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# 2024 Transcatheter Closure of Septal Defect (TCSD): Atrial Septal Defect (ASD) and Patent Foramen Ovale (PFO)

## *Cardiology Services*

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# Transcatheter Closure of Atrial Septal Defect (ASD)

## Transcatheter Closure of ASD Guideline

Transcatheter closure of an atrial septal defect (ASD) is considered medically appropriate when isolated ostium secundum ASD is demonstrated on transthoracic echocardiogram (TTE) or transesophageal echocardiogram (TEE) **AND** when the documentation demonstrates **ANY** of the following: [7] [12] [11] [14]

I. **ALL** of the following: [3]
   - A. Antiplatelet therapy candidate for 6 months after procedure [14]
   - B. Diameter maximal measurement of ASD is 38 mm or smaller.
   - C. Reference ideal method (RIM) length (anterior, inferior, posterior, superior) is more than 5 mm and **ANY** of the the following:
     1. Asymptomatic and left to right shunting with pulmonary-systemic blood flow ratio {Qp:Qs} of 1.5:1 or more and **ANY** of the following: [13]
        - i. **ALL** of the following:
          - a. Pulmonary artery (PA) systolic pressure is less than 50% of the systemic pressure.
          - b. Pulmonary vascular resistance measures less than one third of the systemic resistance
          - c. Right atrial **AND** right ventricular enlargement
          - d. **NO** cyanosis at rest or during exercise
        - ii. PA systolic pressure is 50% or more of systemic arterial systolic pressure.
        - iii. Pulmonary vascular resistance is greater than one third of the systemic resistance.
     2. Fontan procedure previously performed [10]
     3. Symptomatic exhibiting **ANY** of the following: [1] [2]
        - i. Left to right shunting with pulmonary-systemic blood flow ratio {Qp:Qs} greater than or equal to 1.5:1
        - ii. Lips and/or fingernail beds do **NOT** turn bluish during rest and/or exercise
        - iii. Pulmonary vascular resistance measuring one third or less of the systemic vascular resistance

iv. Right atrial and/or right ventricular enlargement

v. Shortness of breath at rest or with exertion

II. Paradoxical embolism history with **ALL** of the following: [1]

A. Antiplatelet therapy candidate for 6 months after procedure

B. Asymptomatic

# Transcatheter Closure of Patent Foramen Ovale (PFO)

## Transcatheter Closure of PFO Guideline

Transcatheter closure of a patent foramen ovale (PFO) is considered medically appropriate when the documentation demonstrates **ALL** of the following: [6] [5]

I. Age is between 18 to 60 years.

II. **ANY** of the following:

A. Cryptogenic cerebral infarct diagnosed in the last 9 months **AND** all non-PFO causes of ischemic stroke in addition to atrial fibrillation have been ruled out (eg, extracranial or intracranial vessel stenosis and small vessel ischemic disease). [9] [4]

B. Right to left shunt size is documented as moderate to large (large is considered more than 30 bubbles and moderate is considered 10-30 bubbles). [4]

III. PFO is documented on invasive or non-invasive cardiac imaging. [12] [5] [8]

## TCSD Procedure Codes

**Table 1. Transcatheter Closure of Septal Defects (TCSD) Associated Procedure Codes**

| CODE | DESCRIPTION |
|---|---|
| 93580 | Percutaneous transcatheter closure of congenital interatrial communication (i.e., Fontan fenestration, atrial septal defect) with implant |
| 93662 | Intracardiac echocardiography during therapeutic/diagnostic intervention, including imaging, supervision and interpretation |

## TCSD Summary of Changes

Transcatheter Closure Of Septal Defect (TCSD) Atrial Septal Defect (ASD) & Patent Foramen Ovale (PFO) clinical guidelines from 2023 to 2024 had the following version changes:

- "28 day cardiac event monitor negative for atrial fibrillation for patients more than 50 years of age with risk factors for atrial fibrillation (eg. hypertension, obesity, obstructive sleep apnea)" was removed on the ASD guideline.
- Added the following to the definition section: cyanosis, ischemia, ostium secundum ASD, pulmonary systemic blood flow ratio, stenosis, stroke, TTE and TTE.
- References were updated and information was verified.
- "Shunt size is documented as moderate to large" was updated to "Right to left shunt size is documented as moderate to large (large is considered more than 30 bubbles and moderate is considered 10-30 bubbles)".

# TCSD Definitions/Key Terms

**Atrial fibrillation (AF)** is a cardiac rhythm disorder characterized by uncontrolled atrial activation without effective atrial contraction. On the electrocardiogram (ECG), P waves are absent. AF is characterized by rapid oscillations or fibrillatory waves that vary in amplitude, shape and timing associated with an irregular ventricular response.

- **Paroxysmal AF** terminates spontaneously or with intervention within 7 days of onset. Episodes typically convert back to sinus rhythm within 48 hours.
- **Persistent AF** is continuous AF sustained beyond 7 days.

**Atrial septal defect (ASD)** is an opening in the septal wall that separates the two top chambers of the heart (the atria) that occurs before the birth of an individual. The defect can allow oxygen-rich blood to leak into the oxygen-poor blood chambers in the heart.
**Cardiac event monitor** is a device used to record heart rate and rhythm for long-term monitoring of symptoms that occur less than daily. The time frame for use can be up to 30 days.
**Cryptogenic stroke** is a brain infarction not clearly attributable to a definite cardioembolism, large artery atherosclerosis or small artery disease despite extensive investigation.
**Cyanosis** is a bluish or purplish discoloration of skin due to deficient oxygenation of the blood.
**Embolus** is anything (eg, blood clot, air bubble, fatty deposit) that moves through vasculature and when it reaches a vessel that is too small to let it pass, the blood flow is occluded.
**Fontan procedure** is a procedure that involves separating the pulmonary and systemic blood flow in individuals with single ventricular defects to reduce the mixing of unoxygenated and oxygenated blood.
**Ischemia** is an inadequate blood supply to an organ or part of the body, especially the heart muscles.
**Ostium secundum atrial septal defect** is a hole in the center of the atrial septum.

**Patent Foramen Ovale (PFO)** is a tunnel-like opening in the septum of the heart between the atria that remains open after birth. The small, flap-like foramen ovale is found between the right and left atria of the fetal heart and allows blood to bypass the lungs prior to birth.
**Pulmonary-systemic blood flow ratio {Qp:Qs}** is the ratio between pulmonary (Qp) and systemic flow (Qs). It indicates the existence of some sort of shunt between the two circulations, either intra- or extracardiac. If the Qp/Qs ratio is >1, the shunt is from the systemic to the pulmonary circulation and if <1, from the pulmonary to the systemic circulation.
**Stenosis** is a narrowing or constriction of the diameter of a bodily passage or orifice.
**Stroke**, sometimes called a brain attack, occurs when something blocks blood supply to part of the brain or when a blood vessel in the brain bursts. In either case, parts of the brain become damaged or die. A stroke can cause lasting brain damage, long-term disability, or even death.
**Syncope** is a transient loss of consciousness and postural tone (ability to maintain or change position intentionally) due to insufficient cerebral perfusion. The loss of consciousness is associated with prompt recovery, not needing resuscitation.
**Transcatheter septal occlusion devices** are implantable devices that are used to repair septal wall defects. Access to the defect is achieved through the venous system via the internal jugular vein or femoral vein in the groin.
**Transesophageal echocardiogram (TEE)** is a test done by inserting a probe with a transducer down the esophagus, which provides a clearer image of the heart because the sound waves do not have to pass through skin, muscle or bone tissue.is a test done by inserting a probe with a transducer down the esophagus, which provides a clearer image of the heart because the sound waves do not have to pass through skin, muscle or bone tissue.
**Transthoracic echocardiogram (TTE)** involves placing a device called a transducer on the chest. The device sends ultrasound waves through the chest wall to the heart. As the ultrasound waves bounce off the structures of the heart, a computer converts them into pictures on the computer screen. A TTE uses sound waves to create pictures of the heart chambers, valves, walls and the blood vessels attached to your heart. The test is also called echocardiography or diagnostic cardiac ultrasound.

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