

Commencement Address: The Power of the “5th c”

The 157th Commencement Ceremony
New York Medical College
Carnegie Hall May 23, 2016
Steven A. Wartman, M.D., Ph.D

- Thank you President Kadish
- Chairman Hasten
- Board of Trustees
- Chancellor Halperin
- Deans
- Officers
- Faculty
- Distinguished Guests
- My wife, Gina
- and, of course, the Class of 2016

- It is a great honor to be asked to come before you today on the occasion of this distinguished institution’s 157th commencement.

- I have many thoughts looking out upon the audience in this classic venue
 - The view from the stage is breathtaking
 - The graduates are a diverse group, and represent three different health professions schools, plus a number who have joint degrees
 - You have worked hard to be where you are today, have had the usual ups and downs during the course of your education, but now enjoy the glow of real accomplishment
 - But there are others who also deserve our thanks
 - The School’s leaders, teachers, and staff
 - And let’s not forget those who have supported you along the way - families, spouses, partners, and friends
 - Let’s give them a round of applause

- My talk today is tempered by the realization that beginning immediately after I finish and lasting a lifetime, no one will remember who the commencement speaker was
- I accept that – but I aspire to leave a message with you that I hope will stay with you throughout your career

- I'd also like to offer you some relief with the assurance that I will follow the “3-B's” of commencement speaking, as told to me by my late friend and university president, Andrew Sorensen
 - **Be** to the point
 - **Be** brief
 - **Be** seated

- And here is what I want you to remember: the “**power of the 5th c**”
 - Hold that thought – I'll be getting to it

- Arguably, medicine, science, and healthcare are undergoing the fastest changes in their history

- Let's take a moment to look backward and forward:

- When I was still in the early phases of my academic career, about 34 years ago, there were no personal computers, no cell phones, and no internet
 - When I graduated from medical school, about a thousand years ago, it never really occurred to me how different medicine might be over the course of my career
 - As an intern, which is what the first year of residency used to be called, we had every other night on-call, and there were no duty hour limitations. Our team managed a full range of patient acuity, from minor to severe. For example, I remember admitting very sick patients to the ICU, as well as patients whose blood pressures

or blood sugars were just a little bit off, or who needed some routine GI studies.

- Today, more and more patients are treated as outpatients, while the pace and acuity of hospital care is extraordinary
- The changes that are taking place are fundamentally reshaping medicine and science.
- And the tech gurus tell us that the changes to come will be exponential in scope – such that the next 34 years will witness faster and even more dramatic changes than the past 34
- 34 years from now will be the year 2050, when most of you will still be practicing your profession
- What will it be like for you compared to today?
 - And is it even possible to speculate?
- A recent viewpoint provided an interesting perspective on the changes we are experiencing. The authors commented that we are undergoing a profound shift from a print-based industrial society to a technology-based internet society¹
- One way to look at this evolution, as described last month in another article², is that a new ecology of healthcare is leading three types of transitions:
 1. From health care to self-care (going online for advice and moving beyond diagnosis to self-management)

¹ The Future of the Professions. Richard Susskind and Daniel Susskind, Oxford University Press: 2015.

² West J and Mehrotra A. The future ecology of care. Annals of Internal Medicine 2016;164:560-561.

2. from visit care to virtual care (for example, Kaiser Permanente in Northern California reports that 40% of all physician encounters are virtual and growing³)
 3. and from in-person care in hospitals and offices to a wider range of settings (retail clinics, and “hospital-at-home” models)
- These transitions have important implications for the health professions
 - Each day that passes we become less the exclusive bearers of medical and scientific knowledge – which for millennia has been the strength and basis of trust of our profession
 - How does this change the role of the care giver, when the patient knows nearly as much on a specific topic – or perhaps even more?
 - Another transition is the growing focus on precision medicine
 - This speaks to a highly individualized form of healthcare that will increasingly rely on interdependent teams of health professionals using large data sets and sophisticated computer algorithms.
 - While this opens up important new avenues of scientific research and technology development, it also will lead to deep changes in the role and scope of the health professions
 - And there is also the important dynamic of changing market forces in healthcare
 - Given the 3.2 trillion dollars – and growing – spent on healthcare each year in the U.S., comprising about 18% of our GDP, there are massive incentives for private companies, ranging from established giants like CVS to small start-ups, to get into the health field and further conflate and complicate – and perhaps improve - the healthcare system

³ ibid

- There is, of course, another largely unpredictable dynamic: that of politics -- in the form of healthcare legislation – which could intervene and change a lot of things
- But I think you’ll agree that it’s best not to try to make any predictions on this point, especially in the midst of an election season!
- There are also many other potential healthcare disruptors out there, and, when trying to see the big picture of change, it seems to me that a new paradigm for medicine, healthcare, and science is being created - something that would amaze and perhaps profoundly disorient the historical greats, from Hippocrates to Osler.
- More than a century ago, a Swiss patent clerk discovered a new physics which changed our views of space and time, and, ultimately, of ourselves
- What’s being created today in healthcare is a kind of “new physics of patient care”
- Had I been working in a patent office today with a fraction of the intelligence of the great physicist, perhaps I would have come up with this formula to describe the “new physics of patient care”
- So, picture a white board with the following equation:
- $E = mc^{4\text{th power}}$, where
 - E = the new healthcare system
 - m = the patients and populations being treated
 - and $c^{4\text{th power}}$ refers to 4 new key principles of patient care
- These 4 new key principles are:

- c^1 is care anywhere
 - Technology is moving with and inside the patient's body, wherever the patient may be
- c^2 is care by teams
 - The one-to-one doctor patient relationship is being augmented by relationships with multiple health professionals
- c^3 is care by large data sets
 - Collections of huge meta-data sets are becoming standard for patients, eventually leading to continuous monitoring
 - A new interpretive and functional infrastructure is required to manage this data (IBM Watson comes to mind here)
- and c^4 is care by machines
 - Machines are changing conventional medical practice, because:
 - They can out-perform humans in a growing number of tasks (for example, some surgeries, data storage and recall)
 - They don't have to be perfect, but just make less mistakes than humans
 - Machines' abilities don't decline with age, they don't get tired, and they are easily updated
- As artificial intelligence grows more powerful, it presents a fundamental challenge to the interface between humans and smart machines (of course this applies not only to health care, but to all areas of our lives)

- Marc Pollacco, in an article in *The Pharos*, wrote that: “Healing, whether physical or emotional, is an experience of life, one that technology can never replace.”⁴
- Another recent journal article on the growing mechanization of healthcare suggested that “The profession...has a tremendous opportunity and an obligation to oversee the application of this technology to patient care”⁵
- So, considering the “new physics of patient care” – built on the “4c’s plus some other futuristic variants, what do today’s graduates have to look forward to?

PERHAPS THE MOST EXCITING TIME IN THE HISTORY OF MEDICINE!

- Science will further unlock the mysteries of biology with new insights into disease and aging.
- Highly effective and individualized therapies on an unprecedented scale will become available, with the result of enhanced health and well-being, provided we solve the insidious problem of health disparities.
- But, as we move rapidly into this new arena, we need to address some fundamental issues:
 - What are the most effective roles of caregivers, and how best can they work together?
 - How can human health professionals most effectively manage the machines? Or ---- will they be managing us?
 - How does medical decision making go beyond probabilities to address uniquely human complexities?
 - And, ultimately, what is the reality of the “human touch?”

⁴ Pollacco MA. The \$6 million physician. *The Pharos* 2015;78(2):11-15.

⁵ Darcy AM, Louie AK, Roberts LW, *JAMA* 2016; 315: 551-2.

- I have now got some really good news: I am coming into the home stretch of my talk, and getting closer to the one point I hope you will remember.
- It's very common at white coat ceremonies and graduations to talk about health professionals' duties to their patients. We recite the Hippocratic oath and affirm that we will do our best to provide our patients with honest and appropriate care – and, above all, do no harm,
- But there is another dynamic to this dyad that doesn't get enough attention: that each patient you see, no matter how serious or trivial an issue they have, is also serving as your teacher.
- Patients are arguably your most important teachers, beyond the medical literature, grand rounds, or the growing virtual world of knowledge. It is through learning from your patients that you become the best clinicians you can be. Because of this, every working day you owe each and every patient your gratitude and respect.
- The late Paul Kalanithi, in his book *When Breath Becomes Air*, wrote: "...the [caregiver's] duty is not to stave off death or return patients to their old lives, but to take into our arms a patient and family whose lives have disintegrated and work until they can stand back up and face, and make sense of, their own existence."⁶
- And the writer Anatole Broyard put it another way: "Not every patient can be saved, but illness may be eased by the way caregivers respond."⁷
- In other words, Kalanithi and Broyard emphasize the paramount importance of concern for the sufferings and misfortunes of others

⁶ Paul Kalanithi, *When Breath Becomes Air*, Random House: 2016

⁷ Adapted from *Intoxicated By My Illness*, Anatole Broyard, Ballentine Books: 1992

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- So this brings me to the “5th c” that I mentioned at the beginning of my talk, the one thing that I hope you’ll remember
- My formula, $E = mc^4$ has added a 5th power, the 5th c, perhaps its most powerful component
- It turns out that the 5th c is already defined on your institution’s website, where, under the statement of guiding values, it says and I quote:
 - “...we teach that while being educated and skilled is critical to success, to truly make a difference and fulfill the duties and responsibilities that the medical and health service professions require, our students must also be compassionate.”
 - So the 5th c – and the most important one - is compassion.
- So while I know you will forget my somewhat tongue-in-cheek physics formula – and it is worthy of being forgotten – I ask you to be guided by the importance of sympathy and concern for the sufferings and misfortunes of others, and to be steered by the principle that your patients are your best teachers. This will serve you well in your profession and your life.
- I wish all of you, on the threshold of such a promising future, a world filled by achievement, fulfillment, peace, and, above all, compassion.

Thank you