



Over the past decade, biomedical research and the practice of medicine have increasingly become information-driven disciplines. The availability of the entire genome sequence for many organisms, including humans; the advent of high-throughput screening technologies, such as techniques that can rapidly screen people for genomic information related to their medical condition; the introduction of powerful digital imaging technologies for biological systems and human patients; and the desire to target treatments to individual patients through personalized medicine have necessitated the use of advanced data management and analysis techniques, high-performance computation, and decision support in the art and science of medicine.

At the same time, the delivery of routine and emergency health care is in desperate need of transformation in many countries around the globe. In economically developed countries, aging populations increasingly demand improved patient safety and management of spiraling health-care costs. In developing economies, effective, consistent, and affordable medical care is needed. Growing evidence shows that information technology will enhance the overall efficiency, safety, and effectiveness of the health-care enterprise as it has in many other industries and lead to new delivery methods that adapt to emerging economies.

Around the world, health care and the life sciences are increasingly becoming an interdependent ecosystem, one which requires the efficient exchange of information among stakeholders from disparate public and private institutions. This necessitates innovative, open, standards-based technologies that are adaptable to the workflow of health care and the productivity needs of medical professionals.

The convergence of these global trends, moving discoveries from basic science to medical practice while improving outcomes and safety and reducing overall costs, has led to the vision and promise of personalized or information-based medicine. In this issue of the *IBM Systems Journal*, we explore the information technology requirements and capabilities that will lead to the transformation of all aspects of medicine through the rich, timely, and practical delivery of contextual data, clinical analysis, and decision support.

A handwritten signature in black ink, reading "Catherine Lasser".

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A handwritten signature in black ink, reading "Michael Svinte".

Michael Svinte
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