Watson Health Medical Imaging Collaborative Expands to 24 Members; IBM Debuts Watson Clinical Imaging Review, the First Cognitive Imaging Offering

ORLANDO – 20 February 2017 – IBM (NYSE: IBM) today at HIMSS17 introduced IBM Watson Imaging Clinical Review -- the first cognitive imaging offering from Watson Health -- and announced the expansion of the Watson Health medical imaging collaborative to 24 organizations worldwide, adding clinical and industry expertise for the worldwide initiative already tackling eye, brain, breast, heart and related conditions.

The Watson Health medical imaging collaborative is an initiative comprised of leading health systems, academic medical centers, private radiology practices, ambulatory radiology providers, and imaging technology companies that are finding ways to use medical imaging to identify and predict the risk of cancer, diabetes, and diseases of the eye, brain and heart and related conditions.

New collaborative members Froedtert & the Medical College of Wisconsin, IDx LLC, PrivaCors, Strategic Radiology, Sutter Health, Pacific Radiology Group, University of Michigan and University of Virginia Health System join founding members 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, vRad, a MEDNAX (NYSE: MD) company and Merge, an IBM company.

"The medical imaging collaborative is vital to Watson's ongoing training and the development of cognitive imaging solutions to address the world's pressing health challenges," said Anne Le Grand, vice president of Imaging for Watson Health. "Members of the collaborative helped design and curate data for Watson Imaging Clinical Review, which we debut today at the HIMSS17 conference."

Watson Health will debut Watson Clinical Imaging Review, the first cognitive imaging offering from IBM. The offering reviews medical data including images to help healthcare providers identify the most critical cases that require attention.

The first application for the offering is cardiovascular disease, starting with a common condition called aortic stenosis (AS). AS, which affects 1.5 million Americans[1], occurs when the aortic valve in the heart is narrowed, impeding blood flow to the rest of the body and causing shortness of breath, tiredness, and chest pain. A pilot study found that Watson Clinical Imaging Review

---

[1] 1. Bach D, Radeva J, Birnbaum H, et al. Prevalence, Referral Patterns, Testing, and Surgery in Aortic Valve Disease: Leaving Women and Elderly Patients Behind. J Heart Valve Disease. 2007:362-9.

2. Iivanainen A, Lindroos M, Tilvis R, et al. Natural History of Aortic Valve Stenosis of Varying Severity in the Elderly. Am J Cardiol. 1996:97-101.

3. Aronow W, Ahn C, Kronzon I. Comparison of Echocardiographic Abnormalities in African-American, Hispanic, and White Men and Women Aged >60 Years. Am J Cardiol. 2001:1131-3.

was able to help hospital personnel identify potential AS patients who had not been previously flagged for follow up cardiovascular care.

Using Watson Imaging Clinical Review, hospital administrators may identify cases where follow up care is warranted and assure EMR information is complete. It uses cognitive text analytics to read structured and unstructured information in a cardiologist's medical report, combines that with a variety of data from other sources (e.g. EMR problem list), and extracts relevant information to verify key data, including the diagnosis, is accurately reflected throughout the health record.

"Watson Imaging Clinical Review is the type of targeted AI-driven tool that providers could put to use to help them standardize care delivered across their organization, and gradually build a critical mass of reproducible results from their patient population. In doing so, it can support a population health-driven approach to personalized care," said Nadim Michel Daher, a medical imaging and informatics analyst for Frost & Sullivan.

"Out of the gate, this type of cognitive tool may provide big benefits to hospitals and doctors, providing insights we don't currently have and doing so in a way that fits how we work," said Ricardo C. Cury, M.D., director of Cardiac Imaging at Baptist Health of South Florida and chairman and CEO of Radiology Associates of South Florida.

IBM plans to supplement the release of this offering with nine additional cardiovascular conditions, such as myocardial infarctions (heart attacks), valve disorders, cardiomyopathy (disease of the heart muscle), and deep vein thrombosis.

To learn more about Watson Imaging Clinical Review and other work by Watson Health's imaging group, visit HIMSS17 booth #1712. HIMSS17 -- the 2017 Health Information and Management Systems Society Annual Conference and Exhibition – takes place this week at the Orange County Convention Center in Orlando, Florida. Go online to learn about IBM Watson Health at HIMSS17 and follow IBM's Watson Health's social media channels #IBMHealthcare, #WatsonHealth, and #HIMSS17 for on-site activity updates, times and locations, as well as timely insights from the Watson Health ecosystem.

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 can mask patient identities and allow for information to be shared and combined with a dynamic and constantly growing aggregated view of clinical, research and social health data. For more on IBM Watson, visit: ibm.com/watson. For more information on IBM Watson Health, visit: ibm.com/watsonhealth.

Join the conversation at #ibmwatson and #watsonhealth. Follow Watson on Facebook and see Watson on YouTube and Flickr.

<div align="center"># # #</div>

Media Contact
Lorie Fiber
646.318.0575
lfiber@us.ibm.com

Questions and Answers for Collaborative/Imaging Release

How/why were the new members of the collaborative chosen and what do they bring to the table?

To help better manage populations of patients through the Watson health platform, Watson needs to draw data and insights from a variety of patient care environments ranging from stand-alone ambulatory settings to integrated delivery networks.

The collaborative is designed to provide IBM Watson a real-world experience and share real-world findings because one hospital may use a different imaging machine, operational approach or medical protocol. IBM needs a diverse group of imaging experts training Watson and the collaborative will provide that.

We also have to allow collaborative members to do their day jobs, and to manage what are sometimes disruptive (albeit necessary) processes inside health system IT departments, such as an EMR upgrade. Pockets of time will certainly exist where a given member can't focus on a project, so we have designed the Collaborative to be multi-member, multi-geography, multi-type organization in order to keep the important work we will do together moving forward.

Why is a tool like IBM Watson Clinical Imaging Review needed, and why was Aortic Stenosis chosen as the first release?

EMR systems are intended to make patient management and system analytics easier and better. However, they often have seemingly random, disorganized, and inconsistent structures. With a move towards value-based reimbursement strategies and a need to report data into the broader healthcare system, missing information can be harmful at both the patient and system level.

IBM Watson Imaging Clinical Review employs cognitive text analytics and is a kind of cognitive 'peer-review' tool designed to enable reconciliation of discrepancies between patient's clinical diagnosis and administrative records to provide a more insightful patient record. Additionally, it can have a significant impact on the provider's bottom line

Early diagnosis and surgical intervention have traditionally dramatically improved survival rates for a disease like AS. Timely care is especially important for heart related issues such as AS where it has been said that "time is muscle".

A retrospective study conducted by IBM and a large provider looked at a population of 1,129 patients who were potential at risk of having AS. The study showed that the provider had identified 421 patients with AS who were having their AS managed according to their EMR. In addition, using cognitive text analytics, IBM identified an additional 23% of patients (97

patients) whose original echocardiogram and report documented evidence of AS but this finding was not documented in the patients EMR.

How does IBM Watson Clinical Imaging Review solve for specific customer needs in a differentiated way?

IBM Watson Clinical Imaging Review reads the structured and unstructured information in a report, cognitively understands this data to extract clinically meaningful information, compares this clinical data with EMR problem list and medical coding to empower users to assure that the information in the EMR is accurate.

This tool serves as a process enhancement tool that supports accurate and timely clinical and administrative decision making. It supports patient flow from diagnosis to documentation eliminating cracks in the system because of incomplete or incorrect documentation. Specifically, it identifies AS cases where evidence is present in the final diagnostic report but is not reflected in the EMR problem list and/or medical coding. Thus, it helps to validate that the EMR problem list and medical coding align with the cardiologist's clinical diagnosis.

It also provides an actionable report customized for different users; this report highlights potential cracks in the process discovered by Watson. Users can either accept or reject Watson's recommendation. If users accept Watson's recommendation on a particular case, they can go in the EMR to update that particular case. If a particular case is not resolved, it will continue to appear in the discrepancy report until it is resolved.

Moreover, actions performed by users can be recorded for the executive/manager level review.

When a customer implements IBM Watson Clinical Imaging Review, what do they get?

Watson Health Imaging Gateway: This is a common gateway used to route information between the site and the cloud. Each site will get a gateway with their first implementation of a cognitive offering and then leverage it for future offerings. As the number of offerings increase, additional resources to the gateway infrastructure may be required.

Professional Services (Implementation): The majority of this effort will be to implement the gateway the first time. However, as additional offerings are provided, additional configurations may be required (e.g. adding support for another HL7 message type).

Professional Services (Training): Training will need to be provided for each offering as it will introduce new functionality and may target new users within the enterprise.

Software as a Service (SaaS): This will include both the software on the gateway as well as the actual offering itself.

What additional offerings can be expected in the short term and long term?

In the short term, we expect to supplement IBM Watson Imaging Clinical Review first release for Aortic Stenosis by launching a cardiology suite providing additional use cases such as myocardial infarction, valvular disorders, cardiomyopathies, deep vein thrombosis and many more. (All retrospective)

In the long term, we expect to expand IBM Watson Imaging Clinical Review for retrospective analysis using cognitive text analytics of Breast, and Brain diseases.

Additionally, we expect to launch a cognitive physician support tool that seeks to recommend probability driven differential diagnoses options upon analysis of vast amount of patient, population and medical research data to help inform physician's decisions for the patient.