The MS Degree in Medical Physics: An Interview with Tony Doemer

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So you've decided you would like to become a medical physicist and intend to dedicate at least a substantial portion of your career to clinical practice. What degree should you pursue? You are aware that a graduate degree, then residency, then board certification is your pathway to this job but there are several graduate degrees available in medical physics. Let's assume that you don't already have a PhD in physics or a related field (thus ruling out the graduate certificate program). You are now left with the MS option and two doctoral options (PhD and DMP). Some have questioned whether the MS degree is still, and will continue to be, a sufficient degree for professional practice in these medical specialties. While some entrants to the profession might assume that more letters are better, or that one should necessarily always pursue a terminal degree, I decided to ask one of our graduates of the WSU program his perspective on the value of the MS degree during his career as a medical physicist in radiation oncology.

Tony Doemer is a 2007 graduate of the MS program in Medical Physics at Wayne State University. He completed a radiation oncology physics residency at Thomas Jefferson University in 2009 and then returned to Detroit to work for Henry Ford Health System. Today, he is the Director of Clinical Physics for HFHS, overseeing clinical physics services for 6 different treatment locations which together employ 24 clinical radiation oncology physicists. I caught up with him recently to talk about his career path.

JB: Thanks for taking the time to talk to me about how your degree decision has shaped your career path. My first question, of course, is whether you would make the same decisions again.

TD: I would definitely take the same route. I'm very happy with the decision to complete an MS degree, a clinical residency program, and then enter clinical practice. The PhD path definitely brings a lot of value to our profession, and is necessary for many academic roles, but I've been able to do everything that I've wanted to do with the education and training that I pursued. As you know, I actually entered the WSU program in the PhD track but later switched to the MS. After my first year of graduate coursework, what I looked forward to most was getting experience with specialized clinical training rather than searching for a research niche. So I chose to enter a residency program and go directly into clinical practice. At some large institutions, you may have people specializing in specific areas of practice. But I wanted to be more of a generalist than a specialist. Having said that, I've had a lot of opportunities to become a specialist in particular areas but I'm still routinely practicing within a broad array of clinical duties.

JB: Do you think things have changed since you trained? And would you still take the same path if you started today?

TD: Things have definitely changed. Obviously one of the biggest changes is the challenge of getting a residency position. They were actually even more challenging to get into back then, but it wasn't required in order to become board certified. So there is a lot more pressure today. But while many things have changed, I think the role of, and necessity for, MS medical physicists is very similar. They are a major component of our clinical workforce in medical physics. While the specific areas of innovation are different today, we still have a lot of space to innovate and make things better in our respective medical specialties. In some of these areas in radiation oncology - take immunotherapy, radiopharmaceutical therapy, MR guided and biologically guided radiotherapy, for example - we don't really even know what it is going to

take to implement and deliver these in the most effective ways. So we need every bit of our workforce to do these things well and right now we are seeing a seemingly major shortage of clinical medical physicists. This shortage is not showing signs of slowing down and may get worse as more baby boomers retire. So our MS workforce is absolutely critical. It is also the most direct path to clinical practice so it has the added advantage that it allows us to more quickly react to changes in market forces.

There are a lot of myths out there about degree type and its relationship to residency placement. While there are some institutions out there that are restricted to hiring PhD graduates into their residency positions, that is, in my opinion, a small minority of institutions. And there are many programs out there who more commonly accept MS graduates. [Sidenote: Of the 28 residents admitted to date into the HFHS residency program, 14 had an MS degree, and of 29 residents admitted into the Karmanos Cancer Center residency program and its affiliates, 25 had an MS degree.] I've heard of students who decide to do a PhD so they have a better chance of getting a residency position. This is obviously not a great reason to do a PhD!

JB: Let's come back to that point in a minute, but as a former residency program director, talk about your thoughts in regard to degree type during resident selection.

TD: HFHS doesn't take degree type into account while recruiting or hiring residents. That's not to say that we don't recognize degree differences, or differences in what was in the application dossier, but the question was more of what they achieved within the scope of their progression to this point. We would expect different types of accomplishments from a PhD applicant than from an MS applicant. Our decisions were based largely on what people had to say about the candidate within the context of their role with them, not necessarily on specific metrics. Even if the PhD candidate had more academic accomplishments, did they do enough academically in that extra time they spent in graduate school? There is a different type and level of expectation there.

JB: In your hiring of clinical physicists for HFHS, do you have similar views?

TD: Yes. Some institutions look specifically for PhD physicists, which is great for us because we want MS physicists and that helps our applicant pool! We're roughly 50/50 in terms of MS and PhD here. The bottom line is that when it comes to patient care, I don't trust any PhD physicist more than I trust an MS physicist.

JB: Many people have the impression that there is an implicit bias toward MS physicists from community hospitals – that community hospitals think that PhD physicists prefer to sit in an office and do research while MS physicists prefer to be out in the clinic. What are your thoughts on this?

TD: From my experience, that is unwarranted and generally untrue but I think there may be an experience advantage in the clinic for the MS physicist. If you are splitting your time between academic pursuits and clinical practice, you inevitably will have less time for clinical practice. We definitely need both of these. The innovations that medical physics research brings to medicine are absolutely needed but so is the clinical workforce. What we really need right now is more medical physicists overall.

JB: You mentioned innovation and I think some people might think that this is something only the domain of PhD medical physicists. But I view that as something that is just part of our role as medical physicists, regardless of degree or training pathway. I would expect that nearly all medical physicists actively participate in clinical research and development.

TD: Absolutely. We're an innovative field so this is inherently a part of everything we do. I, along with a Wayne State trained PhD physicist, commissioned the first MR linac in the US. Is that 'clinical research' or is that just my job?

JB: Ok, let's come back to our earlier discussion of the PhD pathway. There does seem to be a recent trend of students choosing the PhD pathway for reasons other than a career in research/academia. Do you think this is a troubling trend?

TD: Doing a PhD is a 'calling'. Many students are drawn toward this pathway because the idea of a career in research is so compelling. However, there seems to be an increasing number of students these days who complete a PhD and then have little or no participation in research during their career. It is difficult to reconcile this with that idea of being compelled toward a career in research. There are also those who start on a research track but don't stay on it and a clinical position seems to be a fallback position. I think this is partly due to people choosing a risk-averse path, because research funding is so difficult to acquire and maintain. A clinical position is a much safer alternative. I think there is also a component of this that is due to students who want to get graduate school funding through their degree process and/or have a better chance at a residency position.

I participate in a lot of interviews and a question I always ask is, "what is your ideal job?" Many people say that they would like at least one day of protected time for research. And my next question is, "what is your plan with it?" Will our field and our contribution to medicine be substantially pushed forward by positions with a day per week of research? And is what can be done in that day very different than the clinical R&D that is being done by MS physicists? From a structure standpoint there is a problem. Particularly since clinical dollars often pay for that academic time while a researcher builds their research niche.

JB: We have limited academic resources in medical physics. Do you think this, in a sense, results in 'wasted' academic resources?

TD: I do. There is sort of a bifurcation of our workforce. We talked about the need for the clinical workforce but we obviously also need innovation. Innovation can come from MS physicists but the PhD workforce is the primary driver. We've talked about the flow of PhDs out of research roles. There are few examples of the opposite – of physicists who do a PhD later in their career and accelerate into funded research roles. So there isn't much flow from clinical to research, but that leakage from research to clinical is important.

JB: Those are great points. We have limited resources to support and mentor the next generation of physicists who will lead major research efforts in the field. When these slots are used for someone who won't end up in an academic role, that results in a reduction in our future contributions to the overall research infrastructure in our respective medical specialties.

So, in summary, the MS degree is still a very vital component of our educational infrastructure in medical physics and the right choice for many students interested in a career in clinical medical physics. While the statistics do show that PhD applicants have a higher residency placement percentage than MS applicants, the overall number of MS students entering residency positions is still greater, and some programs are able to place most or all of their MS graduates into residency programs.

Tony, I want to thank you for your time, and for all you have contributed to our profession, from clinical service, to innovation, to education and training, and to our national organizations including the AAPM, ASTRO, and SDAMPP. You definitely make Wayne State very proud!