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# Medical Physics & Career Musings

adapted from a talk to the WIPC conference 2015  
(slides notes help guide the slides)

Michelle Hilts, PhD, FCCPM

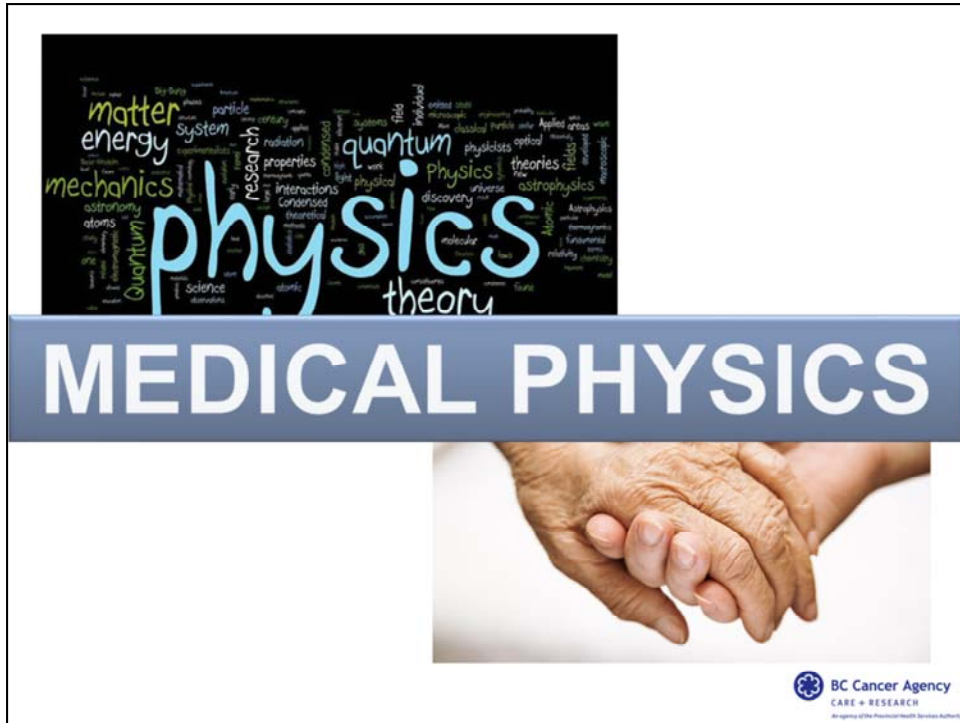
BC Cancer Agency – Centre for the Southern Interior



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I realized I'd thrive if I could take my love of physics, math, solving problems and give it a human connection. And that's when I discovered this thing called medical physics.

I did my PhD at UBC and have since have worked at the BC cancer agency in radiation cancer treatment.

## What is medical physics?

Wikipedia

**Medical Physics** (also called **biomedical physics** or **medical biophysics** or **applied physics in medicine**) is generally speaking the application of physics concepts, theories and methods to medicine or healthcare.



Well, Wikipedia as usual does a pretty good job...

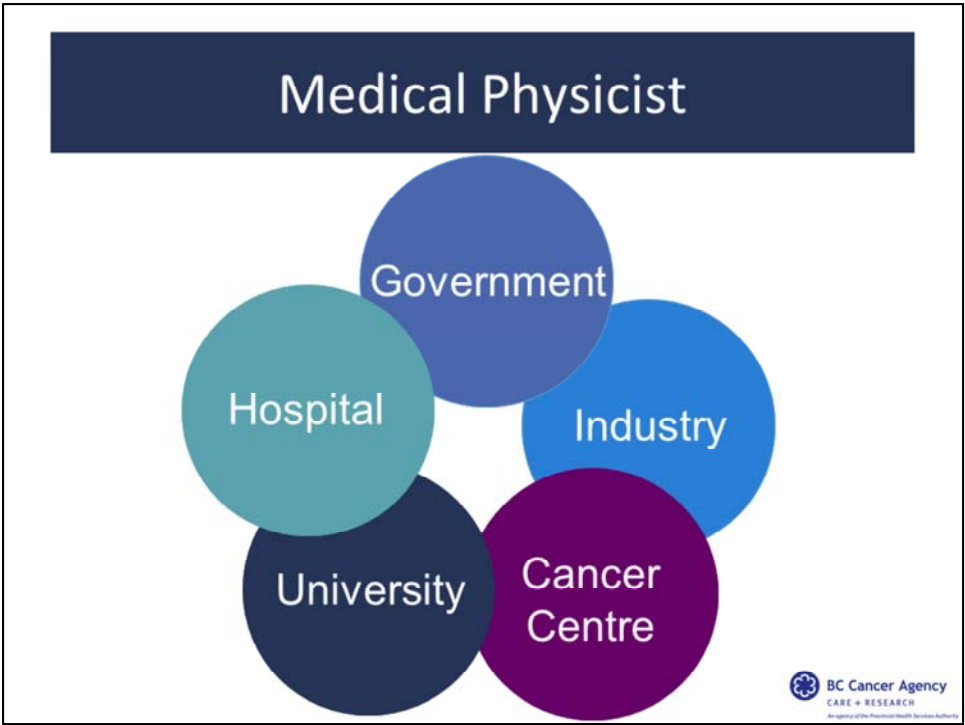
Application of physics to medicine. It is not defining new physics. It is applying old physics and methodologies to new problems.

**International Day of Medical Physics**  
**November 7, 2013**

Radiation Exposure from Medical Procedures: Ask the Medical Physicist!

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It encompasses many diverse areas, from radiation protection to nuclear medicine. This word cloud from our 2013 international day of medical physics poster highlights this diversity.



Typically medical physicists can work in:



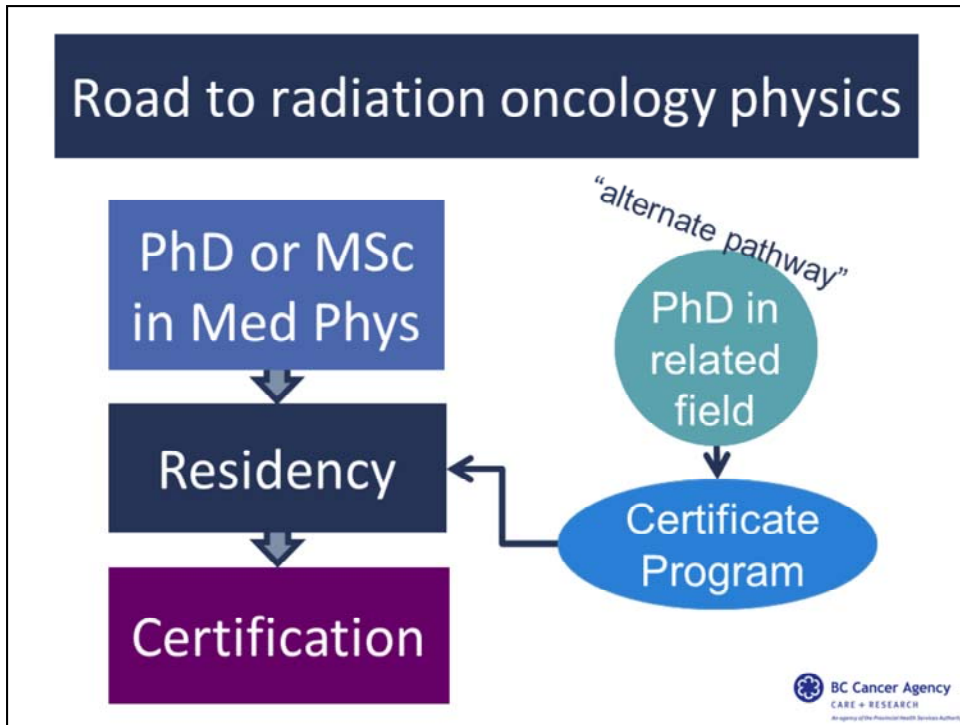
They are involved in teaching, radiation safety, R&D and clinical service. Sometimes a medical physicist will work in just one of these areas, but more frequently their work bridges several.

## Clinical radiation oncology physics

- Clinical responsibility is top priority
  - Radiation Oncologist: Where to treat with what prescription dose
  - Medical Physicist: Ensuring this happens...
- Along the way... technique development, research, teaching etc.
  - The way a physicist thinks is invaluable!

To hone in on clinical radiation oncology physics...

This means... ensuring that radiation delivery machines deliver the correct dose. There is a unique treatment plan for each radiation patient (tells things like where radiation beams come from, amount to radiation from each beam) and Every single radiation treatment plan is signed by a medical physicist!



These days there is a well defined path into the career.



## Career musings

- **Do what you love!**
  - Ignore other's ideas of what you should do!
- It's ok if it takes time to find your career; it's better to find what drives you
- Know your strengths and weaknesses
  - everyone has weaknesses, it's ok!
  - that's what team work is for... 😊
- Mentorship matters
  - be a role model when you can



Do what you love! Several speakers have mentioned this and Elizabeth Nicol yesterday was a living example of how this love is infectious! Anyway, I think it is critical. For both success and for happiness.

I say ignore labels because I've been hung up on this in the past. Particularly the notion of being a physicist and relating this to what I do. Not all of what I spend time doing is physics. As physicists in a cancer care, we are THE professionals highly skilled at critical thinking, problem solving and the scientific method. And these skills are invaluable to both research and clinical service in the cancer centre. I was super happy in my job, but I worried for some time that here I was with a PhD in physics not doing enough "physics". But this is silly. I am using unique skills I have as a physicist in an extremely valuable and satisfying way and I love it. So forget the label. Do what you love and are good at!

It took me some searching to find what I wanted. I think this is OK and way better than getting railroaded into doing something you aren't passionate about. It will take up a lot of your energy, you best enjoy it!

We all have strengths and weaknesses. I have found that an honest

recognition of these is really helpful. I have a terrible memory and am, at times, not very interested in details. I like ideas, the big picture. In recognizing this I have been able to collaborate with those that fill in these holes and enjoyed phenomenal teamwork.

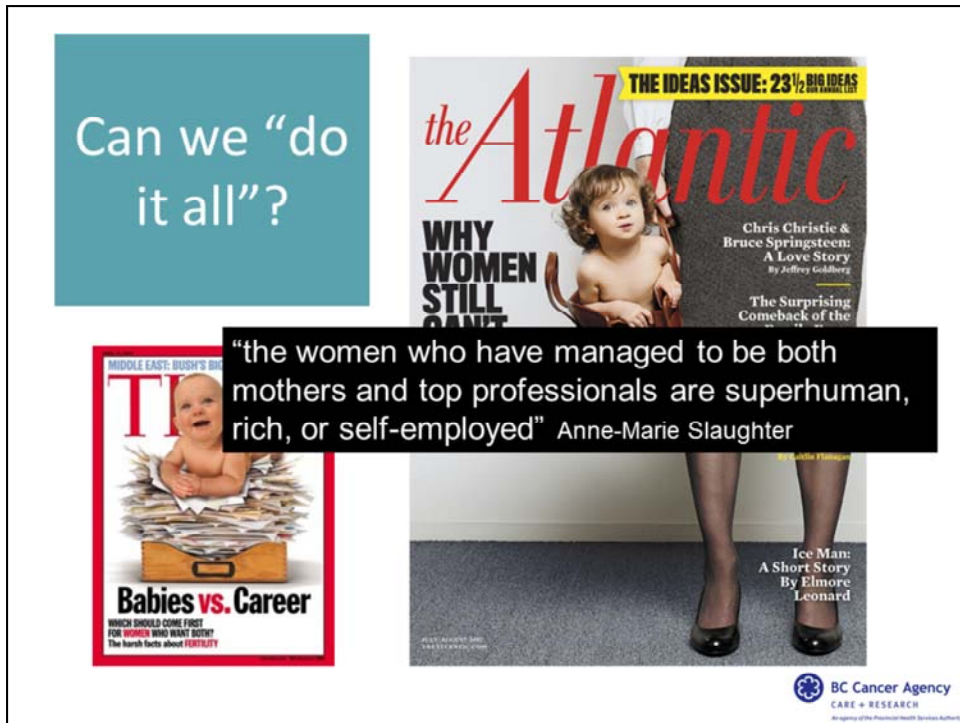
From that early experience with a nuclear physicist visiting my grade 5 class to my PhD supervisors to visionaries today, I think mentorship is key all along the way. Involve yourself.

## Work-life musings



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So... here's the reality... I have two young sons and trust me, balance is a constant struggle....



Fantastic article – I encourage you to read it. Her premise is that my generation at least, has been fed a rather pumped up, all roses, we can “Do it all” mantra and that in reality the idea that you can do it all without compromise is ridiculous. This is something I deeply believe. I will go further to suggest that this super rosy “you can do it all” mantra has caused some harm, leading to women who then when they struggle to balance a career and family end up wondering “what is wrong with me?” when they are unhappy and stressed out.



So is this really our only recourse? No... we've talked about structural improvement that will hopefully make doing it all easier. But I also think we need to think about what "all" means and this will likely be very different for each of us.

## Define your own “all”

- Know what really matters to YOU
- Prioritize based on these things
- Compromise elsewhere
- Learn to say “NO”
- Share the load
  
- Alternative?
  - stress



There will ALWAYS be something you won't do as well as you would like. Knowing that this is your choice, that you chose to put your energy elsewhere, is vital.

## Cupcakes



Personal notes... aren't these cupcakes amazing!!! But nope. I'll never be able to do that. No class cupcakes from my kids... my kids wear shirts inside out... I have wanted to replace my couch for 2 years now... That's just life.