Medical Imaging Leaders Tap IBM and Watson to Tackle Cancer, Diabetes, Eye Health, Brain Disease and Heart Disease

Watson Health Medical Imaging Collaborative Attracts Sixteen Leading Health Systems, Academic Medical Centers, Radiology Providers and Imaging Technology Companies

CAMBRIDGE, Mass. - 22 Jun 2016: IBM (NYSE: IBM) today announced it has formed a Watson Health medical imaging collaborative, a global initiative comprised of more than fifteen leading health systems, academic medical centers, ambulatory radiology providers and imaging technology companies. The collaborative aims to bring cognitive imaging into daily practice to help doctors address breast, lung, and other cancers; diabetes; eye health; brain disease; and heart disease and related conditions, such as stroke.

Members of the collaborative plan to put Watson to work to extract insights from previously 'invisible' unstructured imaging data and combine that with a broad variety of data from other sources. In doing so, the efforts may help physicians make personalized care decisions relevant to a specific patient while building a body of knowledge to benefit broader patient populations. This information may include data from electronic health records, radiology and pathology reports, lab results, doctors' progress notes, medical journals, clinical care guidelines and published outcomes studies.

Foundational members for the collaborative include Agfa HealthCare, Anne Arundel Medical Center, Baptist Health South Florida, Eastern Virginia Medical School, Hologic, Inc., ifa systems AG, inoveon, Radiology Associates of South Florida, Sentara Healthcare, Sheridan Healthcare, Topcon, UC San Diego Health, University of Miami Health System, University of Vermont Health Network and vRad, a MEDNAX (NYSE: MD) company as well as Merge Healthcare, an IBM company. As the work of the collaborative evolves Watson's rationale and insights will evolve, informed by the latest combined wisdom of these organizations.

Initial plans include training Watson and evaluating potential new offerings in a variety of patient care environments ranging from stand-alone ambulatory settings to integrated health delivery networks. The aim in doing so is to gather data based on diverse real-world experience and to share findings to inform how the medical community might reduce operational and financial inefficiencies, improve physician workflows, and adopt a patient-focused approach to improving patient care and outcomes. Further, medical experts could

determine how to integrate Watson into the existing health IT systems of the imaging technology companies in the collaborative. For example, integrating with electronic health records and PACS (Picture Archiving and Communication Systems) to deliver cognitive insights to providers within existing clinical workflows.

“There is strong potential for systems like Watson to help to make radiologists more productive, diagnoses more accurate, decisions more sound, and costs more manageable,” said Nadim Michel Daher, a medical imaging and informatics analyst for Frost & Sullivan. “This is the type of collaborative initiative needed to produce the real-world evidence and examples to advance the field of medical imaging and address patient care needs across large and growing disease states.”

Recent studies reveal that inadequate, unnecessary, uncoordinated, and inefficient care and suboptimal business processes eat up at least 35%—and maybe over 50%—of the more than $3 trillion the United States spends annually on healthcare. That suggests more than $1 trillion is being squandered.[1] Watson Health aims to help healthcare professionals improve care and reduce waste by enabling enhanced utilization of medical imaging data and providing cognitive offerings and services that support a doctor’s ability to make tailored medical recommendations personalized to each patient’s unique needs.

“With the ability to draw insights from massive volumes of integrated structured and unstructured data sources, cognitive computing could transform how clinicians diagnose, treat and monitor patients,” said Anne Le Grand, who recently joined IBM as vice president of Imaging for Watson Health. Ms. Le Grand brings more than 30 years’ experience building global businesses that operate at the intersection of imaging, informatics, diagnostics and professional services. “Through IBM's medical imaging collaborative, Watson may create opportunities for clinicians to extract greater insights and value from imaging data while better managing costs.”

How Watson’s Ability to Analyze Image Data Could Transform Care

Members of the collaborative are expected to team with Watson Health cognitive computing experts to train Watson on cardiovascular disease, eye health and other conditions using data provided by the members of the collaborative or from population-based disease registries, which house millions of de-identified cases from around the world. To help create new solutions powered by Watson, the industry members of the collaborative could integrate Watson into their workflow systems or image management software.

For example, members of the collaborative could train Watson to detect cardiovascular disease early and identify commonly overlooked heart health conditions such as congestive heart failure or myocardial infarction (heart attack). For early disease detection, Watson could be trained to analyze and ‘score’ a coronary angiogram (a video image of a beating heart) for physician review. This score, commonly known as a SYNTAX score, is one factor used by physicians to decide to refer a patient with coronary artery disease to a minimally invasive stent procedure or a coronary artery bypass graft procedure. In regard to commonly

overlooked heart conditions, Watson could be trained to identify congestive heart failure early by 'learning' how patients' hearts are likely to start failing and then monitoring disease progression. Further, Watson could aid physicians in discerning chest pain likely to indicate a future heart attack from chest pain related to a different health condition. Chest pain is a leading reason people visit a hospital emergency room each year, yet of the estimated 7 million people with chest pain who make it to a ER[2] as much as 2% may suffer a heart attack at home after a hospital discharge because signs of imminent heart attack were missed[3].

Eye health is another area of focus for the collaborative. Members involved in this work may undertake projects to develop an evidence-based clinical decision support system for ophthalmologists and optometrists. For example, offerings could take the form of an online tool for eye clinics and ophthalmic practices that enables early detection and monitoring of common eye diseases among high-risk patient populations, such as detecting diabetic retinopathy among people with pre-diabetes or diabetes and people with obesity or heart disease.

The Watson Health medical imaging collaborative furthers IBM's commitment to work in close concert with healthcare professionals to develop offerings for the medical community. Watson for Oncology and Watson Clinic Trial Matching are examples of this approach, as are relationships with the American Cancer Society, American Diabetes Association and American Heart Association. IBM will open the first Watson Health European Center of Excellence in Milan near the Human Technopole Italy 2040 research campus, supporting the government of Italy's initiative to establish an international hub for the advancement of genomics, big data, aging, and nutrition.

About IBM Watson Health

Watson is the first commercially available cognitive computing capability representing a new era in computing. The system, delivered through the cloud, analyzes high volumes of data, understands complex questions posed in natural language, and proposes evidence-based answers. Watson continuously learns, gaining in value and knowledge over time, from previous interactions. In April 2015, the company launched IBM Watson Health and the Watson Health Cloud platform. The new unit will help improve the ability of doctors, researchers and insurers to innovate by surfacing insights from the massive amount of personal health data being created and shared daily. The Watson Health Cloud will allow this information to be de-identified, shared and combined with a dynamic and constantly growing aggregated view of clinical, research and social health data. For more information on IBM Watson, visit: ibm.com/watson. For more information on IBM Watson Health, visit: ibm.com/watsonhealth.

Check out the IBM Watson press kit at: http://www-03.ibm.com/press/us/en/presskit/27297.wss. Join the conversation at #ibmwatson and #watsonhealth. Follow Watson on Facebook and see Watson on YouTube and Flickr.

[1] https://hbr.org/2016/07/the-case-for-capitation *(July/August 2016 issue)*

[2] *Ohio State University Wexner Medical Center. "Many people in emergency department for chest pain don't need admitted." ScienceDaily. ScienceDaily, 18 May 2015. <www.sciencedaily.com/releases/2015/05/150518121155.htm>.*

[3] *Pope J.H., Aufderheide T.P., Ruthazer R., et al; Missed diagnoses of acute cardiac ischemia in the emergency department. N Engl J Med. 2000;342:1163-1170.*