FEATURE

Rethinking the physician of the future: Embracing new technologies, empathy, and new models of care

Findings from thought leader interviews and Deloitte 2020 Survey of US Physicians

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THE DELOITTE CENTER FOR HEALTH SOLUTIONS

We envision a future where medicine will be a team sport, with humans and machines working together, and consumers playing an important role. To prepare for this, industry leaders should shift the focus of both training and the definition of physicians' work.

Executive summary

As we recover from the public health crisis and take stock of the events of the last several weeks and months, we begin to think about the future and how the practice of medicine may be transformed. Physicians have been at the forefront of patient care, making challenging decisions under enormous stress and personal risk. Scientists and public health experts—many of whom are physicians—have been critical to sharing emerging scientific evidence. Many clinicians face financial and emotional strain from long hours, triaging and delaying care, and quickly adopting new approaches to keep their patients safe.

In this article, we reflect on the interviews we conducted with thought leaders in medicine and the findings from the Deloitte 2020 Survey of US Physicians. While both took place before the pandemic, they paint a picture of the future that is, if anything, more relevant to the recovery period. Our respondents have an optimistic outlook on technological and scientific advances in medicine. They believe technology and new models of care can augment, not replace, physicians and help them focus on meaningful work.

To prepare for this future, health care and medical leaders should shift the focus of both training and the definition of physicians' work: from an ability to memorize and quickly retrieve complex scientific information to even greater empathy and cultural competence;

from autonomous decision-making to being team players and team leaders; from sick care to well-being and prevention; from periodic continuing medical education (CME) seminars to lifelong learning, enabled and supported by their organizations.

To set priorities for physician workforce development, we suggest that organizations "zoom out" to envision themselves 10 years from now, considering where they want to be and what kind of work outcomes, workforce, and workplace will be required to achieve that. Then, leaders can "zoom in" to identify two or three key initiatives that they can undertake in the near future. These initiatives should aim to solve short-term problems in a way that can accelerate the progress toward long-term vision. As organizations look to develop their current staff, bring in new people, and hire for the future, they should focus on creating an inclusive culture, developing new approaches to training and reinforcement, and redesigning CME to deliver just-in-time content in smaller and more frequent increments.

To set priorities for physician workforce development, we suggest that organizations "zoom out" to envision themselves 10 years from now, considering where they want to be and what kind of work outcomes, workforce, and workplace will be required to achieve that.

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Key findings

In this article, we reflect on the interviews with thought leaders in medicine and the findings from the Deloitte 2020 Survey of US Physicians conducted prior to the COVID-19 pandemic. Our respondents have an optimistic outlook on the future of medicine, with technology and new models of care augmenting physicians and helping them focus on meaningful work. To prepare for this future, we should rethink medical education, on-the-job training, and the definition of physicians' work.

QUICK FACTS ABOUT THIS STUDY

We collected the data that informs this article before the COVID-19 pandemic. It consisted of:

- Qualitative interviews with 13 thought leaders in medicine and medical sciences between late October and mid-December 2019

- Deloitte 2020 Survey of US Physicians, a nationally representative study of 680 US primary care physicians (PCPs) and specialists fielded between January 15 and February 14, 2020

The scope of the study was the future of the medical profession in the United States. For more detail on the methodology, please see the Appendix.

Our respondents have an optimistic outlook on technological and scientific advances in medicine.

TECHNOLOGICAL AND SCIENTIFIC ADVANCES CAN TRANSFORM THE PRACTICE OF MEDICINE

Thought leaders in medicine are mostly optimistic about the future of the medical profession. As the Fourth Industrial Revolution (see sidebar, "The Fourth Industrial Revolution and health care") takes hold, technological and scientific advances—such as artificial intelligence (AI), robotics, data visualization, and genomics—can transform the practice of medicine in positive ways. Below are specific examples of the possibilities drawn from our interviews with thought leaders. Technology will be able to:

- **Automate mundane tasks** such as clinical documentation, coding for billing and quality reporting, and patient scheduling

- **Consolidate and analyze data from multiple sources** (such as those listed below) and retrieve on demand the most pertinent and contextually appropriate insights:

  - Clinical data traditionally maintained in EHR, genomic, behavioral data (such as exercise, sleep, stress, diet)

  - Purchasing and consumption data (online and retail purchasing, fridge and pantry content)

  - Environment and community information (pollution, temperature, access to healthy food)

- **Provide clinical decision support** for diagnosis and treatment in line with the most up-to-date research and evidence base, even as it evolves weekly or daily, as we observed with COVID-19

- **Help physicians deliver personalized concierge-like care** that focuses on prevention, providing actionable recommendations to support patients' well-being and to delay and even avert disease

THE FOURTH INDUSTRIAL REVOLUTION AND HEALTH CARE

The Fourth Industrial Revolution is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. It is marked by technological breakthroughs in robotics, AI, nanotechnology, quantum computing, fifth-generation wireless technologies, 3D printing, and material science. This has profound implications for how we work, shifting our understanding of work from completion of discrete and, often, sequential tasks to problem-solving and managing human relationships.[1]

Perhaps, the greatest transformative potential lies in AI and its ability to harness large troves of data to make accurate predictions and to unearth hidden insights.

In health care today, AI-driven algorithms can predict patient deterioration, such as sepsis, up to 48 hours before it occurs. Some algorithms use a combination of subtle signals that in isolation do not represent risks or significant deviations but collectively point to a pattern of deterioration. Other algorithms quantify nurses' hunches: When nurses are concerned about a patient, they begin to check on that patient more often or order more tests and monitoring—a behavior that nurses themselves may not be aware of.

In the future, algorithms will increasingly help make clinical decisions using amounts of data that are too vast for humans to process, such as human genome or geolocation and environmental exposure. The nature of the relationship between humans and machines can be that of collaboration where humans define the problems, machines help find the solutions, and humans verify the acceptability of those solutions.[2]

THE ROLE OF KEY CLINICAL PLAYERS WILL CHANGE

Thought leaders and frontline physicians alike believe big changes are coming to the practice of medicine.

- Half of surveyed physicians expect a great deal of change in their specialty in the next 10 years. Interestingly, the most experienced physicians (with 30 or more years in practice) are most likely to expect changes (58%).

The role and composition of clinical teams is expected to evolve, and many of the tasks traditionally performed by physicians will be performed by other team members.

- Physicians estimate that 30% of their current work can be performed by nonphysicians and 18% can be automated.

The role of the consumer is expected to evolve too: Consumers will own their health data and control who can access this information. They will assume greater ownership in their care and become an important part of the care team.

- Two in three (65%) physicians expect that in 5–10 years, it will be standard practice for consumers to own and control their health data.

Collectively, these changes can improve outcomes, increase physician productivity, and optimally allocate resources, but most importantly, they can improve work for physicians, freeing them from rote tasks, restoring humanity in patient care, and allowing them to focus on drivers of health and other important issues.

POSSIBLE ROLES OF THE PHYSICIAN OF THE FUTURE

Thought leaders' descriptions of future physician roles resemble the archetypes identified in Deloitte's article *Shaping the physician of the future*.[3]

FIGURE 1

Physician archetypes of the future

Complex care manager/care integrator: Shepherd of the future-state caregiver team, leading an integrated care team for patients and populations

Digital consultant: Optimizes routine processes and procedures using state-of-the-art technologies

Analytic consultant: Provides specialized insights to the caregiving team

Proceduralist: Acts as the precision expert, providing the highest level of skilled procedures

Data and informatics specialist: Interprets, integrates, and applies large amounts of data to improve individual and population health

Researcher: Develops innovative, cutting-edge treatments for care deliverers to deploy, care enablers to promote, and patients to implement

Executive: Acts as the CEO of the future health ecosystem, providing guidance for caregivers and stakeholders

Educator: Liaises between instructional and caregiving functions teaching and building academic credibility for innovative, technology-forward treatments

Source: Deloitte analysis.

In roles that will succeed today's primary care, thought leaders see a trend toward an integrated care model that combines humanness with the power of AI. Physicians will be able to synthesize information from multiple sources and interpret it within the context of nonclinical data, acting as part of larger care teams in which humans and machines work together. Future PCPs may specialize in the types of patient populations they serve rather than in body systems: the young and healthy, adolescents, the elderly, patients with complex conditions, or those in specific communities.

Outside of primary care, even greater specialization than today is possible: Some specialists can become consultants to PCPs and care teams, helping with diagnosis and identification of the best course of treatment, while others may specialize in highly technical procedures leveraging robotics, augmented reality, virtual reality (VR), and mastering ever-changing processes.

SHIFTING FOCUS IN THE WAY PHYSICIAN WORK AND TRAINING ARE DEFINED

We interviewed thought leaders and surveyed physicians to get their views about what future knowledge and skill requirements for physicians will be. Thought leaders and surveyed physicians prioritize these somewhat differently. Thought leaders focus more on relationship-oriented and quantitative skills, whereas physicians in the survey emphasize knowledge relevant to the business and economics of medicine and give lower weight to empathy and data-related capabilities. However, prioritization of skills by physicians in later stages of their careers was similar to the thought leaders' views, perhaps due to a longer-term perspective.

Interviewed thought leaders believe the physician profession even more so than today will require lifelong learning beyond CME. Furthermore, human capabilities that underlie the ability to learn, apply, and effectively adapt new skills will be increasingly important in an environment that calls for new skills that must be refreshed more often.[4]

According to interviewed thought leaders, to successfully practice in the future, physicians will need a mix of relationship-oriented skills to connect with patients and colleagues, quantitative skills to interpret complex data, a strong foundation in prevention to deliver wellness-oriented care, and a robust understanding of business and economics of medicine to drive population health.

Specifically, the thought leaders called out the following:

- *Relationship-oriented capabilities:*

  – **Empathy, cultural competence (knowing how to deal with people of different cultural backgrounds), and storytelling** to get at motivational levers for patients. As our patient population and health care workforce get increasingly diverse, physicians should be able to connect with patients and colleagues of different cultural backgrounds, and often do so using remote rather than face-to-face modalities.

  – **Leadership and influencing capabilities to be an effective team leader and team player** will be required for physicians in leadership positions (the executive archetype) and in everyday clinical practice (such as complex care manager/integrator or analytic consultant archetypes).

    • For instance, thought leaders predict that PCPs, more than other specialists, will need these skills, or they might need them sooner, as they are more likely to work in teams in the near future.

    • Thought leaders recognize that some physicians might find it difficult to transition from autonomous decision-makers to team players. As medicine becomes a team sport and nonphysician providers assume greater autonomy, working in teams may call for changes in decision-making, accountability, and role definitions.

- *New ways to apply quantitative thinking:*

  – The ability to accurately **interpret genetic information**, even if aided by AI, will be required not only for clinical decision-making around treatment but also for prevention and preserving well-being. Thought leaders call on addressing this gap soon, as studies suggest physicians are unprepared to help patients interpret genetic information that is already available, particularly negative results.[5]

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- The ability to look under the hood and **understand the algorithms** behind clinical decision support systems, so that physicians can critically assess weaknesses in software and research results (such as absolute and relative risks, or probabilities). This skill will be essential for the data and informatics specialist and researcher archetypes, but some thought leaders argue that all practicing physicians will need a basic understanding of the algorithms they use in their daily work.

- *Better knowledge base on prevention,* which would include a deeper understanding of diet and nutrition, the interplay between clinical and nonclinical drivers of health, ability to integrate information across body systems, and think more holistically about physical, mental, and spiritual well-being.

- *The business and economics of medicine,* which involves understanding of cost and revenue drivers, direct and indirect costs from the perspective of the organization, the patient, and the health care system. This can better equip physicians to apply a population health lens, something that many find difficult today.

Figure 2 shows how surveyed physicians prioritize these skills and knowledge.

Our survey data also shows that physicians' views about future education needs are not uniform.

The perceived value of education about business and economics of medicine is low among late-career physicians (who have practiced more than 30 years). However, the appreciation of training on empathy increases considerably with experience: 19% of young physicians (less than 10 years in practice) vs. 47% of experienced physicians (with 30 or more years in practice) consider this an important requirement (figure 2).

PCPs (56%) are more likely than specialists (~41%) to consider teamwork skills a priority; for them, this is one of the top three educational requirements. At the same time, training on new technologies is a high-priority area for surgical specialists (51%) but less so for PCPs (42%) and nonsurgical specialists (41%).

This section features three vignettes that detail the areas where thought leaders feel some of the greatest needs exist: empathy and communication; fluency with genetic data, risks and probabilities; and ability to integrate vast amounts of clinical and nonclinical information.

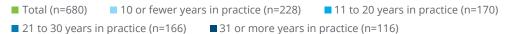## VIGNETTE 1. TECHNOLOGY CAN FREE PHYSICIANS FROM ROUTINE TASKS AND MAKE ROOM FOR EMPATHETIC CARE

In the future, physicians can forget the cumbersome and archaic acts of having to document what they do, as technology will record, filter, and edit everything needed for documenting an encounter. Furthermore, many routine activities (medication refills, diagnosis of acute illnesses, or even dose titration) will move to self-service. Lastly, technology can relieve physicians from having to remember differential diagnoses and trying to sort therapeutic options based on limited data the human brain can store. This can create opportunities for physicians to focus more of their energy on patient care—restore the humanity of physician work and allow more time with the patient.

> "Even if all AI is doing is guiding physicians through a decision tree, that reduces the cognitive burden so physicians can use the cognitive bandwidth for all the other important things: empathy, asking intuitive questions, connecting the dots. [AI] gives physicians superpowers through computational and visualization infrastructure."
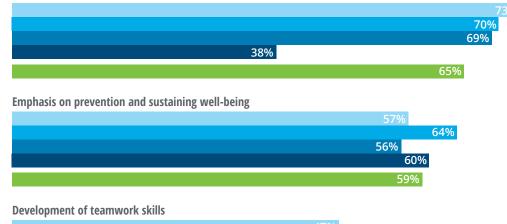
FIGURE 2

Surveyed physicians believe that for the next generation of physicians, understanding the business of medicine and a focus on prevention will be important

Survey question: What needs to change in medical education to prepare the next generation of physicians to practice in the future?

■ Total (n=680) ■ 10 or fewer years in practice (n=228) ■ 11 to 20 years in practice (n=170)
■ 21 to 30 years in practice (n=166) ■ 31 or more years in practice (n=116)

Education about business and economics of medicine
- 73%
- 70%
- 69%
- 38%
- 65%

Emphasis on prevention and sustaining well-being
- 57%
- 64%
- 56%
- 60%
- 59%

Development of teamwork skills
- 47%
- 42%
- 42%
- 51%
- 45%

Training on new technologies
- 41%
- 46%
- 49%
- 41%
- 44%

Training on empathy
- 19%
- 26%
- 27%
- 47%
- 27%

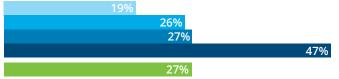**Emphasis on data-related skills**
- 25%
- 25%
- 30%
- 32%
- 27%

Source: Deloitte 2020 Survey of US Physicians.

Like today, consumers will turn to physicians with issues that cannot be resolved through other means, at times when they are vulnerable and confused. And physicians' role will be to help them navigate complex decisions about treatments and consequences, using critical thinking, intuition, and compassion to ask the right questions, identify tradeoffs, and offer comfort.

> "When I was an ER medical technician, I was taught that putting my hands on a patient, especially at trauma scenes, was worth one shot of morphine—just the human contact alone has been shown to have a powerful physiological effect. You cannot get this from robots or algorithms."

Dealing with clinical as well as social and psychological barriers to health—hard topics such as end of life conversations, why patients don't take their drugs, or why they choose not to vaccinate—may require a renewed focus on relationship-oriented capabilities, storytelling, motivational coaching, and cultural competence. Just giving people information does not address their concerns, nor does it get at the issues that bother them or lie at the root of their problem. For example, in an encounter with a person who opposes vaccination, what levers can a physician pull to get through? Is it fear of the government? Do the parents believe vaccines make their child's body dirty? Or is it because no one else in their community vaccinates?

VIGNETTE 2. PERSONALIZED MEDICINE REQUIRES NEW TYPES OF QUANTITATIVE CAPABILITIES

As family history is augmented with genomic data, care can become proactive and personalized. Consequently, the information about risks and probabilities that physicians must explain to patients and parents will be vastly greater than today, and knowledge of genetics will be routinely incorporated in medical decision-making just like weight, activity level, and LDL cholesterol. At the same time, use of clinical decision support

algorithms can give rise to questions about medical liability and this amplifies the need for a deeper skill set around probability, uncertainty, clinical decision-making, and basics of computer science.

> "When you unpack what physicians do, it is managing clinical uncertainty. The responsibility is to think probabilistically, assess what is in front of us, go through differential diagnoses, decide what's right, and expand. When a health system uses a predictive algorithm about a patient, as a physician you are legally accountable, whether it's used accurately or not."

Here is how this could happen in the future. Jim had his genome sequenced at birth and it became part of his medical record. At age 16, new research indicated that a specific combination of genes that Jim had was associated with a particularly high risk of colon cancer. A genetic virtual assistant alerted Jim's doctor to this fact and provided updated clinical guidelines for patients such as Jim. Because Jim's genetic risk came through the maternal side, his doctor set up a meeting with Jim and his mother to explain the new research and guidelines to begin regular colorectal screenings at age 35 and offered personalized nutritional recommendations.

VIGNETTE 3. INTEGRATING LARGE VOLUMES OF DATA OPENS THE DOOR TO HOLISTIC WELLNESS-ORIENTED CARE

The amount of data to inform wellness-oriented care will continue to grow. In addition to motion tracking, sleep monitoring, and data from clinical information systems, health data could include DNA and microbiome analyses, as well as data trails from purchasing decisions, consumption patterns, voice searches on smart speakers, or even keystrokes (that might be indicative of early dementia or neurological concerns). An average consumer is unlikely to make medical sense of all this. They will need a trusted adviser, and the physician could be that linchpin, to guide consumers and help interpret these disparate data inputs. In some future

scenarios, this could be the role for primary care wellness-oriented physicians.

In such scenarios, cognitive specialists (e.g., the analytic consultant archetype) could become the amplifiers of population health, enhancing the care delivered by the wellness-focused clinicians, helping them interpret complex information and use it to predict and avert illness. Imagine a gastroenterologist or endocrinologist who manages the issues in the right way at the right time working hard upstream, preventing consequences from particular issues so the patient does not need bariatric or heart surgery down the line.

> "The general physician of the future is somebody who helps patients interface this vast medical web, like a counselor, being able to point the patient: 'Here are the specialists who are the best of the world for what you need.' Or when a patient needs to be operated on: 'We will find you the right place and do the right thing.'"

What can health care leaders do to help prepare physicians for the future?

To set priorities for physician workforce development, we suggest that organizations apply the "zoom out/zoom in" method of strategic planning.[6] First, leaders "zoom out" to envision their organization 10 years from now, considering where they want the organization to be, what work outcomes, workforce, and workplace will be required to achieve that, and the factors that may help or hinder its progress. Then, leaders can "zoom in" to identify two or three key initiatives that they can undertake in the near future. These initiatives should be designed to solve short-term problems in a way that will accelerate the progress to the organization's long-term goals.[7]

RELATIONSHIP-ORIENTED SKILLS WILL BE THE "NEW GOLD"

Research from the Thomas Jefferson University indicates that relationship-oriented skills can be measured, taught, and improved. Moreover, they are associated with better patient outcomes and clinical competence.[9]

"There will be a disruption in how we choose doctors, nurses, and other health professionals. Knowing the answers will be the least important parameter. Knowing the right questions to ask and how to listen to, talk to, and empathize with a diverse group of patients will be the 'new gold' for [medical school] applicants." – Stephen Klasko, MD, Jefferson Health President and CEO.

If this zoom-out vision is one of new models of care in which technological advancements help preserve well-being and avert illness, the organization equally values technical skills and human capabilities, and physician roles are similar to the proposed archetypes (figure 1 and *Shaping the physician of the future*)[8], then the tactics below can offer a few ideas for realizing this vision.

BUILD SKILLS OF CURRENT STAFF

> "Every organization that employs clinicians needs to have a training and culture-building department that is bigger than their coding department."

- Cultivate diverse candidates for leadership roles and create an inclusive culture of listening to other perspectives. This can bring new points of view to the C-suite, committees, and strategic initiatives.

- Consider new approaches to skill identification, training, measurement, and reinforcement.

- In designing training programs, organizations should anticipate and acknowledge the requirements, vantage points, and life experiences of a diverse workforce. What is obvious to some might be completely missed by others, and in some areas, people may not achieve common ground.

- Training and reinforcement may focus on applying learned concepts to everyday practice and incorporate less traditional approaches, such as role playing.

• Develop new approaches for continued medical education to deliver just-in-time content in smaller and more frequent increments.

"CME can't be something you dump on physicians to do at nights or weekends—that leads to burnout. It has to be baked into the concept of what it is to be a physician, not just a little bonus or nice to have."

BRING IN NEW PEOPLE

• Ensure the organization's hiring processes encourage recruitment of diverse candidates.

• Consider screening for relationship-oriented skills through targeted interview feedback, online assessments, or even more advanced programs that use technologies such as AI or VR.

HIRE FOR THE FUTURE

Deloitte's physician archetypes may serve as a guide for thinking about physician roles in the future and the differential skill sets that may be needed for these roles.

For instance, primary care of the future may call for a combination of relationship and data skills:

the ability to listen and communicate empathetically, cultural competence, collaborating with large and diverse teams, as well as the ability to integrate information across multiple body systems and data sources. Proceduralists should be able to embrace technologies (such as robotics, augmented reality, VR, and AI) and frequently learn new technologies and processes, be able to discern the right mix of technology and human oversight, and collaborate with other clinicians. And physician executives may require listening and influencing skills, coupled with a strong knowledge of policy and business.

While there are many unknowns in defining the future physician roles, we encourage the reader to begin thinking about the future and preparing for it today.

Appendix: Study methodology

Data collection to inform this article took place between late October 2019 and February 2020.

INTERVIEWS WITH THOUGHT LEADERS

Between late October and mid-December 2019, we conducted in-depth, qualitative interviews with 13 thought leaders: practicing physicians in leadership roles at traditional and nontraditional organizations; scientists in evolving fields such as biotechnology, genetics, and digital biology; physician futurists, innovators, and entrepreneurs. Our questions covered a range of future-oriented topics, such as:

• Changes in physician work in the next 10 and 20 years

• Factors that will drive these changes

• How organizations should prepare, and the challenges they might expect

• Skills that will be required to practice medicine in the future

DELOITTE 2020 SURVEY OF US PHYSICIANS

Since 2011, the Deloitte Center for Health Solutions has surveyed a nationally representative sample of US physicians on their attitudes and perceptions about the current market trends impacting medicine and future state of the practice of medicine.

The general aim of the survey is to understand physician adoption and perception of key market trends of interest to the health care, life sciences, and government sectors. In 2020, 680 US primary care and specialty physicians were asked about a range of topics: future of work, future of health, virtual health, digital transformation, and value-based care.

We selected a random sample of physician records with complete mailing information from the American Medical Association (AMA) master file, and stratified it by physician specialty, to invite participation in an online 20-minute survey.

The resulting study sample is representative of the AMA master file with respect to years in practice, gender, geography, practice type, and specialty to reflect the national distribution of US physicians.

Data collection took place between January 15 and February 14, 2020.

About the AMA

The AMA is the major association for US physicians and its master file is a census of all US physicians (not just AMA members). The database contains records of more than 1.4 million US physicians and is based upon graduating medical school and specialty certification records. It is used for both state and federal credentialing, as well as for licensure purposes. This database is widely regarded as the gold standard for health policy work among PCPs and specialists, and is the source used by the federal government and academic researchers for survey studies among physicians.

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Acknowledgments

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Our insights can help you take advantage of change. If you're looking for fresh ideas to address your challenges, we should talk.

Industry leadership

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