



BlueCross BlueShield  
of Alabama

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**Name of Blue Advantage Policy:**  
**Intracoronary Physiologic Measurements**

Policy #: 117  
Category: Medical

Latest Review Date: January 2021  
Policy Grade: **Effective June 29, 2011: Active Policy but no longer scheduled for regular literature reviews and updates.**

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**BACKGROUND:**

*Blue Advantage medical policy does not conflict with Local Coverage Determinations (LCDs), Local Medical Review Policies (LMRPs) or National Coverage Determinations (NCDs) or with coverage provisions in Medicare manuals, instructions or operational policy letters. In order to be covered by Blue Advantage the service shall be reasonable and necessary under Title XVIII of the Social Security Act, Section 1862(a)(1)(A). The service is considered reasonable and necessary if it is determined that the service is:*

1. *Safe and effective;*
2. *Not experimental or investigational\*;*
3. *Appropriate, including duration and frequency that is considered appropriate for the service, in terms of whether it is:*
  - *Furnished in accordance with accepted standards of medical practice for the diagnosis or treatment of the patient's condition or to improve the function of a malformed body member;*
  - *Furnished in a setting appropriate to the patient's medical needs and condition;*
  - *Ordered and furnished by qualified personnel;*
  - *One that meets, but does not exceed, the patient's medical need; and*
  - *At least as beneficial as an existing and available medically appropriate alternative.*

*\*Routine costs of qualifying clinical trial services with dates of service on or after September 19, 2000 which meet the requirements of the Clinical Trials NCD are considered reasonable and necessary by Medicare. Providers should bill **Original Medicare** for covered services that are related to **clinical trials** that meet Medicare requirements (Refer to Medicare National Coverage Determinations Manual, Chapter 1, Section 310 and Medicare Claims Processing Manual Chapter 32, Sections 69.0-69.11).*

## **POLICY:**

**Blue Advantage** will treat **intracoronary physiologic measurements** including, but not limited to **myocardial fractional flow (FFR)** and **intravascular ultrasound (IVUS)** as a **covered** benefit when performed on intermediate coronary lesions (30% to 70% stenosis by visual inspection) in patients with anginal symptoms to determine if revascularization procedures are indicated.

Blue Advantage will treat **post-stent deployment IVUS** as a **covered** benefit.

*Blue Advantage does not approve or deny procedures, services, testing, or equipment for our members. Our decisions concern coverage only. The decision of whether or not to have a certain test, treatment or procedure is one made between the physician and his/her patient. Blue Advantage administers benefits based on the members' contract and medical policies. Physicians should always exercise their best medical judgment in providing the care they feel is most appropriate for their patients. Needed care should not be delayed or refused because of a coverage determination.*

## **DESCRIPTION OF PROCEDURE OR SERVICE:**

Coronary angiography is considered to be the gold standard technique for the detection and evaluation of coronary artery disease. However, a number of limitations of this technique have become apparent. Limitations include the two-dimensional nature of the images, the absence of information about the blood vessel wall, insensitivity to substantial plaque burden in outwardly remodeled vessels and inability to detect vessel wall disruption during angioplasty. Myocardial fractional flow reserve (FFR) and intravascular ultrasound (IVUS) have been developed to help overcome these limitations.

### **Fractional Flow Reserve (FFR)**

FFR is an index of the functional severity of coronary stenosis. It is defined as the ratio of the hyperemic flow in a stenotic artery to the hyperemic flow in the same artery in the hypothetical case when there is no stenosis present. FFR is calculated from simultaneous pressure measurements proximal and distal to a stenosis obtained with a pressure monitoring guidewire during a cardiac catheterization procedure during maximal hyperemia, obtained with intracoronary or intravenous adenosine or intracoronary papaverine. Unlike coronary flow reserve using Doppler methods, FFR is independent of variables such as heart rate and blood pressure as well as gross abnormalities of the microcirculation. The normal FFR value for all vessels under all hemodynamic conditions regardless of the status of microcirculation is 1.0.

Hemodynamically significant coronary stenosis is defined as FFR <0.75. This information can be used to determine if revascularization procedures such as percutaneous transluminal coronary angioplasty (PTCA) or stent placement are necessary.

### **Intravascular Ultrasound (IVUS)**

IVUS is commonly performed as an adjunctive imaging modality following coronary angiography. It allows visualization from inside blood vessels into the endothelium of blood vessels. In clinical practice IVUS is often used as an adjunct to balloon angioplasty to detect

dissection, stent under-deployment, stent thrombosis and to predict restenosis risk. It is also used as an accessory to diagnostic angiography to evaluate lesions of uncertain severity (especially in the left main coronary artery) and to detect disease, which is not visible on an angiogram (as in the case of transplant coronary artery disease).

## **KEY POINTS:**

The most recent literature update was performed through January 12, 2021.

### **Summary of Evidence**

For individuals with anginal symptoms who receive FFR to determine if revascularizations procedures are indicated, the evidence consists of prospective studies, meta-analyses, and randomized trials. Multiple studies have demonstrated that deferring angioplasty based on physiologic criteria such as FFR is feasible, safe, and associated with improved patient outcome. FFR has been found to be independent of hemodynamic variation, has an unequivocal normal value of 1.0 for each vessel in a normal patient, and a value of 0.75 has shown a good correlation with traditional noninvasive stress testing indicating inducible myocardial ischemia. If the FFR is less than 0.75, there is at least 80% sensitivity and 85% specificity for an abnormal exercise test result. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals with anginal symptoms who receive IVUS to determine if revascularizations procedures are indicated, the evidence consists of randomized controlled trials, cohort studies and retrospective reviews. IVUS offers unique capabilities to assess coronary atherosclerosis. In patients with clinical symptoms of coronary disease, IVUS commonly detects atherosclerosis at angiographically normal sites. The value of IVUS is its tomographic perspective and direct imaging of coronary atheroma. Angiography depicts the coronary anatomy as a planar silhouette of the lumen. Ultrasound, in contrast, directly images the atheroma within the vessel wall, allowing measurement of plaque size, distribution, and to some extent composition. IVUS has been performed safely in a wide variety of clinical situations with few serious side effects. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

### **Practice Guidelines and Position Statements**

**American College of Cardiology, American Association for Thoracic Surgery, American Heart Association, American Society of Echocardiography, et al.**

In 2017, the ACC/AATS/AHA/ASE/ASNC/SCAI/SCCT/STS published Appropriate Use Criteria for Coronary Revascularization in Patients with Stable Ischemic Heart Disease. They state the following related to FFR and IVUS:

“The writing group recognizes that not all patients referred for revascularization will have previous noninvasive testing. In fact, there are several situations in which patients may be appropriately referred for coronary angiography on the basis of symptom and ECG presentation and a high pretest probability of CAD. In these settings, there may be situations where angiography shows a coronary narrowing of questionable hemodynamic importance in a patient with symptoms that can be related to myocardial ischemia. In such patients, the use of additional

invasive measurements (such as FFR or intravascular ultrasound) at the time of diagnostic angiography may be very helpful in further defining the need for revascularization and may substitute for stress test findings. Accordingly, many of the indications now include FFR test results.”

“FFR is considered as part of an invasive evaluation and is cited separately in some scenarios. An emerging technology, computed tomography-derived FFR is a combination technique that is noninvasive like computed tomography but provides FFR, which has traditionally only been an invasive test.”

“...the angiographic assessment of the severity of left main disease has several shortcomings, and other assessments such as IVUS or FFR may be needed..... A minimum lumen area between 6 and 7.5 mm<sup>2</sup> requires further physiological assessment, such as measurement of FFR.”

**U.S. Preventive Services Task Force Recommendations**

Not applicable.

**KEY WORDS:**

Fractional flow reserve, flow, coronary flow reserve, intravascular ultrasound, intravascular Doppler, IVUS, Intravascular Doppler velocity, pressure derived coronary flow reserve measurement, FFR, intracoronary ultrasound

**APPROVED BY GOVERNING BODIES:**

Several devices that measure bone density have been cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process.

**BENEFIT APPLICATION:**

Coverage is subject to member’s specific benefits. Group specific policy will supersede this policy when applicable.

**CODING:**

**CPT Codes:**

93571	Intravascular doppler velocity and/or pressure derived coronary flow reserve measurement (coronary vessel or graft) during coronary angiography including pharmacologically induced stress; initial vessel (List separately in addition to code for primary procedure).
93572	Each additional vessel (List separately in addition to code for primary procedure).

92978	Intravascular ultrasound (coronary vessel or graft) during diagnostic evaluation and/or therapeutic intervention including imaging, supervision, interpretation and report; initial vessel (List separately in addition to code for primary procedure)
92979	;each additional vessel (List separately in addition to code for primary procedure)

## REFERENCES:

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## **POLICY HISTORY:**

Adopted for Blue Advantage, March 2005

Available for comment May 1-June 14, 2005

Medical Policy Group, March 2007

Medical Policy Group, March 2009

Medical Policy Group, June 2011

Medical Policy Group, December 2018: 2019 CPT Code Update

Medical Policy Group, December 2019

Medical Policy Group, January 2021

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*This medical policy is not an authorization, certification, explanation of benefits, or a contract. Eligibility and benefits are determined on a case by case basis according to the terms of the member's plan in effect as of the date services are rendered. All medical policies are based on (i) research of current medical literature and (ii) review of common medical practices in the treatment and diagnosis of disease as of the date hereof. Physicians and other providers are solely responsible for all aspects of medical care and treatment, including the type, quality, and levels of care and treatment.*

*This policy is intended to be used for adjudication of claims (including pre-admission certification, pre-determinations, and pre-procedure review) in Blue Cross and Blue Shield's administration of plans contracts.*