




Deloitte.



Shaping the physician of the future

An evolving care model, enabled by technology, is changing the nature of work

What happens when a health system ...

-  Outfits a radiologist with artificial intelligence (AI) to improve diagnostic accuracy?
-  Equips a surgeon with robotics to perform complex procedures with more precision and flexibility?
-  Trains a primary care physician to use big data analytics to uncover patient diagnostic and prognostic patterns and correlations?

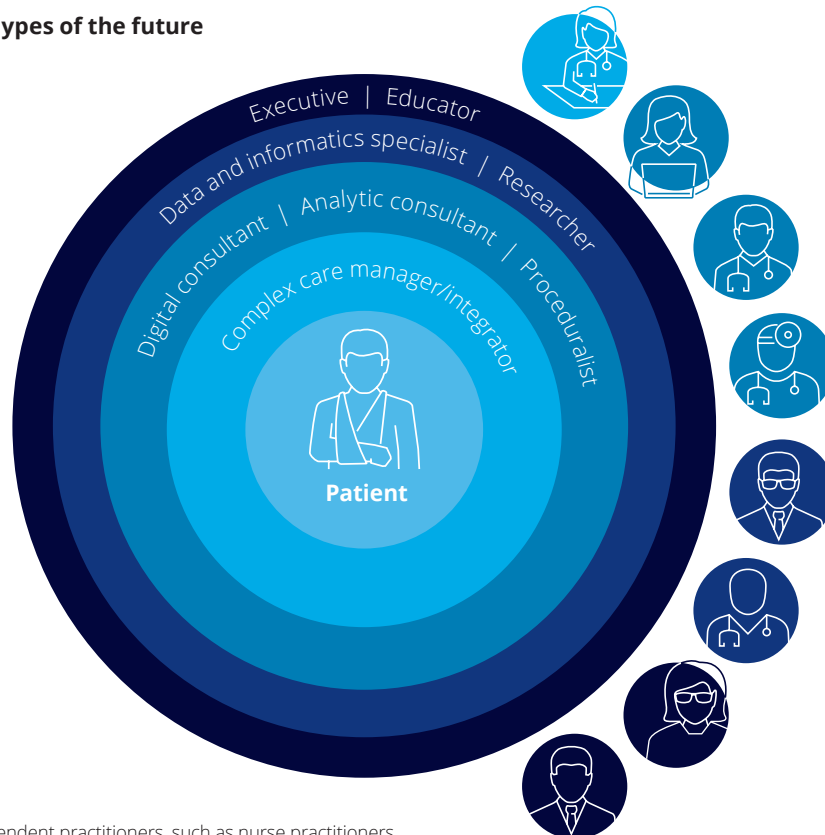
That health system is preparing its physicians for a future that is likely to look very different from today. Numerous trends are disrupting the traditional health care ecosystem; among them, increasing costs, declining health outcomes, value-based payment models, personalized care, and a fundamental shift from treating illness to enabling wellness. In [Deloitte's 2040 vision for the future of health](#), over the next 20 years, innovation powered by greater data connectivity; interoperable and open, secure platforms; and increasing consumer

engagement will transform health care as we know it. Already, the evolving care model is blurring traditional health care boundaries, opening the door to nontraditional players, and spawning new ways to address the classic "jobs to be done" of delivering care and sustaining well-being.

The role of the physician is changing to align with the future of health and preventive care. Deloitte has developed profiles of eight archetypes—focused on the delivery, infrastructure, and enablement of care—that depict how the physician's role is likely to evolve and align with the future of health and preventive care.

This paper explores trends and innovations that are changing the nature of existing health care work; profiles eight archetypes (figure 1) that we expect will emerge and reshape the role of the physician to drive future value; and offers health care organizations suggested steps to support and drive their physicians to make the transition toward the future of health.

Figure 1. Physician* archetypes of the future



* Physician is used to include independent practitioners, such as nurse practitioners.

What is driving change for physicians?

Despite the United States spending a projected 17.9 percent of its gross domestic product (GDP) on health care in 2017—\$10,739 per person¹—the system is underperforming relative to that investment. This is one of the factors accelerating systemwide efforts to introduce new ways of performing traditional clinical tasks more efficiently and cost-effectively.

- While the United States spends twice as much on health than all other Organization for Economic Co-operation and Development (OECD) countries, the country falls below the OECD average in life expectancy gains.²
- Unnecessary care accounts for roughly 30 percent of total US health expenditures per year, exceeding \$1 trillion annually, as administrative overhead consumes 25 percent of US hospital expenditures.³
- More than 250,000 deaths per year are due to medical errors, now the third leading cause of death in the United States.⁴
- Seventy percent of Americans surveyed cite the US health care system as being “in a state of crisis” or having “major problems.”⁵

Physician burnout, an evolving care model, and technology advances are also reshaping the role of the physician to drive future value. As detailed below, these drivers both contribute to and work interdependently to accelerate the reshaping.

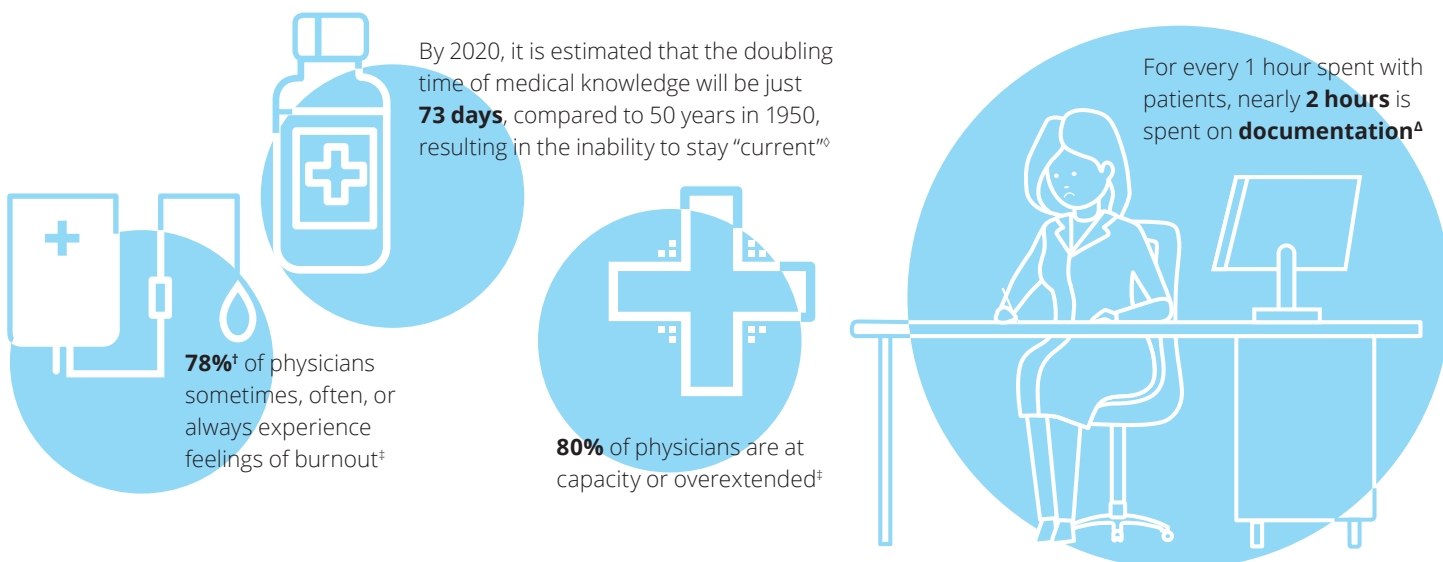
Physician burnout

Physician burnout and decreased productivity are major factors driving the need for change in the medical profession (figure 2).

Some physicians are so dissatisfied with their profession that they plan to retire early or exit the field. According to a 2018 survey by the Physicians Foundation, 46 percent of respondents plan to change career paths.⁶ Seventeen percent say that they’re retiring, and 12 percent want to find a job where they don’t have to deal with patients.⁷

Figure 2. Current challenges driving the need for change

Physician burnout and decreased productivity



[†] Recent evidence suggests that physician burnout may be decreasing.

[‡] Physicians Foundation 2018 Survey of America’s Physicians, <https://physiciansfoundation.org/wp-content/uploads/2018/09/physicians-survey-results-final-2018.pdf>.

⁴ Annals of Internal Medicine, <https://annals.org/aim/article-abstract/2546704/allocation-physician-time-ambulatory-practice-time-motion-study-4-specialties>.

⁵ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3116346/>.

These actions have the potential to exacerbate a looming problem: Physician demand continues to outpace supply. A shortage of 124,000 physicians is projected by 2025, with primary care accounting for the largest share of the shortage at 37 percent.⁸ Improving physicians' work performance and satisfaction is a business imperative, in part because of physicians' outsized role in the US health care system. Decisions made by primary care physicians (PCPs) influence almost 90 percent of total health care costs, through referrals, testing, and hospitalizations,⁹ and PCP supply is positively associated with decreased mortality rates.¹⁰

Health care systems get the most value when their physicians and other clinicians are practicing at the "top of their license"—focusing their time, attention, and effort on providing patient care rather than completing administrative tasks. Technology advances should enable this; however, thus far, technology has largely proven to be more of a burden than an enabler. For example, while using electronic health records (EHRs) can help relieve physicians and other clinicians of mundane tasks, and thus improve efficiency and satisfaction levels,¹¹ findings from the [Deloitte 2018 surveys of US health care consumers and physicians](#) suggest that many physicians continue to be frustrated with EHRs, particularly due to the lack of interoperability and the burden of documentation.¹²

Evolving care model

Transformational investments and initiatives are coming from within and outside of health care. Well-funded, nontraditional players from the consumer, retail, and technology sectors are helping to accelerate the pace of change and prompting hospitals and health systems to reevaluate existing functions, roles, and services.



Apple announced it is entering the personal health record (PHR) space with Apple Health, a new platform that will interface with EHRs at 12 US hospitals.¹³



J.P. Morgan Chase, Berkshire Hathaway, and Amazon have partnered to establish an independent, not-for-profit health care company, Haven Healthcare, for their one million US employees. The trio's goal is to improve health care services and cost efficiency for their employees.¹⁴



Amazon has rolled out a line of private label over-the-counter medicines, the Basic Care line, and is building a business selling a wide array of medical supplies to doctors, dentists, and hospitals.¹⁵

These are just a few examples of nontraditional players entering the health care marketplace and rethinking the entire process of care delivery. Without making a large investment in infrastructure, highly capitalized entrants often have the flexibility to test new and multiple models of care delivery, taking advantage of emerging technologies and their ability to access geographically dispersed resources.

Technology advances

Technologies will power the health care model's evolution and reshape physicians' role in driving future value (please see sidebar). In just a few decades, automated systems may displace up to 80 percent of physicians' or clinicians' standard work¹⁶—freeing them from administrative tasks to focus on patient care. Already, trained, deep convolutional neural networks can achieve a level of accuracy comparable to 21 US board-certified dermatologists when identifying the most common and deadliest skin cancers.¹⁷ Trained AI algorithms can prioritize radiology worklists to reduce time to diagnose intracranial hemorrhage by 96 percent.¹⁸

Patients' use of technology is also having an impact on the physician's place in the health care ecosystem. With applications literally at their fingertips via mobile phone, laptop, or tablet, patients can immediately access care, when it's needed. Among current examples, First Derm is an on-demand, online dermatology service that recently launched an AI algorithm to enable quick diagnosis and treatment of skin issues.¹⁹ Woebot is a mobile application that provides cognitive behavior therapy through a chatbot that helps to monitor a patient's mood and understand their mental health through informal daily conversations.²⁰

One obstacle to forward movement? Physicians are often reticent to fully embrace new technology-enabled care models such as virtual health: The use of teleconferencing, mobile apps, and other digital technologies that can complement, or even substitute for, in-person care based on the needs of the patient population, capabilities of the organization, and availability of resources.²¹ Yet despite present-day hurdles to physicians' technology uptake, the health care industry is inexorably progressing toward an augmented workforce that combines people and technology to get things done in a way that is more productive and rewarding to the worker, physicians included.²²

Future-focused technologies

The evolution of the eight physician archetypes will be enabled by technology advances, many of which will cause archetypes and clinical functions to overlap. Examples of current and emerging innovations include:

Artificial intelligence that supplements memory and experience to improve diagnostic accuracy and treatment efficacy.

Natural language processing that generates detailed, accurate medical notes through spoken or written sentences.

Crowdsourcing and virtual technology that allows asynchronous, geographically distributed input.

Big data analytics that can examine large, unstructured data sets to uncover patient patterns or correlations; **data visualization** that presents data in the most efficient and effective way to ensure findings that drive strategy and decision making.

Robotics that help physicians perform complex procedures with more precision and flexibility; **augmented reality** that gives surgeons easy access to digital images and data so that they don't need to look away from the patient to gather information.

Sensors on wearables that monitor patient health and develop algorithms to determine treatment recommendations; **machine learning** that helps recognize and flag abnormalities without bias; **3-D holograms** that bring the delivery of care closer and more comprehensively to the patient.

Enterprise applications designed to integrate computer systems that run all phases of an enterprise's operations to facilitate cooperation and coordination of work across the enterprise; **AI and robotic process automation (RPA)** to digest data and information to support future-oriented decisions.

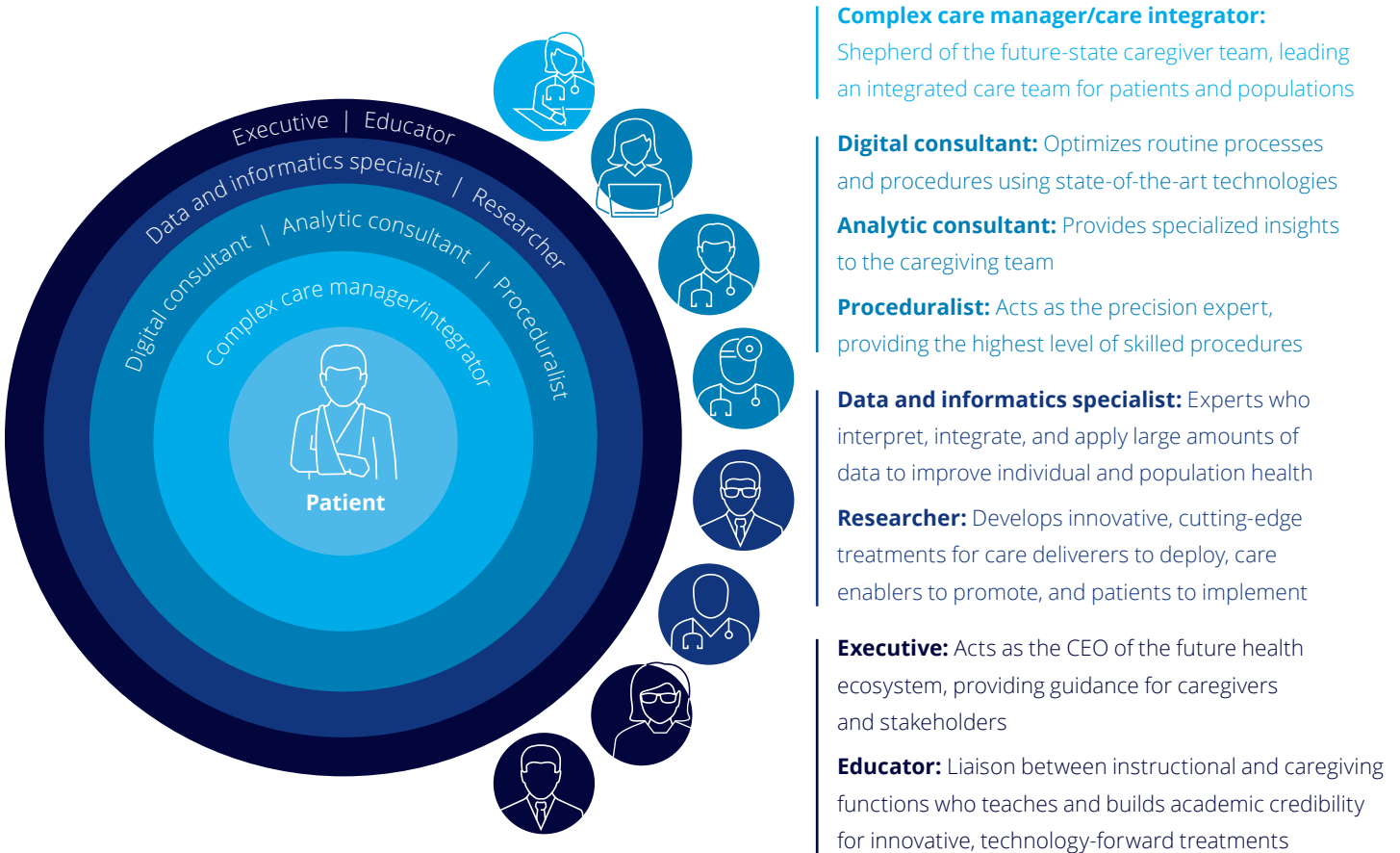
Learning platforms that encourage flexible and interactive learning among students and allow teams to drive targeted training; **work group collaboration tools** to drive efficient information-sharing, teamwork, and data control in research and academic capacities.

Emerging archetypes spotlight physicians' changing role

Evidence is mounting that a technology-enabled, evolving care model has the potential to change physicians' future roles in health care delivery, infrastructure, and enablement. The transition will not be like flipping a light switch, but evolution is already under way. We expect it to accelerate over the next 5 to 10 years, although the pace of change is likely to vary across the country.

In one scenario, we envision eight physician archetypes of the future (figure 2). Like many descriptive classifications, an individual may exhibit characteristics of multiple archetypes and may migrate among them during her/his career. Already numerous examples exist of physicians exhibiting characteristics of these emerging archetypes.

Figure 3. Physician* archetypes of the future



Powered by open data and platforms
 Primarily aimed to sustain well-being, providing care only in the rare instances when well-being fails → Care delivery

* Physician is used to include independent practitioners, such as nurse practitioners.

Delivery



Complex care manager/ integrator

These physicians are the shepherds of the future-state caregiver team. They lead and support patients and populations in taking control of their health and manage the entire network of health care providers for ill patients who need individualized care as well as for populations that require health and wellness initiatives.

Current medical positions: Primary care physicians, including hospitalists and behavioral health specialists

Future workplace examples: Advanced ambulatory care center; remote and community settings

Sample skill sets: Excellent data and AI management skills; empathetic communication of data; ability to leverage big data and external knowledge; and team performance

Sample responsibilities: Optimizing health through data-driven empathy; aggregating and analyzing AI technologies and medical data; and improving overall health outcomes and quality of life

Potential outcomes: Big data and AI-supported evidence to drive decision-making processes; lower physician-patient ratio with innovative team structure; increased satisfaction for patients, caregivers, and organizations; and improved health outcomes and decreased costs



Analytic consultant

These physicians provide specialized medical insight to the care team. They leverage enhanced AI/algorithms to supplement the care team with complex diagnostic and therapeutic recommendations.

Current medical positions: Medical specialists—endocrinologists, neurologists, rheumatologists, and oncologists

Future workplace examples: Nontraditional delivery center; virtually enabled locations

Sample skill sets: Excellent technological literacy; deep analytic and diagnostic capabilities; and the ability to communicate and add value to the care team

Sample responsibilities: Interpreting patient issues with AI technology to pinpoint diagnoses, and communicating with care teams and the ability to recommend application of data; and may plug in as on-call or crowdsourced participant in care

Potential outcomes: Better health outcomes that treat the patient as a whole; more accurate diagnoses and recommendations; increased efficiency and effectiveness for both the patient and provider; and personalized treatment plans based on aggregated data



Complex care manager/executive

A longtime family physician spends half his time as board chair of a national medical organization and the other half as a PCP at a midwest physicians group. As a PCP, he sees roughly 12 to 13 patients per half-day, with a panel of roughly 1800 to 1900 patients. The physician leads a care team, including a medical assistant, triage nurse, care coordinator, midlevel practitioner, and clinical pharmacist. He incorporates population health analytics and individual risk prediction into his practice to better manage the health of his panel and to go beyond simply responding to illness. The physician's practice currently conducts team visits and is planning to implement e-visits in the near future.



Digital consultant

These physicians optimize routine processes and procedures using state-of-the-art technologies. The future digital consultant function is primarily digitized, creating opportunities for efficiency and eventual AI substitution.

Current medical positions: Radiologists, pathologists, and dermatologists

Future workplace examples:

Nontraditional delivery center, academic centers, and virtual

Sample skill sets: Excellent technological literacy; astute analytic and diagnostic capabilities, including data aggregation and synthesis and machine learning expertise; and the ability to apply technology-enabled recommendations to scale

Sample responsibilities: Examining, imaging, and diagnosing issues in various specialties in depth; and communicating with and across a network of machines to deliver accurate diagnoses and treatment plans

Potential outcomes: Increased coordination of care delivery via smart machines and connected technologies; better health outcomes that holistically treat patients; and more accurate and efficient diagnoses based on data aggregation and synthesis



Proceduralist

These physicians act as the precision expert, providing the highest level of skilled procedures. Proceduralists perform diagnostic or therapeutic procedures that will be supported by robotics, enabling nanosurgery, remote, and other machine-enabled interventions.

Current medical positions:

Surgeons, orthopedic surgeons, and interventional radiologists

Future workplace examples:

Specialized surgical centers and command centers

Sample skill sets: Ability to continually learn and operate new technology; interpersonal skills to collaborate across networks; and the ability to interface with and trust technology

Sample responsibilities: Performing a wider range of therapeutic or diagnostic procedures with the help of technological aids; and helping to coordinate delivery of technological interventions

Potential outcomes: More precise and efficient provision of care; increased satisfaction for patients and providers; reduced costs and improved efficiencies; and reduced errors resulting from human-based limitations



Digital consultant

Since 2005, a physician who specializes in neuro-oncology radiology and also holds a degree in technical informatics has been dividing his time between practicing radiology and leading research in molecular medicine and medical imaging. The physician helps his clinical research team discover how to incorporate AI into clinical workflow; for example, by optimizing patient scheduling, image generation, and image interpretation. One of the skills the physician is building is the ability to recommend which diagnostic modality will be the most efficient and accurate; and, when there is a discordance between two modalities, for example, imaging and tissue biopsy, recommending which one provides the most accurate diagnostic to guide treatment.

Infrastructure



Data and informatics specialist

These experts interpret, integrate, and apply large amounts of data to strengthen clinicians' overall understanding of patient health and treatment effectiveness to improve individual and population health.

Current medical positions: Emerging medical informaticists and chief medical information officers (CMIOs)

Future workplace examples:

Nontraditional delivery centers and data centers

Sample skill sets: Deep knowledge of data analysis tools and programs; advanced data and statistical analysis skills; strong proficiency in statistical programming languages; written and verbal communication skills to communicate across teams; and an understanding of machine/deep learning

Sample responsibilities: Collecting, analyzing, and interpreting large data trends and patterns; integrating patient data across multiple data platforms; understanding how data sets relate to one another and communicating a patient's personal story; identifying potential operational improvements to provide the best statistical analysis of patient needs; and developing innovative, proprietary algorithms based on patient and population needs

Potential outcomes: Increased visibility into patient data across multiple platforms; improved understanding of patient needs; and more accurate, high-quality data results



Researcher

These physicians work in scientific and technological research to develop innovative treatments and methods to deliver the highest-quality care based on the latest medical knowledge and advancements in the field. Researchers develop cutting-edge treatments for care deliverers to deploy, care enablers to promote, and patients to utilize.

Current medical positions: Academic/medical school faculty

Future workplace examples: Virtual, data aggregators, medical universities, and laboratories

Sample skill sets: Research skills; ability to structure clinical and other questions into research protocol; deep understanding of data structure and sources; and writing and graphical presentation abilities

Sample responsibilities: Utilizes the latest research/information in both the medical and technology fields to improve care and outcomes; provides clear and actionable findings based on tangible research studies; and communicates cross-functionally with patients and caregivers to fully understand evolving needs, for example, questions, issues, and concerns

Potential outcomes: Uniform set of rules and procedures; increased efficiency when providing care under a standard set of policies; improved security regarding medical practices; and expedited knowledge updates



Data and informatics specialist

An internal medicine practitioner at an eastern US hospital dedicates half of his time to patient care and the other half to quality improvement and informatics. The informatics work is informed by the physician's clinical work and vice versa. While he builds tools for providers and staff to use in real time with patients, he educates his colleagues on how to query the clinical database and to leverage the electronic health record to improve overall care. One of the most important skills the physician brings to his colleagues is the ability to structure a clinical question into a data query that can be answered by the organization's large clinical database.

Enablement



Executive

These physicians act as the CEOs and leaders of the future health ecosystem. They occupy the top levels of health care organizations, oversee all members of the caregiver team, and make critical business decisions to ensure high-quality clinical outcomes.

Current medical positions:

Chief executive officer, chief clinical officer, and chief medical officer

Future workplace examples:

Traditional enterprise system offices and headquarters and virtual centers

Sample skill sets: Organizational change management skills; cross-functional, interpersonal communication, and leadership skills; core financial literacy concepts and metrics; and the ability to empower and engage the caregiver team

Sample responsibilities: Brings together clinical, business, and policy perspectives to inform strategic decision making at the highest organizational levels; acts as liaison between emerging physician archetypes and executives, ensuring the organization functions efficiently and effectively; makes decisions swiftly and executes accordingly; and adapts to changing business dynamics and industry trends to work toward a common goal

Potential outcomes: Future organization that avoids disruption and obsolescence; improved efficiency across the entire physician ecosystem; and high-functioning teams that drive high-quality clinical outcomes, ensuring patient and business value



Educator

These physicians communicate and teach the latest technological and medical advancements to students and external audiences and build learning platforms for professionals, the public, and external stakeholder groups.

Current medical positions:

Academic/medical school faculty

Future workplace examples: Medical universities, health systems, and virtual

Sample skill sets: Deep knowledge of clinical perspectives aligned with the latest technological developments; creativity and problem-solving capabilities to devise innovative methods of treatment; a strong network of peers across the health care system to share and validate findings; and strong interpersonal and teaching skills

Sample responsibilities: Liaises between the academic and caregiving functions of health care systems to bolster innovation and adoption of advanced technologies; continually identifies new areas of improvement and optimization and provides technology-forward solutions

Potential outcomes: Increased learning by knowledge transfer between health care systems and academic/research facilities to improve overall patient outcomes; and technology-forward education programs for future physicians

How can health systems create their own future?

With the wider health care ecosystem transforming around them, leaders of health systems should consider investing in their physicians' futures, or they could risk being disrupted. What can today's hospitals, health plans, and health systems do to help their physicians make the transition toward the future of health and preventive care? Based on our research and historical experience with health care organizations of all shapes and sizes, we have identified a three-pronged approach that focuses on physician organization redesign, strategic change management, and smart investments in workforce and technology.

1 Create a physician organization that enables all caregivers to practice at the top of their license, anticipates changes in care delivery, reduces burnout factors, and affirms physicians as

partners in care rather than employees to be managed. Analyze how the evolving health care model is changing the nature of work and the future role of the physician. Identify a preferred future care model (please see sidebar for one example), and let it guide the future physician organizational structure (that is, functions and roles). Zoom out 5 to 10 years and then zoom in 1 to 2 years to think about how future aspirations will have an impact on decisions made today. For example, when thinking about primary care, consider the following questions: What will the primary care physician look like in 5 years, in 10 years, and beyond? What is the next big investment for our primary care physician enterprise? Will technology investments burden or ease physician workload?

Advanced team care with in-room support “powers up” primary care

Primary care physicians are often diverted from high-value clinical activities to administrative tasks—documentation, order entry, invoice preparation, and others—that don't require a medical education: Less than one-third of a physician's day is spent in-person with patients and one-half is consumed in EHR documentation and desk work.²³ An emerging care model, known as the advanced team care with in-room support, has the potential to “power up” primary care and increase physician, staff, and patient satisfaction. In this model, each clinician teams with two or three medical assistants or nurses; that is, care team coordinators (CTCs). Together they conduct in-person patient visits, sharing responsibilities to optimally utilize clinician resources.²⁴

Evidence from early demonstration sites suggests that the advanced team care with in-room support model improves clinical quality; is more satisfying to

clinicians, staff, and patients; and appears to be financially sustainable under both fee-for-service and value-based payment.²⁵ In 2014, Bellin Health in Wisconsin piloted the model; by 2018, its use had spread to more than 100 primary care clinicians. Teams using this model achieved better performance on 13 of 15 quality metrics than those not yet using it,²⁶ patient and staff satisfaction increased, and clinician satisfaction went from 34 percent to 88 percent.²⁷ The University of Colorado Health System employs the model in its family medicine residency clinic and other primary sites. The patient experience has improved for staff and clinician communication, and there has been an increase in patients' willingness to recommend the practice to others. Physician burnout dropped from 56 percent to 28 percent in one year and after-hours EHR work declined.²⁸

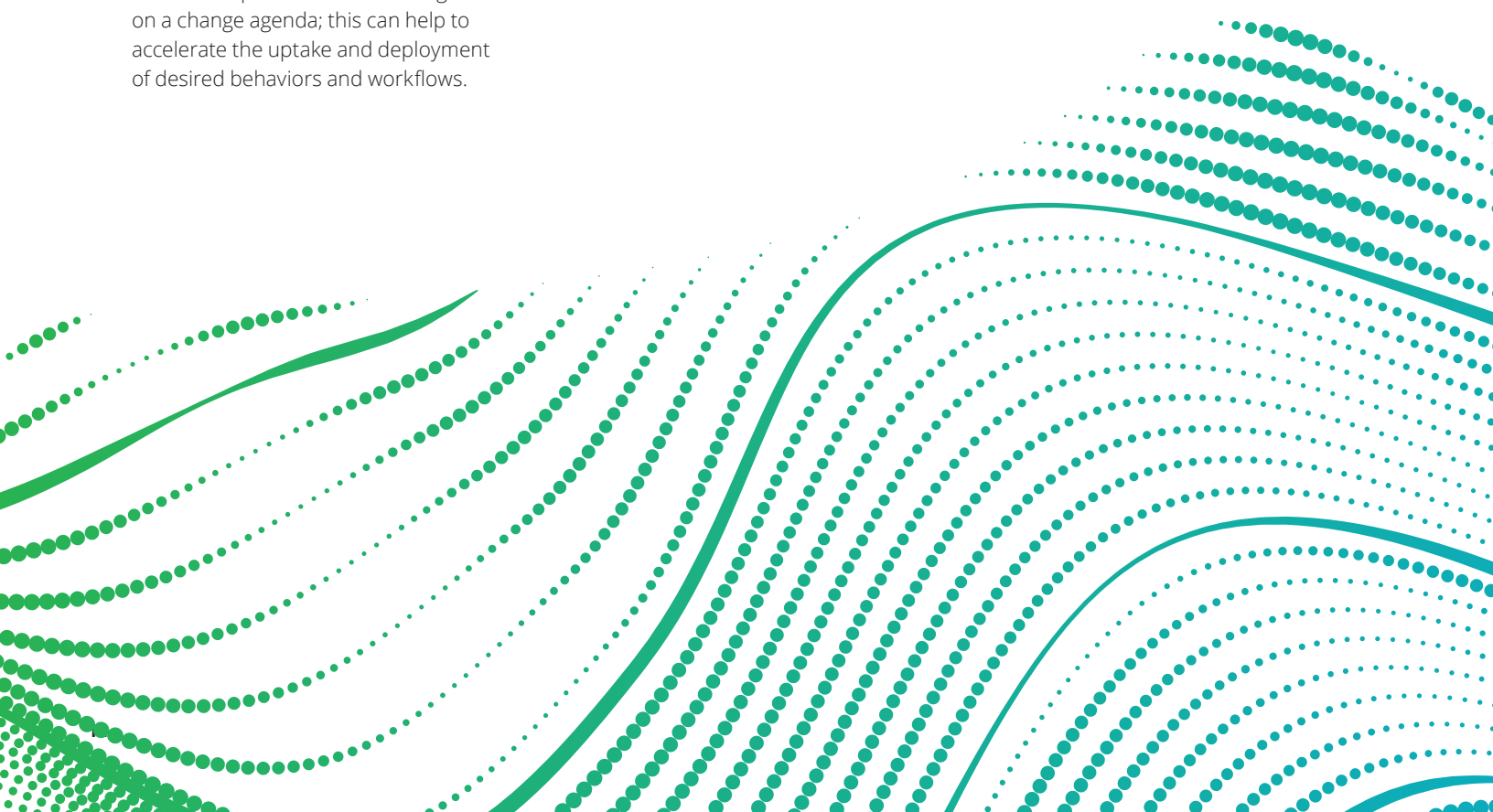
2 Execute a deliberate change management process that is led by physicians and equips them to drive change rather than resist it.

Overcoming physicians' potential aversion to adopting new processes and technologies has major change management implications. Organizations should educate physicians on the "business of medicine" as it relates to cost and population health, as well as equip them with the skills they will need to care for patients in a future outcomes-focused, technology-enabled environment. In addition, encourage a culture of collaboration and communication to help drive change adoption and buy-in among physicians. While change may be uncomfortable for all stakeholders, provide the necessary support structure, for example, training, communications, data, tool kits, and a compensation model that aligns to desired goals, to ensure that physicians understand the rationale for change and the implications of not changing. Most importantly, position physicians as organizational leaders who are responsible for executing on a change agenda; this can help to accelerate the uptake and deployment of desired behaviors and workflows.

3 Make smart investments in workforce and technology based on the future, not the past.

Technology has the potential to enable physicians to improve their caregiving and care outcomes; however, the track record for many technologies, including the EHR, has been a dissatisfier for some physicians.²⁹ Therefore, when developing criteria for specific technology investments, include physician time and workflow in addition to business value. Consider investing in training tools that can help physicians feel confident about their changing role. For example, virtual reality (VR) technology is transforming the process of medical training with its immersive experience and realistic scenarios for physicians. Surgical Theater, a company specializing in VR, provides a pre-op rehearsal platform for complex surgeries.³⁰ Oculus VR is running a pilot to test VR simulation on emergency department staff in high-risk pediatric trauma situations.³¹

Physicians are key players as health care organizations start preparing for the future. These and other physician-focused initiatives can help health systems reduce or eliminate obstacles to improved physician performance and enable their clinicians to practice at the top of their license.



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