

IBM Bolsters Scientific Research to Improve Healthcare Quality and Costs

IBM

ARMONK, N.Y., - 15 Jul 2010: IBM (NYSE: [IBM](#) [1]) today announced plans to enlist some of the company's leading scientists and technologists to help medical practitioners and insurance companies provide high-quality, evidence-based care to patients. As part of this initiative, IBM is collaborating with clinicians in medical institutions and hiring medical doctors to work alongside its researchers to develop new technologies, scientific advancements, and business processes for healthcare and insurance providers.

Dedicating \$100 million over the next three years, the initiative will draw on IBM's leadership in systems integration, services research, cloud computing, analytics and emerging scientific areas — such as nanomedicine and computational biology — to drive innovations that empower practitioners to focus their efforts on patient care.

More than 100 researchers across IBM's nine worldwide research laboratories and its collaboratories in [Melbourne, Australia](#) [2], and [Taipei, Taiwan](#) [3], are contributing to these efforts. As part of this initiative, IBM expects to hire several physicians, clinicians, nurses, engineers, economists and social scientists. Additionally, the company will seek new research collaborations with businesses, governments and universities. IBM will focus its research on three main areas:

- Evidence generation, which uses scientific methods to utilize health data to help develop effective treatment methodologies, and then deliver it in a context-dependant and personalized way at the point of care;
- Improving service quality through simplifying the healthcare delivery process; and
- New incentives and models to shift the healthcare system to one that rewards based on patient outcomes rather than only treatment and volume of care.

Privacy and security of patient data and compliance with current healthcare regulations will be addressed throughout the new research initiative.

“Improving the quality of healthcare requires more than just digitizing health data,” said Chalapathy Neti, Global Lead, Healthcare Transformation at IBM Research. “In fact the proliferation of diagnostics technology has in many ways added another layer of complexity, making it more difficult to gain valuable insights for patient care. Enabling greater coordination between care providers and transforming data into clinical decision intelligence could improve patient outcomes and help lower costs of healthcare today.”

Putting Medical Evidence to Use

Today, advanced diagnostics -- tests that aim to detect illness and identify potential health risks -- can lead to earlier intervention for patients and provide clinicians with a wealth of information. The raw data that comes from these tests can be converted into "evidence" or actionable information for clinicians. With the amount of digital information patients amass over time, it is critical that doctors are able to integrate and analyze data from many different sources -- such as patient demographics, lab tests, modality studies such as EKGs and echo videos, specialist interpretations, etc. -- to form a holistic picture of a patient's condition and make more informed judgments and decisions in treatment.

IBM researchers across the globe are collaborating on a variety of efforts to help bring more a more evidence-based approach to patient care. Current research efforts include:

- Computer scientists are working with cardiologists to create a system that helps identify difficult-to-see patterns in symptoms and characteristics across a patient set that gives better insight into diagnoses and the comparative effectiveness of different treatments and outcomes.
- Researchers are working with the European HYPERGENES consortium to understand the interrelations of genomic, clinical and environmental factors underlying essential hypertension (EH) and to help improve diagnostic accuracy and introduce new strategies for early detection, prevention and therapy for individuals that suffer from EH. Through attempting to build a comprehensive EH disease model based on biological pathways, they hope to identify new genetic variations contributing to EH and associated organ damage.
- Chronic disease, patients taking multiple medications and aging populations across the globe present additional challenges and burdens on the healthcare system. Scientists and mathematicians across IBM are using data mining, information management and advanced analytics to build a system that could help better understand and address adverse drug reactions and interactions as well as provide insights to clinicians on effective courses of treatment.
- In China, IBM and Peking University People's Hospital are building an evidence-based clinical care solution that focuses on chronic disease management and integrates a comprehensive view of a patient's health data, best practices from previous diagnoses, treatment, research and more to provide doctors with clinical decision support at the point of care. The solution also incorporates a mobile platform that will enable doctors and nurses to provide remote care and monitoring service.
- Scientists are also combining their deep expertise in nanotechnology and

biology to develop new applications for personalized medicine. Scientists have begun to [develop medical diagnostics tests](#) [4] of the future that can quickly and accurately analyze biological samples and test for a variety of diseases. IBM is also collaborating with Roche to [develop a nanopore-based technology](#) [5] that will be expected to read and sequence human DNA quickly and efficiently for more personalized diagnosis and treatment.

Improving Service Quality and New Incentive Models

Despite improvements, the way people interact with their health insurance companies is cumbersome at best and breakdowns occur at many levels. Evolving regulatory and security requirements adds another layer of complexity to the relationship between patient and health plans and it is more difficult to track decisions and manage costs. Care providers need to be freed to work more closely with doctors and caregivers to improve efficiency and increase safety and move towards new models that that reimburse more patient-centric care rather than just the volume of care. In this effort, IBM will apply the knowledge the company has gained through its own business processes transformation and the quality of the services it delivers to clients to improving healthcare today.

For example, IBM is collaborating with National Account Service Company (NASCO) to help its Benefits and Operations teams make changes to claim processing rules quickly and accurately in response to rapidly evolving regulations, policies and patient coverage rules that regularly occur with healthcare benefit plans. The changes are so complex that one small change can set off a series of unintended consequences, causing valid healthcare claims to be denied or paid inaccurately. IBM worked with NASCO to create benefit plan traceability by examining existing benefit code and rules and mapping them back to industry concepts and constructs. The team created a technology that translates the different sequences of code into English, analyzes the sequences, consolidates similar functions into groups, and displays the translated code using several data visualization approaches. Using IBM's expertise in analyzing complex, large-scale IT systems, the scientists have provided NASCO with a way to improve claims payment research while increasing the flexibility necessary to efficiently respond to new or changing healthcare regulatory and market requirements.

Through deep analytics and mathematical optimization techniques, IBM researchers are also exploring payment models based on best practices and positive outcomes at the patient-level, large-scale analysis of wellness at a population level and more. These efforts could accelerate the shift of the current healthcare system from a fee-for-service model to one that rewards disease prevention and wellness.

IBM scientists are engaged [in a multi-year research effort](#) [6] to connect and analyze enormous collections of information from a wide variety of sources in order to enable individuals, governments and businesses to better understand which actions improve human health. Through advanced modeling and simulation, the team is investigating and simulating the cause-and-effect relationships between agriculture, transportation, city planning, eating and exercise habits, socio-economic status, family life and more to pinpoint what types of incentives or investments might be needed and how to prioritize them.

IBM's track record of helping to improve healthcare through scientific achievements and collaboration with healthcare companies dates back to the 1950s. In the last decade alone, IBM has collaborated with Scripps Research Institute to understand how influenza viruses mutate, worked with European universities to develop better HIV antiretroviral therapy methods and launched the World Community Grid, which has done projects on cancer, aids, dengue fever among other groundbreaking healthcare innovations.

For more information on current IBM Research healthcare efforts, please visit [here](#) [7] and read [A Smarter Planet](#) [8].

For more information about IBM and healthcare, please visit:

http://www.ibm.com/smarterplanet/us/en/healthcare_solutions/ideas/index.html?re=sph [9]

Note to registered journalists and bloggers: You can view and download a VNR on the healthcare Research initiative by going to <http://www.thenewsmarket.com/ibm> [10]. The VNR is available in HD, standard definition broadcast and streaming quality. [registration available online]

[SOURCE](#) [11]

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[5] <http://www-03.ibm.com/press/us/en/pressrelease/32037.wss>

[6] <http://asmarterplanet.com/blog/2010/05/meet-splash-a-plan-for-analyzing-everything-to-do-with-health-2.html>

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