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Will Dr. Robot Open New Doors for Nurses?

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Technological innovation is rapidly transforming patient care. A new generation of innovations will potentially change the most fundamental aspect of the patient experience – patients' interactions with physicians and nurses. The FDA recently approved the [first autonomous telemedicine robot](#) for use in acute care hospitals. Even more [advanced technologies](#), some capable of processing up to tens of millions of pages of plain medical text per second, are being tested and may soon be used to diagnose conditions and recommend treatment, with limited input from clinicians.

"We suggest that nurses should embrace rather than fear these innovations."

This new technology has the potential to perform several tasks more efficiently than clinicians, albeit with some limitations. It can quickly and effectively sift through large amounts of information and, based on a complex set of guidelines, create a probability-weighted list of diagnoses and recommendations. The result will be purely evidence-based and free of human [cognitive decision-making biases](#). The technology can drastically speed diffusion of new research and guidelines through electronic dissemination, similar to automatic software updates, and make most novel treatment regimens instantly available to patients.

However, even the smartest technology may not perform well when guidelines require information that is not easily quantifiable, nor when decision-making requires patient-specific judgment. Furthermore, technology is unlikely to supplant humans in direct patient care, including procedures and tasks that require empathy and emotional support.

That said, these technological innovations will most likely replace some of the current work of clinicians—in much the same way the electronic health records systems supplanted unskilled

medical records personnel with highly-educated health care [IT professionals](#). As technology evolves to the point when it is capable of independently diagnosing patients and prescribing treatments, it will increase the productivity and reward clinicians whose skills are enhanced by that technology, while potentially displacing clinicians whose tasks can be performed better, or more cheaply, by the technology.

This type of technological innovation is likely to complement nurses' skills. The Occupational Information Network ([ONET](#)) lists *social perceptiveness*, *active listening*, and *coordination* as nurses' top three skills, and new technology will most likely enhance rather than undermine the value of these skills. For example, a hospitalized patient's clinical information would be continuously updated and monitored by the technology against a set of clinical guidelines, immediately flagging patients at risk for an adverse event and triggering nurse actions to mitigate the risks (providing oxygen, medications, etc.), without lengthy delays and errors that may otherwise occur.

In an outpatient setting, as the technology takes over clinical decision-making, highly trained nurses might even be able to assume the role of the primary interface between the patient and the technology. Thus the return on nurses' skills in direct patient care activities—performing examinations to collect information for the new technology, carrying out the recommended treatment, administering medications, and providing health promotion, counseling, and education services—will increase.

In contrast, the new technology may well substitute for physicians' diagnostic work. ONET lists physicians' three most critical skills as *scientific*, *complex problem solving*, and *critical thinking*. The activities associated with these skills, including those performed by nurse practitioners and physician assistants, could be taken over by technological innovation that might, someday, produce cost-saving substitutes for clinicians. These clinicians will need to specialize in diagnosing and treating cases that don't have reliable guidelines or that require patient-specific judgment. The good news is that the technology would free clinicians from routine work and enable them to focus their time on aspects of care in which they would have a comparative advantage, and let the technology handle clear-cut, guideline-driven cases.

Widespread adoption of technological innovations has the potential to elevate and enhance nurses' role in patient care. We suggest that nurses should embrace rather than fear these innovations, and hospitals and other health systems should devote resources to nurse training and education that enhances nurses' ability to adopt new technology and effectively interact with it, in providing high-quality and affordable patient care.

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