

Anticipating Disruptive Innovations With Foresight Leadership

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The purpose of this article is to discuss the importance of foresight leadership to anticipate disruptive innovations in health care. Nursing foresight leadership is defined. Types of foresight leadership styles are described. Selected disruptive trends in health care are identified. Strategies to develop foresight leadership are discussed. Foresight requires transformational leadership skills. Resources to support the development of foresight leadership are referenced. Readers are invited to engage in actions and learning activities to develop foresight leadership capacity to anticipate disruptive innovations in health care and build transformational leadership capacity of people in the profession of nursing. **Key words:** *foresight leadership, future of nursing, innovations*

IN BUSINESS, the term “disruptive innovation” is broadly defined as the creation of new market values and the breaking away from existing market trends.¹ An individual searching for a definition of the word “disruption” is likely to find related terms such as “interruption,” “confusion,” “disturbance,” “disorder,” “break,” “separation,” “severance,” “agitation,” or “splitting.” People agree that conditions in the world today are volatile, uncertain, complex, and ambiguous (VUCA).^{2,3} The VUCA challenges impacting the health care industry require the development of foresight leadership.⁴ This merits special attention to properties of complex adaptive systems such as order and disorder, embeddedness, self-organization,

distributed control, nonlinearity, adaptable elements, diversity, and emergence.⁵

In his work related to adult development, Hudson⁶ observed that some adults become future blind. Future blindness is about a focus on the past and a predilection to get lost and trapped in yesterday’s decisions, choices, and consequences. As a result of being future blind, people become risk averse. Hudson further observed that people often feel betrayed by their expectations when they are challenged to come to terms with youthful expectations and their experiences in life. In addition, social systems that were once protective of people are destabilizing due to disruptive innovations. Given the pace of change, people frequently become overwhelmed by complexity and discontinuities and become bewildered. As a result, individuals develop a discourse of regret versus hope. Hudson believed the opposite of future blindness is foresight. Developing foresight creates hope and is a strategy that leaders can use to anticipate and navigate disruptive innovations in health care.

Dilts⁷ suggests leadership involves several types of ability. Self-skills have to do with how leaders deploy themselves in situations. Relational skills include the ability to understand,

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communicate, and motivate other people. Strategic thinking skills are necessary to define a desired future state with specific goals and objectives. Systemic thinking skills are used to define the problem space of a situation or challenge while also projecting a desired future state that inspires and motivates people and teams to create a world where they want to belong. Creating the future requires transformational rather than transactional leadership. Transformation is influenced by anticipation.

ANTICIPATING DISRUPTIONS IN HEALTH CARE

Burrus^{8,9} is an advocate for the development of anticipatory organizations. Anticipatory organizations use processes that separate hard trends that *will* happen from soft trends that *might* happen. Anticipation involves knowing what's next, developing opportunities, shaping the future, and accelerating success. The Burrus anticipatory organizational model is focused on the transformation of planning, innovation, culture, and results. Leaders who have developed their foresight leadership capacities are better positioned to anticipate and respond to disruptive innovations in health care.

Armstrong¹⁰ developed a framework to assess the risks associated with disruptive technologies. This is based on an analysis of emerging technologies, behavior patterns of people, and data. In his book, *Disruptive Technologies*, Armstrong spells out a step-by-step approach to the analysis and evaluation of risks and decisions associated with what he believes are the most important emerging disruptions. These technologies are as follows: artificial intelligence (AI)—machine learning; block chain and bitcoin; holography, including virtual and augmented reality; 3D printing; and nanotechnology. Another futurist, Ross¹¹ notes that key industries of the future will be in the areas of robotics, advanced life sciences, the codification of money, cybersecurity, and big data, along with the geopolitical, cultural, and generational contexts from which these industries emerge.

Dawson¹² and Watson¹³ have created a periodic table of 100 disruptive technologies. As part of this, they organized trends according to 3 time horizons. Horizon 1 technologies are new technologies that are happening right now. Businesses should be currently integrating and executing these technologies if they are appropriate for their industries. Horizon 2 technologies are probable near-future technologies (10-20 years hence). Businesses should be experimenting and discussing these technologies now. Horizon 3 technologies are likely to emerge in the more distant future (20 years plus). Businesses should keep an eye on developments in these areas and explore them when appropriate. Many of these technologies will impact health care. These include robotic care companions; powered exoskeletons; computerized shoes and clothing; 3D printing of food and pharmaceuticals; medical tricorders; diagnostic toilets; human organ printing; artificial human blood substitute; public mood monitoring machines; programmable bacteria; peer-to-peer energy trading and transmission; lifelong personal avatar assistants; predictive gene-based health care; automated knowledge discovery; autonomous robotic surgery; human biohacking; Internet of DNA; male pregnancy and artificial wombs; DNA data storage; and genomic vaccines. Advances in data science are also likely to impact the future of health and how the business of health care is managed. Burke¹⁴ writes about the impact of health analytics for the future of health care, whereas McNeill and Davenport¹⁵ share insights into best practice strategies to master analytics in health care and the life sciences.

Dealing with disruptive innovations is a significant challenge for leaders in the health care industry. Foresight leadership is essential for 21st-century health care leaders who want to be successful as they tackle challenges and disruptive innovations. A capacity for this type of thinking and planning pivots on the degree to which an organization is focused on the future rather than the past or immediate present. It also depends on whether or not the organization has a process and system

in place that regularly scans and curates weak signals and industry trends. An organization's success anticipating, analyzing, and evaluating the impact and cascading consequences of disruption depends on the future literacy and foresight of its leaders.

Johansen^{16,17} asserts that leaders make the future when they have clarity of purpose. He outlines 10 future leadership competencies and 5 necessary leadership literacy skills. The latter include abilities to:

- Look back from the future but act in the now;
- Engage fear, voluntarily;
- Master the leadership required while organizations shift shape;
- Exert influence on the organization by being there when it is not possible to be there; and
- Sustain and create positive energy.

Additional leadership skills include a design thinking mind-set (a maker instinct); clarity; dilemma flipping abilities; bioempathy; the ability to appreciate immersive learning; constructive depolarization; quiet transparency; the ability to rapidly prototype; appreciation of the wisdom of the crowd (or smart mob organizing); and a commitment to create common agendas and action plans. These skills call for the appreciation of multiple perspectives and the engagement and interaction among people, processes, and disciplines to encourage creativity and foresight leadership.

What is foresight leadership for nurses? What are different types of foresight leadership styles? Why is foresight leadership in nursing necessary? How can we educate people about foresight leadership? To what degree does the cultivation of foresight leadership help leaders anticipate, navigate, evaluate, and make decisions about the collective dynamics and impact of disruptive technologies in health care?

DEFINING FORESIGHT LEADERSHIP IN NURSING

In the fall of 2017, the University of Minnesota School of Nursing and the Katharine

J. Densford International Center for Nursing Leadership hosted an invitational summit to explore the concept of Foresight Leadership for Nursing and Health.¹⁸ One purpose of the summit was to examine the values, key drivers, and actors related to a Foresight Leadership initiative that would advance health care, innovation, and learning to support healthy communities and sustainable planetary health. A second purpose was to establish a blueprint, strategies, principles, and evaluation criteria to provide a road map for a Foresight Leadership movement in nursing and health care. The Foresight Leadership initiative is consistent with the School of Nursing's reputation for innovation and the Densford Center's mission to develop next-generation leaders.

Organizers of the summit created the following definition of nursing foresight:

Nursing Foresight is the ability and act of forecasting what will be needed in the future considering emergent health care trends that have consequences for population and planetary health, as well as the nursing profession's purpose, definition, scope, and standards of professional practice.

Several assumptions stimulated the creation of the Foresight Leadership: The Future of Nursing and Health initiative. Some of these assumptions, values, and beliefs are as follows:

- Visionary health innovation leadership presupposes a future time orientation;
- A future time orientation is reinforced by foresight thinking and strategic, anticipatory planning skills;
- Foresight thinking is a skill that can be taught and used for strategic foresight planning;
- Foresight thinking and strategic foresight planning are supported by environmental scanning of weak signals and trends that are likely to become movements;
- Partnerships with organizations that do environmental scanning and foresight work are useful to develop insights into nursing and health-related trends locally, regionally, nationally, and globally;

- Data gathered through scanning can be processed with several foresight methodologies to develop scenarios about preferred futures;
- Scenarios regarding preferred futures can be used to promote organizational learning and support strategic foresight planning while building transformational leadership capacity;
- Strategic foresight planning, models, methods, and frameworks ought to be incorporated into nursing curricula to promote innovations, advance practice, and contribute to the design and development of new products, services, and partnerships in health care contexts; and
- Foresight is a collective dynamic and key success factor and variable in anticipating, mastering, and managing disruptive innovations in health care.

EXPLORING FORESIGHT LEADERSHIP STYLES

People react to the future with a variety of attitudes and perspectives.¹⁹ The nature of foresight leadership is a matter of style. Dian²⁰ defines several types of foresight leadership styles. Her foresight leadership style assessment uses a number of variables to assess an individual's time orientation, propensity for dualistic or systemic thinking, and desire for structure or activity. Combining these variables, she proposed 6 categories of foresight leadership: futurists, activists, opportunists, flexists, equilibrists, and reactionists.

Futurists tend to think in terms of 5 to 20 years or more. They look for perspective and try to see the whole picture. They frame things through a systems thinking lens and want to create the best possible future. They extract scenarios or future possibilities from emerging trends, environmental scans, weak signals, or disruptive technologies. *Activists* introduce new ideas and innovations into a system, commit themselves to a cause, and create change in service of making things better. Activists are inspired and motivated by the

visions of the futurists. *Opportunists* try to influence the future by making sure the present is fully realized. Short-term goals and fads support opportunists' advancement. *Flexists* are grounded in the present and are open to new innovations that enhance survival. *Equilibrists* work in the present and see survival as a matter of balance. They keep organizations running, while working to integrate new ideas into existing systems. *Reactionists* want to protect and sustain organizations. They are cautious of change and want to support the status quo because they see the unknown as a survival threat. They can stop change in an instant by forcing people in the organization to consider the downsides of new ideas.

Building on Dian's work, Gary²¹ conducted factor analysis on data derived from the foresight style assessment. He identified 4 types of foresight leadership: *framers*, *adapters*, *testers*, and *reactors*. Through inquiry and explanation, *framers* ask larger questions about the future and try to define the future. *Adapters* adjust to situations once they realize the future demands it. *Testers* track, experiment, and adopt new trends and put them to use. *Reactors* preserve their position against threats or forced change.

Consideration of foresight leadership styles and categories clarifies how various individuals anticipate and react to disruptive innovations. There are leaders who are likely to anticipate disruptive innovations with a desired future in mind. Others will become activists or champions for the adoption of innovations. Opportunists may capitalize on short-term gains associated with emerging technologies. Flexists and equilibrists are likely to manage the present adoption of innovations in order to keep the organizations competitive, effective, and efficient. Reactionists could (or will) work against innovations and actively thwart the adoption of new technologies or exploration of the impact of innovations on the enterprise.

The challenge for leaders in health care is to be open to framing and asking larger questions. They will need to adapt to situations

caused by disruptive innovations, while experimenting, testing, and evaluating the impact and influence of innovative products, services, or technologies. They will also need to understand that reactors are not likely to support foresight or innovation. These individuals will need to be identified and managed. It is important to acknowledge their concerns and objections and factor their opinions into thinking and planning. A significant challenge to advance a foresight leadership movement is the need for resources to support the design and development of models, methods, and frameworks that advance the teaching and learning of futures thinking and the development of foresight leadership skills. Resources that can help leaders develop foresight are valuable contributions to the future of nursing and health.

RESOURCES TO SUPPORT THE DEVELOPMENT OF FORESIGHT LEADERSHIP

One significant outcome of the 2017 University of Minnesota School of Nursing Foresight Leadership: The Future of Nursing and Health summit²² was the creation of a Web-based resource and digital learning community devoted to the development of foresight leadership capacity in the nursing profession.²³ The purpose of this resource is to educate and inspire nurses and health care professionals to master the theory, knowledge, and practice of foresight leadership. The resource is organized around 6 categories: theories and concepts; models and methods; environmental scanning and trend analysis; scenarios and reports; organizations that support future studies; and additional resources. The resources aggregated and curated at this Web site are designed to stimulate learning about future studies and future methodologies, while providing professionals with ideas and strategies to anticipate and navigate emerging trends and consequences of social, technological, economic, environmental, and political developments that are likely to influence the future.

Nurse leaders are invited to explore the Web site resources and to consider how they can apply and use them in their current work. For example, there are multiple resources that help individuals reflect and develop their own future literacy skills. There are guidebooks and resources designed to support the profession's adoption of futures thinking models and methods. There are listed reports, resources, networks, and institutes that project social changes likely to impact and influence the future of health and health care.

Equipped with foresight knowledge and skills, leaders are more likely to be able to anticipate disruptive trends and the consequences of those trends on health care. The University of Minnesota School of Nursing wants to help build foresight leadership capacity in nursing. In service of this goal, the Future of Nursing and Health Web-based resource advances the teaching and learning of foresight leadership. A brief description and sampling of some of the resources follows.

RESOURCES FOR BUILDING FORESIGHT LEADERSHIP

*The Association of Professional Futurists*²⁴ has developed a foresight competency model. This association has defined and described 5 competency areas to support the development of foresight leadership. The first of these relates to personal effectiveness and includes capabilities related to interpersonal skills: integrity; initiative; adaptability and flexibility; and willingness to learn and openly communicate. The second area relates to academic competencies and specialized knowledge in a domain or field of study, with strong commitments to analytic inquiry and applied and civic learning. The third relates to workplace competencies such as creative and systems thinking; planning; organizing; networking; and the ability to use technology for problem solving. The fourth relates to technical competencies specific to foresight, such as framing, scanning, futuring, visioning, designing, and adapting. The final area relates to contributions of

futurists through academic work, consulting, or organizational development.

*The World Futures Studies Federation (WFSF)*²⁵ is a global network of leading futurists. WFSF membership is transdisciplinary and very diverse. WFSF members include scholars, teachers, researchers, foresight practitioners, policy analysts, activists, students, and others with a long-range view. WFSF is dedicated to stimulating awareness of the urgent need for long-term thinking in government, policy, civil, and educational institutions in order to resolve complex local, national, regional, and global problems. There are a number of pedagogical resources at this Web site to support education programming.

*The Acceleration Studies Foundation*²⁶ is an educational nonprofit organization engaged in outreach, education, research, and selective advocacy with respect to issues and processes of accelerating change. The organization helps communities, companies, and individuals improve their foresight capacity (innovation, creativity, strategy, planning, forecasting, and security) with respect to accelerating technological change. The objectives of the foundation are to promote a critical understanding of accelerating processes of planetary change in service to social, professional, and personal evolutionary development. Goals of the organization are to improve the methods used by individuals and organizations to create, manage, and predict the future by advancing the emerging disciplines of acceleration studies, evolutionary development studies, and strategic foresight.

*The Foresight Guide*²⁷ is the first book to address the range of readers interested in the foresight field: students, educators, and organizational leaders. It is a remarkable resource containing a comprehensive, free introduction to general futures thinking and professional foresight practice available throughout the world. The guide is designed to be the best big picture guide to 21st-century foresight. The guide is a product of *Foresight University and the Acceleration Studies Foundation*.

*Communities of the Future (COTF)*²⁸ is an international network of colleagues from all walks of life who have collaborated for 25 years to create new principles, ideas, concepts, and methods that will help local communities prepare for a future that will be constantly changing as we become increasingly interconnected, interdependent, and complex. The Center for Communities of the Future emphasizes “futures generative dialogue” of “early adopters” (people who are open to new ideas). Once new ideas are identified through the facilitation of small networks of creative thinkers, local “futures projects” are established to introduce 1 or more new “capacities for transformation” into the thinking and activities of local communities to see what resonates and what may be inappropriate. COTF is pioneering new concepts, methods, and techniques of community transformation to be used in parallel to other basic strategic planning models. The goal is to spread “capacities for transformation” throughout any organization/community in a dynamic and flexible way. It is in this way that the concepts and methods of COTF reflect the use of ecological principles of self-organization, continuous innovation, and emergence.

*The FOR-LEARN*²⁹ project is aimed at consolidating and improving accessibility to foresight knowledge and know-how, advancing foresight knowledge, and promoting foresight throughout Europe. It is part of the European Foresight Knowledge Sharing Platform. The most important outcome of this project is the *FOR-LEARN On-line Foresight Guide*. It guides users throughout the critical steps of design, implementation, and follow-up of a foresight project and gives a description of the main methods that can be used. Clear and easy-to-access information is provided, with real case illustrative examples. It is a unique resource on foresight and its techniques, and it is used by the community of foresight practitioners and by those who want to learn how to apply foresight in policy development. The site contains a public directory wiki of the world's best foresight resources. It lists

communities, degree programs, courses, people, employers, organizations, and educational materials that help advance a global foresight culture.

The mission of *The Genetic Literacy Project (GLP)*³⁰ is to aid the public, media, and policy makers in understanding the science and societal implications of human and agricultural, genetic and biotechnology, and research and to promote science literacy. The goals of this organization are to compile and disseminate educational materials, organize public and private conferences, and initiate briefings with policy influencers. This is to help the public disentangle science from ideology; prevent legislative overreach; promote cooperation among public, academic, and corporate science researchers; and encourage an ethically and scientifically sound development of breakthrough genetic technologies.

*Shaping Tomorrow*³¹ is the world's first, multiple award-winning, and only AI-driven systems-thinking model that delivers strategic foresight and anticipatory thinking in real time. Digital assistant *Athena* helps people gather information and move toward predictive, scenario, and prognosis-based decision-making. With an entirely automated service, *Athena* delivers cost-effective real-time foresight analysis. Organizations can use the information to make decisions about investments, risks, and developments likely to impact the future.

STRATEGIES TO DEVELOP FORESIGHT LEADERSHIP

Leadership is about anticipation, alignment, and action.³² There are specific strategies that may be useful to cultivate and develop foresight leadership skills.^{33,34} First, it is important for each leader to know his or her personal orientation toward time. Does a leader operate in the past, present, or future? How might he or she develop reflective time shifting skills? Second, it is

important to develop future literacy skills and to appreciate the value of innovation and design thinking as a foundation for the development of foresight leadership capacity.

It is vital that leaders actively monitor industry trends, forecasts, and disruptions. They must discern logical consequences of those trends by using futures thinking tools and techniques. It is valuable to engage teams in the use of vision-based scenarios while activating strategic conversations about espoused visions, looking backwards from the future. Leaders must navigate change efforts by using appreciation, influence, and control.

On a practical level, adding a foresight discussion agenda item to all standing committees might be a way to begin foresight conversations throughout the organization. Leaders should identify and nurture people who have a futuristic mind-set. A horizon scanning team should be developed in every organization.

A PERSONAL NOTE TO LEADERS WITH FORESIGHT

The author hopes you will invite people in your organization to explore the Foresight Leadership: Future of Nursing and Health Web resource at the University of Minnesota School of Nursing. Pose a question or contribute to the foresight digital community on LinkedIn. If you find a foresight leadership resource that is useful and meaningful, share it with your peers, colleagues, and team mates. Begin to talk about the future and manage disruptive innovations before they manage you and your organization. Anticipatory leadership requires awareness, authenticity, audacity, adaptability, and action.³⁵ Make a commitment to develop your own foresight leadership skills to better anticipate disruptive innovations yet to be realized. You will be better prepared and able to serve your patients, your communities, *and* your profession.

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