The Digital Age is Here: Are *All* Our Physicians Ready?

Laura D'Onofrio

We are approaching a new era in healthcare. Some say it is a revolution. Technology is slashing industry silos, consumers are more empowered than ever, payors are shifting their incentives, and work forces are demanding diversity and flexibility.

As for physicians, they are the gatekeepers to our collective wellbeing. They have been a prized profession throughout modern history, but today we are seeing a change in the demographics of this population. Physicians of today do not look like ones from yesteryear. The physician population has its own segments, more pronounced than ever before, which think differently, act differently. What do these diverse segments look like and what can each offer us?

We need to address these distinctions to ensure that the exponential growth in healthcare reaches all physicians. We need to underscore respective strengths from each generational stratum and codify it into broad national use. The goal, and my hope, is help guide physicians of all ages into this not-far off future as leaders, not pawns.

FIRST. THE CHANGES.

The physician demographic changes, and what they mean, are debated.

Some sources are optimistic. One census in 2016 states that in 2010, there were 850,085 actively licensed physicians in the United States, and that by the publication date the number grew to 953,695. In 2010, 23.6% of these physicians were <40 years old and 25.2% were 60+ years old. By 2016, 25.2% of physicians were in the younger cohort, and 29.2% in the elder.[1]

Why are there more older doctors? Are there *really* more older doctors? The census in 2016 stated that millennials are the largest cohort represented in the United States population (83.1 million, compared to 75.4 million baby boomers[1]). From this report I wondered why there are more millennials in the population but less in physician roles.

Another perspective notes our population is aging disproportionately and doctors are retiring later. For instance, the Association of American Medical Colleges (AAMC), in partnership with IHS Markit, a London-based consultancy, released data with simulations that by 2030 the US will experience a shortfall of between 40 800 and 104 900 physicians. Meanwhile, between 2015 and 2030 the population of people aged older than 65 years will grow by 55%, and the population younger than 18 years will grow by 5%.[2] Perhaps less young people are becoming physicians, our population has more elderly than young, *and* we are working later in life? Intuitively, I am in this camp.

Data can say many things. These articles address different years, periods, specialties, and utilize different predictive modelling tools.

Just for argument's sake, what can we know? Well in 2017, there were approximately 900 000 physicians (484 384 in specialties and 441 735 in primary care) with an American population of just over 320 million.[1-4] Primary care handles everyday needs in population health goals (weight control, blood pressure, glucose, cholesterol control, and smoking cessation), so let's consider them.

If we divide the total population by the primary care physician population working full-time (388 000) in 2017, that is about 824 patients per primary care physician. Out of the 200 working days in the calendar year-each physician needs to see about 4 patients per day if they want to make sure each patient is seen once in the year. Does this sound like the average day for a primary care physician? Not to me.

Even authors ask, is it a physician shortage or surplus?[2] If medical school numbers and enrollment are increasing, roles are expanding, non-physician clinicians continue to receive more prescription rights, and retirement is delayed, we may be okay. But, if our aging U.S. population demands intensive healthcare, we may have demands exceeding supply.[1] As usual, to glean the true context out of literature is hard, we have to look back, way back, to understand trends forward.

Regardless, it is apparent that the generational diversity in physician numbers is going to be a factor in this paradigm shift. There is no I in TEAM, and physicians can't prevent the changes that are coming. History has shown us that the system will adapt, but the transformation this time is the role of technology and it may outpace our human *ability* to change. That said, we must be more ready than before. We need to understand each other and make sure that each provider is thoroughly engaged as this transition to a digital health world moves forward.

A Look at the Generations- *A Snapshot of their Mindset*

Let's discuss what makes the generations who they are.

Traditionalists (1925-1945)

Traditionalists shared the common experience of societal rebuilding after the war although they were too young to fight in World War II. Sociologists identify them as dedicated, conventional, altruistic, and patriotic.[3] Many are now retired but about 10% of all physicians are from this cohort, and they are leaders within their respective departments, hospitals and communities. Generally, they value hierarchy, loyalty, formality and avoid challenging the systems where they work. Finally, medicine is their vocation, not a day job.[4]

Baby Boomers (1946-1964)

Baby Boomers were part of the Golden Age of Medicine and are captains of their own ship. They accumulated medical knowledge and made independent clinical judgements; decisions did not need approval, or second review. Crucial to this generation is the idea of a legacy in their work. They value meaningful work and knowledge contribution-an asset to their organization.[5] They have a very bonded patient-physician relationship and are highly respected. Also important, during their first engagement with the healthcare system pensions were widely available, burden of retirement was on the company, and social security was robust without threat of insolvency. Their medical school costs and debt burden pales in comparison to what future generations are facing. Finally, they did not have internet and lightning speed access to medical knowledge and are accustomed to archaic diagnostic equipment and procedures.

Generation X Physicians (1965-1980)

Generation X was the era of insurance preauthorizations and peer to peer review before medical action. It was during this time the art of medicine became the financial bottom line of medicine. College and medical school tuition increase outpaced inflation and there was a disconnect between what medicine was going to be when entering (based on Golden age physicians) and what it turned out to be in reality. Advances in technology led to increased efficiency (archiving and communications; more data processing; advanced imaging). However, electronic health records and patient satisfaction surveys ushered in the era of clerical and "YELP review" medicine. In terms of philosophy, Generation X providers are collaborative, nonhierarchical, and bring a questioning approach to their work and life.[3]

Millennials (1981-1999)

Here we are to today. Millennials are used to the Information age- it is instantaneously accessible, and they are used to making an impact and ultimately want to contribute as such to their organization. Ideally this organization values their interests as well: feedback, team-oriented design, and work-life balance.[3] Millennials are shaped (arguably scarred) by major historic and social events like 9/11 and tragic school shootings. They have shifted to prioritizing physician lifestyle; this generation did not want to endure as much personal sacrifice. They also have more financial acumen as the student loan debt burden is continuing to exponentially rise, declining reimbursements loom, and Social Security and Medicare contributions are riskier. There is less room for these MDS to make financial errors. They are also attractive because cost saving measures in hospital administration programs are looking for more mid-levels, and less expensive specialists/experienced physicians. Still though, they have questions, technology who has been their friend throughout their lives is now growing in importance and paranoia is creeping in. For instance, millennials wonder, will Artificial Intelligence replace certain specialties?

HOW IT PLAYS OUT?

Take a look at a recent Scandinavian study that outlines some differences in professional approaches comparing senior and junior physicians. Senior doctors are aged 65-70 years with more than 30 years of clinical experience and junior doctors are aged 30-44 years old with between 1-10 years of clinical experience. All come from an internal medicine background, with broad variation in practice.

Theoretical Knowledge

The Senior cohort did not prominently describe the theoretical knowledge, more so they expressed their opinions based off past cases and experience. Their considerable experience was used when cases were considered typical or divergent, risky, complex, or needed prognosis. Juniors on the other hand used theoretical knowledge as a step by step guide in forming valid clinical judgements. Interestingly, they did not trust fully their past clinical case experience.

Ethical Approach and Communication

In terms of a morality-based approach, senior doctors were conclusive in their positioning. They refer often to the patient's wellbeing, consider the risk of "over-treating", and revolved around patient's quality of life. In communication they are precise, underlined the patient's vulnerability and needs, and emphasized their need to be aware and controlled in their behavior and communication style with patients.

The junior cohort's moral standings revolved off personal beliefs and in using resources in the most cost-effective way. Their communication style was focused on their actions, and providing information, a more one-way style of approach, compared to their predecessors.[6]

Each generational group developed unique knowledge and experience based on social, organizational, and personal prerequisites. The seniors had clinical proficiency where cues, patterns, and associations were used considerably against. This all lends to what Patricia Benner defines as experience. "As the skill model predicts, with more experience comes a better grasp of the nature of particular clinical situation…. Consequently, responses to patients become

more contextualized and attuned." This wider view focuses decisions on the long term and their relational and ethical skills are more distinct.

The juniors had a focus on process and ability to act, which according Benner lends to a skill characterized by using guiding rules, searching for credible sources of useful information, and the anxiety of performing without mistakes.[7]

WHAT WILL IT TAKE TO UNITE THE GENERATIONS?

Are there organizations who have used physician generational diversity to improve healthcare delivery and outcomes? Are there leaders with knowledge to implement these types of programs? There are executive, graduate, and post-graduate courses dedicated to organizational leadership and doubtless they are useful to any professional. But, as I have eluded to in the past, the healthcare provider has a duty higher–a Hippocratic duty. They must be selfless in a fragmented, tug-of-war system. Assuming this system doesn't change here in the United States (and unfortunately, its not) what skills can help physicians move into a new generational era where the past contributes to the current? Where the novel viewpoint isn't given a sneering glance by a long-standing attending?

Agility

Can we develop ACGME accredited education to hone-in on concepts of resilience, managing uncertainty, and balancing stakeholders? Can the prevalent idea of collaborative care be of use in this regard? We discussed that millennials are accustomed to collective action, but traditionalists and boomers value hierarchy and Gen Xers are autonomous. Let us brew these ingredients more functionally. Millennials will be easiest so let's start there. They morally believe and are characteristically befitted for the multidisciplinary approach where feedback and insight abound. Traditionalists and boomers on the other hand would be suited to guide the new team as they appreciate standard chains of command. They just have to do it a bit, *differently*. Leading with a mentorship style which will pass their legacy, infuse new meaning into their work, and open communication in a non-judgmental tone with their younger peers. Finally the Gen Xers- autonomous, discerning, and balanced, could serve as key mediator and translator role for this new collective design. Likely this group would be a safety net for resolving internal conflict or remediating poor, unexpected outcomes- serving as an ad hoc human resources arm. Agility does mean *moving* quickly and easily after all, but we can all apply our own touch.

Tech Savvy

What happens when we don't know where our friends summer barbeque is taking place? We Google Map it. What if my car battery died overnight and I have a client meeting in 2 hours? I Lyft there. What happens when I suddenly end up in conversation regarding every Brad Pitt movie ever made. I ask Google Home or Siri.

Our location, transportation, and even memory is now infused and dispersed through the massive computing network available to us, often through devices no larger than an index card.

This is our world in 2019, and culturally the shift toward machine learning is well on its way.

But technology isn't *that* new. Healthcare, new techniques, devices, and equipment have always been linked, right? What about when in the mid-1800s when the Industrial Revolution birthed the germ theory of disease and sanitation and hygiene became a real thought, ushering in the scientific era of medicine? Medical writers of the time commented that the industrial age enhanced quality of life: clothing, cleaning products, and nutritious food could be purchased at a lower cost. Even puerperal fever, a baffling disease to doctors, was eradicated with obstetricians washing their hands between deliveries. Bacteriology and microbiology, introduced by Louis Pasteur, were applied to medicine and surgery and further improved outcomes. Later on, in the 1900's, antibiotic applications sparked the rising curve in longevity rates from 59.7 years in 1930 to 74.9 years by 1987.[8,9]

Could you imagine if we didn't have the convex lens magnifying glass, now ubiquitous in surgery, if Roger Bacon hadn't constructed it in 1250? Or the flexible catheter from Benjamin Franklin in 1752? Or the X-ray from Dr. Wilhelm Conrad Rontgen in 1895?[10] You get the idea. Innovation is not only necessary in medical science; it is intrinsic to it.

Physicians must disabuse from themselves the notion that technology will eradicate their purpose. It is going to *enhance* their purpose. Traditionalist providers, who mainly live in senior positions now, need to harness their belief in the vocation of medicine, that technology is and has always been part of their profession and that their loyalty to its advancement trumps any hesitation. The baby boomers are suited well for technology, their competitive and driven spirit can be steered to the idea that it will best their organization in the marketplace. Generation X and Millennials will obviously be keen to technology's integration into the clinical space- they are accustomed to the digital age and value growth and development.

It is about positioning technology into the workplace appropriately, with phased and targeted messaging. Less top-down implementation and more merging of minds. Technology training needs to be provided on an ongoing basis, in various forms: self-paced, face to face, and tutorials–to meet the needs and learning styles of the differing generations. Assistance and support are crucial so that clinicians are comfortable taking new technology to their divisions and teams.[11]

Empathy

This word is commonplace in team development, leadership, and management training. But what of it is included in medical education? Defined as a caregiver's cognitive and vicarious understanding of the patient as a person- empathy has been on the decline in medical

education programs. While not as provocative as medical journal titles like, "the Vanquishing Virtue," and "Is there hardening of the Heart during Medical School," suggest, empathy is slowly tapering off in the education system.

Speculation as to why is diverse. Some say self-protective cynicism helps buffer the difficult and painful clinical interactions with patients and families. Others look at the medical schooling process as a competitive treadmill where science majors and high-test scores are given precedence. This psychologically underscores qualities like detachment and assertion, rather than character, and fuels emotional byproducts like anxiety and frustration, both rampant in the medical profession. However, recent reexaminations of literature show that mean empathy ratings have little or no change attributable to medical education training and that response bias is likely.[12]

Data is varied, and yes, most professional fields can look and feel like the rat race. To some extent this competitive spirit works to the advantage of an organization and a nation's product output. But at what cost?

Just a quick search on the American Medical Association (AMA) website and you see the headlines: "How to Immunize Yourself against Medical School Burnout," and "Coworker Reports of Unprofessional Behavior by Surgeons and Surgical Complications in their Patients." In the former article, the AMA touts 'finding joy', 'practicing gratitude', and 'sending concerns up the chain.' In the latter, the AMA found that the adjusted complication rate for surgeons who had 1 to 2 coworker reports of unprofessionalism was 14.3% higher than surgeons who had no coworker reports, and 11.9% higher for patients whose surgeons had 4 or more reports.[13,14]

We should downshift on uncooperative and obstructive practice via less seniority and more intergenerational teams in decision making.

In 1999 the Association of American Medical Colleges (AAMC) was thinking along these lines: that professionalism should be part of the core curriculum in all medical schools. What was professionalism (when it was redesigned in 2005)? Well it was centered around 7 key themes: compliance to values, patient access, doctor-patient relationship, demeanor, professional management, personal awareness and motivation. Each of these themes necessitates their own editorial, however, let's think about two of these in particular: demeanor and personal awareness and motivation.

First, why are they important? They are not hot button keywords under mission statements these days, however, they should be. Who wants to train under a physician with belittling or impatient demeanor? And awareness and motivation- if all a department lead physician is interested in is managing working time directives, so her political aspirations can realize, how focused can she be to that perplexing patient case you are working through? Likely no one, and not much.

Furthermore, what if we tell our organizations, and ourselves, one thing, but it is really another? The research notes this: self-assessments are questionable and consistently show that accuracy of self-assessment is poor.[15] So, how well do we know ourselves and what drives us?

Further, these traits have a subjective and fluid sense. Demeanors fluctuate, just like circumstances that affect our ability to self-motivate and be aware. Plus, diverse personalities and perspectives help in treatment of patients with varying backgrounds and lifestyles. But it's the soil that determines the plant, and the foundation that shapes the house. These internal factors have to be oriented in the right direction. Even through the differences in the generations, we can cross boundaries and navigate and support for all professionals to aspire to these values.

CONCLUSION

To summarize, these changes are not cost-prohibitive, they do not require immense bureaucratic redesigns, and the don't rely on ideas no one has heard of before. The interdisciplinary team is the model the new highly *technical intergenerational team* can use to re-imagine our system in the digital age. All physician cohorts can arrive there, together.

Our physicians have a high workload, and to account for the aging population amidst a changing world, the intergenerational team would satisfy a quadruple aim: better professional satisfaction, improved patient experience, lower costs, and better population health. When we align our expectations the tensions between different rungs of medical physicians can dissipate. Otherwise the divergencies will continue, like millennials, who have acquired labels ranging from "impatient, distracted, overly socialized, and entitled" to "deeply empowered, collaborative, and innovative."

Unless we want robots to be our sole source of care in the future, physicians may have no choice but to address these schisms to create connectivity and enhanced physician recruitment and retention. (*Altern Ther Health Med.* 2019;25(6):8-12).

REFERENCES

1. Young A et al. A Census of Actively Licensed Physicians in the United States, 2016. *Journal of Medical Regulation*, Vol 103, No 2.
2. Looming Physician Shortage? Pentecost, Michael J. *Journal of the American College of Radiology*, Volume 14, Issue 8, 1034.
3. Lim A, and Epperly T. Generation Gap: Effectively Leading Physicians of All Ages. *Fam Pract Manag.* 2013 May-June;20(3):29-34.
4. Mohr NM, Moreno-Walton L, Mills AM, Brunett PH, Promes SB. Generational influences in academic emergency medicine: teaching and learning, mentorship, and technology (part I). *Acad Emerg Med.* 2011;18(2):190–199.
5. Mohr NM, Smith-Coggins R, Larrabee H, Dyne PL, Promes SB. Generational influences in academic emergency medicine: structure, function, and culture (part II). *Acad Emerg Med.* 2011;18(2):200–207.
6. *BMC Medical Education* 2009, 9:25.
7. Benner P: Using the Dreyfus Model of Skill Acquisition to Describe and Interpret Skill Acquisition and Clinical Judgement in Nursing Practice and Education. Bulletin of Science, Technology & Society 2004, 24: 188-199.
8. Williams G. The Age of Miracles - Medicine and Surgery in the Nineteenth Century. Chicago, IL: Academy Chicago Publishers, 1981.
9. Hiatt N, Hiatt JR. A history of life expectancy in two developed countries. *The Pharos* 1992;(55)2:3.
10. "Milestones in Medical Technology." NYTimes.Com. 2012 Oct 10. archive.nytimes.com/www.nytimes.com/interactive/2012/10/05/health/digital-doctor.html#/#time15_375
11. Hannay M, Fretwell C. The Higher Education Workplace: Meeting the Needs of Multiple Generations. *Research in Higher Education Journal.* 10 (2011):1.

12. Colliver, Jerry A., et al. "Reports of the decline of empathy during medical education are greatly exaggerated: a reexamination of the research." *Academic Medicine* 85 No.4 (2010): 588-593.
13. "How to Immunize Yourself Against Medical School Burnout." AMA-ASSN.org. 2019 July 9. https://www.ama-assn.org/residents-students/resident-student-health/how-immunize-yourself-against-medical-school-burnout
14. Cooper WO, Spain DA, Guillamondegui O, et al. Association of Coworker Reports About Unprofessional Behavior by Surgeons With Surgical Complications in Their Patients. *JAMA Surg.* Published online June 19, 2019. doi:10.1001/jamasurg.2019.1738
15. Colliver JA, Willis M, Robbs RS, Cohen DS, Swartz MH. Assessment of empathy in a standardized-patient examination. Teach Learn Med. 1998;10:8-11.