Efficiency and Best Use of Resources From a Safety Perspective

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RETHINKING MEDICAL PHYSICS

Disclosures

I have received research funding through Padres Pedal the Cause in the form of a Moores Cancer Center Translational Cancer Research Award.

Outline

- Physics workload and how safety is impacted
- Efficiency and best use of time/resources
  - What can you do personally?
  - What can we do as a field?

The New York Times

U.S. | THE RADIATION BOOM

As Technology Surges, Radiation Safeguards Lag

By WALT BOGDANICH JAN. 28, 2010

In New Jersey, 36 cancer patients at a veterans hospital in East Orange were overradiated — and 20 more received substandard treatment — by a medical team that lacked experience in using a machine that generated high-powered beams of radiation. [illegible] publicly reported, continued for m[illegible] in place to catch the errors.

In Texas, George Garst now wears two external bags — one for urine and one for fecal matter — because of severe radiation injuries he suffered after a medical physicist who said he was overworked failed to detect a mistake. The overdose was never reported to the authorities because rules did not require it.

Radiation incidents

The Ottawa Orthovoltage Incident

Report of the Panel of Experts convened by Cancer Care Ontario

Peter Dunscombe, Ph.D.

Harold Lau, M.D.

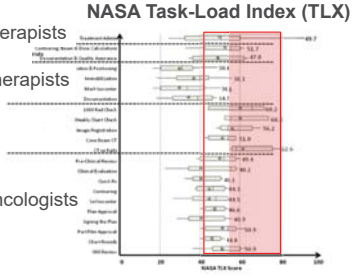
Susan Silverthorne, M.H.S.A.

Executive Summary

During the incident review, it was discovered that medical physics staffing at The Ottawa Hospital Cancer Centre had been experiencing extreme resource limitations prior to and around the time the error occurred. This was further exacerbated by the increasing demands of new equipment commissioning, equipment upgrades and urgent requests by the CNSC (Canadian Nuclear Safety Commission). Although a direct causal relationship between medical physics staffing shortages and the specific calibration error cannot be established with certainty, it was definitely, in the opinion of the Panel, a significant contributory factor.

Workload levels

Treatment therapists
Dosimetrists
Simulation therapists
Physicists
Radiation Oncologists



NASA TLX > 55 considered "high workload"

Mazur et al, IJROBP 2012; 83(5): e571-6.

Physicist responsibilities

Audience poll

Efficiency: What can you do?

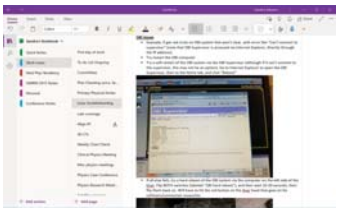
Obviously there are a lot of things that are outside of your control, but what can you do personally?

Disclosure:
My personal perspective

Stay organized

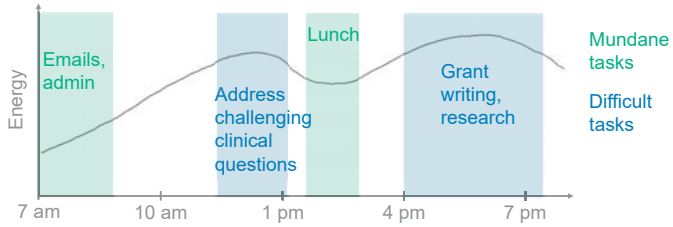
Find a system that works for you, and ideally one that can be taken with you

Examples:
- Calendar synced between all devices
- OneNote notes synced to all devices



Time management

- Work with your daily energy cycle
- Daily highs and lows are normal and should be listened to

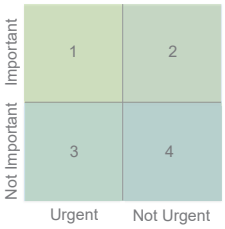


Prioritize

- Learn and recognize your own limitations
- You can't do everything

Prioritize

- Prioritize your to-do list – what NEEDS to be done, and what can wait?



Make time for wellness

Find something that makes you happy, and schedule it in

Make time for wellness

Need a reference?

- Significant correlation between poor well-being and worse patient safety in 16/27 studies measuring well-being
- Significant association between burnout and patient safety in 21/30 studies measuring burnout

Support network

Surround yourself with good people
- Mentors
- Coworkers
- Past colleagues
- Friends and family

Take time to build and nurture your support network
- Conferences
- Coffee, beers, surfing
- Touch base

Learn when to say no

… But be strategic about saying no

- Say yes to big boss's requests, things needed for promotion/ advancement
- Say yes to colleagues when you do find time, to maintain your support network and be a valuable team member
- Never compromise safety
- When in doubt, consult with your boss

When in doubt, ask for help

- Use that support network
- Talk to your boss about modifying your responsibilities
- Don't forget to reply to others' calls for help we you can!

Efficiency: What can we do?

Automate	• Improve efficiency of clinical processes • Eliminate opportunity for human error • Free up time for innovation/etc.
Focus	• Tasks that add value and use our unique skillet • Delegate menial tasks or hire assistants • Redefine role of physicist?

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Focus	• Tasks that add value and use our unique skillet • Delegate menial tasks or hire assistants • Redefine role of physicist?
Collaborate	• Don't reinvent the wheel • Use your network • Share any tools you create
Communicate	• Incident learning systems • Medphys Listserv/ other • Publish

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