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A breakthrough partnership just made one of the most talked about health trends for 2018 a reality

GE Healthcare and Roche Diagnostics come together to develop industry-first software integrating in-vivo and in-vitro diagnostic data with latest clinical research for improved patient outcomes

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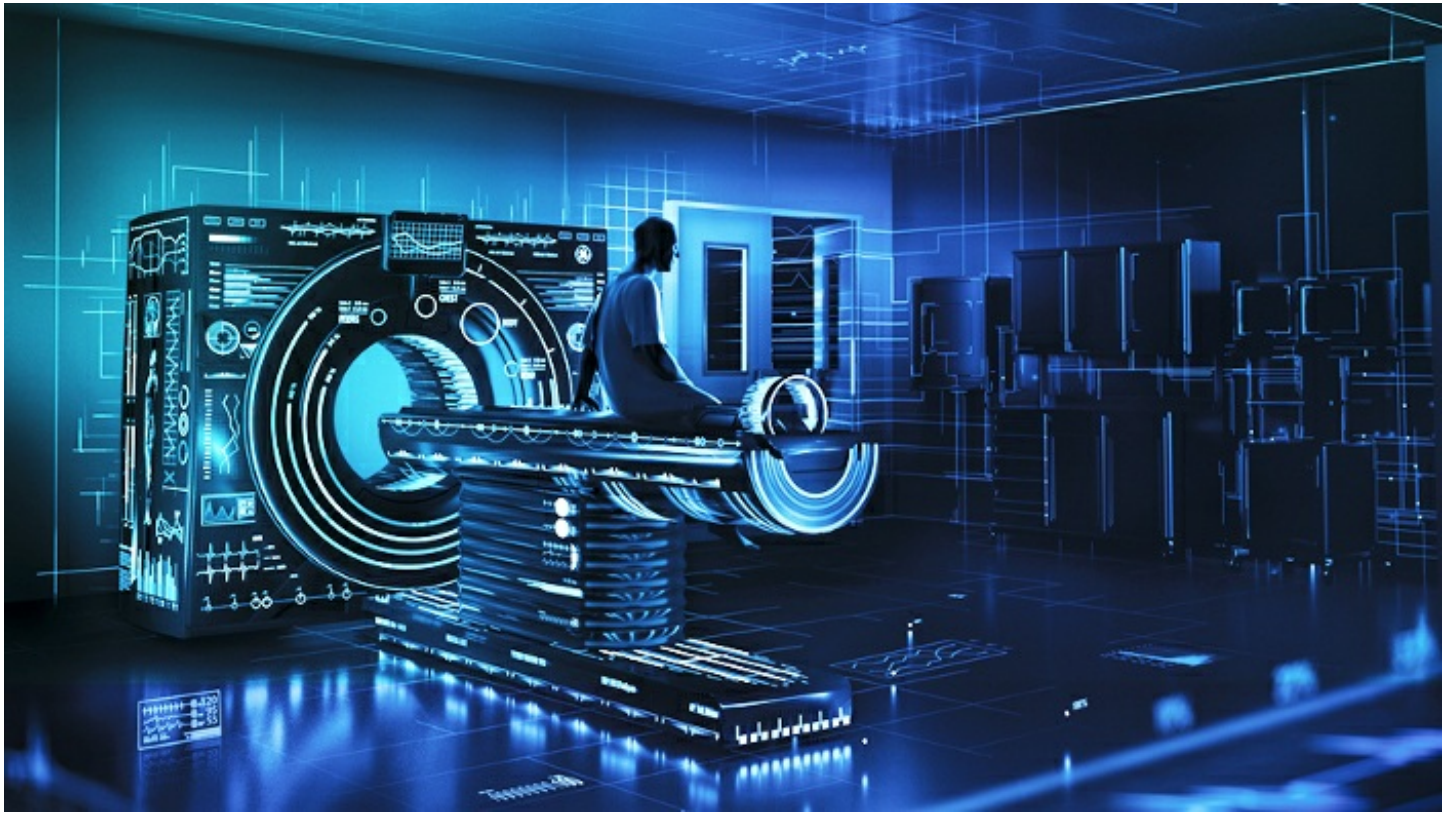

Precision medicine has been a growing trend in healthcare for years. Doctors and researchers are leveraging computational power, modern analytics, and broad inputs of patient information from genomics to wearables to demographics to help make more individualized and accurate treatment plans. What if, for the first time, all of a patient's in-vitro diagnostic data including genomics, tissue pathology, and biomarkers could be analyzed in conjunction with their imaging and monitoring data? Then by adding data analytics and machine learning, a complete picture of the patient's health could be presented on a dashboard enabling clinicians with a comprehensive portfolio of patient information to make earlier, faster diagnosis and individualized treatment? A tool like this will be developed by two leading healthcare companies, bringing healthcare one step closer to making that "what if" a reality.

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A new alliance between GE Healthcare, a leading imaging and monitoring provider, and Roche Diagnostics, the in-vitro diagnostics leader, aims to make the industry's first data-driven software by marrying in-vivo and in-vitro diagnostics. Too often patient information is siloed in different departments, sets of records or even hospitals and the care team lacks a full clinical picture. The two companies will create applications integrating a wide range of patient information alongside the latest clinical studies and research, allowing doctors to diagnose earlier, and develop personalized treatments that may be more effective. Initially, the solutions will focus on oncology and critical care.

“Medicine today is becoming vastly more data-driven due to advances in our scientific understanding of disease and human biology, combined with our ability to detect and measure many new parameters,” said Steve Burnell, PhD, VP, Head of Strategy, Diagnostics Information Solutions, Roche. “In the process, it is also becoming a lot more complex for physicians, researchers, and patients to navigate and make sense of these data. Simply put, Roche Diagnostics and GE Healthcare intend to support these stakeholders in using all the available data to make better healthcare decisions. We do this by connecting the data silos that still exist in most clinical settings, providing collaboration tools and intuitive workflow products.”

According to the latest research from the National Cancer Institute, in 2016, an estimated 1,685,210 new cases of cancer will be diagnosed in the United States and 595,690 people will die from the disease. The potential to speed up diagnosis, make it more accurate and enable more

individualized treatments could have enormous benefits for doctors, researchers, and patients.

In oncology, new therapy options are becoming available that include immune therapies and combination regimens; these require the application of comprehensive diagnostic approaches using both new and established biomarkers to screen, diagnose and monitor disease. When combined with the increasing availability of "big" datasets and advanced analytics, it is possible for a patient to be placed quickly within context of a broader evidence base.

"Together these trends offer the potential of even more personalized healthcare, but at an individual level such decisions will require that the patient and their physician have all of the relevant information and evidence at their fingertips to make the most informed choices," said Burnell.

For example, in the case of a breast cancer patient, the apps running behind the dashboard could combine a woman's diagnostic images, pathology, and genomic information into one profile. "By leveraging this combined data set using machine learning and deep learning, it may be possible in the future to reduce the number of unnecessary biopsies that are performed due to suspicious findings in the mammograms and possibly also reduce mastectomies that are performed to combat ductal carcinoma in situ, a condition that may evolve into invasive breast cancer in some cases," said Nadeem Ishaque, Chief Innovation Officer, GE Healthcare Imaging.

For patients receiving critical care in the ICU or ED, for example, the goal is to combine data from ICU/ED equipment including patient monitors with biomarker, tissue pathology, genomics and sequencing data. The new combined dataset can then be integrated into existing clinician workflows and help physicians to identify, or even predict infectious diseases before they hit. Infectious diseases are a huge risk for patients in the ICU as they are more susceptible.

The cloud-based apps and dashboard will help doctors and researchers visualize the data and provide actionable insights from multiple datasets, none of which are visible to the human eye and cannot be synthesized by human cognitive processes. Analytics, machine learning, and deep learning help build upon and create critical clinical information that can be mined from the

datasets to improve the productivity of clinical staging and to improve patient outcomes.

"GE Healthcare has significant installed bases in both imaging and monitoring equipment, and Roche is the leading in-vitro diagnostics company. By bringing these two powerhouse companies together, we believe we can make a difference for not only our users but for patients around the world. Data in healthcare is exploding and we want to make it easy for doctors to see a complete patient picture and make the data work for them enabling better patient outcomes," said Ishaque.