radiation exposure to the patient, self, and other members of the healthcare team”

## ASRT

- ❖ Radiography Curriculum: Effective 2017
  - ❖ Procedural Factors → Radiation Protection → Shielding
  - ❖ Patient Protection → Radiation Safety → Shielding
  - ❖ Radiation Protection → Explain purpose and importance of patient shielding
    - ❖ Practice Standards: Effective 2019
    - ❖ Scopes of Practice

## REGULATIONS

- ❖ JRCERT Standards: Effective 2021
- ❖ State Regulations/Legislation
  - ❖ California Department of Public Health
    - ❖ **2010 California Code**  
**Health and Safety Code**  
**Article 5. Radiological Technologists**  
**SECTION 106955-107111**
  - ❖ Louisiana Department of Environmental Quality

## CHALLENGES for EDUCATORS

Radiologic  
Science  
Textbooks

Educating  
Communities of  
Interest

Clinical  
Education  
Settings

Radiologic  
Technologists

## CARES COMMITTEE OUTCOMES

- ❖ Six (6) Education Modules are being developed to provide a framework for the new fetal and gonadal recommendations from the AAPM.
- ❖ Each of the Modules is approximately 15 minutes in length.
- ❖ Each of the Modules will be assigned continuing education credit and will be provided by various organizations
- ❖ The modules will be hosted by the Association of Educators in Radiologic Sciences (AEIRS)