

Imperial College London

Global Patient Safety Collaborative (GPSC) Webinar Series 2023

Systems Thinking in Patient Safety

Introduction

The webinar on Systems Thinking for Patient Safety was organized within the frames of the Global Patient Safety Collaborative (GPSC) – the strategic initiative jointly established by WHO and the Government of the United Kingdom of Great Britain and Northern Ireland with the objective of securing and scaling up global action on patient safety, as well as reducing the risk of avoidable harm and improving the safety of health systems at the country level. The webinar was organized in collaboration with Imperial College London (ICL) - WHO's academic partner for the GPSC.

Systems thinking is crucial for patient safety, especially nowadays, considering that patient care occurs within complex health care systems. For ensuring sustainable change and achievement of better health outcomes it's essential to create environments where patient safety is integral to all health care processes and is addressed in a comprehensive way. During the webinar, the concept of systems thinking and how it relates to patient safety was explored and discussed. Specifically, the following topics were covered:

- lessons from other high-risk industries and their relevance to health and patient safety;
- practical application of systems thinking in patient safety;
- > the necessity of systems thinking in clinical care and for clinical care staff; and
- > influence of systems thinking on the global patient safety agenda.

Systems thinking: Lessons from Safety - Critical Technological Systems and Industries Professor Najmedin Meshkati, Professor of Civil and Environmental Engineering, Industrial Systems

- > Defining characteristics of work:
 - Safety in critical systems and industries: if something goes wrong in the processes involved it will have significant impact on the patient, or people involved.
 - Interdisciplinary orientation: work with different professions, including health workers, designers, engineers, etc.
 - Cross-cutting nature of Human-Systems Integration (HSI)
 - Safety Culture advocacy

Engineering, and International Relations, USC

- Safety spans across wide areas, including nuclear power, petrochemical, oil, offshore drilling, aviation, maritime, coal mining, and health care.
- > The 'HOT' Model: Major Subsystems of a Complex Safety-Critical Technological System (e.g., a hospital)
 - Every safety system is composed of three elements; the **h**uman element, the **o**rganization and the **t**echnology involved.
 - This model demonstrates the interdependence of these subsystems, highlighting the need for equal attention to all subsystems to ensure system reliability and safety.

- At each level of the system, it is necessary to consider the structures which need to be coordinated. For example, at human level, the influence of culture or language should be considered.
- If the system is not balanced across these three elements, something might go wrong, and an incident might occur.
- > The two essential elements for ensuring the safety of a complex system are human factors and safety culture.
- The three sub systems of 'HOT' model need to be given equal and adequate attention, otherwise the chain will break at the weakest link. For example, if a new technology is introduced, the other elements also need to be addressed.
- Safety culture is analogous to the human body's immune system, one issue can affect all elements of the system. Strong leadership is necessary to ensure the protection, maintenance and nurturing of a healthy safety culture of any health care organization.

Question: Do you believe that as we move forward, our focus on AI and algorithm development in technology will play a crucial role in maintaining balance within our health systems?

- > AI and algorithm development are likely to play a key role in maintaining equilibrium in our systems.
- Drawing an analogy to aviation automation, we've seen the profound impact of technology on safety, and it's imperative to learn from past experiences.
- As we navigate through the next phase, we need to ensure both technology readiness level and human readiness level. If these two things are not in sync, we will encounter serious issues. For example, with new car technology, we have a technology which is not matched by the level of human readiness, leading to crashes.

Question: Where are we with regard to the balance between our human factors and our organizational elements, to bring about a safety culture?

- Many organizations are doing this well; however there are different maturity levels across organizations, and some may lack awareness of this, hindering their ability to prioritize and improve safety culture effectively.
- The challenge lies in raising awareness and encouraging organizations to assess and enhance their maturity levels to establish a robust and balanced safety culture.

Practical Application of Systems Thinking in Patient Safety at the National Level

Professor Imad Hassan, Medical Protocol Department Chairman, Saudi Health Council | Competency-Based Training Subcommittee, Department of Medicine, King Abdulaziz Medical City, Riyadh, Saudi Arabia

- > The concept of systems thinking was introduced in patient safety manual developed in Sudan.
- > The same concept is applicable to addressing the COVID-19 pandemic.
- > 70% of change efforts in the world fail (Harvard Business Review), and the major culprit is failure of the change agents to apply the science and tools of system thinking.
- Systems thinking is a foundational requirement for transformational leadership, essential for maximizing program effectiveness.
- Systems thinking is a holistic approach to a better understanding of how the system elements interact with each other over time, the root-causes of system defects, and identification of the right approach for highly effective problem-solving interventions.
- Success factors in systems thinking include:
 - Taking a holistic view, appreciating the interconnectedness and interdependence of all elements in the system.
 - Identifying and focusing on strong leverage points.
 - Shifting the focus from 'products to people': system intelligence.
 - Being mindful of and ready to tackle 'the unintended consequences' of change.

- > Practical applications of systems thinking in patient safety:
 - \circ $\;$ Root cause analysis: systems factors as well as individual factors can be identified.
 - Process improvement: understanding the complex interdependencies within a health system, systems thinking can guide the implementation of process improvement initiatives.
 - Risk assessment and management helps in identifying potential hazards, assessing their impact and developing strategies to mitigate those risks effectively, dealing with unintended consequences.
 - Collaboration and communication: recognizing interconnections between different stakeholders and systems, systems thinking promotes effective teamwork and information sharing.
 - Policy development: systems thinking provides a holistic view on systems, enabling policy makers to develop evidence-based policies and regulations.
- Systems thinking is about understanding the system, or big picture.
- Systems thinking supports identifying leverage points for system design using a multidisciplinary approach.

Hassan I et al. A systems thinking approach for responding to the COVID-19 pandemic. East Mediterr Health J. 2020;26(8):872-876. <u>https://doi.org/10.26719/emhj.20.090</u>.

Incorporating Systems Thinking into Clinical Care

Dr Asad Latif, Director of Centre for Patient Safety, Department of Anaesthesiology and Community Health Science, Aga Khan University Medical College

- > There is variability in applying best practices across the board, often as a result of five key issues:
 - Lack of multidisciplinary engagement
 - Confusion regarding practice
 - Workflow issues
 - Lack of required resources
 - Provider beliefs and practices
- > To improve clinical care using systems thinking, several key principles should be embraced:
 - Safety should be acknowledged as a science, recognizing the fallibility of all elements in the system and assuming that things may go wrong.
 - Principles of safe design, such as standardizing care, creating independent checks, and learning from errors, need to be emphasized.
- The necessity of systems thinking in clinical care and for clinical care staff lies in addressing the multifaceted challenges contributing to variability in practice.
- Embracing principles of safe design and recognizing the impact of system-level factors are essential for enhancing patient safety and the overall quality of care in clinical settings.

Influence systems thinking on the global patient safety agenda Dr Neelam Dhingra, Unit Head, PSF, WHO HQ

- Systems thinking has a significant influence as patient safety is not a vertical program, it is part of a wider system.
- From the global perspective, systems thinking encourages the active involvement of all stakeholders, including patients, health care workers, policymakers, and communities, that fosters a safer health system.
- This approach emphasizes the need for interdisciplinary collaboration, acknowledging that patient safety is influenced by a diverse range of professionals and processes within the health care system.
- Placing patients at the center of health care processes, as highlighted in the theme of the World Patient Safety Day 2023 - Engaging patients for patient safety - supports the design of systems responsive to their needs and involves them as active partners in decision-making.

- Systems thinking facilitates the recognition of the interconnectedness of various stakeholders and promotes multicultural, multisectoral collaboration and partnerships. This collaboration extends globally, enabling the sharing of knowledge, best practices, and data on patient safety.
- An important perspective that systems thinking brings is the proactive risk management approach encouraging the identification and addressing of potential failures, fostering continuous feedback and learning.
- In the context of global patient safety, systems thinking informs and guides the formulation of comprehensive policies and strategic planning. It addresses the root causes of patient safety issues, understanding how changes in one part of the system can impact others, leading to integrated and sustainable solutions. Optimizing resources becomes possible, as the impact of one part of the system resonates across a broader area, improving patient safety and health outcomes.
- The application of a systems thinking approach can inform strategies to address inequities, ensuring patient safety improvements benefit all populations, particularly the most vulnerable.
- Many organizations incorporate systems thinking approach into their strategic vision and planning, to address the global patient safety agenda including, the International Alliance for Patient Organizations, International Council of Nurses, the World Medical Association and the Patient Safety Movement Foundation.
- Initiatives like the Global Patient Safety Collaborative and the Global Ministerial Summits on Patient Safety have demonstrated the practical application of systems thinking on a global scale.
- The best demonstration of a systems approach to patient safety is the Global Patient Safety Action Plan (GPSAP) 2021-2030 that was developed through an iterative and extensive process involving key stakeholders, and outlines strategic objectives, strategies, and actions for different categories of stakeholders. It emphasizes the importance of patient policy development, legislation, advocacy, awareness raising, high reliability organizations and human factors, competence development, skill development, patient safety measurements reporting, learning systems, and creating a safety culture.
- In summary, systems thinking is instrumental in shaping a more productive, collaborative and strategic global agenda for patient safety. The numerous initiatives and partnerships underscore the transformative impact of systems thinking in developing safe, resilient, and sustainable health care systems worldwide.

Question: What is the importance of leadership at different levels to bring together a coordinated approach to systems thinking for patient safety?

Professor Najmedin Meshkati

- The most important element for instilling and sustaining a patient safety culture is leadership. Often a change in leadership can lead to a decline in safety culture, not necessarily an improvement.
- Ensuring that leadership remains inflexible in its commitment and belief is vital for the longevity and success of transformative efforts at the organizational level.

Professor Imad Hassan

- > To improve patient safety, systems thinking has to become part of a regular training.
- Staff engagement is pivotal, and the literature underscores the significant impact of this on improving quality, safety and cost-effectiveness in health care. There is an urgent need for competency development in the area of patient safety for leaders at all levels of health care. Staff engagement should be recognized as a strategic priority, with leaders playing a central role in aligning staff with organizational goals.

Question: How do we build more resilience into our workforce at each level? Where are we in terms of using systems thinking to re-energize staff at all levels (front line, through to national policy)?

Dr Asad Latif

Engagement has declined, due to burnout resulting from the challenges imposed by the COVID-19 pandemic, resource constraints, and an existential crisis experienced by health workers.

- > Due to this, especially in high-income countries, the vacancies are being filled by staff from low- and middleincome countries, leading to brain drain.
- Staff engagement needs to be improved through:
 - Involving staff in day-to-day activities.
 - Ensuring staff are heard and have access to a forum/platform where they can be heard.
 - Decentralization of quality and safety teams to unit level to foster genuine engagement.
- Regular forums that bring together executive leaders, physicians, nursing leadership, and frontline staff can create a culture of engagement and lead to more successful outcomes in improving the health workforce's resilience.

Dr Neelam Dhingra

- Ensuring the adequacy and sufficiency of the health workers is crucial, considering the impact of poor staffto-patient ratios, that have impact on patient safety.
- Focusing on education, training, and skill development for all categories of health workers is essential. This involves recognizing patient safety as a discipline and providing ongoing professional development.
- Prioritizing the safety and security of the workforce is paramount, encompassing physical, emotional, and protection from violence.
- High-level advocacy, especially through platforms like the Global Ministerial Summits on Patient Safety, plays a vital role in bringing these issues to the attention of political leaders and policymakers.
- In terms of care provision, innovative strategies such as task-shifting, interdisciplinary teamwork, and patient-centered approaches can be effective, even in situations with insufficient staffing. Engaging and educating patients to take an active role in their own care can contribute significantly to the overall system's safety.
- Leveraging technology to streamline processes and reduce dependence on repetitive tasks can also be instrumental.
- Examples from countries like Singapore, with initiatives like "Joy at Work," demonstrate the positive impact of strategies that focus on staff engagement and well-being. Adopting a combination of these approaches can address the challenges countries face in building and sustaining a resilient health workforce.

Question: Please could you articulate one sentence that encapsulates your vision for where we should be in the future with systems thinking?

- We need to teach systems thinking to frontline providers, adding the concept into the core of medical and nursing curricula - that is a key for our evolution into high reliability organizations. (A Latif)
- We need to bring systems thinking for patient safety into the forefront of people's mind sets. We need to make systems thinking a compulsory competency in training, globally. Leaders must prioritize systems thinking as a fundamental competency to navigate the complex challenges and intricacies of our health systems. (I Hassan)
- > We need to concentrate on safety culture. (N Meshkati)
- We need to make the concepts of systems thinking simplified for political leaders, as they are the ones who will shape the agenda for health at both national and global levels. This should be brought to the forefront through high-level advocacy and evidence-based arguments. (N Dhingra)

Conclusion

The significance of systems thinking in patient safety is underscored by its instrumental role in shaping a more collaborative and strategic global agenda. By promoting an understanding of health issues within the framework of a vast interconnected system, systems thinking reframes patient safety from a vertical program to an integral part of a broader system. This approach shifts the focus from individual errors to systems accountability, acknowledging the complexity and interdependence within the health system.

Applying systems thinking to patient safety emphasizes that individual errors are better understood in the context of the broader health system, discouraging the tendency to solely blame individuals. The pivotal shift from an individual to a systemic focus leads to a comprehensive approach involving study, understanding, analysis, and design aimed at reducing the likelihood of errors and minimizing the risk of harm. This approach ensures a concerted effort to achieve maximum harm reduction in health care, ultimately contributing to improved health outcomes. Therefore, the holistic perspective offered by systems thinking is crucial for fostering a culture of continuous improvement and enhancing patient safety on a global scale.