**Left Atrial Appendage (LAA) Closure SR Report**

## SUBMITTED on Behalf of Working Group 01

(Cardiac and Vascular Information)

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## Introduction/Scope

Left Atrial Appendage (LAA) Closure (a.k.a. Left Atrial Appendage Occlusion) is a preventative procedure to occlude the left atrial appendage in patients with atrial fibrillation to reduce the risk of stroke.

LAA periprocedural imaging includes:

* anatomic measurements and occlusion device sizing with gated cardiac computed tomographic angiography, or transesophageal echocardiography (TEE),
* intraprocedural guidance & assessment with x-ray angiography and TEE (or alternatively, intracardiac echocardiography (ICE)), and
* follow-up imaging with TEE or transthoracic echocardiography.

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|  | **Computed Tomography** | **Ultrasound** | **Fluoroscopy** |
| Pre-operative LAA assessment | Cardiac CTA |  (or) 2D or 3D TEE |  |
| Intraprocedural guidance & assessment |  | TEE or ICE |  (and) XA |
| Follow-up |  | Transthoracic or TEE |  |

Pre-operative assessment

LAA circumference, diameter and length measurements can be assessed using CTA three-dimensional TEE multiplanar reconstruction. Alternatively, linear measurements of the LAA ostium length and width are acquired at 0, 45, 90 and 135 scan planes using 2D TEE.

Intraprocedural guidance & assessment

The occlusion device is deployed via peripheral venous catheter under fluoroscopic and TEE guidance. TEE is used to determine that the the four ‘‘PASS’’ criteria (position, anchor, size, and seal) are met.

Before device release, one of the criteria to be assessed is the device compression. The device shoulder is measured by 2D TEE at 0, 45, 90, and 135 and the device compression is calculated as ratio of the device shoulder to the original device size.

Follow-up

Transthoracic or TEE is used to evaluate device position, embolization, device-related thrombus, patency, and pericardial effusion.

References:

1. [Periprocedural Imaging for Left Atrial Appendage Closure](https://doi.org/10.1016/j.ccep.2019.11.007)
2. [Assessing Anatomy for Left Atrial Appendage Closure](https://citoday.com/articles/2017-may-june/assessing-anatomy-for-left-atrial-appendage-closure)
3. [Left Atrial Appendage Occlusion/Exclusion: Procedural Image Guidance with Transesophageal Echocardiography](https://www.asecho.org/wp-content/uploads/2018/05/JASE-_-Vainrib.pdf)

## Limitations of Current Standard

Except for follow-up imaging, the existing procedure-specific measurement templates do not include Left Atrial Appendage Closure. A Left Atrial Appendage Closure template will ensure that necessary information is present and organization of the information is clear and similar between vendors which, in turn, will facilitate procedure planning and follow-up.

Note: IHE Cardiology Technical Framework Supplement, Cardiac Procedure Note (CPN) profiles HL7 CDA R2 cardiac procedure notes. This supplement includes a Left Atrial Appendage Occlusion Option, but does not profile specific measurements; this supplement does, however, include controlled terminology that could be used in the SR template.

## Description of Proposal

## This supplement will define one or more Left Atrial Appendage Closure Measurement SR templates. These templates would likely be referenced by TID 5200 Echocardiography Procedure Report and/or TID 3900 CT/MR Cardiovascular Analysis Report.

## New terminology will also be added to express LAA-related scan planes, anatomy and measurements.

Other structural heart procedures such as: transcatheter aortic valve replacement (TAVR), transcatheter (mitral or pulmonic) valve replacement, and atrial septal defect (ASD) closure follow the same imaging pattern as LAAC, including 1) pre-operative assessment, 2) intraprocedural assessment and 3) follow-up. This supplement would accommodate this pattern in order to allow for future CPs to address other structural heart procedures.

## Parts of Standard Affected

This proposal does not introduce new services, messaging or encoding. This work item will affect Parts 16 of the DICOM standard by adding one or more SR templates and relevant controlled terminology.

## Resources & Time Line

This work is expected to be a small number of pages. The work and stakeholder outreach will be primarily conducted in WG-01. We anticipate that four hours of Working Group Six meeting time will be required on each of four occasions during in 2022 and 2023 to review and approve an early draft as well as public comment, letter ballot, and final text versions of the supplement.