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221<sup>th</sup> Annual Oration

**ORATOR:** Terence R. Flotte, M.D.

*Celia and Isaac Haidak Professor of Medical Education  
Dean, Provost and Executive Deputy Chancellor, The University of Massachusetts  
Medical School*

**ORATION: *A Glass (more than) Half Full: The Top Ten Reasons to be Optimistic about the Future of Medicine in Worcester***

Please let me begin by thanking the Worcester District Medical Society, its the president Dr. Jay Broadhurst and all of the officers of the Society for bestowing upon me the wonderful honor of being selected to deliver this year's WDMS Oration. I also want to thank Ms. Joyce Cariglia, Ms. Melissa Boucher, and all of the members of my office team, Kristen Maki and Kimberly Laperle, for assisting me with the logistics this evening. I want to further thank Chancellor and Mrs. Collins for attending, as well as the University of Massachusetts Medical School (UMMS) students and faculty in attendance. Finally, I want to very much thank my adult children, Jesse, Lindsay and her friend Wes, who are a daily support and joy for me. Finally, I want to thank my wife Kye for her ongoing support and also for inspiring the top ten list format for this talk. Like David Letterman, Kye is a native of Indiana and "Dave fan" from way back.

I am particularly daunted by the task of delivering this Oration given that this is the 221<sup>st</sup> Oration and the society has been in existence for nearly 223 years. Given that history, and my relative newcomer status, being here only 10 of those 223 years, I thought myself on safer ground to talk about the future rather than about that storied past, and so I present to you this evening a talk entitled:

*"A Glass (more than) Half Full: The Top Ten Reasons to be Optimistic about the next 220 years of Medicine in Worcester"*

Two disclaimers about this talk: First, I do not consider myself an orator. I am more of an idea man. So perhaps we should consider this talk an "ideation" rather than an oration. For you psychiatrists in the audience, let's just hope it is not a suicidal ideation. Second, this talk is about optimism and about the future, but it is not intended to ignore the very real challenges we face. In fact, it is precisely in response to those challenges that I hope to bring you 10 reasons for optimism.

In that spirit here is **Reason #10: Burnout. We can name it, we can treat it, we can beat it!** I think most of you in this audience are aware of the statistics on physician burnout. Between 40 and 60% of docs report symptoms of burnout on national surveys. The good news is that the awareness of this problem is also at an all time high. The AAMC and other national meetings in the last year or two have all featured workshops on this topic. A recent meta-analysis published in the *Lancet* in the last 3 months synthesized the outcomes of 2,617 articles and 52 separate controlled trials and cohort

studies showed convincingly that interventions for burnout DO work, whether they are focused on individuals or organizations (1). In almost every study, there were positive effects and the overall effect was an 18% drop in the rate of burnout indicators. I know that here in Worcester, our hospitals are investing in physician wellness and resilience interventions, and the data suggests that this will be worth it.

On to a more positive note, **Reason #9: Our patients have insurance.** It is easy for us here in Worcester to take for granted our very high rate of health insurance coverage. Massachusetts is the best in the nation, and is at the lowest level in our nation's history. Furthermore, we know that having insurance is beneficial for patient's health. Insured patients have better access to care, better health outcomes and live longer than uninsured. This is truly good news. This has further improved under the Affordable Care Act (ACA). I am not going to make this a political speech, but it does seem clear that Congress has gotten the message from states and hospitals, we do not want to see any ground lost on this issue.

These are going to just get better from here... **Reason #8: Respect for physicians remains high.** Shown here are some of our wonderful young doctors at the time of receiving their white coats, among other things a token of that respect. Even in 2016, this Harris Poll of American show that 90% of Americans rate being a physician as a prestigious profession. Even above firefighters, military officers and police officers. Most of us know this to be true. But it is important to remind ourselves of this at times likes these.

**Reason #7. We are not alone...The increasing role of teams in health care.** Many of us have recognized for many years that patients are best treated not by physicians alone, but by teams of health professionals, including nurses, pharmacists, occupational therapists, physical therapists, psychologists and many others.

The focus on what is best for the patient has prompted professional education groups across all these professions to come together and agree on Interprofessional Education competencies. Our three-school UMass Worcester campus has fully embraced this, espousing the theory depicted in this IPEC collaborative document, that in training, we should come together across professions to focus on the learners. The goal is to then model the right behavior for learners to then transition to being a part of a team that focuses on the patient (2). We work to live this out at UMMS as we offer interprofessional education grants (IPEG) grants every year to support teams of faculty across nursing and medicine and biomedical sciences to develop interprofessional courses.

Perhaps our best example of this is our opioid training course (OSTI) for medical students and nurse practitioner students. Beginning last spring under the leadership of Drs. Pugnaire and Fischer, this program has trained hundreds of learners as teams, combining simulation, standardized patients (the patient actors), and panels of actual patients and families affected by substance use disorders (3).

**Reason #6** to be optimistic about the future of Worcester medicine: **Women in the physician workforce.** Of course, this is not new, but it is a trend, and as data from the AAMC report on women in the physician workforce show, the diversity of specialties attracting women in their **residencies** is evolving. Certainly some specialties, such as obstetrics and gynecology and pediatrics, still attract more women, but family medicine and psychiatry are also majority female as well and previously male dominated specialties like surgery are also attracting women. And why do I say this is a positive trend? Well, apart from the fact that it only makes sense as we grow the workforce to not leave out 50% of the population. But beyond that, this 2017 study showed that elderly patients care for by female docs both had a higher chance of surviving after hospital discharge and a lower rate of being readmitted to the hospital (4).

But, as with some of the other positive trends, there is a challenge here. A remarkable study, funded by NIH, and performed by Reshma Jagsi, a radiation oncologist at Michigan showed that among recipients of NIH-K awards, the mentored investigator career awards, female recipients earned a full \$30,000 per year less than their male colleagues, and nearly 30% reported experiencing varying levels of gender-based mistreatment (5).

The challenge for us then is to move forward at the top, and address the gender disparities at the leadership levels, especially department chairs, where female representation still lags dramatically. Keeping in mind the residency data I showed you, the percentage of female chairs remains low, even in majority female specialties, only 20% in pediatrics, 22% in Ob-Gyn and 19% in family medicine. I am happy to report that here at UMMS, we have increased from 1 female academic department chair ten years ago, to seven in 2017, a tribute to the faculty who have filled those positions and also to the leadership of Chancellor Michael F. Collins and other senior leaders in our organization. Good news for medicine in Worcester.

We're halfway home now, and I will present another one of my "silver lining" type reasons: **Reason #5 Electronic Health Records (EHRs) are getting better...we hope...** EHRs are ubiquitous, the trend shown on this slide actually predated the meaningful use regulations, most physicians are using EHRs, and Massachusetts is again first in the nation in physicians who were fulfilling stage 1 of Meaningful Use of EHRs when they first rolled out, according to publicly available data from the CDC. Our clinical partner, U Mass Memorial Health Care, under Dr. Dickson's leadership is making large investments in this area, and the evidence of dividends for quality and patient safety are growing.

**Reason #4: Science that Matter, right here in Worcester.** Of course, this group is all quite familiar with the fact that Professor Craig Mello brought home a Nobel Prize to Worcester in 2006. The accolades keep coming and are sure to do so going forward into the future, as our own Dr. Victor Ambros won the 2008 Lasker Award and the 2015 Breakthrough Prize, and we continue to amass members of the National Academy of Sciences and the IOM, now called the National Academy of Medicine, including our own Michael Green, who is a member of both. We are confident that more great science from

these breakthroughs will continue in the Worcester Biomedical community, the trajectory is only up.

**Reason # 3. We are digital and connected.** I suspect we are just scratching the surface on how mobile and other digital devices can be used to affect our health. But just a bit of evidence on how simple digital health monitoring can promote patients to take better care of their own blood pressure (systolic and diastolic) (6), or on control of diabetes. The figures show HgbA1c values improving through a telemedicine intervention(7). The better we get at harnessing these technologies, the more benefit we can hope to reap.

**Reason #2. Our patients will live longer.** I have to be a little biased here and start with pediatrics. This recent review by Cheng et al., documented seven changes in health care in pediatrics any one of which could be considered an amazing breakthrough (8). These include:

- Immunizations... not for just diphtheria and pertussis and tetanus, but for the invasive bacterial diseases that I trained on in residency, Hib and Pneumococcus
- Reducing sudden infant death syndrome (SIDS) with back to sleep
- Curing acute lymphocytic leukemia (ALL), the most common childhood cancer
- Saving Premature infants with surfactant replacement
- Preventing HIV transmission from mother to infant
- Increasing life expectancy for genetic diseases
- And saving lives through injury prevention

Just some sample data: Look at the decline in mortality from ALL. The incidence is the same, but the rate has dropped 4-fold. The percent decline in mortality after the introduction of surfactant is shown on the figure (a 50% decline in the 26 to 28-weekers).

Another great example is pediatric AIDS, a disease that came and went during my 31 year medical career. And finally one that I participated in to some extent as a pediatric pulmonary physician, the dramatic increase in the life span in CF patients. By the way, this does not even show yet the effect of the new Vertex drugs, Kalydeco and Orkambi.

So now on to the net effect of both pediatric and adult medicine interventions life span...it is continuing to improve and the disparities are getting smaller, as these data from the census bureau show. Good news indeed!

Is there any down side to that? Well... There is the issue that if every one lives longer, they are going to use more health care. Healthy 70 year olds use more health care than healthy 50 year olds. So as you can see from this slide from the AAMC Center for Workforce Studies, every conceivable projection means that there will be a physician shortage, at least in the coming 30-40 years. Which is still a glass half full because it means total job security.

**Finally, the Number One Reason for being optimistic about the future of medicine in Worcester: Help is coming! The largest cohort of the brightest and most well rounded people in history is joining our ranks!**

National data on applicants to US Medical schools, the blue line, shows that it is an all time record. Our UMMS data parallel the trend until last year when we began talking a limited number of out of state students and the school's enrollment overall has taken an uptick in parallel to the need. We have developed new clinical placements for those students at Cape Cod and Baystate in Springfield. And those students are the best qualified ever, as shown by our incoming class grade point averages (GPAs) and MCAT scores. We maintain our top ranking in US news ranking, and our students go to great programs when they graduate.

Our student's overall rating of their satisfaction with their education is the best in the nation, as shown by the AAMC graduation questionnaire data on overall satisfaction. But quite simply, if you want to know what the future of medicine is going to look like, just look at the faces of these wonderfully talented, idealistic, dedicated young people! If you had my job and worked with these young people, how could you not be optimistic!

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