Why we have failed to effectively communicate "patient dose"

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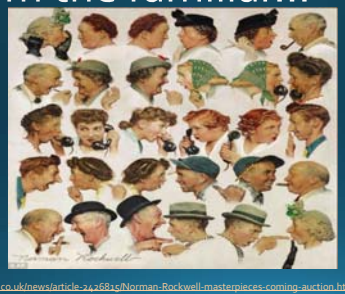
Instrument for Change, Inc.

Objectives

- To assess the adequacy of our communication methods regarding this essential point
- To review relevant scientific facts, uncertainties and misunderstandings
- To explore impediments to effective communication
- To review alternative methods of communication and assess their effectiveness

From the familiar…



http://www.dailymail.co.uk/news/article-2426815/Norman-Rockwell-masterpieces-coming-auction.html
http://insideschools.org/component/schools/school/28

Outline

- Experiential Learning role-play
- What is the goal of this communication?
- Review of basic scientific facts
- Common misconceptions, impediments and resources
- A different way to have this discussion
- Role play, to explore new approach

AAPM 2016 SUMMER SCHOOL — MEDICAL PHYSICS LEADERSHIP ACADEMY
June 12–16 • Westfield … Conference Center • Chantilly, VA

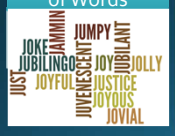
In our scenario, this is a 2-way exchange of info or ideas. You may (or may not) agree…..

Oral Communication

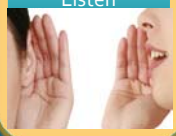
From presentation by Samei, Pavord, Cosler

Oral Communication/ Conversation

Judicious Use of Words



Learning to Listen



Eye-Contact

Reference: Dale Carnegie, *How to Win Friends & Influence People*, Simon and Schuster, New York, NY, 1981

Photo credit: FreeImages

Conversation

When Humans Encounter New People, We Evaluate Others on Two Criteria:

Exercise
Your Elevator Pitch

- What is It?
- Who is it for?
- What are the unique benefits?

Photo credit: FreeImages

When To Abandon Your Elevator Pitch

Reference: Deborah Grayson Riegel, The Problem with Your Elevator Pitch. Fast Company, January 7, 2013

Photo credit: SlideGenius

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Scientific Facts about Dose

(This you know, and can look up more!)

- Dose = energy/mass
- Background radiation
- Units: mGy, mrad, mCi
- Effective Dose (ICRP 106)
- ESE, CTDI, AGD, Effective Dose
- Latency effect
- LNT Hypothesis

More in a moment, "Resources"

Fundamentally, the LNT model implies a uniform cancer risk per unit dose from higher to lower doses, meaning that, for example, a radiation dose of 10 mSv has one hundredth the risk from a radiation dose of 1,000 mSv.

Because the LNT model assumes there is no threshold dose for radiation-induced cancer, even a dose of as low as 0.1 mSv is associated with a nonzero excess risk (i.e., one hundredth the risk from 10 mSv).

http://jnm.snmjournals.org/content/58/1/7.full

"Although the debate over LNT will not be resolved anytime soon, one point should be abundantly clear, as reinforced by the article by Siegel et al.:

the scale of the associated uncertainties is such that it is not appropriate to use such risk factors for clinical decision making and the management of individual patients."

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

Professional/Education/Science Policies

POLICY NUMBER	POLICY NAME	
PP 25-A	AAPM Position Statement on Radiation Risks from Medical Imaging Procedures	12/31/2017

Policy source

Policy text

The American Association of Physicists in Medicine [illegible] that medical imaging procedures should be appropriate and conducted at the [illegible] with acquisition of the desired information. Discussion of risks related to radiation dose [illegible] procedures should be accompanied by acknowledgement of the benefits of the procedures. Risks [illegible] doses below 50 mSv for single procedures or 100 mSv for multiple procedures over [illegible] to be detectable and may be nonexistent. Predictions of hypothetical cancer incidence [illegible] tions exposed to such low doses are highly speculative and should be discouraged. These [illegible] they lead to sensationalistic articles in the public media that cause some patients and parents [illegible] procedures, placing them at substantial risk by not receiving the clinical benefits of the prescribed procedures.

[illegible] members continually strive to improve medical imaging by lowering radiation levels and maximizing benefits of imaging procedures involving ionizing radiation.

http://www.aapm.org/org/policies/details.asp?id=318&type=PP

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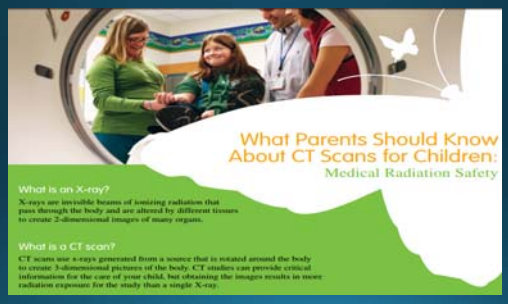
Common Misconceptions

- Dose ~ an hour in the sun at the beach
- Dose ~ cross country flight in a plane
- Dose ~ "I take 250 mg dose of Tylenol"
- 1 chance in a million
  - If I want a good thing, it will happen to me (Lotto)
  - If I am afraid, the bad thing will happen to me (Cancer)
  - If I want to do it, bad thing won't happen to me (Smoking)
- Today's cancer can be caused by yesterday's X-ray
- Radiation mysteriously changes you
- Doctors and scientists conspire to take advantage of me

What does the patient think?

Is it OK for her to have this exam, or am I protecting my child by saying no!



http://www.imagegently.org/Portals/6/Parents/Image_Gently_8.5x11_Brochure2pg.pdf

How much radiation is used in these exams?

We all are exposed to small amounts of radiation daily from soil, rocks, building materials, air, water, and cosmic radiation. This is called naturally occurring background radiation. The radiation used in X-rays and CT scans has been compared to background radiation we are exposed to daily. This comparison may be helpful in understanding relative radiation doses to the patient.

Radiation source	Days background radiation
Background	1 day
Chest X-ray (single)	1 day
Head CT	up to 8 months
Abdominal CT	up to 20 months

image gently™

www.imagegently.org

What are the risks from medical radiation?

There is no conclusive evidence that radiation from diagnostic X-rays causes cancer. However, some studies of large populations exposed to radiation have demonstrated slight increases in cancer risk even at low levels of radiation exposure, particularly in children. To be safe, we should act as if low doses of radiation may cause harm.

The risk for radiation induced cancers should be evaluated against the statistical risk of developing cancer in the entire population. The overall risk of a cancer death over a person's lifetime is estimated to be 20-25%. For every 1,000 children, 200-250 will eventually die of cancer
medical radiation. The estimated incr
a person's lifetime from a single CT s
has been estimated to be a fraction of
These estimates for the population as
direct risk to one child. This informat
developing cancer related to a single
the available research indicates that th
the risk may be cumulative.

How can we minimize radiation risk to my child?

There are ways to ensure that your child is exposed to the smallest amount of radiation possible during an imaging study. The Image Gently Campaign is promoting optimal scanning strategies for children and they are listed below:

- Image when there is a clear medical benefit
- Use the lowest amount of radiation for adequate imaging based on size of the child
- Image only the indicated area
- Avoid multiple scans
- Use alternative diagnostic studies (such as ultrasound or MRI) when possible

If I still have concerns regarding radiation exposure to my child, whom should I talk to?

You should first talk to the physician who is requesting your child's exam. Your doctor and the radiologist can work together on decisions about which study is best to perform. If you still have questions, ask to speak to the radiology physician.

Putting radiation in context

Advancing Molecular Imaging and Therapy

Everyday Activities	Radiation Dose
Watching television	0.01 mSv/year
Air travel (roundtrip from D.C. to L.A.	0.05 mSv
Average annual exposure from breathing radon gas	2 mSv
Average annual exposure living in the United States	3 mSv/year
Annual dose limit for radiation workers in U.S.	50 mSv/year

Medical Imaging	Radiation Dose
Chest X-ray (1 film)	0.1 mSv
Nuclear med. thyroid scan	0.14 mSv
Mammogram (4 views)	0.4 mSv
Nuclear med. lung scan	2 mSv
Nuclear med. bone scan	4.2 mSv
Tc-99m cardiac diagnostic	11 mSv
Abdominal CT scan	8 mSv
F-18 FDG PET/CT study	14 mSv
Cancer treatment	50,000 mSv

* See www.discovermi.org, fact sheets, Molecular Imaging Safety for statistics sources.

Courtesy Fred Fahey, DSC

Balancing Benefit and Risk

IMAGE WISELY® Radiation Safety in Adult Medical Imaging

With an understanding of the effects of radiation and the doses for standard examinations, a physician (possibly with the help of a radiologist) can make a determination of which examination provides the most benefit to the patient at the lowest possible dose.

To do this, the physician needs to consider the following criteria:

http://www.imagewisely.org/imaging-modalities/computed-tomography/medical-physicists/articles/how-to-understand-and-communicate-radiation-risk

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ACR Appropriateness Criteria in Publications

This list attempts to identify all ACR Appropriateness Criteria® (AC) topics and related ACR AC documents that have been published in the medical literature. The list may not document every publication and does not include every publication that may reference the ACR AC. The ACR AC are updated on a regular basis. Refer to the ACR website at www.acr.org/ac for the most current and complete version of the ACR Appropriateness Criteria®.

Appropriateness Criteria in Publications for 2016

https://www.acr.org/Quality-Safety/Appropriateness-Criteria/ACR-Appropriateness-Criteria-in-Publications

Revised: 2016

ACR Appropriateness Criteria®
Radiation Dose Assessment Introduction

Subcommittee on Appropriateness Criteria Radiation Exposure: Dianna D. Cody, PhD[1], Murray Becker, MD, PhD[2], Richard A. Geise, PhD[3], David W. Jordan, PhD[4], Mary Ann Keenan, DMP[5], Max P. Rosen, MD, MPH[6], Frank J. Rybicki, MD, PhD[7], Keith J. Strauss, MSc.[8]

Table 1. Relative radiation level designations along with common example examinations for each classification

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range	Example Examinations
○	0	0 mSv	Ultrasound; MRI
☢	<0.1 mSv	<0.03 mSv	Chest radiographs; Hand radiographs
☢☢	0.1-1 mSv	0.03-0.3 mSv	Pelvis radiographs; Mammography
☢☢☢	1-10 mSv	0.3-3 mSv	Abdomen CT, Nuclear medicine bone scan
☢☢☢☢	10-30 mSv	3-10 mSv	Abdomen CT without and with contrast; Whole body PET
☢☢☢☢☢	30-100 mSv	10-30 mSv	CTA chest abdomen and pelvis with contrast; Transjugular intrahepatic portosystemic shunt placement

*The RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (eg, the region of the body exposed to ionizing radiation, the imaging guidance that is used, etc.). The RRLs for these examinations are designated as "Varies."

Table 10: Acute Abdominal Pain and Fever
Patient presenting with fever, non-localized abdominal pain and no recent operation*

Exam	Rating 1 = least appropriate 9 = most appropriate	RRL scale
CT abdomen and pelvis w/contrast	8	☢☢☢☢
CT abdomen and pelvis w/o contrast	6	☢☢☢☢
US abdomen	6	None
X-ray abdomen	5	☢☢☢
X-ray upper GI series with small bowel	5	☢☢☢
X-ray colon contrast enema	5	☢☢☢
Nuclear ImagingGa-67 of abdomen	5	☢☢☢☢
Nuclear Imaging Tc99m WBC abdomen and pelvis	5	☢☢☢
MRI abdomen and pelvis w/o contrast	5	None
MRI abdomen and pelvis w/contrast	5	None
Interventional arteriography visceral	2	☢☢☢

*adapted from ACR Appropriateness Criteria October 2008.

Table 11: Acute Abdominal Pain and Fever in a *Pregnant Patient*
Patient presenting with fever, non-localized abdominal pain and no recent operation*

Exam	Rating 1 = least appropriate 9 = most appropriate	RRL scale
US abdomen	8	None
MRI abdomen and pelvis w/o contrast	7	None
MRI abdomen and pelvis w/contrast	7	None
CT abdomen and pelvis w/contrast**	5	☢☢☢☢
CT abdomen and pelvis w/o contrast	5	☢☢☢☢
X-ray abdomen	4	☢☢☢
X-ray upper GI series with small bowel	2	☢☢☢
X-ray colon contrast enema	2	☢☢☢
Nuclear Imaging Ga-67 of abdomen	2	☢☢☢☢
Nuclear Imaging Tc99m WBC abdomen and pelvis	2	☢☢☢
Interventional arteriography visceral	2	☢☢☢

*adapted from ACR Appropriateness Criteria® October 2008
** only after all exams that do not use ionizing radiation have been used or ruled out as possible.

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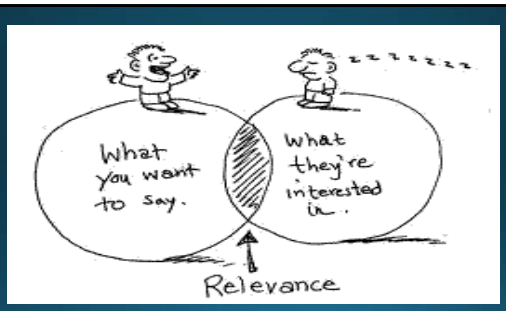


http://mindthegapacademy.com/page/4/

http://mindthegapacademy.com/blog/category/physician-patient-communications-2/

Jagosh, J., Donald, J., Steinert, Y., Ellen, M., & Ingram, L. (2011). The importance of physician listening from the patients ' perspective : Enhancing diagnosis , healing , and the doctor – patient relationship. Patient Education and Counseling, 85(3), 369-374.

LISTENING AND HEALTHCARE

- **Physicians interrupt 69% of patient interviews within 18 seconds** of the patient beginning to speak. As a result, in 77% of the interviews, the patient's true reason for visiting was never elicited (Lee, 2000).
- Health care practitioners who use more **patient-centered communication,** including listening, have patients who are more satisfied with their practitioners and their overall medical care (Wanzer, Booth-Butterfield & Gruber, 2004).
- **Effective listening** is a significant predictor for patient satisfaction (Wanzer, Booth-Butterfield & Gruber, 2004).
- **Active listening** on the part of both the physician and the patient increased compliance and the perception of a supportive atmosphere (Hausman, 2001).

http://www.listen.org/page-1860173

ila International Listening Association

Does this look like good communication?

https://www.minnpost.com/community-voices/2015/04/electronic-health-records-advance-quality-care-all-minnesotans

http://mindthegapacademy.com/

Practical tips

- Ask the patient "How may I help you" or "What are you thinking about that concerns you?
- Send the message "I am with you…"
- Simple gestures, phrases
  - Eye contact
  - Nodding, smiling
  - "Tell me more…"
  - "uh-huh"
- Pause to allow time to let their words sink in
- Repeat key phrases (active listening)
  - "What I hear you saying is…"
  - "Do I understand you correctly that…"

LEARN strategy

- **LISTEN,** actively with repect
- **ELICIT** health beliefs of the patient or parent
- **ASSESS** priorities, values and supports
- **RECOMMEND** a plan of action, with adequate explanation and understanding
- **NEGOTIATE** by involving the patient in next steps and decisions

Non-verbal (for F2F)

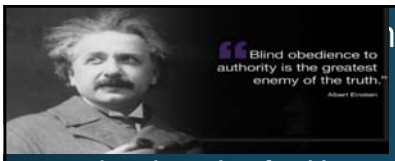
- Sit square to the patient
- Avoid "across the desk"
- Lean slightly forward
- Eye contact
- Relaxed posture
- React to their words with slight changes in facial expression
- Turn off or ignore cell phone
  - ***("You are my priority at this moment")***
- Demonstrate empathy

http://cliparts.co/people-talking-images

How do people make decisions?

- Emotionally driven or fact-based
- Judge opposing views
- Trust in "surety" vs. "honest uncertainty"?
- Under stress, even rational people often shift to emotional response, and have difficulty processing info they would easily understand, absent the stress factor

Talking "down" to a patient communicates lack of respect or arrogance



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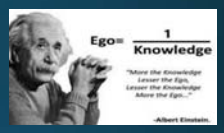


- I don't have time for this.....
- This person is irrational, so why bother....
- Decisions not made on facts cannot be changed based on facts
- Let me dazzle them with my scientific knowledge so they will listen to me
- Who are they to challenge my judgement?

Be sure to discuss both Radiation Risk and Benefit

Benefits should be clearly explained by your doctor

Fast results for best treatment

Maybe in the future, a slight increased risk of cancer

Not having the procedure, delay in treatment

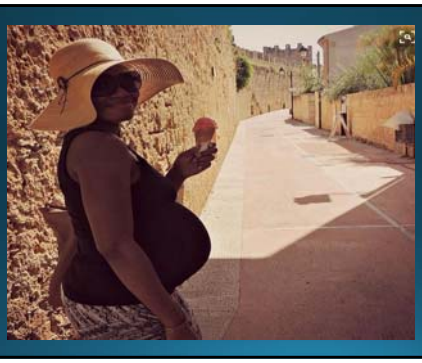
Describe immediate benefits

Roger of Salerno, c 1180

https://trinitycollegelibrarycambridge.wordpress.com/2015/07/29/surgery/

Tip #1

- Driving (or being passenger in a car) is the riskiest think most of us do
- We intuitively balance Benefit and Risk every day, without thinking about it
- Consider this example



Tip #2

You know, if this were my daughter/niece, granddaughter, I would ask "Do you use any dose reduction methods for children?"

.....If yes, then have them go ahead with the study

...because *the real benefit to her NOW* is more important than the very small chance that something might happen (but probably won't).

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Think about these.....

Do

- Communicate respect
- Eye contact
- Body language
- Active listening
- Describe real, immediate benefits and the "possibility" of risks years later
- Act like talking to your mother, grandmother

Referring Physician

"***My patient*** has been told she should have a Head CT scan after she was in a car accident. They trust me, and asked for my advice.
I am unsure because I have read that CT scans use a lot of x-rays, and carcinogenesis is a concern.

RSO

I am the Radiation Safety Officer and have been asked to discuss this with you.

The RSO starts conversation.
Time called after 2 mins.
Referring MD interrupts.
Try some new techniques.
Time for feedback.

Take away points

- Helping patients requires effective communication
- Communication is not just about reporting facts
- Try active listening techniques, to establish respect and rapport
- Be aware of eye contact
- Develop a concise, flexible "elevator speech"
- Emphasize Benefits-Risk, find your own analogy

Think about it…