

# Human-Centered Design: Principles for Successful Leadership Across Health Care Teams and Technology



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Centering the humanity of the individual and evaluating the benefits and risks of care delivery is nursing's calling card across health systems confronted by competing technology-centered and human-centered perspectives. Human-centered design (HCD) emerged in health care to reprioritize a human-centered approach to innovation and caring. Nurse leaders can leverage HCD to understand the disease and treatment context of the human experience in care delivery as lived by those directly participating in and impacted by a process or system. While HCD in health care continues to evolve, consideration of the human experience is vital to delivering effective design-focused processes and solutions.

Centering the humanity of individuals and evaluating the benefits and risks of care delivery is nursing's calling card across health systems confronted by competing technology-centered and human-centered perspectives. This professional capacity and alignment are evident in the profession's recognition that systems theory and complexity science present opportunities while requiring balance against the human needs of those receiving care across an increasingly systematized industry.

Evolving across generations of clinicians and leaders, nursing theory and evidence-based practice have long reflected and fulfilled a holistic approach to health and caring for individuals and communities that aligns with excellence across general systems theory, complexity science, and human-centered design. These underlying theories and principles have also served to align and empower nurse leaders as effective contributors to an outsized and humanizing influence across health care even as variations systems theory have become more pervasive.

Nurse leaders have long recognized the importance of coordinating relationships and optimizing resources in health care delivery while contributing extensively to the body of knowledge reinforcing the necessity of human-centered, patient-tailored care. When incorporating innovative solutions into system processes, nurse leaders have an obligation to bring human caring

and the unique needs of individuals, communities, and populations into focus. Through an enhanced understanding of human-centered design (HCD), nurse leaders can more effectively deliver innovative solutions and processes that positively shape user experience (UX), challenge industry assumptions, and shape tomorrow's health care.<sup>1</sup> In this paper, we further describe and explore the evolution of these foundational theories and concepts as critical to effective change management while reviewing key concepts that inform effective change management and innovation leadership. By understanding the theory and principles that serve as foundations for driving innovation and delivering effective change, leaders can enhance their

## KEY POINTS

- Nurse leaders face competing technology-centered versus human-centered perspectives.
- Nurse leaders are aligned with human-centered design as patient and staff champions.
- Nurse leaders are ideally suited to drive innovation and deliver change.

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leadership contributions and effectiveness across teams and systems.

### ROLE OF GENERAL SYSTEMS THEORY

With health care experiencing accelerated integration and increased consolidation, nurse leaders leverage effective frameworks to reference, interpret, and drive behaviors and interventions across increasingly complex relationships and interdependent systems. *Systems theory* is a concept employed across multiple disciplines with varied meaning, but the earliest work in the field is Ludwig von Bertalanffy's *general systems theory* (GST).<sup>2</sup> An underlying principle of GST is *holism*, or an "organized whole," that further defines systems as reflecting the components, interactions, and relationships within a collective environment.<sup>3</sup> Additionally, the theory offers an opportunity to consider objects, events, and processes down to the smallest element, step, or influence unique to that system.<sup>4</sup> Generally applied, this means that systems are composed of individual humans as well as their interactions, the technology they work with, and a unique culture. In essence, people, processes, and technology intersect to create a dynamic system where nurse leaders should have a defined role and exercise expansive influence. This means that nurse leaders must establish and grow their influence to shape the systems used by their teams and the relationships and interactions across those teams.

As a theory, GST is grounded in principles of mathematics and physics that cannot be readily applied to the analysis of more subtle and mediated systems.<sup>5</sup> The gap in aligning GST to health care leadership practice is the theory's description of systems as machines in which removing a part can stop the function of the whole. While the experiences of today's health care professionals validate the unpredictable influence of complex, interacting components, nurse leaders understand that these dynamic components, processes, and relationships both individually and simultaneously shape system outcomes.<sup>6</sup> More simply, GST is a foundational tool for nurse leaders to identify, interpret, and understand interactions between people, process, and technology. This informed view of systems theory rewards the nurse leader by offering multiple avenues to influence systems beyond simply interacting with others. This knowledge empowers nurse leaders to shift their focus to a network-based approach that expands their influence and ability to effect change.

### RISE OF COMPLEXITY SCIENCE

While systems theory defines the relevant components and influences being considered within a process, relationship, or organization, *complexity science* (CS) adds value for nurse leaders by considering the fullest spectrum of diverse characteristics across the widest range of affiliated subsystems. CS also explores how discrete components at any level, including the most obscure or relegated subsystems, can affect high-level processes and outcomes.<sup>2</sup> In a

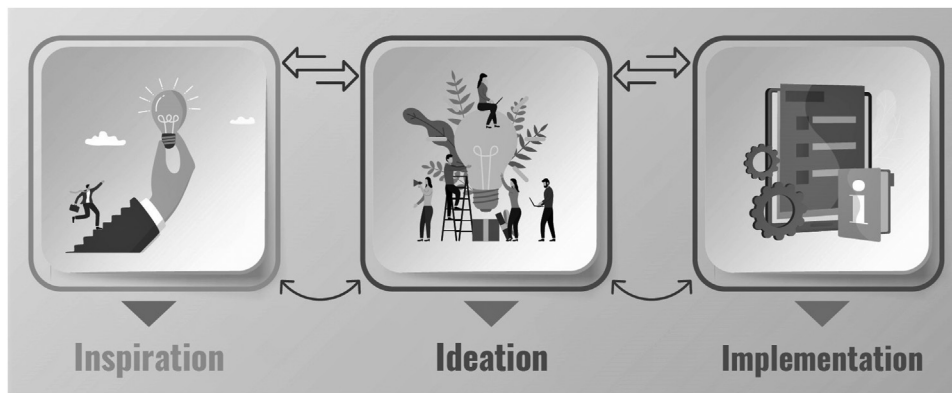
complicated system, as described by general systems theory, removing a component causes the system to no longer function. In a complex system, as described by CS, an element of the system can be removed, and the system adapts to fill that gap or evolves to no longer require that object, process, or relationship.

Nurse leaders have a practical and pragmatic familiarity with the need to develop a robust understanding of complex systems. Nurse leaders are also acutely aware of the likelihood for previously unknown or poorly understood subsystems to influence outcomes far beyond a defined footprint and dependencies. Understanding CS provides a lens through which nurse leaders can observe chaotic, unpredictable environments and interpret the micro-interactions and nonlinear relationships that can be leveraged to influence the trajectory of the whole system. In this context, complexity moves the nurse leader from "having the answers" to facilitating the discussion and strengthening their influence as co-creators of effective solutions.

CS allows nurse leaders to shape and guide complex, adaptive organizations in a more holistic manner while increasing leadership agility in response to the unpredictable and novel ways that organizations adapt to change. Recognizing that nurse leaders cannot predict the future with any certainty, CS removes the pressure to know the answer and prioritizes working with teams to adapt. Facilitated team problem-solving, instead of leading via command and control, is an essential behavior for systems-based leaders looking to foster innovation. Although CS may not discretely address the myriad of challenges faced by nurse leaders, the method does offer another framework for nursing leaders and allied professionals seeking to describe, define, and influence today's dynamic, multi-layered, interconnected health care environment.<sup>7</sup>

### EMERGENCE OF HUMAN-CENTERED DESIGN

In contrast to theoretical conceptualizations of systems, HCD is a set of tools that leaders can use to observe, document, understand, and influence complex systems more tactically. Modern health care is a complex adaptive system with nonlinear behavior induced by diverse multidisciplinary teams, unpredictable patient outcomes, and the rapid advancement of new technologies and innovations. The interdependent components of a health care organization, from the micro to macro level, interact across tasks and processes that shape outcomes and influence health care quality and safety.<sup>8</sup> HCD emerged in health care to systematically operationalize innovation through a human-centered approach. Leveraging HCD concepts, the nurse leader serves as a critical resource in the delivery of innovative solutions by bridging the gap between real-world, systematized health care processes and the 3 phases that inform HCD methodology: inspiration, ideation, and implementation (*Figure 1*).<sup>9</sup> Although



**Figure 1.** The 3 Phases of Human-Centered Design

HCD may align with the practice of nursing and lived experiences of today’s nurse leaders, health care continues to leverage processes and see outcomes that further highlight a critical need for further centering of the individual and human in our care.

Nurses and nurse leaders are ideally suited to grasp the opportunities for leveraging HCD across health care, and with nurses representing 59% of the world’s health care workforce, the evolution of health care into an integrated physical and digital experience demands that nurses engage and lead.<sup>10</sup> The profession’s core values of human dignity, integrity, autonomy, altruism, and social justice inform nurses’ understanding of the moral imperative for innovation to consider the humanity of the end user and those impacted by dynamic and influential components of systems and processes.<sup>11</sup> The failure to integrate HCD in care communication continues to result in episodes of harm and even death<sup>12</sup> even as the method creates a pathway to partner with underrepresented and disadvantaged populations in addressing health and diagnostic disparities,<sup>13,14</sup> intimate partner violence,<sup>15</sup> and medically complex patients.<sup>16,17</sup> Although HCD is not a theory, it is a dynamic, practical, and agile sets of complementary skills that nurse leaders can use to support ideas and influence outcomes while centering the human experience in processes and systems.

### PRINCIPLES OF HUMAN-CENTERED DESIGN

HCD has emerged across multiple industries as a method to support innovation activities. In some cases, leaders combine HCD and innovation initiatives as a synonymous process, so it is important to understand that HCD is a problem-solving method more closely associated with initiatives such as Lean, Six Sigma, and Agile. It is a set of tools to use for innovation and improvement work but is not a theory of innovation in and of itself. The HCD approach is especially aligned with health care and the nursing profession because the process puts the person first by capturing the thoughts, feelings, experiences, and challenges of the end user, rather than solving for a technology problem.

As described by Hargraves,<sup>17</sup> HCD is “the mattering of people, and to participate in the mattering of people is to care.” This perspective should excite nurse leaders as the practice of caring and the centering the person are where the profession excels. Instead of a simplistic and impersonal focus on quantified metrics for results, processes, and engagement, nurse leaders can leverage HCD to understand the disease and treatment context of patient experience (PX) and care delivery as lived by those directly participating in or impacted by the system.<sup>17</sup>

### Be Where the Person Is (Finding the Human in the Process/System)

The individual nurse leader’s ability to center the person can be greatly enhanced by an informed perspective on UX/PX while understanding that evaluating the end user and patient perspective is often dependent on the selection of an efficient and effective method to evaluate engagement, usability, and experience.<sup>18</sup> Although regulatory guidelines and formalized means of evaluating HCD in health care continue to evolve, consideration of UX/PX in the clinical setting is vital to the successful delivery of design-focused solutions that transform business and clinical processes.<sup>19,20</sup> As organizations seek to accelerate problem-solving and speed the development and implementation of creative processes, products, software, and integrated solutions, keeping the end user in focus and involved with development processes and testing is vital to meeting customer needs and requirements while ensuring delivery of a safe solution and an optimized experience.<sup>21</sup>

### Prioritize Big Wins (Don’t Chase Every Problem; Go for the Big Wins!)

Nurse leaders driving innovation across complex, evolving health care systems benefit from an HCD approach that can help prioritize and achieve big wins via 3 essential design processes: framing, intention, and collaboration.<sup>19</sup> Beginning with *framing* keeps the end user as the priority to ensure relevant and effective

solutions that deliver for the person and their community. Framing also creates the context for challenging long-established assumptions and a foundation for visioning key components of future health care.<sup>1</sup> The last couple of decades have also seen nurse leaders and their teams tasked with a variation on this concept known as *digital reframing*: the redesign, transformation, and delivery of traditional tools and products as contemporary digital products.<sup>22</sup> *Intention* validates the need to solve problems the right way while respecting lived experiences, wants, needs, and priorities.<sup>19</sup> Seeing the user and their community as partners also advantages the design team through *collaboration* that effectively identifies needs, co-creates and tests ideas, and facilitates appropriate decision making while increasing the likelihood of success with a relevant, integrated, useful product or solution.<sup>19</sup>

### **Localize the Process (Go as Deep as Possible to Find Out the True Challenge or Opportunity)**

The skills and experience required to identify minute process components and finite relationships and interactions are especially critical for nurse leaders looking to positively influence systems. As with the other steps in HCD, the inclusion of relevant participants from the community is vital to the quality of the process insights that can inform successful implementations and influence outcomes.<sup>23,24</sup> Similarly, localizing valid opportunities within products and solutions should always point back to the real-world impact on care delivery and patient outcomes.<sup>25</sup> The nurse leader's role in innovation delivery is to achieve the greatest alignment and benefit to the individual and community, not to serve as an advocate for processes, hardware, or solutions.<sup>26</sup> Through identification and understanding of the most finite elements and influence across systems, nurse leaders will discover opportunities to maximize processes through HCD that will maximize engagement and influence outcomes.<sup>27</sup>

### **Solve Interactively and Iteratively (Persistence and Resilience Carry the Day!)**

Similarly to principles associated with machine learning, use of the HCD method is characterized by prototyping and versioning that is performed interactively and continuously with input, interaction, and collaboration of individuals engaged with a process, product, or solution.<sup>28</sup> The prototype or version is then rapidly developed into a product or solution that is desirable, feasible, and viable for the relevant partner, population, or community.<sup>29</sup> The contributions of engaged and relevant stakeholders create repeated opportunities for iterations to drive additional refinement and assure delivery of relevant functionality, creative insights, and effective interventions for patients and their communities.<sup>30,31</sup>

### **Capability and Capacity (Capture Best Practices and Leverage Organizational Strengths)**

The ability to collaboratively iterate with known partners and communities creates opportunities to develop institutional familiarity, comfort, and competence with HCD principles to the benefit of process, service, and product portfolios. Ideally, nurse leaders should identify their internal organizational strengths and capabilities as a first step to leveraging internal assets and encouraging external partnerships. In doing so, nurse leaders can integrate innovation as a critical component of a strategic plan and transform their internal and external relationships to advance their organizational mission and values. These newly transformed relationships also help to mature and strengthen internal and external ties in a manner that creates an interwoven mesh of social and human capital that has increased capacity to stimulate and accelerate excellence in innovation practices.

### **IMPLICATIONS FOR CHANGE MANAGEMENT**

Change leadership is often overlooked in leadership programs and in the practice of influencing change within systems. There is significant evidence from other industries about how to effect change across groups, how organizations evolve to meet the requirements of an ever-changing environment, and how people react to novel solutions. In health care, leaders tend to default to performance improvement methodologies as the preferred technique to drive change initiatives. However, we fail to understand the complex systems and the human elements that might influence change beyond the structure and composition of current processes. Nursing leaders can gain significant comfort and agility with change by learning about such processes in the context of complex systems.

A maturing nurse leader in a complex system may respond to a budget shortfall by reducing supply orders, cutting overtime, and furloughing nonessential staff. However, these discrete solutions, while worth considering, are incurious and reflexive responses to what can often be multifaceted, poorly correlated, and nonlinear influences on a particular circumstance. An effective nurse leader equipped to deliver change in the context of a complex system, interdependent relationships, and a dynamic culture may, in contrast, address the same issue through the discovery and removal of non-value-added steps across workflows, evolving team structures and roles to meet new business or clinical requirements, and investing in professional development or credentialing opportunities to elevate team effectiveness and performance in an ever-evolving industry.

Change is constant and, thereby a frequent and reoccurring leadership challenge in nursing and across health care. Effective nurse leaders contribute to the success of organizations by interpreting, visioning, and delivering change in a world of constant movement.

They also communicate in a clear and deliberate fashion that inspires action, assures progress, and supports the continuous adaptation and evolution of individuals and teams. In the context of traditional leadership theories, change is conceptualized as episodic without fully considering all stakeholders or influences.<sup>32</sup> However, through the lens of general systems theory and complexity science, change is constant, dynamic, and unavoidable. This reality dictates that nurse leaders must be intentional with every interaction, from conversations around water coolers to those in the board room, and use these critical opportunities to increase engagement, build capacity, define priorities, and deliver change across complex systems.

### RELEVANT CONSIDERATIONS FROM THEORY

When applying theory to the delivery of change and innovation across health care, nurse leaders may gain additional perspective and valuable insight by reviewing Roger's Diffusion of Innovations, Neuman's Systems Model, and Peplau's Theory of Interpersonal Relations. Roger's theory serves to inform HCD through his findings that 5 characteristics determine the rate of diffusion for any particular innovation: relative advantage, compatibility, simplicity, observability, and trialability.<sup>33</sup> His work adds weight to key elements of HCD by cuing nurse leaders to potential influences across the method's stages. Neuman's efforts highlight the influence of complex relationships and influences on the wellness of the individual as a system shaped by real and perceived, internal and external, and stress influences.<sup>34</sup> Her work is particularly valuable in informing nurse leaders as to the potential influences between subordinate processes within systems. Peplau's work also uniquely informs the nurse leader's pursuit of HCD by encouraging a deeper look at the influences that shape the responses to challenges and dilemmas.<sup>35</sup> By looking for those deeper influences, the nurse leader is more likely to find success in implementing HCD solutions that effectively deliver on a patient's and community's needs in the context of their lived experience and real-world influences.

### CONCLUSION

Increased familiarity with the underlying theories and principles that shape today's health care environment and influence the structure of care is critical to the success of nurse leaders. The central role of HCD in the delivery of safe, efficient, and effective care cannot be overstated, and the topics covered here are essential knowledge for success with the method.

The nursing profession and nurse leaders should be proud of a well-established history of advocacy aligned with human-centered design well before the term was coined. Recognizing the interplay of components, relationships, and interactions across communities and disease states is among our greatest achievements and longest traditions. These attributes make nurse leaders

ideally suited to drive innovation and deliver change. Nurse leaders can leverage HCD, not only to deliver for patient or staff user experience, but also to maximize new business opportunities, transform their organizations, and drive a culture of innovation across organizations and health care as a whole.<sup>1</sup>

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Note: The authors have no conflicts of interest to declare. The views expressed are solely those of the authors and do not reflect the official policy or position of the US Army, US Air Force, US Navy, the Department of Defense, or the US Government.

1541-4612/2023/\$ See front matter  
Published by Elsevier.  
<https://doi.org/10.1016/j.mnl.2022.11.004>