



## **Defense Health Agency (DHA) Clinical Communities Speaker Series (CCSS)**

### **2025 SEP CCSS: Healthcare Innovation and Readiness: Empowering Change and Resilience in Global Care Delivery**

#### **S03: Evolution of Telesurgery During the Robotic Surgery Renaissance and a Systematic Review of its Ethical Considerations**

##### **Resource List**

Robot-assisted surgery has seen widespread adoption in recent years, yet its ethical implications have received comparatively less attention compared to other health technologies that operate in close proximity to patients in vulnerable states. [The ethical landscape of robot-assisted surgery: A systematic review](#) (2025) explores the ethical debates surrounding robot-assisted surgery, particularly in the context of increasing automation. This review highlights the diverse ethical issues that require careful deliberation and integration into the surgical ethos. As automation continues to advance, the authors argue for a shift in perspective to address emerging challenges in robotic surgical devices. This approach will help ensure that ethical considerations keep pace with technological progress.

[Evolution of neurosurgical robots: Historical progress and future direction](#) (2024) provides a comprehensive review of the evolution, current state, and future directions of neurosurgical robots, highlighting their transformative impact on precision, safety, and efficiency in neurosurgery. Over the decades, advancements in stereotactic frames, radiographic imaging, and neuronavigation have led to the development of cutting-edge systems. These robots have evolved to incorporate features such as tremor filtering, motion scaling, obstacle avoidance, and force sensing, enabling minimally invasive and highly precise procedures. Future research will focus on overcoming magnetic resonance compatibility challenges, enhancing artificial intelligence-driven capabilities, and optimizing telesurgery techniques to further improve outcomes in robot-assisted neurosurgery.

[Computer-Assisted Surgical Systems](#) (2022) notes that robotically-assisted surgical (RAS) devices are FDA-cleared for various surgeries, including hysterectomy and prostatectomy. They are not authorized for cancer prevention or treatment due to limited evidence on long-term outcomes like survival and recurrence. These devices offer benefits such as enhanced precision, reduced invasiveness, and improved visualization, but require proper training and credentialing for safe use. The FDA monitors RAS devices through reports, studies, and surveys, encouraging the establishment of patient registries to gather real-world data and improve safety. Patients and healthcare providers are advised to discuss risks, benefits, and alternatives, ensuring informed decision-making and appropriate use of RAS devices.

[World Health Organization \(WHO\) and Society of Robotic Surgery \(SRS\) launch health innovation initiative to expand access to virtual care and telesurgery](#) (2025) details the Memorandum of Understanding between the WHO and the SRS to advance equitable access to virtual care and telesurgery. This collaboration aims to address barriers to surgical care in low- and middle-income countries (LMICs) by leveraging digital health innovations, robotic-assisted technologies, and cross-sectoral partnerships. Leaders emphasized the importance of bridging gaps between public and private sectors, strengthening regulatory frameworks, and building local capacity to ensure sustainable and equitable impact. WHO's commitment to health equity through digital innovation underscores the transformative potential of telesurgery to extend access to care, improve outcomes, and close global health disparities.



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### References

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