Image Gently: The Paradigm Shift

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Acknowledgements

- No financial disclosures
- Donald P. Frush, MD

Co-Chair, Imaging Gently Alliance 7
Image Gently 2007 “Influences”

Image Wisely Campaign 2010

EuroSafe Campaign 2014

AfroSafe, AsiaSafe, LatinSafe, Canada Safe Imaging Campaigns 2015
We Are Giving Ourselves Cancer

By RITA F. REDBERG and REBECCA SMITH-BINDMAN JAN. 30, 2014

DESPITE great strides in prevention and treatment, cancer rates remain stubbornly high and may soon surpass heart disease as the leading cause of death in the United States. Increasingly, we and many other experts believe that an important culprit may be our own medical practices: We are silently irradiating ourselves to death.

The use of medical imaging with high-dose radiation — CT scans in particular — has soared in the last 20 years. Our resulting exposure to medical radiation

Neither doctors nor patients want to return to the days before CT scans. But we need to find ways to use them without killing people in the process.

radiation doses of CT scans (a series of X-ray images from multiple angles) are 100 to 1,000 times higher than conventional X-rays.

Of course, early diagnosis thanks to medical imaging can be lifesaving. But there is distressingly little evidence of
Radiology MD:
“As many as 1 in 300 children who get a CT scan of the abdomen, chest or spine will eventually develop a tumor as a result of the radiation...”

http://www.huffingtonpost.com/entry/childrens-hospitals-ct-scans-study_55df8791e4b0c818f6175b69
Hi,

My 19 month old had an abdominal X-ray at XXXXXXXXXX
Where can I find if they are an accredited image gently center?
After doing research today, I'm concerned with the radiation and hope they adjusted it because of his size etc.

Any recommendation on what I should ask the radiologist to verify it was indeed adjusted for pediatrics?
Thank you for your time, I'm just so concerned because he's had 2 X-rays and only 19 months.

Thank you,
Worried Mommy (XXXXXX)
Mission

Original Focus

Address the majority of radiology practice (adult-focused) that did not adjust dose or protocols for children’s needs: Optimization.

Address all stakeholder education, awareness, advocacy.

Along the way, build on justification.
Mission Statement
Revised July 1st, 2015

The mission of the Alliance for Radiation Safety in Pediatric Imaging (the Image Gently Alliance) is, through advocacy, to improve safe and effective imaging care of children worldwide.
Founding Societies

Society for Pediatric Radiology
American College of Radiology
American Society of Radiologic Technologists
American Association of Physicists in Medicine
Radiation protection for children
Knowledge must be layered
Image Gently Alliance
Alliance for Radiation Safety in Pediatric Imaging
= Image Gently Alliance

An **Assurance** Organization:

Assurance: “positive declaration that is intended to give confidence; a promise”
(Oxford)

through a positive message
Values: safety, effectiveness, consensus, advocacy, and accessibility.

Goals: strong, stable and strategic

Strategy: blueprint was based on the following fundamental elements:

- the message
- the messengers
- the messaging
The Message

Simple, resonant
CREATE BLAST E-MAIL...
SENT BY ALL ORGANIZATIONS
ON 1st DAY of NEW CAMPAIGN
Raising awareness: communication through social marketing strategy

- Website
- 6 campaigns
- Speakers group
- Scientific publications
- Image Gently summits
- Speakers at meetings
- Parent/provider brochures (translations)
- Newsletter
- Facebook
- Twitter
Alliance for Radiation Safety in Pediatric Imaging

NEWS RELEASE

Contact: Shawn Farley
(703) 648-8936
sfarley@acr.org

For Immediate Release:

“Image Gently” Alliance to Educate Providers to “Child-Size” Radiation Dose for Pediatric Imaging Care

Reston, Va. – As medical imaging exams have replaced more invasive procedures, benefiting patients and revolutionizing medicine, Americans’ exposure to medical radiation has increased, raising concerns among imaging providers. Particularly, children are more sensitive to radiation received from imaging scans than adults and cumulative radiation exposure to their smaller, developing bodies could, over time, have adverse effects.

Therefore, providers who perform imaging exams on children are urged to:

- Significantly reduce, or “child-size,” the amount of radiation used
- Not over-scan:
  - scan only when necessary
  - scan only the indicated region
  - scan once; multi-phase scanning (pre-and post contrast, delayed exams) is rarely helpful
- Be a team player:
  - Involve medical physicists to monitor pediatric CT techniques
  - Involve technologists to optimize scanning

These are the central messages of the “Image Gently” campaign (www.imagegently.org) launched today by the Society for Pediatric Radiology (SPR), the American College of Radiology (ACR), the American Society of Radiologic Technologists (ASRT), and the American Association of Physicists in Medicine (AAPM), founding members of the Alliance for Radiation Safety in Pediatric Imaging.

“Children are not just ‘smaller adults.’ Their bodies are different and require a different approach to imaging,” said Marilyn Goske, M.D., chair of the Alliance for Radiation Safety in Pediatric Imaging and board chair of the SPR. “Ultimately, we hope to change the way all children are imaged in the United States, using kid-size, not adult-sized radiation doses. It’s an ambitious goal, but one that we feel must be achieved.”

The Image Gently campaign will initially focus on computed tomography (CT) scans. There were approximately 4 million pediatric CT scans performed in 2006. In fact, the number of pediatric CT scans performed in the United States has tripled in the last five years as rapidly evolving CT technology replaces more invasive and often more costly techniques. The Image Gently campaign is an effort to help ensure that medical protocols for the imaging of children keep pace with advancing technology.

“As the stewards of nearly 100 years of radiology safety knowledge, radiologists are committed to ensuring that patients receive safe, necessary imaging care,” said Ari Van Moore Jr., M.D., FACR, chair of the ACR Board of Chancellors. “The Image Gently campaign is an important opportunity for radiologists to help referring physicians and medical imaging professionals understand which exams may be most appropriate for children and how these exams may be carried out in a safe, effective manner.”
Image Gently Campaign PR Efforts

Series of Advertisements for trade magazines and member organizations’ Internal publications to run as public service announcements.
Image Gently in Dentistry

- Launched September 24, 2014
- 15 dental subspecialty groups including American Dental Association, ADHA
- Featured at 4 subspecialty meetings
- NCRP draft 2016
Image Gently in Dentistry: Partnering with Parents to Promote the Responsible Use of X-Rays in Pediatric Dentistry

Many parents are increasingly concerned about exposure of their children to radiation during periodic and imaging assessments, with credible scientific evidence suggesting a potential small increase in cancer risk in people exposed to radiation at levels that can be measured during diagnostic imaging procedures. This is a particularly important issue for children, whose tissues are more sensitive to ionizing radiation and whose lifelong exposure provides a longer time in which immature systems can develop and react to radiation exposure.

Recent data suggest that health care providers, including dentists, are responsible for an increasing amount of total exposure, accounting for up to 50 percent of annual per capita radiation dose in the United States. While individual doses from radiographic procedures to dentistry are quite low, there are now concerns raised by groups such as the American Association of Orthodontists, the American Association of Oral and Maxillofacial Radiology, and the American Academy of Pediatric Dentistry. The primary objective of this initiative is to raise awareness of the radiation community of the need to reduce radiation dosage when imaging patients.

The American Dental Association (ADA), representing the nation’s 158,000 general dentists, is leading the initiative, and the American Academy of Pediatric Dentistry (AAPD) and the American Academy of Pediatric Dentistry (AAPD) are also participating. The ADA is also an active member of the Alliance for Imaging Quality in Dentistry, which was formed by the American College of Radiology (ACR) and the American Association of Oral and Maxillofacial Radiology (AAOMR). The goal of this campaign is to raise awareness of the special considerations for pediatric dental patients in order to provide radiation safety by emphasizing the importance of minimizing radiation exposure to children. The campaign encourages providers to collaborate with patients and their parents about safety issues.

Background

The Image Gently in Dentistry campaign emphasizes the importance of radiation safety in dentistry for children. The campaign encourages providers to collaborate with patients and their parents about safety issues.

The Image Gently in Dentistry campaign was launched in September 2014. The campaign is supported by the American Dental Association (ADA) and the American Academy of Oral and Maxillofacial Radiology (AAOMR). The goal of this campaign is to raise awareness of the special considerations for pediatric dental patients in order to provide radiation safety by emphasizing the importance of minimizing radiation exposure to children.

Radiation exposure is a serious issue that needs to be addressed by all providers, including dentists. The campaign encourages providers to collaborate with patients and their parents about safety issues. The campaign is supported by the American Dental Association (ADA) and the American Academy of Oral and Maxillofacial Radiology (AAOMR). The goal of this campaign is to raise awareness of the special considerations for pediatric dental patients in order to provide radiation safety by emphasizing the importance of minimizing radiation exposure to children. The campaign encourages providers to collaborate with patients and their parents about safety issues.

References


Role of Image Gently in DRLs

- Research projects (QuIRCC, ACR registry)
  - Abdomen pelvis
  - Chest (in progress)
  - Neck CT (in progress)
  - Chest CTA PE (in progress)

- Education

- Accreditation

- Consultation on regulation and guidance
Role of Image Gently in DRLs

- Research projects (QuIRCC, ACR registry)
  - Abdomen pelvis; Neck trauma
  - Chest (in progress); CTA for PE (in progress)

- Education

- Accreditation

- Consultation on regulation and guidance
- Determine diagnostic reference ranges
- Pediatric centers (QuIRCC)
- AP CTs in children
- Recorded dose estimates
  - $\text{CTDI}_{\text{vol}}$, DLP, SSDE
  - ED estimation
- Diagnostic quality assessed

Goske et al
Radiology 2013; 266:208
Added noise: “Dose” Reduction

Rated scan quality on 5 pt scale

Goske et al
Radiology 2013; 266:208
### Table 3

**Distribution of SSDE**

<table>
<thead>
<tr>
<th>BW Group</th>
<th>No. of Scans</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Lower DRR, 25th Percentile</th>
<th>Median, 50th Percentile</th>
<th>Upper DRR, 75th Percentile</th>
<th>SSDE/SSDE&lt;sub&gt;mean&lt;/sub&gt; Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15 cm</td>
<td>21</td>
<td>8.6</td>
<td>0.9</td>
<td>5.8</td>
<td>8.0</td>
<td>12.0</td>
<td>0.52</td>
</tr>
<tr>
<td>15–19 cm</td>
<td>153</td>
<td>10.0</td>
<td>0.5</td>
<td>7.3</td>
<td>8.7</td>
<td>12.2</td>
<td>0.61</td>
</tr>
<tr>
<td>20–24 cm</td>
<td>286</td>
<td>11.4</td>
<td>0.7</td>
<td>7.6</td>
<td>9.8</td>
<td>13.4</td>
<td>0.69</td>
</tr>
<tr>
<td>25–29 cm</td>
<td>326</td>
<td>13.5</td>
<td>0.3</td>
<td>9.8</td>
<td>13.0</td>
<td>16.4</td>
<td>0.82</td>
</tr>
<tr>
<td>≥30 cm</td>
<td>168</td>
<td>16.5</td>
<td>0.4</td>
<td>13.1</td>
<td>15.6</td>
<td>19.0</td>
<td>1.00</td>
</tr>
</tbody>
</table>

### Table 4

**Distribution of CTDI<sub>vol</sub> Measured with 32-cm CTDI Phantom**

<table>
<thead>
<tr>
<th>BW Group</th>
<th>No. of Scans</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Lower DRR, 25th Percentile</th>
<th>Median, 50th Percentile</th>
<th>Upper DRR, 75th Percentile</th>
<th>CTDI&lt;sub&gt;vol&lt;/sub&gt;/Adult CTDI&lt;sub&gt;vol&lt;/sub&gt; Ratio</th>
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</thead>
<tbody>
<tr>
<td>&lt;15 cm</td>
<td>21</td>
<td>3.6</td>
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<td>5.0</td>
<td>0.30</td>
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<tr>
<td>15–19 cm</td>
<td>153</td>
<td>4.7</td>
<td>0.2</td>
<td>3.4</td>
<td>4.1</td>
<td>5.6</td>
<td>0.39</td>
</tr>
<tr>
<td>20–24 cm</td>
<td>286</td>
<td>6.0</td>
<td>0.2</td>
<td>4.0</td>
<td>5.4</td>
<td>7.1</td>
<td>0.49</td>
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<tr>
<td>25–29 cm</td>
<td>326</td>
<td>8.2</td>
<td>0.2</td>
<td>5.8</td>
<td>8.0</td>
<td>9.8</td>
<td>0.67</td>
</tr>
<tr>
<td>≥30 cm</td>
<td>168</td>
<td>12.2</td>
<td>0.4</td>
<td>9.4</td>
<td>10.8</td>
<td>14.0</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Role of Image Gently in DRLs

- Research projects (QuIRCC, ACR registry)
  - Abdomen pelvis
  - Chest (in progress)
- Education
- Accreditation
- Consultation on regulation and guidance
Pediatr Radiol
DOI 10.1007/s00247-014-3088-8

IMAGE GENTLY ALARA CT SUMMIT: HOW TO USE NEW CT TECHNOLOGIES FOR CHILDREN

Developing patient-specific dose protocols for a CT scanner and exam using diagnostic reference levels

Keith J. Strauss
# Image Gently

## CT Techniques

<table>
<thead>
<tr>
<th>Abdomen/</th>
<th>Abdomen/</th>
<th>Abdomen/</th>
<th>kVp</th>
<th>mA</th>
<th>Time (sec)</th>
<th>Pitch During Measured CTDIvol</th>
<th>Pitch During Clinical Exam</th>
<th>Adult SSDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelvis:</td>
<td>Pelvis:</td>
<td>Pelvis:</td>
<td>120</td>
<td>140</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AP Thickness (cm)</th>
<th>LAT Thickness (cm)</th>
<th>Effective Diameter (cm)</th>
<th>Mass (kg)</th>
<th>Age</th>
<th>Limited mAs Reduction Factor (1)</th>
<th>Moderate mAs Reduction Factor (0.75)</th>
<th>Aggressive mAs Reduction Factor (0.5)</th>
<th>Limited mAs SSDE</th>
<th>Moderate mAs SSDE17</th>
<th>Aggressive mAs SSDE</th>
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<tbody>
<tr>
<td>10</td>
<td>14</td>
<td>11.8</td>
<td>4</td>
<td>newborn</td>
<td>0.52</td>
<td>0.39</td>
<td>0.25</td>
<td>16</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>16</td>
<td>13.3</td>
<td>10</td>
<td>1 yr</td>
<td>0.55</td>
<td>0.42</td>
<td>0.29</td>
<td>16</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>20</td>
<td>16.7</td>
<td>18</td>
<td>5 yr</td>
<td>0.62</td>
<td>0.50</td>
<td>0.39</td>
<td>16</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>16</td>
<td>25</td>
<td>20.0</td>
<td>33</td>
<td>10 yr</td>
<td>0.70</td>
<td>0.62</td>
<td>0.53</td>
<td>16</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>19</td>
<td>29</td>
<td>23.5</td>
<td>54</td>
<td>15 yr</td>
<td>0.80</td>
<td>0.74</td>
<td>0.68</td>
<td>16</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>22</td>
<td>32</td>
<td>26.5</td>
<td>65</td>
<td>20 yr</td>
<td>0.89</td>
<td>0.86</td>
<td>0.83</td>
<td>16</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>25</td>
<td>35</td>
<td>29.6</td>
<td>75</td>
<td>md adult</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>31</td>
<td>41</td>
<td>35.7</td>
<td>110</td>
<td>lg adult</td>
<td>1.21</td>
<td>1.28</td>
<td>1.35</td>
<td>16</td>
<td>17</td>
<td>19</td>
</tr>
</tbody>
</table>

*Limited NB = Adult SSDE Estimated mAs*
*Moderate NB = 0.75 * Adult SSDE Estimated mAs*
*Aggressive NB = 0.5 * Adult SSDE Estimated mAs*
**AAPM WG Head CT protocols**

using IG “universal protocols”

SPR CT committee

**Indications**

- Acute head trauma
- Child abuse
- Cranioencephalitis/encephalopahy
- Calvarial bone lesions (Langerhans cell histiocytosis, neuroblastoma, etc)
- Suspected acute intracranial hemorrage
- Immediate postoperative evaluation following brain surgery (evacuation of hematoma, a drainage, etc)
- Suspected shunt malfunctions, or shunt revisions if rapid brain MRI is not available
- Increased intracranial pressure
- Acute neurologic deficits
- Suspected acute hydrocephalus
- Brain herniation
- Suspected mass or tumor
- Non-focal seizures
- Detection of calcification

When magnetic resonance imaging (MRI) imaging is unavailable, contraindicated, or if the supervising physician deems CT to be most appropriate due to an urgent health situation, the use of sedation is contraindicated.

**Routine Pediatric Head (Brain)**

**Pediatric Head – Routine (Axial) (selected Philips scanners)**

**Philips**

<table>
<thead>
<tr>
<th>Scan Type</th>
<th>BrightSpeed 16</th>
<th>BrightSpeed 64</th>
<th>Ingenuity CT</th>
<th>Brilliance ICT SP</th>
<th>Brilliance ICT</th>
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</thead>
<tbody>
<tr>
<td>Rotation Time (s)</td>
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<td>0.75</td>
<td>0.75</td>
<td>0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>Collimation</td>
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<td>16 × 0.625 mm</td>
<td>16 × 0.625 mm</td>
<td>16 × 0.625 mm</td>
<td>16 × 0.625 mm</td>
</tr>
<tr>
<td>mAs</td>
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<td>120</td>
<td>120</td>
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<td>120</td>
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<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
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<tr>
<td>FOV (mm)</td>
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</table>

**GE**

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<tr>
<th>Scan Type</th>
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<th>LightSpeed 16 Select</th>
<th>LightSpeed 16</th>
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<td>Detector Configuration</td>
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<td>4 × 2.5 (10mm, 20)</td>
<td>16 × 0.625 (10mm, 20)</td>
<td>16 × 0.625 (10mm, 20)</td>
</tr>
<tr>
<td>Pitch</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
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<td>Table Feed/Interval (mm)</td>
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<td>mAs</td>
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</tr>
<tr>
<td>SFOV</td>
<td>HEAD</td>
<td>HEAD</td>
<td>HEAD</td>
<td>HEAD</td>
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</table>
Role of Image Gently in DRLs

- Research projects (QuIRCC, ACR registry)
  - Abdomen pelvis
  - Chest (in progress)
- Education
- Accreditation
- Consultation on regulation and guidance
Facilities with this logo have successfully achieved accreditation in CT for pediatric imaging. This demonstrates their ability to image pediatric patients with the appropriate radiation doses.
Role of Image Gently in DRLs

- Research projects (QuIRCC, ACR registry)
  - Abdomen pelvis; neck trauma
  - Chest (in progress); CTA for PE (in progress)

- Education

- Accreditation

- Consultation on regulation and guidance
Safe Practice 34: Pediatric Imaging

When CT imaging studies are undertaken on children, “child-size” techniques should be used to reduce unnecessary exposure to ionizing radiation.
July 2015, TJC mandates that:

1. “The [hospital/practice] documents the radiation dose ($\text{CTDI}_{\text{vol}}$ or DLP) on every study produced during a computed tomography (CT) examination. The radiation dose must be exam specific, summarized by series or anatomic area, and documented in a retrievable format.”

2. “The [hospital/practice] reviews and analyzes incidents where the radiation dose ($\text{CTDI}_{\text{vol}}$ or DLP) emitted by the computed tomography (CT) imaging system during diagnostic CT exams exceeded expected dose ranges identified in imaging protocols.”
13. In your estimation, did the Image Gently campaign or website cause you to modify your pediatric CT protocols? Select the change in dose for each region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Lower dose</th>
<th>Higher dose</th>
<th>No change</th>
<th>Response Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain</td>
<td>57.5% (50)</td>
<td>0.0% (0)</td>
<td>42.5% (37)</td>
<td>87</td>
</tr>
<tr>
<td>Chest</td>
<td>69.4% (59)</td>
<td>0.0% (0)</td>
<td>30.6% (26)</td>
<td>85</td>
</tr>
<tr>
<td>Abdomen or abdomen/pelvis</td>
<td>71.8% (61)</td>
<td>0.0% (0)</td>
<td>28.2% (24)</td>
<td>85</td>
</tr>
<tr>
<td>answered question</td>
<td></td>
<td></td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>skipped question</td>
<td></td>
<td></td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>
Poster: Update to the North American Guidelines

- Appeared in the first page of the J Nucl Med issue in August 2014
- Dec 2014 of JNMT

- Reduction of administered activities
- Variability in activity/body weight and minimum activity substantially reduced
- 10/13 institutions modified administered activities according to the guidelines

And, survey of 200 general hospitals
85% knew of Image Gently, 60% knew of No Am Guidelines, 50% modified their practice based on No Am Guidelines

Fahey, Ziniel, Manion, Treves. JNM 2015
Outcomes-1-

- Define the Issue, the Core Team (radiographer, med physicist, radiologist), philosophy of collaboration, invite all stakeholders, all open source materials
- No industry sponsors
- Explicit engagement of the (social and public) media—a first
Outcomes-2-

- Free resources for all stakeholders
  - 6 modules (slides, video, checklists, links)
  - 20 translations
  - CT PQI module
  - 4 main CT vendor programs for radiographers
  - Image Wisely CME-SAM on CT SSDE
  - FDA sponsored videos on fluoroscopy optimization
Outcomes-3-

- Policy collaborations and document development with FDA, WHO, IAEA, TJC, NCRP, ICRP, EPA/CDC
- Multiple publications (50+) in radiology, physics, medical specialty journals
- Multiple collaborative educational sessions at radiology and medical meetings worldwide
- …surveys and ACR CT DIR demonstrate optimization worldwide, especially in CT
IMAGE GENTLY CAMPAIGN: MAKING A WORLD OF DIFFERENCE

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Abstract—Focused care that addresses the needs of the pediatric patient during imaging should improve diagnosis and reduce radiation dose. This requires trained staff correctly operating appropriately configured imaging equipment. This is one of the objectives of the Image Gently Campaign (IGC) by the Alliance for Radiation Safety in Pediatric Imaging (IGA). This article features a description of IGC’s campaign, an explanation of the methods used to develop and disseminate its message, and a description of the IGC’s current and future goals. The concept and model of IGC, along with the provision of the citations of the majority of its published resources, is provided to the international medical physics community so that they might be used for local pediatric applications worldwide. A brief summary of the fundamentals of medical physics that should be applied during pediatric imaging concludes this discussion. The ultimate goal is imaging with the appropriate amount of radiation required to provide adequate image quality and imaging guidance. The reduction in the x-ray flux during pediatric imaging provides the opportunity for the medical physicist to recommend different x-ray tube voltages/added filtration, reduced pulse widths, or focal spot sizes that either improve image quality, reduce patient dose, or both. The medical physicist needs to ensure that the desired acquisition parameter changes for pediatric imaging are incorporated into the configuration of the installed imaging device.

Keywords—Image Gently, pediatrics, radiation dose, image quality

I. INTRODUCTION

While most state-of-the-art imaging equipment provides reasonable image quality on teenagers using the manufacturer’s recommended configurations for a half, excessive radiation dose levels and less than optimum used to develop and disseminate its message, and a description of the IGA’s current and future goals. The concept and model of the IGC, along with the provision of the citations of the majority of its published resources, is provided to the international medical physics community so that they might be used for local applications worldwide. One of the objectives of the IGC is to assist radiologists and radiologic technologists in improving imaging performance in children.

The second goal is a brief summary of the fundamentals of medical physics that should be applied to imaging devices that will be used to image children. The ultimate goal is imaging with the least amount of radiation required to provide adequate image quality and imaging guidance. Section IV of this paper stresses the importance of teamwork and the important role of the medical physicist. The fundamental differences between small children and adults are briefly discussed. The fundamental reduction in the x-ray flux emitted by the x-ray tube during pediatric imaging provides the opportunity for the medical physicist to recommend different x-ray tube voltages/added filtration, reduced pulse widths, or focal spot sizes that either improve image quality, reduce patient dose, or both. The medical physicist needs to ensure that the desired acquisition parameter changes for pediatric imaging are incorporated into the configuration of the installed imaging device.

II. THE IMAGE GENTLY ALLIANCE

A. RATIONALE

The Alliance for Radiation Safety in Pediatric Imag...
A. 2012 Lancet: “CTs cause cancer in children”
B. 2012 Digital Radiography campaign
C. 2014 Dental Campaign

Arrow: website redesign
Challenges

• Resources: volunteer organization
• Measuring success
• Disruptive competition?
• Increasing national and international needs
  • Need for Registries for all ionizing radiation imaging to establish and maintain DRLs for both children and adults
  • Patient Safety Organization Partnership?
Thank You!

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Globally Relevant Strategy

- Branding: simple, resonant message of advocacy
- Head, hands and heart
- Consensus
- All stakeholders
- Parity of representation (although some may need to contribute more)
- Economy of operation; wealth of volunteers
- Independence from conflicts of interest
- Products: define and personalize to customers
  Alliance members coordinated release, talking points, spokespersons
Image Gently

The Image Gently Alliance has developed a successful and adaptable model for dissemination of information relevant to medical radiation protection for children, which can include DRLs.
What is *Image Gently*?

- The campaign from the Alliance,
- for education and awareness: imaging experts, patients, families, caregivers, referring healthcare providers

**Advocacy and Assurance**

- Several modalities addressed…CT was first (2007)
- To improve medical radiation protection for children
- Nearly 100 health care organizations/agencies (>35 international)
- >1,000,000 participants worldwide: radiologists, technologists, medical physicists, other experts
Image Gently:

A Communication Campaign: Social Marketing

- Market *ideas*
- Alter societal attitudes
- Benefit market, not "marketers"
- Other organizations: Image Wisely, EuroSafe, AfroSafe, Canada Safe… AsiaSafe, LatinSafe
“Proposed Revisions to Diagnostic Imaging Standards”

1. These comments are primarily directed at the pediatric population but may apply to patients outside of the pediatric age group as well. Without the previous proposed revisions, it is difficult to understand what the entire proposed revisions are, what might have been modified based on prior input, what might have been eliminated or added. This information is critical in deciding in what context the current draft should be viewed. It will be necessary to have relevant organizations have an opportunity to review and comment on the comprehensive proposal as soon as possible.

2. There should be accountability for radiation dose estimations and adjustment prior to imaging (case by case and/or adherence to appropriate protocol); the emphasis on recording after the fact alone is insufficient for patient dose management.

3. Cone beam CT:
   a. Why is dental use excluded?