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Subject: Radiation Safety Counseling News - How to Talk to Patients Concerned About Radiation (Part 1)
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Radiation Safety Counseling News

How to Talk to Patients Concerned About Radiation (Part 1)

Dear Greg,

I am pleased to share two items of news this month. On February 5, I was installed as President-Elect of the American Academy of Health Physics. This organization represents all Certified Health Physicists of which there are about 1,300 in the world. Also beginning March 1, I will become the full time Director of the Radiation Safety Counseling Institute (RSCI). This is a transition from my part-time position as Vice President of training for the Dade Moeller company. As the Director of RSCI, I will be offering consulting and training services with Moeller as one of my clients.



Ray Johnson

This month's article is based on a series of 90-minute seminars which I presented to about 50 staff of the Radiology Department at the Shady Grove Adventist Hospital on February 16 and 18, 2012. I greatly appreciated the opportunity to interact with hospital staff since most of my experience has been with industrial and research facilities. I am most grateful for the very kind invitation of Michael Calhoun, Radiology Director, to meet with his staff. The seminar included two areas for discussion, 1) understanding the basis of radiation fears and 2) how to give the most helpful response to a concerned patient.

As always, your questions or feedback are welcomed. Feel free to contact us through email, our blog, or our Facebook page.

Regards,
[Ray Johnson](mailto:ray@radiationcounseling.org)
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 Radiation Safety Counseling Services

Understanding Radiation Fears

We began with a question, "Is it OK to be afraid of radiation?" Most said, "Yes." Although they admitted that the challenge is dealing with people who are inordinately afraid. There is nothing wrong with fear. Fear is a gift for our protection. We have learned to survive by paying attention to our fears and reacting as needed. True fears are part of our defense mechanism. Psychologists define a true fear as a response to a specific stimulus such as pain or imminent danger. Since radiation does not produce any physical sensation or imminent danger, then fear of radiation is not a true fear. Instead, radiation fears fall in the category of worries or anxieties based on our memories or imagination. Radiation fears are manufactured in our minds based on images of unacceptable consequences of radiation exposures.

Why are We so Afraid?

Since most people do not technically understand radiation, they are forced to rely on what they have always heard and have come to believe about radiation. Unfortunately most of what people everywhere believe, without special training in radiation safety, is mythology. A myth is defined as any collective opinion, belief, or perception that is based on false premises or the product of false reasoning (false meaning not technically defensible). Radiation myths are the common basis for news stories. Scare stories about radiation sell news and advertising. Although radiation is neither new nor mysterious, it is often grossly over covered. The best recent example is the coverage of the damaged nuclear reactors in Fukushima, Japan. While entire communities were destroyed and over 18,000 people died as a result of the tsunami, the media focused on the nuclear plants for more than two weeks. This focus on the nuclear plants failed to report that no one died or was even injured as a result of radiation. Instead viewers were invited to imagine the consequences of nuclear bombs, Chernobyl, and prospects of radiation spewing forth from the damaged reactors.

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facebook

We have created a Facebook page for the Radiation Safety Counseling Institute. This is another resource for the sharing of radiation safety related information and questions.

Click below to visit our page!

[Find us on Facebook](#)

Got Questions?

If you have a question about radiation safety that you would like to share, please post your question on our Forum (blog) or our Facebook page. Each week our experts will select a question and post an answer that will also be included in our monthly newsletter.

To post a question go to:
[Radiation Safety Forum](#)
 or
[RSCI on Facebook](#)

Communication Insights

Each week, we post another installment of guidance to improve communication with others. To stay informed, you can go to our [blog](#) and click on Follow: RSS, then choose to "Subscribe to this Feed".

You can also go to our [Facebook](#) page and choose "Like" to have our status updates displayed on your Facebook wall.

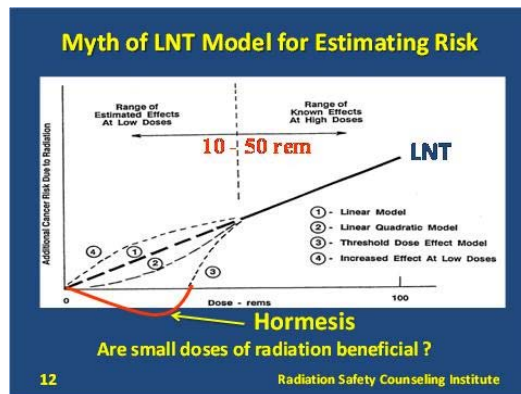
We hope you find this information helpful and welcome your comments, questions, or other feedback.

The Myth of "Deadly Radiation"

The media has used these two words together for over 60 years such that most people now accept these words as the basis for understanding radiation. However, putting these two words together automatically assumes causes and effects which may not be true. For example, "Is radiation deadly in all amounts?" We know radiation can be deadly in very large amounts and that is not disputed. What most people do not know is that we are actually very resistant to effects of radiation. Medical doctors know this when they find that very large amounts of radiation are needed to kill tumor cells. The reason we can treat cancer with radiation is because tumor cells are more sensitive to radiation damage than normal cells. However, it still takes enormous amounts of radiation to knock out cancer cells. The analogy for using the words "deadly radiation" would be to describe aspirin as "deadly aspirin." We know that aspirin can be deadly and is a common choice for people committing suicide. However, it would seem strange to say that I have a headache, so I will take a dose of "deadly aspirin." And yet, this is how the media commonly describe radiation. It's scare tactics to entertain viewers.

The Myth of LNT

Radiation safety regulators have long applied a theoretical model for worker and public protection which relates radiation dose and lung cancer. This model is called "the linear non-threshold dose model" or LNT. This model extrapolates known cancer incidence at high radiation doses as a straight line down to zero as shown in the figure below.



Myth of LNT Model

There are several problems with the LNT model. One is that we do not know for certain that cancer results from doses less than about 10 to 50 rem (10,000 to 50,000 mrem). The straight line LNT model says that there is risk of cancer all the way down to zero dose. However, there are a large number of studies which show that doses below 10 to 50 rem may actually stimulate a beneficial response. The other problem is that zero does not really mean zero. There is no zero on the cancer risk scale. In this country we would be looking for additional cancers (due to radiation) above a baseline of 560,000 cancer deaths a year. Thus, even if they occur they would be impossible to see above the baseline.

There is also no zero on the dose scale. We are all exposed to radiation all the time. In this country the baseline for everyone's average dose is about 310 mrem/year. Thus, in theory we could potentially see cancer risk at doses above 310 mrem/year.

However, there are much higher baseline doses in other countries without any apparent ill effects as follows.

310 mrem / year average across US
 600 - 800 mrem / yr in Yangjiang, China
 1,500 - 2,500 mrem / yr in Kerala, India
 6,000 - 8,000 mrem / yr in Guarapari, Brazil
 10,000 - 26,000 mrem / yr in Ramsar, Iran

Radiation and Fearful Images

Since no one has ever had an experience or sensation from radiation exposure, then people have to imagine the consequences, usually cancer and death. Unfortunately, we cannot learn about radiation the way we learn about touching a hot pan or falling to the ground. Actually, psychologists know that all fears are based on imagination. Fears summon powerful predictive forces. Thus, fears are often not about what is happening now, but what might happen next. My favorite example is to ask a person fearful of heights to make believe they are in the center of the flat roof of a very tall building. People will usually say they are OK with that, but would be concerned about getting too close to the edge (which they have to imagine). I then ask them to picture themselves near the edge. At

this point they admit they are afraid of falling (but they have to imagine that). I usually conclude this exercise by asking the person, "Would it be helpful, if I said you do not have to be afraid?" They always tell me this is not helpful. Imagination will overrule factual information every time. And yet, how often have we been tempted to tell a person afraid of radiation, "You do not have to be afraid."

Role of Our Conscious and Subconscious Mind

In a previous Newsletter (Radiation Fears and the Subconscious Mind, 9/19/2011) we described how fears originate in our subconscious mind. Our conscious mind functions rationally, thinks, reasons, and makes decisions and choices based on sensory input. This function, which is our source of knowing and awareness, occupies only a small fraction of our mind (less than one percent). Our conscious mind is the captain of our ship and the giver of orders. However, our conscious mind can basically only deal with one thing at a time (have you noticed when looking for a street address on a dark night, that you automatically reach over and shut off the car radio).

Our subconscious mind is the seat of our emotions and creativity. More than 99.999 % of stimuli to the brain are processed subconsciously. The subconscious mind is an enormous super computer which operates the machine we call our body. It functions 24/7 regulating our heart, breathing, digestion of food, healing of cells, etc. It is a great multi-tasker which handles hundreds of thousands of inputs simultaneously for our health and protection. Our subconscious mind is also programmed from infancy to react instantly to signs of danger. Do we want to allow the conscious mind to take time to think about whether a snake is going to strike?

Fears of Radiation May Now be Involuntary

For most of us, our subconscious mind is already programmed with instinctive fears of heights, snakes, spiders, closed spaces, being submerged, etc. Because our conscious minds have forwarded the message "deadly radiation" to our subconscious minds for our entire lives, radiation has also now become an instinctive or involuntary source of fear. Thus adverse reaction to radiation is often now automatic and leads people to quickly conclude, "Radiation, I don't want anything to do with that."

Since radiation may now be the source of automatic instinctive fear, the question is whether we can talk someone out of their fear of radiation. Like other instinctive fears, such as fear of snakes, can we talk someone out of their fear by saying, "It's only a harmless garter snake." Can we change a person's fear of radiation by saying, "You do not have to be afraid, it's only like a chest x-ray." I believe we all know that such responses are not going to change a person's fears and may not be helpful. It may also not be helpful to ask a person fearful of radiation, "Why are you afraid?" Since their fear comes from their subconscious, they do not know the answer. If forced, they may rationalize an answer that may not make any logical sense.

Fears May be the Greatest Danger from Radiation

Fear, anxiety, stress, and worry can cause drastic psychological and physical effects such as

- high blood pressure
- addictions to alcohol and drugs
- heart disease
- weight loss or gain
- depression, insomnia
- suicides, abortions
- post traumatic stress syndrome

Since our subconscious mind reacts automatically to messages forwarded from our conscious mind without judgment, all of the effects above could be controlled by our subconscious. We all know of the "placebo effect" where our subconscious mind produces a beneficial outcome of medication because our conscious mind believes the medication will work. Since our subconscious does not judge messages from our conscious mind, it will carry out the expectations of the conscious mind. For example, a person retires and says to themselves that their useful lifetime is now over. How long do they live after retirement? A person dies and their spouse concludes they no longer have a reason for living. How long before the spouse also dies?

Studies of the subconscious mind show that it will attempt to carry out whatever the conscious mind believes. As Yoda told Luke Skywalker in Star Wars, "If you believe you can or believe you cannot, you are right." Because our beliefs so strongly affect the reactions of our subconscious mind, I am now asking questions about how beliefs may affect our physical reaction to radiation. Is it possible if people believe that they will be harmed by radiation, that their subconscious will cause that to happen? To put this question into a current context, I would wonder, "How many persons evacuated from the Fukushima province in Japan will suffer harmful radiation effects because they have been told that they should expect them?" Will their belief in harmful radiation effects cause

them to happen? I hope someone more knowledgeable than me will explore such questions.

We will continue this article next month and look at how to give the most helpful responses to people afraid of radiation.

Your comments on this article are welcomed. Notice also we have added a link to our website ([Ask a Question](#)) where you can post questions for which you would like answers. Be well and God's blessings to you.

[Forward email](#)



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