



BCBSM Physician Group Incentive Program 2012 Program Year

**Cardiac Care Initiative – Phase III
Initiative Plan**

I. Initiative Overview

The Blue Cross Blue Shield of Michigan (BCBSM) Cardiac Care Initiative (CCI) is one of many initiatives of the Physician Group Incentive Program (PGIP). Since its inception in 2005, PGIP has supported and facilitated practice transformation using a wide variety of initiatives to reward physician organizations (POs) for improved performance in health care delivery. Since its inception in 2005, PGIP has supported and facilitated practice transformation using a wide variety of initiatives to reward physician organizations (POs) for improved performance in health care delivery. As of September 2011, PGIP includes 40 POs from across the state of Michigan, representing nearly 15,000 primary care and specialty physicians who are members of the BCBSM TRUST PPO and/or Traditional Networks. These physicians provide care to nearly two million BCBSM members.

BCBSM's Physician Group Incentive Program encourages all payer collaboration, catalyzing all payer system development, rather than payer-specific system development. Through PGIP, BCBSM is helping to improve the quality of care for all Michigan residents. Patients throughout the state, regardless of payer, benefit from the improved care processes developed through the PGIP provider community. Developing systems of care which are used for all patients helps assure that providers don't have to alter care processes based on whether patients have insurance, or which insurance they have. This is an important factor in ensuring that the best practices and care processes are reliably provided to all patients, all of the time. This all-payer approach to practice transformation is good for patients with coverage from BCBSM and BCN and helps further BCBSM's social mission of cultivating a healthier future for all Michigan residents.

The CCI consists of three phases. Phase I of the CCI is designed to reduce the use of unnecessary cardiac diagnostic procedures and limit the associated cost trend. Phase II of the CCI is designed to enhance the quality of ambulatory cardiac care provided to BCBSM members. Phase III addresses the diagnostic/therapeutic cascade in cardiac care. POs participating in the CCI must participate in all phases of the Initiative. Phase I and Phase II are presented separately in two other initiative plans.

Goals and Objectives

The goals of Phase III of the CCI are to:

- 1) Create actionable metrics that allow the PGIP POs to:
 - Understand their performance along the diagnostic testing/therapeutic intervention sequence relative to other POs
 - Take action to improve performance.
- 2) Decrease variability in the use of diagnostic cardiac tests and PCIs among the PGIP POs as measured by:
 - A reduction in the use of cardiac diagnostic tests and percutaneous coronary interventions (PCIs), particularly in patients with no evidence of disease^a

^a The ultimate goal of this initiative is to encourage POs to reduce the use of unnecessary diagnostic tests and PCIs. But because BCBSM must rely on claims – rather than registries or medical records – it is not possible for BCBSM to provide POs with data on the appropriateness of services provided. This initiative is based on the assumption that the POs will respond to the provision of incentives to reduce use by reducing unnecessary services. The goal has been defined such that it can be measured and evaluated.

- A reduction in the use of cardiac diagnostic tests and PCIs, particularly in patients with stable coronary artery disease (CAD).^b
- 3) Improve compliance with national guidelines for pre-PCI diagnostic testing in patients with stable CAD.

The overall objective of Phase III of the CCI is to divide the cardiac diagnostic testing/therapeutic intervention sequence into strata (based on patient condition and, if possible, disease severity^c) and decision points (based on the temporal order of tests and the type of tests^d) to analyze and create actionable measures of PO use and performance.

Specific objectives include:

- Understand the patterns and variation in the diagnostic therapeutic cascade among POs, beginning with a non-invasive cardiac diagnostic test and following the subsequent test/procedure sequence
- Understand the variations in catheterization and PCI use and the patterns and variations in diagnostic testing prior to the PCI by PO
- Understand the patterns and variation in the use of diagnostic and therapeutic tests/procedures for patients with stable CAD
- Understand the patterns and variation in the use of diagnostic and therapeutic tests/procedures for patients with CAD overall
- Understand the patterns and variation in the use of diagnostic and therapeutic tests/procedures for patients following a revascularization and/or a myocardial infarction

Completing all of the above objectives will require significant analytic resources, so the analytic plan for 2012 focuses initially on meeting the first objective. The initial analysis begins with a specific test/procedure and tracks the tests/procedures that follow. Subsequent BCBSM analyses will focus on examining the patterns of testing/procedures for individuals with specific conditions.

II. Background

Health Problem and Significance

In 2007, cardiovascular disease (CVD) was the underlying cause in one-third of deaths in the United States.¹ The main form of CVD - coronary heart disease (CHD) or coronary artery disease (CAD)^e – accounts for approximately one in every six deaths in the US, or half of all deaths due to CVD.^{1,2} The American Heart Association estimates that the direct and indirect costs of CAD totaled \$177.5 billion in 2007.¹

^b See prior footnote

^c Although there are challenges inherent in defining patient condition or disease severity using claims-based data, Lin and other researchers have developed and tested methodologies that will prove useful in designing the metrics for this initiative.

^d Researchers have also developed methodologies for defining elective PCI procedures that we will rely upon in this initiative.

^e The terms CHD and CAD can be used interchangeably and include acute myocardial infarction, other acute ischemic (coronary) heart disease, angina pectoris, atherosclerotic cardiovascular disease and all other forms of chronic ischemic coronary heart disease. For purposes of this paper, we will use the term CAD.

The U.S. age-adjusted overall death rate due to CAD has declined approximately 74% from the peak of 4.78/1,000 in 1963 to 1.26/1,000 in 2007.^{1, 3, 4, 5} Nearly half of this reduction was due to medical and surgical treatments, including secondary prevention medications and rehabilitation after both heart attacks and revascularization (accounting for 11% of the decrease), initial medical and - to a lesser extent - surgical therapies for myocardial infarction or unstable angina (10%), therapy for heart failure (9%), revascularization for chronic angina (5%), and other treatments, such as statins for lipid reduction (12%). Slightly less than half of the drop in death rates was due to changes in risk factors, including reductions in cholesterol (24%), systolic blood pressure (20%), smoking (12%) and physical inactivity (5%). This was partially offset by an 18% upsurge in death rates due to increases in body mass index and rates of diabetes.⁶

Despite declining death rates, the estimated prevalence of CAD in adults age 20 and older remains high – 7% or approximately 16.3 million persons.¹ The burden is particularly high in Michigan, which has the seventh highest CAD death rate in the U.S.¹ The Michigan Department of Community Health expects the burden of heart disease to increase in future years due to an aging population and the increasing prevalence of obesity and diabetes.⁷

Nationally, the use of diagnostic imaging – particularly cardiac imaging - increased significantly over the past 20 years, peaking in 2006.⁸ From 1996 to 2002, the number of cardiac imaging procedures performed on behalf of Medicare beneficiaries grew 9% per year. In 2002, slightly more than one cardiac imaging test was ordered - on average - for every four Medicare beneficiaries.⁹

The Medicare Payment Advisory Commission (MedPAC) 2005 Report to the Congress stated, "The rapid growth in Medicare spending for imaging services raises questions about whether these services are always used appropriately. Perhaps the most significant reason to be concerned about potential overuse of imaging services is the threefold variation in the number of imaging services provided across the country."¹⁰ MedPAC cited studies demonstrating that more medical services, in general, do not result in better outcomes and that Medicare survival rates in areas with higher use of imaging services do not exceed rates in areas with lower use.¹⁰

From 1993-2001, Lucas et. al. found that the age, sex and race-adjusted rate of imaging stress tests in the Medicare population increased an average of 6.1% annually, while the rate of cardiac catheterization increased an average of 2%, the rate of percutaneous coronary intervention (PCI) increased an average of 0.8%, the rate of coronary stents increased an average of 1.2% (from their introduction in 1995) and the rate of coronary artery bypass graft (CABG) increased an average of 0.2%.¹¹ In theory, the increased use of non-invasive imaging and testing should lead to more precise patient risk stratification, which should result in more accurate identification of the patients who can benefit most from invasive procedures, such as coronary angiography or revascularization. Although this may be the case for some individuals, research demonstrates a strong positive correlation between rates of imaging stress tests and coronary angiography¹² and a tight relationship between rates of coronary angiography and revascularization, particularly PCI. In the relationship between coronary angiography and PCI, there is no observed threshold beyond which additional angiographies do not result in additional PCIs.¹³ This strong association between a diagnostic test and a therapeutic intervention has been called the "diagnostic-therapeutic cascade."¹³

Researchers concluded that a small portion of the increase in the diagnostic testing and treatment rates from 1993-2001 was due to the use of PCI for primary treatment of acute myocardial infarction, which has been shown to reduce mortality in the short-term. However, Lucas et. al. found that increasing rates of diagnostic testing and treatment failed to reflect the

reduced rates of restenosis associated with the use of coronary stents and the stable prevalence of acute myocardial infarction during the study period. The authors conclude that “the nearly constant ratios between stress testing and cardiac catheterization and between cardiac catheterization and revascularization suggest that these diagnostic tests are not being increasingly targeted at populations that could most benefit from their consequences.”¹¹

The Lucas ecological study on a 20% sample of the Medicare population highlights the strong association between diagnostic testing and therapeutic intervention and concludes that “patients living in high-diagnostic-intensity regions may be getting more treatment than they want or need.”¹³ The study also provides support for the hypothesis that a patient who receives a stress test has a high probability of subsequently receiving a cardiac catheterization and that a patient undergoing a cardiac catheterization has a high probability of undergoing a PCI. A 2010 article in the *New England Journal of Medicine* opines that “the greatest risk that patients face with unnecessary imaging is needless exposure to nonbeneficial downstream testing and inappropriate treatment related to misdiagnosis and the overdiagnosis of common but unimportant findings.”¹⁴ This highlights the need for clear guidelines and prudent clinical decision making in the area of diagnostic testing.

Guidelines for the assessment of obstructive CAD in stable patients are designed to optimize the diagnostic yield of cardiac catheterization, and to recommend testing and intervention strategies based on patient risk. The guidelines recommend the following:

- Very low risk patients should be observed, but not necessarily tested
- Intermediate risk patients should undergo noninvasive testing, with the aim of determining the need for further intervention, such as cardiac catheterization
- High risk patients may proceed directly to a catheterization^{15, 16, 17}

However, a recent study of patients without known coronary disease who underwent elective cardiac catheterization found that only about one-third had obstructive CAD. The study’s authors offer that since “the primary benefit of invasive treatment for obstructive coronary artery disease is relief of symptoms...the threshold for invasive angiography may need to be higher in asymptomatic patients, for whom the potential benefits remain uncertain.”¹⁸

The situation with respect to PCI is similarly complicated. While national guidelines recommend PCI in patients with unstable coronary syndromes, because PCI decreases the risk of death and myocardial infarction in such patients,¹⁹ optimal protocols for diagnostic testing and therapeutic intervention in patients with known stable coronary disease are less clear-cut. PCI is recommended under limited circumstances for patients with stable CAD,¹⁹ and documentation of ischemia in such patients is suggested before elective PCI is performed.²⁰ However, results from the Blue Cross Blue Shield of Michigan Cardiovascular Consortium (BMC2 - PCI)^f from January 2005 to September 2009 indicate that 42% of the 111,218 PCIs conducted in Michigan and entered into the BMC2 registry were performed on patients with stable disease.²¹ Moreover, a recent study found that only 44.5% of Medicare patients with stable disease had a stress test to document ischemia prior to undergoing elective PCI and approximately 34% of patients in a commercially insured comparison group had a stress test prior to undergoing elective PCI.²²

^f The BCBSM Cardiovascular Consortium-Percutaneous Coronary Intervention (BMC2-PCI) is a longstanding hospital collaborative quality initiative designed to improve care for patients with coronary disease who undergo angioplasty by reducing complications and assuring the appropriateness of the procedure.

A 2005 meta-analysis indicated that, in patients with chronic stable CAD (without a recent myocardial infarction), PCI did not decrease the risk of death, myocardial infarction or the need for additional revascularization when compared to conservative medical treatment.²³ In 2007, the results of the groundbreaking randomized COURAGE (Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation) trial, published by Boden et. al., demonstrated that, in patients with stable CAD, PCI plus optimal medical therapy reduced the risk of angina, but did not reduce the risk of death, myocardial infarction, or hospitalization compared to optimal medical therapy alone.²⁴

In the past few years, the rate of increase in cardiac diagnostic and therapeutic procedures appears to have slowed, and for some procedures has declined. The growth of Medicare imaging volume began to slow in 2006, with implementation of Medicare payment changes introduced by the Deficit Reduction Act (DRA) of 2005. Medicare imaging volume continued to increase at a rate of 6.2% from 2005-2006, 3.8% from 2006-2007, and 3.3% from 2007-2008.^{25, 26, 27} From 2008-2009, the volume of cardiovascular stress tests for Medicare members fell, attributed to a 3.5% decline in nuclear medicine studies.²⁸ Nationally, for all types of payers, the number of inpatient⁹ cardiac catheterization procedures rose dramatically from 1979-2000, but declined slightly in subsequent years until 2007 (the most recent data available).¹

The literature shows a dramatic decline in CABGs since the early 2000s, due primarily to substitution of less invasive procedures (i.e., PCIs with stents).^{1, 28} However, the literature on the trends in the PCI rate is mixed. The number of inpatient PCIs increased more than four-fold between 1990 and 2006, but displayed a precipitous decline from 2006 to 2007.¹ One study found that the rate of inpatient PCIs increased substantially from 1988 to 2001, but stabilized after that time.²⁹ A study published in April 2011 found a mean annual rate of decline of 2.5% in Medicare PCI volume from 2004 to 2009.³⁰ A study published in May 2011 demonstrated a substantial decline in the rate of CABG and an unchanged rate of PCI for Medicare beneficiaries from 2001-2008.³¹ MedPAC attributed an observed decline in the volume of PCIs for Medicare beneficiaries from 2008-2009 to Boden's publication of the results of the COURAGE trial, which showed that medical therapy offered similar outcomes to PCI for patients with stable disease.²⁸ A recent study demonstrated a significant decrease in PCI volumes for patients with stable angina following the COURAGE trial.³²

Despite recent declines in rates of procedures, regional variation in the provision of cardiac diagnostic and therapeutic procedures within Michigan is a significant concern. Research documents a high degree of regional variation in the rates of cardiac diagnostic tests and procedures throughout the country. According to the *Dartmouth Atlas of Cardiovascular Healthcare* and *The Dartmouth Atlas of Health Care in Michigan*, "the likelihood that a patient with CAD will have a particular test or procedure depends in large measure on where the patient lives and seeks care."^{33, 34, 35} In 2008, the average rate of cardiac catheterization among BCBSM members was 7.51 per 1,000, ranging from a low of 3.8 per 1,000 members in Muskegon to a high of 12 per 1,000 members in Saginaw. The PCI rate in Michigan averaged 2.27 per 1,000, with rates varying from 0.9 per 1,000 in Muskegon to 2.94 per 1,000 in St. Joseph.³⁷

⁹ Cardiac catheterizations and PCIs are increasingly being conducted on an outpatient basis; according to the Center for Healthcare Research and Transformation (CHRT), approximately one in four PCIs for BCBSM members in 2008 were performed in the outpatient setting. Much of the available national data on cardiac procedures captures only those procedures conducted on an inpatient basis, so the national trends are not clear. Medicare data and data from the Center for Healthcare Research and Transformation captures both inpatient and outpatient procedures.

Further, studies suggest that there may be opportunities to reduce the use of cardiac procedures in stable patients. If fewer patients receive stress tests initially, fewer will plunge into the inevitability of the diagnostic-therapeutic cascade.

BCBSM Experience

In an analysis of 2009 claims, 48,348 BCBSM commercial members age 18-75 (or 2.17% of adults) had a diagnosis of CAD^h. This is substantially lower than the national prevalence rate, possibly due to three factors. First, it is likely that any analysis that relies on claims data undercounts the number of members with CAD. Research demonstrates that, compared to clinical records, claims data lack important information on diagnoses and prognostic factors relevant to CAD; in one study, claims data failed to identify approximately half of all cases.³⁶ Second, because few elderly individuals are enrolled in BCBSM through the commercial product, this BCBSM population is substantially younger than the national profile. Since individuals over 60 are two and a half times more likely than those between ages 40-59 to have CAD, and since the rates for individuals age 80 and older are approximately four times as high¹, the relative lack of older individuals in the BCBSM commercial population is a factor in skewing the prevalence of CAD below the national rate. Finally, the definition of CAD used to derive the national number appears to include patients diagnosed with aortic aneurysms, while the BCBSM definition does not. Although the population of patients with aortic aneurysms is not large, this may account for some of the discrepancy as well.

The *2010 CHRTBook: Health Care Variation in Michigan* – based on BCBSM data – demonstrates a 16.6% reduction in the rate of cardiac catheterization in Michigan from 1997 to 2008 and a slight reduction in the rate of PCI over the same time period.³⁷ Recent data collected by BCBSM's Clinical Epidemiology and Biostatistics (CEB) department demonstrates a decline in use of stress tests (myocardial perfusion imaging and stress electrocardiogram, in particular), cardiac catheterizations and PCIs in BCBSM members from January 2006 - November 2010.

Possible Solutions

The Deficit Reduction Act of 2005 introduced payment changes in Medicare that appear to have slowed the cost increases and volume of imaging growth. The DRA instituted payment caps and captured savings related to imaging of contiguous body parts. On April 7, 2011, MedPAC disputed industry claims of substantial declines in imaging cost and volume and voted to recommend two additional changes to Medicare intended to further reduce the growth in imaging use and cost: 1) Reduce the physician work component of imaging and other diagnostic tests ordered and performed by the same practitioner (i.e., cut Medicare reimbursement for doctors who refer patients for diagnostic scans on equipment they own themselves) and 2) Implement a prior authorization program for those doctors with a history of ordering high volumes of advanced studies. These recommendations have not yet been voted into law.³⁸

Researchers have proposed a variety of methods to address inappropriate utilization of cardiac procedures and tests³⁹, although the effectiveness of some of the approaches has not been well studied. These approaches include:

- Developing and promoting clinical practice guidelines
- Applying evidence-based appropriate use criteria

^h This rate is based on BCBSM-defined measure for CAD used in the Evidence-based Care Report (EBCR) Initiative (PGIP 2010 program year) MI liability, commercial members with MI residence

- Educating physicians on guidelines and criteria
- Establishing utilization targets
- Employing prior authorization programs, generally through radiology benefit managers (RBMs)
- Providing feedback to physicians based on targets or peer comparisons
- Establishing point-of-service decision support systems
- Establishing health information exchanges to share digital images and results and prevent duplicative imaging
- Imposing higher copayments for high cost diagnostic imaging services
- Privileging or limiting cardiac service providers to those obtaining accreditation or meeting certain criteria, to address quality concerns related to the rapid proliferation of imaging units

A study of three health plans contracting with RBMs to perform prior authorization of advanced imaging requests revealed moderate declines in the use of high-tech imaging, particularly in the first year of the program. The researchers collected data for only two years following program implementation, so the study does not provide results on the long-term effects of imaging prior authorization programs.⁴⁰

The General Accountability Office surveyed a sample of 17 health plans that manage utilization of imaging services, primarily through RBM-administered prior authorization programs. The plans reported substantial declines in use of advanced imaging following implementation of prior authorization. Annual growth rates were reduced from 10-20% to less than 5% in some plans. The most significant declines were reported in the immediate period following implementation. One plan achieved zero growth in imaging costs after 3 years and discontinued use of the prior authorization program. In the following 3 years, the plan experienced an average annual growth rate of 10% in imaging costs. The plan subsequently redeployed the RBM's prior authorization program and growth declined to single digits within 6 months.⁴¹

MedPAC's 2005 Report to the Congress details a variety of approaches used by health plans to reduce imaging use. Some plans profile individual physicians' ordering of imaging services against peer performance and identify physicians with the highest use patterns. One plan (BCBSM) removed high utilizers from its network and found that the threat of exclusion was sufficient to change physician behavior.⁴²

The Institute for Clinical Systems Improvement (ICSI), headquartered in Minnesota, has implemented a successful pilot involving five ICSI members and four Minnesota health plans to address physician concerns with prior notification programs, including the removal of decision-making from the point of service and patient inconvenience. Under the pilot, decision support is offered as an alternative to prior notification either through the electronic medical record or the web. The physician enters clinical information and, based on proprietary appropriateness criteria, immediately receives a 1-9 utility score (with ranges for "Indicated," "Marginal," or "Low Utility") and possible alternatives. The availability of a point of service utility score facilitates shared decision making between the patient and practitioner. Claims must include a decision support number to be paid, but claims are not currently denied based on the utility score. The pilot yielded estimated annual savings of \$28 million, with potential savings of \$60 million for full statewide implementation.⁴³

Sistrom et. al. document a successful program of computerized order entry coupled with integrated decision support for diagnostic imaging studies. Ordering physicians submit the clinical indication to support the request. The physician is immediately provided with a 1-9

appropriateness score, based on the American College of Radiology Appropriateness Criteria supplemented with locally developed indication-procedure pairs. The program resulted in a significant decline in overall Computed Tomography (CT) volume growth and growth rate and a significant decrease in the overall Magnetic Resonance Imaging (MRI) growth rate.⁴⁴

The American College of Cardiology (ACC) has developed appropriate use criteria for various cardiac imaging procedures and has been actively involved in advocating for, and piloting, their use in the clinical setting as an alternative to prior authorization and prior notification programs. However, there is no data on the effectiveness of the ACC efforts to date.

Most national and local health plans perform some type of prior authorization of high-technology radiology and cardiac procedures. In general, prior authorization is not required if services are delivered in the inpatient, emergency, or urgent care setting, or if services are related to same-day outpatient surgeries. The health plans generally contract with one of the major radiology benefit managers to conduct prior authorization. Various health plans employ other activities, such as limiting services to accredited providers and designating physicians or facilities as efficient performers.

BCBSM Experience

BCBSM has engaged American Imaging Management (AIM), a national RBM, for many years to prior authorize non-emergency, outpatient high-tech radiology procedures and privilege practitioners to perform selected procedures. Although approval rates were initially lower, AIM now approves more than 90% of high-tech radiology requests. BCBSM does not prior authorize coronary computed tomography angiography (CCTA) through AIM, but limits the providers of CCTA services to those that participate in the BCBSM-supported Advanced Cardiac Imaging Consortium (ACIC) Collaborative Quality Initiative (CQI). ACIC has developed best practice guidelines and is attempting to influence practice patterns by sharing data on guidelines, referral patterns and appropriateness. The rate of appropriate use of CCTA has risen from approximately 52% in 3Q07 to approximately 82% in 1Q11.

BCBSM's PGIP radiology initiative is designed to reduce variation in cost and use rates of imaging services, increase compliance with the prior authorization program and increase use of the web-based prior authorization process. PGIP provides participating POs with low-tech and high-tech radiology cost and utilization data and offers incentive payments for performance and improvement. To date, BCBSM's Radiology Initiative has had positive results. Savings for 4Q09 through 2Q11 is \$27.8million, with the highest proportion of savings attributed to reductions in high-tech radiology services.

A six-year comparative analysis of six hospitals participating in the BMC2-PCI initiative demonstrated reductions in hospital deaths, contrast-induced nephropathy, blood transfusions after angioplasty, vascular complications, emergency revascularization, unplanned coronary artery bypass surgery and gastrointestinal bleeding. From 2008 to 2010, the BMC2-PCI initiative saved an estimated \$102 million in statewide health care costs.

III. Initiative Description

Specific Area of Focus

Phase III of the CCI focuses on understanding and analyzing the cardiac diagnostic therapeutic cascade within BCBSM. It will build on the data provided through Phase I of the CCI. In Phase I, each PO receives data on the cost and use of cardiac diagnostic procedures. In Phase III, each PO will receive data on the costs and patterns of use associated with cardiac diagnostic and therapeutic procedures, with a specific focus on how POs perform on measures of the diagnostic therapeutic cascade. The assumption underlying both Phase I and Phase III of the CCI is that POs will respond to the availability of utilization and cost data, coupled with financial incentives for performance and improvement, by:

- Analyzing their data in comparison to that of other POs to target areas for improved cost-effectiveness
- Adopting strategies to improve cost and use performance consistent with their identified opportunities

Although the proposed payment uplift for PGIP-participating cardiologists beginning on January 1, 2012 is not technically a part of Phase III of the CCI, the two initiatives will be implemented simultaneously. The payment uplift methodology will ultimately – although not necessarily initially – be based, in part, on metrics available from Phase I, Phase II and possibly Phase III of the CCI.

(See Appendix I for the cause and effect diagrams.)

Target Population

Phase III of the CCI targets all members between 18 and 64 years of age attributed to a PGIP primary care physician.

This initiative will study multiple populations. For some of the proposed metrics, the population will be defined as those who received a service, such as a non-invasive diagnostic test. For some of the metrics, the population will be defined by disease state – stable CAD and CAD overall (both stable and unstable). We recognize the limitations in using claims-based diagnosis codes to define the population. However, the codes used to define patients with stable CAD and CAD overall will be based on a comprehensive review of the literature and consultation with subject matter experts.

Criteria for Participation

Phase III of the CCI is applicable to the following PGIP physician specialties:

Primary Care

- General Practice
- Family Practice
- Internal Medicine
- Pediatrics
- Geriatric Medicine (Internal Medicine and Family Medicine)

Specialty

- Cardiology
 - Cardiothoracic Surgeons
- (Note: Phases I and II are not applicable to Cardiothoracic Surgeons)

BSBCM Deliverables

BCBSM will provide participating POs with three types of data:

- Biannual cardiac flow diagrams of the diagnostic/therapeutic cascade
- Biannual dashboards (included with the Phase I and II dashboards)
- Quarterly datasets (provided as one combined dataset for Phase I and III of the Initiative)

The cardiac flow diagrams represent a unique approach to providing data to the POs. The Phase III data will be presented as a series of flow diagrams (see screenshot of a flow diagram example below). Phase III will include a separate flow diagram for each PGIP PO for each analytic approach. Data on the PO-specific count, rate per 1,000 person months and standard cost PMPM, as well as the PGIP and non-PGIP total count, rate per 1,000 person months and standard cost PMPM associated with the tests/procedures on the flow diagram branches will be displayed at the terminus of each branch and at certain intermediate steps of the branches. Using the flow diagram approach will enable the POs to visualize the data in terms of a “cascade” and to understand their performance along the cascade in comparison to the PGIP average.

The initial Phase III flow diagrams are scheduled for release in May 2012. The flow diagrams will be PO-specific and will include PO-specific, PGIP total and non-PGIP total utilization and cost data for one analytic approach:

- 1) A serial assessment of downstream non-invasive and invasive diagnostic testing and downstream therapeutic interventions for patients who undergo an index non-invasive diagnostic testⁱ

Future Phase III flow diagrams will focus on the following possible analytic approaches. The delivery dates for these flow diagrams have yet to be determined.

- 1) An “upstream” assessment of the prior diagnostic testing for patients who undergo an index PCI
- 2) An assessment of the sequence/cascade of non-invasive and invasive diagnostic testing and therapeutic interventions for patients with stable CAD
- 3) A serial assessment of the diagnostic testing and therapeutic interventions for patients post-revascularization
- 4) A serial assessment of the diagnostic testing and therapeutic interventions for patients post-myocardial infarction

Member assignment to a PO will be based on the BCBSM PCP attribution model. POs will receive both crude (unadjusted) as well as age/sex adjusted data (with the possibility of other adjustment factors as well).

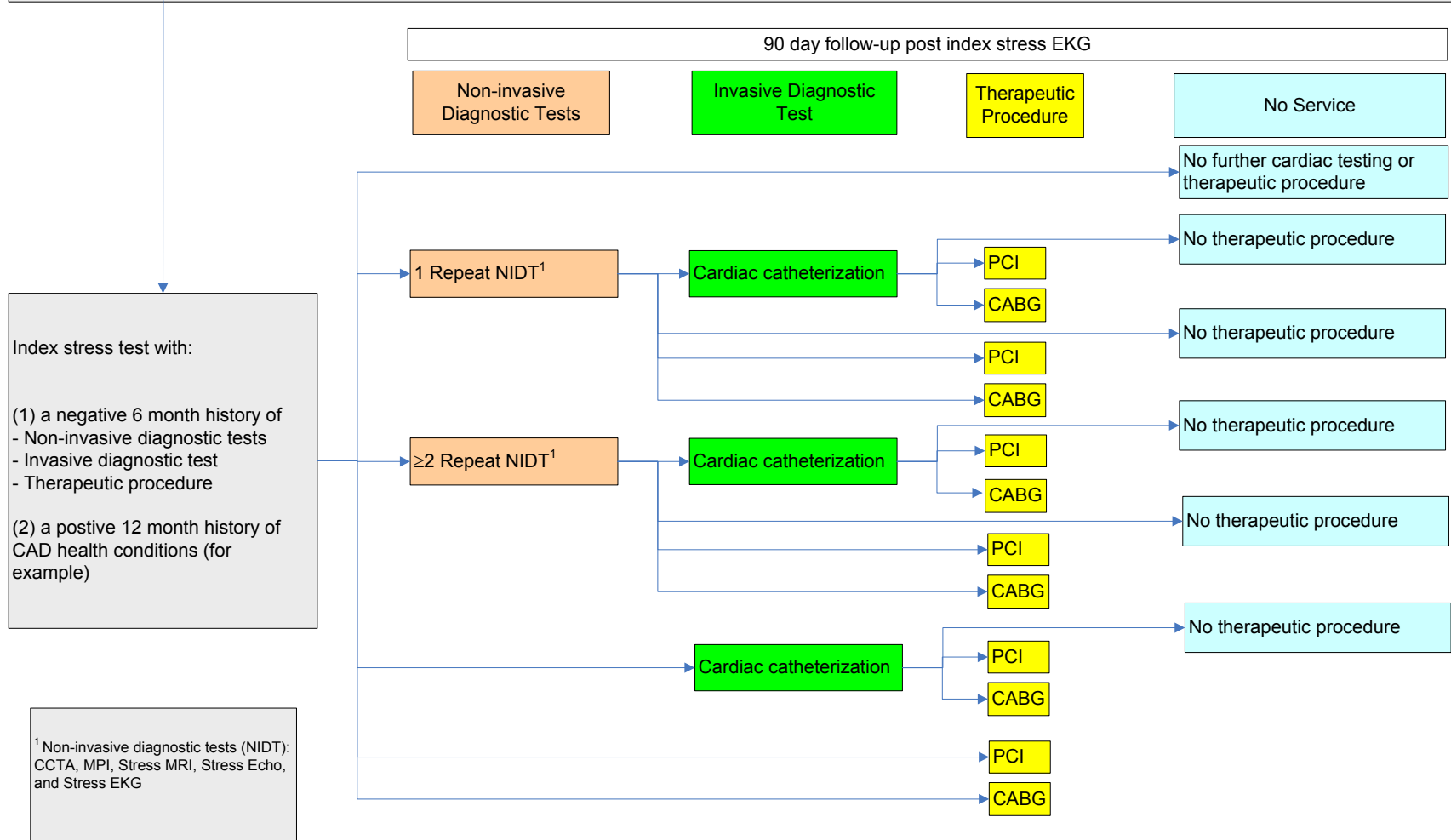
The Phase III dashboard will represent a hybrid of the CCI Phase I dashboard and data on

ⁱ The analysis will be separated into three cohorts: those with a history of CAD, those with conditions that may affect the choice of cardiac screening tests and those with no such conditions.

cardiac therapeutic procedures. The Phase III dashboard will include a subset of the Phase I metrics (i.e., stress EKGs, stress echocardiograms, cardiac CT, Myocardial Perfusion Imaging (MPI), cardiac MRI and outpatient cardiac catheterization) combined with data on inpatient cardiac catheterizations, inpatient and outpatient percutaneous coronary intervention (PCI) and inpatient coronary artery bypass grafts (CABG). While the flow diagrams will present data on a subset of members – such as those who have had a non-invasive diagnostic test or members with CAD - the hybrid dashboard will provide overall population-based data on the specific cardiac diagnostic and therapeutic services addressed in Phase III of the CCI.

EXAMPLE OF CARDIAC PHASE III FLOW DIAGRAM

Population: MI residents, 18 years or older, continuous enrollment in traditional, PPO, or FFS (Continuous enrollment for 11 or 12 months prior to index EKG stress test and 90 days post index stress test.), attributed to a PCP (only for aged between 18 and 64 years)



In the Phase III dashboard, the benchmark will be calculated based on the average overall risk-adjusted standard cost per member per month (PMPM) performance of the highest performing PGIP POs (i.e., those with the PMPM cost) that account for 20% of the attributed population. The current Phase I quarterly cardiac dataset provides claims-level data for each cardiac diagnostic procedure code included in Phase I. The dataset includes member name and other demographic information, the date of service, and the number, type and cost of the diagnostic procedures. With the introduction of Phase III, the dataset will be expanded to include claims level data for therapeutic procedures, although the addition will not occur until the latter part of 2012.

(See Appendix II for a schedule of Phase III data delivery to the POs and Appendix III for an overview of the dashboard components.)

To assist POs in understanding variances in care, BCBSM will also in the future provide the POs with PO-level and PU-level CAVE efficiency reports for cardiology. These episode-based reports provide information on the use and cost of cardiac services at the episode level, and identify areas of inefficiency and possible opportunities for improvement.

POs also receive monthly claims feeds from BCBSM that detail all claims processed for their member population in the prior month. Claims feeds are based on the most current physician list and PO member attribution and include professional claims for professional services rendered at any location, facility claims for facility services including outpatient, acute and inpatient (hospital, skilled nursing facility, etc.) claims, and pharmacy claims for pharmaceutical prescriptions.

BCBSM reserves the right to modify its evaluative and administrative processes related to the Initiative.

PO Expectations/Deliverables

All POs participating in the CCI must provide BCBSM with information on the cardiologists and practice unit affiliations of cardiologists within the PO. Furthermore, all POs participating in Phase II of the CCI must also participate in Phases I and II of the CCI.

POs are expected to meet the following participation requirements to earn the incentive payment based on participation:

- Identify a clinical lead (may be the same or different clinical lead as for Phase I and Phase II) who will take an active role in the Initiative
- Identify an analytic lead (may be the same or different analytic lead as for Phase I and Phase II) who will take an active role in reviewing data and identifying opportunities for improvement
- Distribute flow diagrams, dashboard reports and datasets (if applicable) provided by BCBSM to the PUs (i.e., those with primary care physicians and cardiologists) in a timely manner
- Review and use BCBSM flow diagrams, dashboards and related data to investigate and identify variation in cardiac diagnostic and therapeutic procedures among POs and within the PO
- Use the CAVE reports to identify PO-level, and possibly PU-level, opportunities for improvement

- Foster collaboration and creative problem-solving among primary care physicians and cardiologists who participate in the care of patients with CAD
- Develop and implement strategies and programs to manage the use of cardiac diagnostic and therapeutic procedures
- Attend monthly PGIP Data Users Workgroup meetings and periodic webinars
- Regularly attend PGIP quarterly meetings
- Complete biannual progress reports that allow BCBSM to assess progress in meeting PO objectives, including, but not limited to:
 - Implementation activities
 - Focused improvement areas
 - Collaboration activities
 - Barriers to achieving progress and goals

Quality Improvement Model

The benchmark for the Phase III dashboard will be calculated based on the average overall risk-adjusted standard cost per member per month performance of the highest performing PGIP POs (i.e., those with the lowest PMPM cost) that account for 20% of the attributed population. Dashboard-based performance will be assessed by comparing PO performance to the benchmark and to average PO performance.

As with other PGIP performance feedback initiatives, the overall strategy is to provide information and incentives to the POs to encourage improvement, while allowing POs the autonomy to choose those tactics that will reduce unnecessary utilization and moderate cost within the context of their unique setting. These improvement approaches may include, but are not limited to:

- Substituting low-technology procedures for certain high-technology procedures
- Establishing appropriateness guidelines and/or a decision support framework for the use of high-technology cardiac procedures
- Reconsidering the appropriateness of cardiology referrals for asymptomatic patients
- Assessing the patterns of use and efficiency of cardiologists and sharing the data with cardiology groups to whom PCPs refer
- Directing PCP referrals to more efficient cardiology practices

As POs adopt these improvement approaches, it is expected that the POs will demonstrate improvements in use rates and cost PMPM for cardiac diagnostic and therapeutic procedures.

Incentive Model and Payment Methodology

During the first year of PO participation in Phase III of the CCI, incentives are based on PO participation. The process of analyzing data and performance along the “cascade” is a unique, untested approach. Furthermore, the flow diagrams will address different analytic focus areas. A PO that is fully engaged in this initiative will need to devote significant staff time during the first and second year to understand the data and identify opportunities for improvement.

In subsequent years of participation, the incentive payment will be based on PO performance on the hybrid dashboard, PO improvement over a prior measurement period on the hybrid dashboard, and the number of PO-attributed members. The analytic methodology generates a single summary score for each PO that represents the weighted sum of the PO’s normalized

performance score and normalized improvement score. The normalized performance score is represented along a scale from 0-1, where 1 represents the best performance and 0 represents the worst performance. The normalized improvement score – the ratio of current improvement to the theoretical optimal improvement – is similarly represented along a scale from 0-1, where 1 represents the most improvement over the previous measurement period and 0 represents the least improvement over the previous period.

Each PO with a summary score above a certain percentile will receive an initiative incentive payment. The PO will receive a percentage of the initiative-specific incentive pool based on the PO's summary score, weighted by the PO's number of attributed members. POs with summary scores in the lowest percentiles will receive either no incentive payment or a negative incentive payment. The negative payment is based on the PO's summary score and the number of attributed members, factored by a negative 10% payment percentage.

The negative incentive payment is designed to a) encourage POs to become actively engaged in pursuing improvement in those initiatives in which they are enrolled, and b) encourage POs to carefully make their initiative selections and discourage them from enrolling in initiatives without engaging in activities to improve performance. A PO's poor performance on a specific initiative can result in a negative incentive payment that reduces the PO's overall reward payment for the scoring period. However, a PO's overall incentive payment (for all PGIP initiatives) for a scoring period will never be lower than zero.

BCBSM reserves the right to use discretion in making incentive payments based on the data and relative PO performance.

V. Evaluation

Evaluation Overview

The evaluation of the CCI is intended to assess the effectiveness of the Initiative in achieving stated objectives. The evaluation will address the intervention design and delivery and will focus on the effects theorized to result from the Initiative's interventions. The evaluation will focus on short-, intermediate-, and long-term effects. The hypothesized long-term effect of Phase I of the CCI is a reduction in the use of unnecessary diagnostic procedures and the hypothesized long-term effect of Phase III is a reduction in the use of unnecessary diagnostic and therapeutic procedures. Reductions in use may decrease the PMPM cost of cardiac diagnostic and therapeutic procedures or mitigate the cost trend. See Appendix IV for detailed evaluation metrics.

The approach to the evaluation is influenced by two important factors. First, the data collected for Phase I of the CCI show that use rates for cardiac diagnostic procedures were declining before implementation of the CCI. Given this trend, it may prove challenging to demonstrate that continued declines in rates of use or cost PMPM can be attributed to the Initiative's interventions. Second, although the hypothesis is that the Initiative will result in reductions in inappropriate use, the appropriateness of services cannot be assessed through claims data. Therefore, it is only possible to measure reductions in overall use/cost.

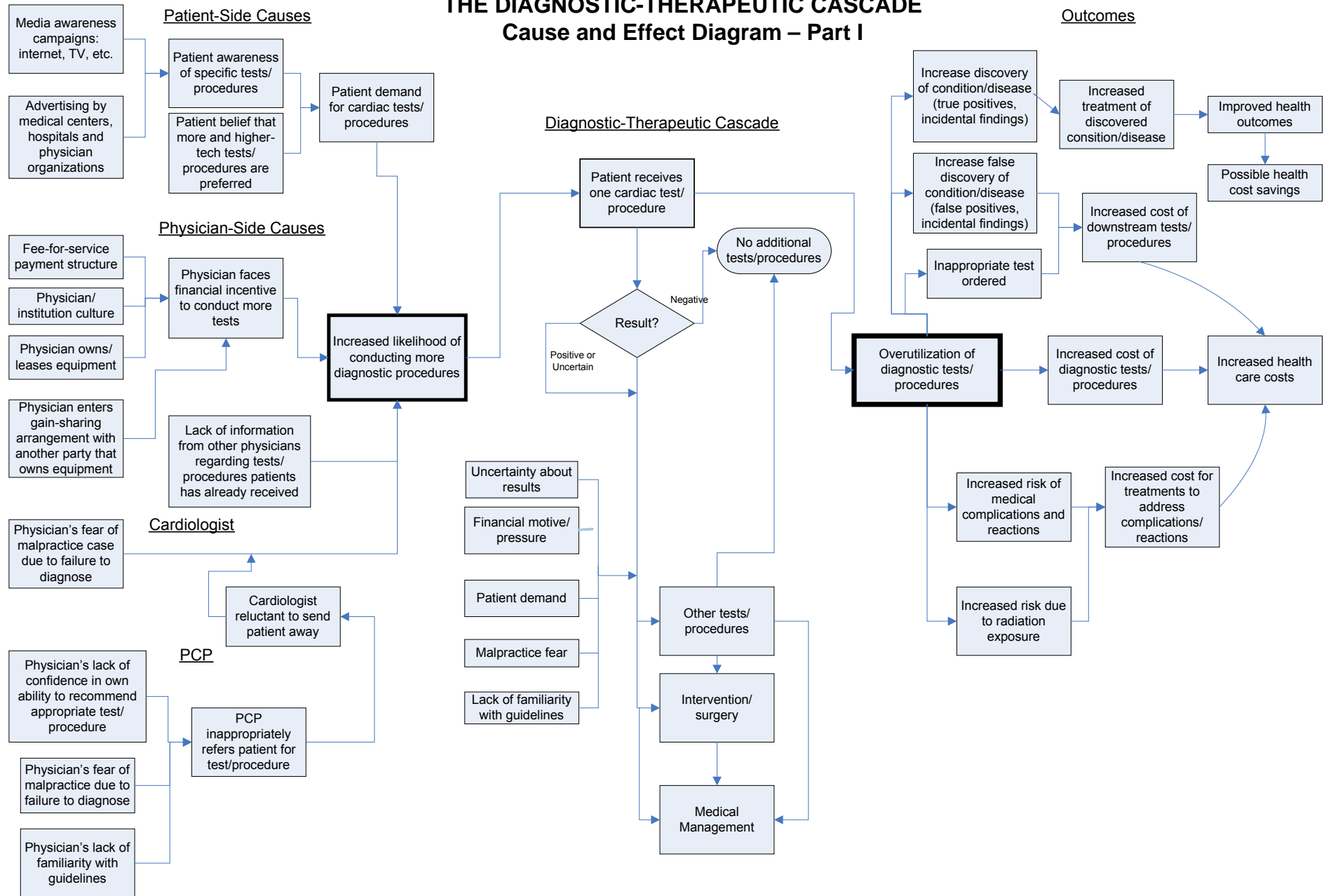
Progress Reporting

Twice a year – in the spring and fall – BCBSM will provide the POs with a progress report template. The progress reports include general questions applicable to all initiatives and initiative specific questions. The progress reports provide POs the opportunity to update BCBSM on activities, strategies, accomplishments and obstacles during the reporting period. The CCI progress report includes a number of questions that, when answered by the POs, form the basis for the short- and intermediate-term outcome evaluations.

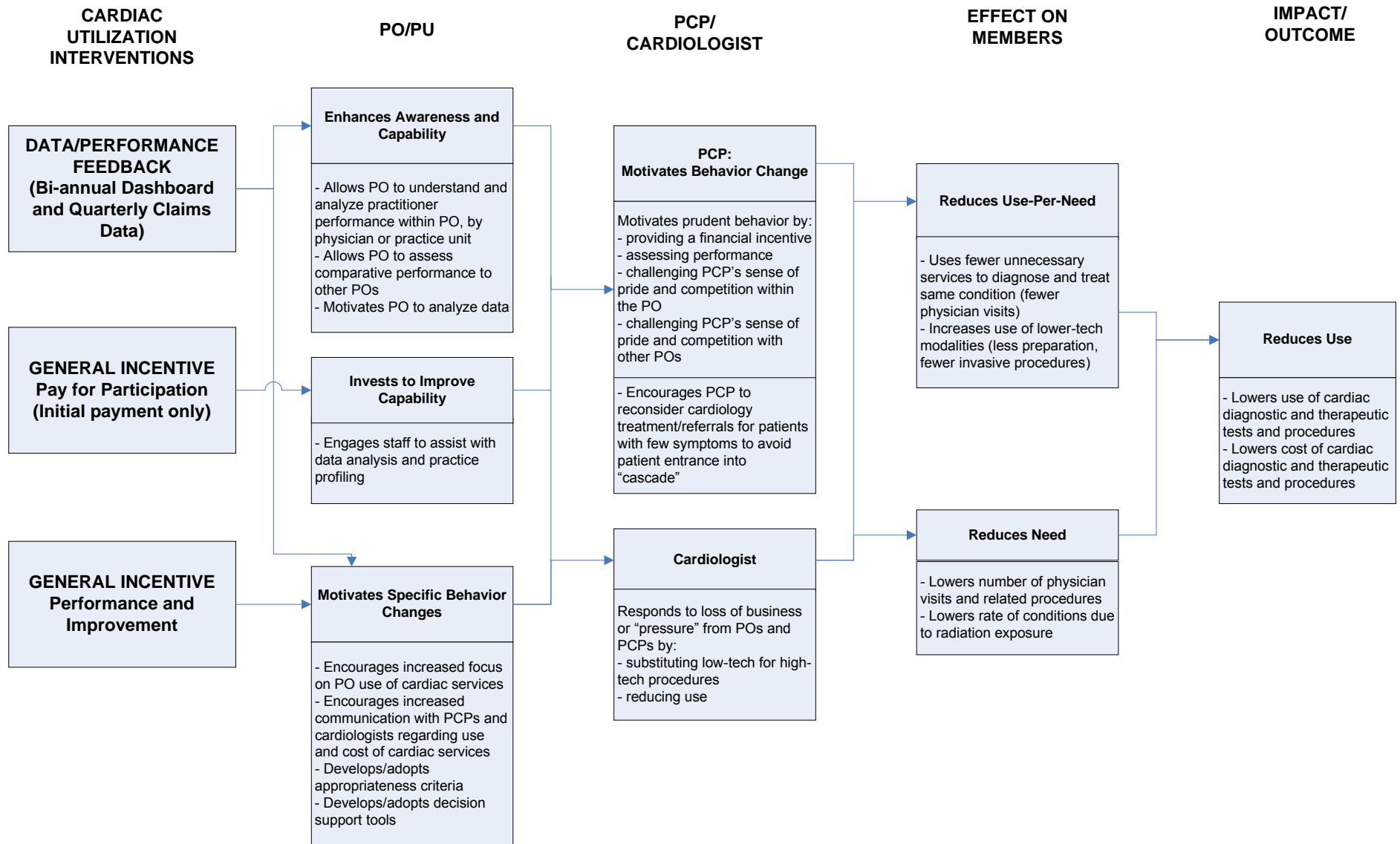
(See Appendix V for the proposed CCI Phase III-specific questions. These questions may be modified through further discussion of initiative objectives and assessment of the Phase III data.)

Appendix I – Cause and Effect Diagrams

OVERUTILIZATION OF CARDIAC DIAGNOSTIC PROCEDURES: THE DIAGNOSTIC-THERAPEUTIC CASCADE Cause and Effect Diagram – Part I



**OVERUTILIZATION OF CARDIAC DIAGNOSTIC PROCEDURES:
The Diagnostic-Therapeutic Cascade
Cause and Effect Diagram – Part II (Interventions)**



Appendix II - Schedule of PO Data Delivery For CCI Phase III

2012 CARDIAC REPORTING			
Flow Diagrams			
Initiatives	Data Type	Release Date	Time period of Claims
Cardiac Care Phase III	Flow Diagrams of Diagnostic Therapeutic Cascade	5/30/2012 (future release dates to be determined)	10/2008-12/2010
Dashboard Reports			
Cardiac Care Phase III	Hybrid Phase I/Phase III Dashboard	July 2012	1/1/11 – 12/31/11
Cardiac Care Phase III	Hybrid Phase I/Phase III Dashboard	11/30/2012	7/1/11 – 6/30/2012
Datasets			
Cardiac Care Phase I and III (modifications to include additional Phase III metrics to begin with August dataset)	Quarterly Dataset	2/28/2012	10/1/2010 - 9/30/2011
	Quarterly Dataset	5/31/2012	01/01/2011 - 12/31/2011
	Quarterly Dataset	8/31/2012	4/1/2011 - 3/31/2012
	Quarterly Dataset	11/30/2012	7/01/2011- 6/30/2012

Appendix III – Dashboard Specifications

The CCI Phase III dashboard represents a “hybrid” of the Phase I dashboard and will include data on procedures currently included in the Phase I dashboard combined with new procedures (or new locations of procedures) not currently included in the Phase I dashboard. The dashboard includes data from professional and facility claims for members age 18-64 years who reside in Michigan and are covered through the PPO, Traditional or POS plans. The dashboard will include use and standard cost data (unadjusted and risk adjusted) for the diagnostic and therapeutic procedures listed below:

Procedures in Current Phase I Dashboard

Stress EKG (outpatient, office, ER)
Stress Echocardiogram (outpatient, office, ER)
MPI (outpatient, office, ER)
MRI (outpatient, office, ER)
Cardiac CT (outpatient, office, ER)
Cardiac Catheterization (outpatient)

Procedures Not in Current Phase I Dashboard

Cardiac Catheterization (inpatient)
Percutaneous Coronary Intervention (inpatient and outpatient)
Coronary Artery Bypass Graft (inpatient)

Appendix IV - Evaluation

Process (Short-term) Measures

Evaluation of the resources required to deliver an intervention may provide insight into opportunities to make an intervention more appealing to POs, address staffing needs and improve data quality. Table 1 presents the measures used to assess whether the CCI short-term implementation objectives have been achieved.

Table 1 – Short-Term Implementation Measures

Category	Process Metric	Data Source	Specific Measure	Metric	Performance Goal
Initiative Team	Identification of the clinical lead	Progress Report	Question: Please identify the name of the clinical lead for the CCI (Phase III)	% of participating POs that identified a clinical lead	At least 90% of participating POs identify a clinical lead
	Identification of the initiative lead	Progress Report	Question: Please identify the name of the initiative lead for the CCI (Phase III)	% of participating POs that identified an initiative lead	At least 90% of participating POs identify an initiative lead
	Identification of the data lead	Progress Report	Question: Please identify the name of the data lead for the CCI (Phase III)	% of participating POs that identified a data lead	At least 90% of participating POs identify a data lead
Initiative Participation	PO participation	PGIP Initiative Selection forms and PGIP Physician List	NA	Number and % of eligible POs that participate in the CCI	At least 65% of PGIP POs participate in the CCI
	PCP participation			Number and % of PGIP PCPs that participate in the CCI	At least 60% of the PGIP PCPs participate in the CCI
	Cardiologist participation			Number and % of PGIP cardiologists that participate in the CCI	At least 60% of the PGIP cardiologists participate in the CCI
Data Use	Use of BCBSM data	Progress Report	Question: Do you integrate the findings from BCBSM data into your QI efforts?	Number and % of participating POs that respond "Always" and "Sometimes"	At least 90% of the participating POs respond "Always" or "Sometimes"
	Use of dataset	Progress Report	Question: Was the quarterly PGIP dataset opened by your PO?	Number and % of participating POs that respond in the affirmative	At least 90% of the participating POs respond in the affirmative

Evaluation Design and Schedule

The data sources for the short-term evaluation of the CCI are the progress reports, initiative selection forms and physician lists. The evaluation of the short-term success of the Initiative will be based on whether the performance goals described in Table 1 have been met.

Intermediate Measures

The primary intervention of Phase III – sharing data on various aspects of the diagnostic/therapeutic cascade – is designed to encourage POs to identify opportunities for improvement and focus on changing processes and practice patterns to address opportunities. If the POs pursue these intermediate steps, their actions can lead to the desired long-term outcomes. Table 2 presents the measures used to assess whether the intermediate-term objectives have been achieved.

Overall Objective	Specific Objective	Data Source	Measurement	Metric	Performance Goal
POs exhibit progress in building an infrastructure for moderating the increase in standard cost PMPM for cardiac diagnostic and therapeutic services	Identify focus area selections	Progress Report	Question: Which of the following categories are specific areas of focus for Phase I and Phase III of this Initiative?	Number and % of responses by focus area	At least 95% of the participating POs choose one or more focus areas
			Question: For each focus area, indicate why your organization chose to focus on this area	Number and % of responses by reason	
	Develop specific target goals for POs	Progress Report	Question: For the chosen focus areas, what are your utilization and PMPM goals?	Number and % of responses	At least 80% of the participating POs have identified specific utilization/cost targets
	Develop strategies for pursuing improvement	Progress Report	Question: To what degree is your organization using the listed strategies to implement Phases I and III?	Number and % of POs that reported specific strategies	At least 95% of the participating POs have developed at least one strategy for implementing the Initiative
			Question: What strategies did you pursue to collaborate with other PGIP POs in Phases I and III?	Number and % of POs that report specific collaboration strategies	At least 80% of the participating POs have shared information with other PGIP POs
	Reduce volume of cardiac diagnostic services in which physicians have an external motivation for performing the service	Progress Report	Question: Does your PO have a policy regarding physician financial investment in high-tech imaging equipment or centers?	Number and % of affirmative and negative responses	At least 70% of the participating POs have a policy regarding financial investment
			Question: Does your PO have a policy regarding physician self-referral?	Number and % of affirmative and negative responses	At least 70% of participating POs have a policy regarding self-referral
	Identify and address barriers to implementing the Initiative	Progress Report	Question: Which barriers have you encountered in implementing the Initiative?	Number and % of responses for each barrier	
			Question: Identify actions to address barriers (open ended)		At least 90% of the participating POs have taken some action to address identified barriers

Evaluation Design and Schedule

The primary data source for the intermediate evaluation of Phase III of the CCI is the Progress Reports which are to be completed by participating POs and returned to BCBSM in the spring and fall.

Performance Evaluation

The long-term evaluation will be developed by CEB and will be conducted if and when prioritized by Executive Leadership.

Appendix V – Draft Progress Report Questions

Activity Period:
 Date Completed:
 Physician Organization Name:
 Main Physician Organization Contact Person:
 Phone Number:
 Email Address:

Phase I and Phase III: Utilization of Diagnostic Cardiac Testing

1. Which of the following categories are specific areas of focus for Phase I (Utilization of Diagnostic Procedures) and Phase III (Diagnostic/Therapeutic Cascade) of this Initiative? (Please select one or more answers from the list below.)

- MRI
- Echocardiogram
- EKG
- MPI
- Cardiac Computer Imaging (CT)
- Other nuclear studies
- Holter monitor
- Electrophysiologic tests
- Evaluation of Pace maker/Defibrillator
- Catheterization/angiography
- Percutaneous Coronary Intervention
- Coronary Artery Bypass Graft
- Other (please describe below)

1. A) For each utilization focus area chosen above, please indicate why your organization chose to focus on this area. (Please select and rank your top three answers from the list below.)

	MRI	Echo	EKG	MPI	CT	Nuclear Study	Holter	Electro-physiologic	Cath/Angiogram	PCI	CABG	Other
Below benchmark performance												
Greatest opportunity for improvement												
High Utilization												
High potential to beneficially impact overall PMPM cost												
Patient Safety												
PCP engagement involving evidence based medicine related to the appropriate use of these studies												
Previously working on this area												
These tests are most likely to be												

	MRI	Echo	EKG	MPI	CT	Nuclear Study	Holter	Electro-physiologic	Cath/Angiogram	PCI	CABG	Other
ordered by the PCP, other tests are almost always ordered by the specialist												
Physician champion was interested in this topic												
Other (please describe below)												

(Future revised questions will address changes in focus areas over time and prioritization of the focus areas.)

1. B) For the utilization focus areas chosen above, what is your organization's specific utilization and PMPM goal/target for the selected diagnostic and therapeutic procedures?

For example:

- Achieve PGIP benchmark or lower for cardiac diagnostic utilization rate. (Performance)
- Reduce the utilization of selected procedure by (please insert a numeric value) ___% (Improvement)
- Achieve PGIP Cardiac PMPM cost benchmark or lower. (Performance)
- Decrease PMPM of selected procedure by (please insert a numeric number) ___% (Improvement)

(Example)

	MRI	Echo	EKG	MPI	CT	Nuclear Study	Holter	Electro-physiologic	Cath/Angiogram	PCI	CABG	Other
Benchmark Utilization		X			X							
Utilization Improvement %		5%										
Benchmark PMPM					X							
PMPM Improvement %		2%										

2. Listed below are strategies that POs may use when implementing Phase I (Utilization of Diagnostic Procedures) and Phase III (Diagnostic/Therapeutic Cascade) of the Cardiac Initiative. Please indicate to what degree your organization is using these strategies to implement Phases I and III.

Strategy	Fully Developed	Partial Developed	Not a Strategy
Review dashboard reports to determine opportunities for improvement			
Review flow diagrams of diagnostic/therapeutic cascade to determine opportunities for improvement			
Conduct data analysis			

Create practice unit-level or physician-level reports (e.g., physician report cards) with targets or peer comparisons			
Share “report card” data and provide feedback to physicians			
Incorporate datasets into data warehouse			
Incorporate data sets into population profiling system			
Adopt and distribute national clinical guidelines for the use of cardiac <u>diagnostic</u> procedures			
Adopt and distribute national clinical guidelines for the use of cardiac <u>therapeutic</u> procedures			
Adopt and distribute indicators/ appropriateness criteria for use of cardiac diagnostic procedures			
Adopt and distribute indicators/ appropriateness criteria for use of cardiac therapeutic procedures			
Educate physicians on indicators/appropriateness criteria for use of cardiac diagnostic procedures			
Develop process for evaluating alternatives to high-tech diagnostic procedures at the point of service (e.g., order entry or manual ordering)			
Implement computerized order entry coupled with integrated decision support for cardiac diagnostic testing			
Create process to reduce duplication of cardiac diagnostic tests			
Create process to improve communication between PCPs and cardiologists			
Address the potential for self-referral for cardiac diagnostic tests			
Restrict referrals to select providers of cardiac diagnostic services/ direct PCP referrals to more efficient cardiology practices			
Other (please describe)			

3. Which did you use this period to share and collaborate with other PGIP POs in Phase I and Phase III of this Initiative? (Select one or more answers from the list below.)

- Shared data, documents or processes with other PGIP POs (please specify which POs below)
- Attended PGIP Data Users Workgroup
- Participated in workgroups, committees or collaborations
- Presented at PGIP Quarterly Meeting
- No collaboration occurred during this reporting period
- Other (please describe below)

4. Which barriers have you encountered in implementing Phase I and Phase III of this initiative? (Please select one or more answers from the list below.)
 - Staff members are not adequately trained on elements of initiative, including the data
 - Inadequate financial or staff resources
 - Difficulty incorporating changes into workflow
 - Difficulty integrating information systems (e.g., EMR, registry, etc.)
 - Underestimated time needed to complete task(s)
 - Lack of provider buy-in or cooperation
 - Resistance/lack of awareness on behalf of patients
 - Data received from BCBSM appears to be incorrect
 - Data received from BCBSM is missing data elements that we need for analysis
 - Data received from BCBSM is not timely
 - Other (please describe below)
5. What efforts have you undertaken to address these barriers?
(Open ended question)

Applies to Phases I, II and III

- 1) Do you integrate the findings from BCBSM data into your quality improvement efforts?
 - a. Always
 - b. Sometimes
 - c. Never
 - d. Our PO has considered using this strategy in the future
- 2) Was the quarterly PGIP initiative dataset (Microsoft Access format) distributed opened by your PO? If yes, then by whom?

Appendix VI – PGIP CCI Phase III Contact Information

For additional information on the CCI, contact the following initiative leads:

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