



## **The Corus<sup>®</sup> CAD Gene Expression Test Can Help Commercial Health Plans Reduce Costs by Improving the Accuracy of the Diagnostic Workup in Patients with Suspected Obstructive Coronary Artery Disease**

- New Economic Utility Analysis Demonstrates that the Corus CAD Test Can Lead to an Estimated 9.4% Reduction in Annual Health Plan Costs Compared to Usual Care -

**PALO ALTO, Calif. – [February 26, 2014]** – CardioDx, Inc., a molecular diagnostics company specializing in [cardiovascular genomics](#), today announced a new publication on the economic utility of [Corus<sup>®</sup> CAD](#) for the assessment of patients with symptoms suggestive of obstructive coronary artery disease (CAD). The analysis found that by using Corus CAD prior to referral for cardiac imaging, a commercial health plan can realize an estimated 9.4% reduction in costs compared to the usual care, for a projected savings of \$0.77 per member per month, or \$4.59 million for a health plan covering 500,000 adult lives.

The study, “Economic Utility of a Blood-Based Genomic Test for the Assessment of Patients with Symptoms Suggestive of Obstructive Coronary Artery Disease,” led by Louis Hochheiser, M.D., CEO of St. John’s Medical Center in Jackson, Wyoming and former Medical Director of Clinical Policy of Humana Inc., is available online in *Population Health Management*, the official journal of the Care Continuum Alliance, in February 2014.

Corus CAD is the first and only commercially available blood-based gene expression test that provides a current-state assessment of obstructive CAD in non-diabetic patients presenting with typical or atypical symptoms. With a 96% negative predictive value for ruling out disease, Corus CAD helps clinicians more accurately exclude obstructive CAD as the cause of these symptoms.

“Each year, approximately three million non-diabetic patients present to primary care offices with symptoms suggestive of obstructive CAD,<sup>1,2,3</sup> resulting in approximately \$5.9 billion in cardiac diagnostic workup costs,” said Joseph Ladapo, M.D., Ph.D., Assistant Professor of Medicine, Department of Population Health and Medicine, NYU School of Medicine and co-author of the study. “The results of this cost analysis indicate that the Corus CAD gene expression score, when used in primary care patients with symptoms suggestive of obstructive CAD, may reduce the economic burden associated with cardiac imaging and invasive coronary angiography, and allow patients to avoid unnecessary radiation exposure and complications associated with procedures.”

The analysis compared usual care to Corus CAD-directed care for the assessment of obstructive CAD. Usual care was defined as a referral from a primary care clinician to a cardiologist for subsequent testing using stress myocardial perfusion imaging (MPI), the most frequently used noninvasive imaging test for the assessment of CAD, with 8 million procedures performed annually in the U.S.<sup>4,5</sup> Corus CAD-directed care was defined by the use of the Corus CAD test prior to MPI to exclude the diagnosis of obstructive CAD. The sample health plan membership used in the analysis was 500,000 adults, based on the average enrollment size of U.S. health plans.

In the analysis, the cost savings associated with a Corus CAD diagnostic strategy were primarily driven by reductions in the number of patients receiving noninvasive cardiac imaging and invasive coronary angiography. Under the usual care diagnostic pathway, estimated annual costs to the health plan were \$49.07 million. Incorporating a Corus CAD-directed care model with a 50% capture rate resulted in a \$4.59 million (9.4%) reduction in costs, with total annual costs of \$44.48 million inclusive of costs of the Corus CAD test. Costs for invasive coronary angiography fell by \$5.01 million (20.1%) under Corus CAD-directed care, and costs for stress MPI fell by \$1.73 million (22.9%). The 9.4% overall annual reduction in costs from incorporating the Corus CAD test equated to \$0.77 per member per month savings.

“Corus CAD addresses the need for a highly sensitive and high-quality cost-saving diagnostic tool that can help improve both patient and health plan outcomes by increasing the accuracy of the diagnostic workup in patients suspected of having obstructive CAD,” said Dr. Hochheiser. “We believe these findings illustrate the economic utility of Corus CAD for health plans seeking to integrate the benefits of precision medicine within the evolving patient-centered frameworks for increasing value in healthcare.”

### **About Obstructive Coronary Artery Disease**

Coronary artery disease is a very common heart condition in the United States. One in six deaths among Americans is caused by CAD.<sup>6</sup> CAD can cause a narrowing or blockage of the coronary arteries (vessels to the heart that supply the heart with blood, oxygen, and nutrients), reducing blood flow to the heart muscle. This narrowing or blockage in the coronary arteries is often referred to as obstructive CAD, characterized by the presence of atherosclerosis, or plaque.

### **About Corus CAD**

Corus CAD is a blood test that can safely, accurately and conveniently help primary care clinicians and cardiologists assess whether or not a stable non-diabetic patient's symptoms are due to obstructive CAD, enabling many patients to avoid unnecessary noninvasive and invasive cardiac procedures and exposure to imaging-related radiation risks, imaging agent intolerance or complications with cardiac catheterization. The test involves a routine blood draw that is conveniently administered in the clinician's office. The test is simple, convenient, and as a sex-specific test for the diagnosis of obstructive CAD, accounts for critical biological differences between men and women.

The test has been clinically validated in independent patient cohorts, including two prospective, multicenter U.S. studies, PREDICT and COMPASS.<sup>7,8</sup> In the COMPASS study, Corus CAD outperformed MPI in diagnostic accuracy as a test to exclude obstructive CAD, demonstrating a significantly higher sensitivity (89% vs. 27%,  $p < 0.001$ ) and a significantly higher negative predictive value (96% vs. 88%,  $p < 0.001$ ) than MPI for assessing the presence of obstructive CAD. Over 55,000 Corus CAD test results have been commercially delivered to clinicians. Corus CAD is a covered benefit for the estimated 48 million Medicare beneficiaries in the U.S. CardioDx processes all Corus CAD test samples at its CLIA-certified and CAP-accredited clinical laboratory in Palo Alto, Calif.

### **About Gene Expression**

Corus CAD is a gene expression test, not a genetic test. Whereas genetic testing may inform on lifetime disease risk, the Corus CAD gene expression test provides a current-state assessment of obstructive CAD by looking at the gene expression changes associated with atherosclerosis. Gene expression levels change depending on a person's disease status resulting from genetic and environmental factors.

## About CardioDx

CardioDx, Inc., a molecular diagnostics company specializing in cardiovascular genomics, is committed to developing clinically validated tests that empower clinicians to better tailor care to each individual patient. Strategically focused on coronary artery disease, cardiac arrhythmia and heart failure, CardioDx is committed to expanding patient access and improving healthcare quality and efficiency through the commercialization of genomic technologies. For more information, please visit [www.cardiodx.com](http://www.cardiodx.com).

## Forward-Looking Statements

This press release may contain forward-looking statements, including statements regarding the safety, efficacy and the adoption rate of and the size of the market for Corus CAD and beliefs regarding the need for and value of gene expression diagnostics. These statements relate to future events and involve known and unknown risks, uncertainties and other factors that could cause actual levels of activity, performance or achievement to differ materially from those expressed or implied by these forward-looking statements. These statements reflect the views of CardioDx as of the date of this press release with respect to future events and, except as required by law, it undertakes no obligation to update or revise publicly any forward-looking statements, whether as a result of new information, future events or otherwise after the date of this press release.

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<sup>1</sup> National Ambulatory Medical Care Survey: 2010 Summary Tables. CDC/NCHS, 2013. (Accessed July 8, 2013, at [http://www.cdc.gov/nchs/data/ahcd/namcs\\_summary/2010\\_namcs\\_web\\_tables.pdf](http://www.cdc.gov/nchs/data/ahcd/namcs_summary/2010_namcs_web_tables.pdf).)

<sup>2</sup> Cayley WE, Jr. Diagnosing the Cause of Chest Pain. *Am Fam Physician*. 2005;72:2012-21.

<sup>3</sup> Woodwell DA, Cherry DK. National Ambulatory Medical Care Survey: 2002 Summary. *Adv Data*. 2004:1-44.

<sup>4</sup> 2013 Nuclear Medicine Market Outlook Report Des Plaines, IL: IMV Medical Information Division, Inc.; 2011.

<sup>5</sup> Present Practices and Future Directions in Cardiac Imaging: The Cardiologists' Perspective, 2011-2014. Des Plaines, IL: IMV Medical Information Division, Inc.; 2011.

<sup>6</sup> Go AS, Mozaffarian D, Roger VL, et al. Heart Disease and Stroke Statistics--2013 Update: A Report From the American Heart Association. *Circulation*. 2013;127:e6-e245.

<sup>7</sup> Rosenberg S, Elashoff MR, Beineke P, et al. Multicenter Validation of the Diagnostic Accuracy of a Blood-Based Gene Expression Test for Assessing Obstructive Coronary Artery Disease in Nondiabetic Patients. *Ann Intern Med*. 2010;153:425-434.

<sup>8</sup> Thomas GS, Voros S, McPherson JA, et al. A Blood-Based Gene Expression Test for Obstructive Coronary Artery Disease Tested in Symptomatic Nondiabetic Patients Referred for Myocardial Perfusion Imaging: The COMPASS Study. *Circ Cardiovasc Genet*. 2013;6:154-162.