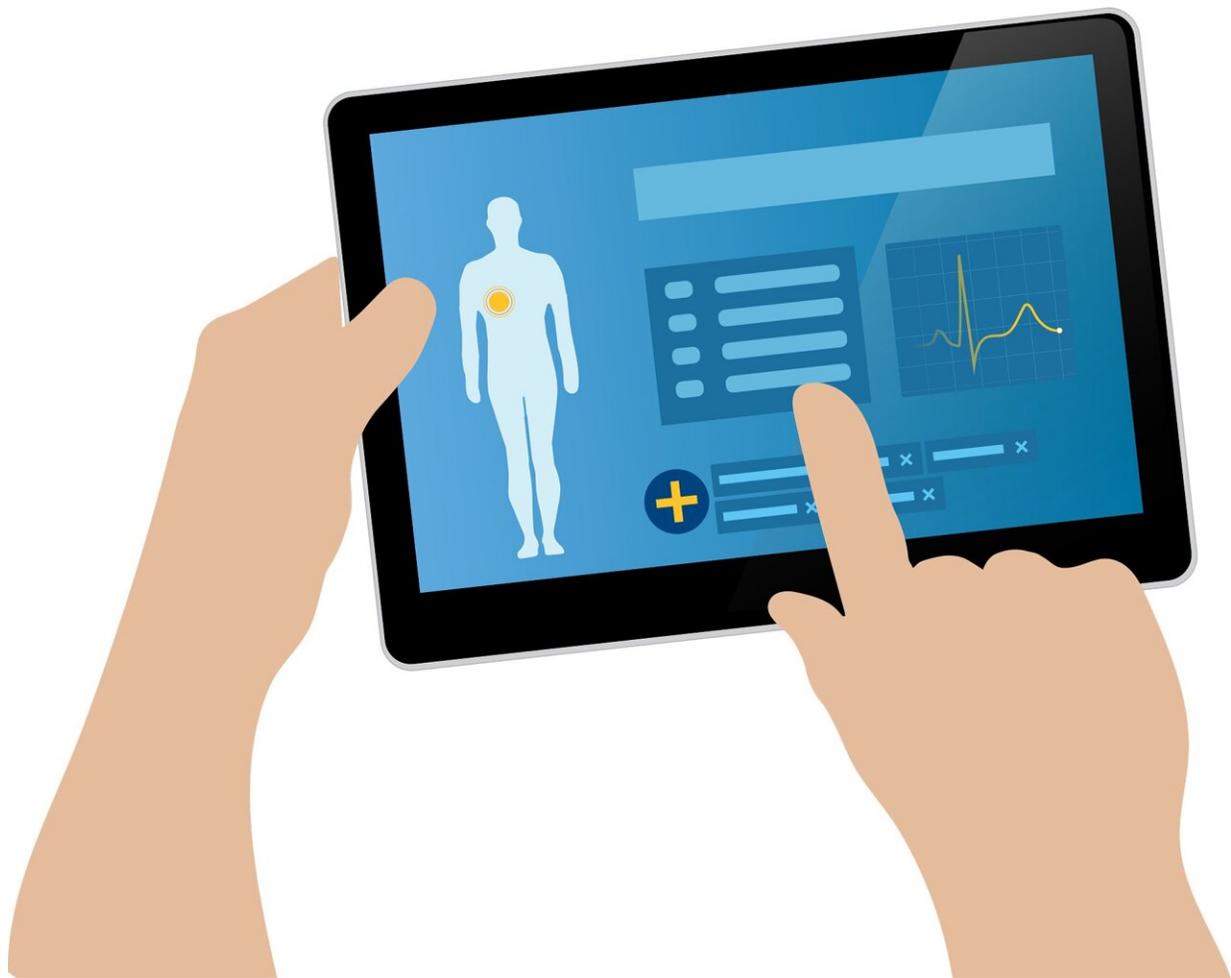


The role of the clinician-data-scientist in health care

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Health care is constantly changing, as big data analytics and advanced technologies such as artificial intelligence are now being applied in the health care field. These high-tech changes hold the potential to transform patient care. In response to these changes, an international team of scientists has published a perspective paper, describing the competencies of clinician-data-scientists and addressing the challenges in training these health care professionals. Their perspective paper was published in the journal *Health Data Science* on August 8, 2022.

The clinician-data-scientist combines in-depth [clinical knowledge](#) with skills in data science. These [health care professionals](#) are well prepared to identify the challenges in [health care](#) that accompany the growing digital transformation. They are able to lead meaningful scientific studies, communicate well across disciplines, and provide general critical interpretations. With their interdisciplinary knowledge, these clinician-data-scientists will play crucial roles in guiding the approvals for [innovative technologies](#) and creating digital health policy.

"In a digital health era, clinician-data-scientists are critically important as they possess a deep understanding of both data science and the humanistic nature of medicine, and are ready to identify clinically important questions," said Luxia Zhang, a professor at the National Institute of Health Data Science, Peking University.

In their perspective paper, the researchers explore the core competencies a clinician-data-scientist needs to have, stressing that these individuals must be able to closely link medicine and data science to work efficiently and to enable data-driven discoveries in health care.

"The core competencies of a clinician-data-scientist should include a fundamental understanding of health data, training in epidemiology, statistics, bioinformatics, and computer science, combined with an understanding of continuous health care improvement frameworks, socio-

technical system challenges, and advanced skills in inter-disciplinary communication and collaboration," said Dr. Mai Wang, from the National Institute of Health Data Science, Peking University. The researchers believe that with a strong understanding of health care and the ability to identify knowledge gaps in [medical practice](#), clinician-data-scientists will play critical roles in data science research projects.

Besides exploring the core competencies a clinician-data-scientist needs, the researchers also examined the training these [health care professionals](#) require. This training is challenging because of the increased complexity of data and the rapid advancement of analytic techniques. As an added challenge, data science is not part of conventional medical education training. While some medical schools are starting to modify their curriculum, overall, integrated formal training programs for clinician-data-scientists are scarce worldwide.

The researchers view teamwork as key to this process. "To conquer training challenges, senior clinical faculties and data scientists should form a close partnership and work together to design training frameworks with flexibility and frequent updating for adaptation to various application scenarios," said Wang.

Looking to the future, the researchers stress that clinician data scientists are key team members in patient [health](#) care. Clinicians need training in [data science](#) skills. At same time, data scientists with deep technical skills are needed, so that key clinical questions are formed and prioritized.

"Clinician-data-scientists are critically important as they possess a deep understanding in both science and humanistic nature of medicine and are ready to identify clinically important questions that, if addressed, can make medical advances and assure excellence in patient care," said Zhang.

"The next step is to form a training framework and design curricula that focuses on the core competencies required by clinician-data-scientists. And this must be continuously updated to adapt to new developments," said Zhang.

More information: Fulin Wang et al, Clinician Data Scientists—Preparing for the Future of Medicine in the Digital World, *Health Data Science* (2022). [DOI: 10.34133/2022/9832564](https://doi.org/10.34133/2022/9832564)

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