UK Left Atrial Appendage Occlusion Registry (LAAO)

Overview of Quality Improvement (QI) metrics

1. Annual centre volume

QI Metric Description/Name	**Annual centre volume**
Why is this important?	Studies and registries have consistently shown a decrease in complications and an increase in successful implant, reflecting a learning curve
QI theme	Safety
What is the standard to be met?	No standard, but CtE aimed at 30 case p.a. per centre, with complications in line with international series and RCTs.
Key references to support the metric	NHS England Reference: 170060P, June 2018. www.england.nhs.uk [1]
Numerator	N/A
Denominator	Cases per centre

2. Number of devices used per case

QI Metric Description/Name	**Number of devices used**
Why is this important?	Appropriate device sizing and selection avoids waste, reduces cost and reduces the number of exchanges in a transeptal sheath
QI theme	Effectiveness
What is the standard to be met?	Published studies average 1.2 to 1.38 devices per case
Key references to support the metric	Vivek Y. Reddy, et al. Post-Approval U.S. Experience with Left Atrial Appendage Closure for Stroke Prevention in Atrial Fibrillation,

	Journal of the American College of Cardiology, Volume 69, Issue 3,2017, Pages 253-261.[2]
Numerator	Centre no. of devices per case
Denominator	National no. devices per case

3. Device successfully deployed

QI Metric Description/Name	**Device successfully deployed, or estimate of residual gap**
Why is this important?	Any leaks in the seal of the device should be less than 5mm as per manufacturer recommendations; larger gaps may paradoxically increase risk of stroke or force continuation of anticoagulant therapy, which is directly opposed to the intended outcome
QI theme	Safety and Effectiveness
What is the standard to be met?	No gaps should be >5mm
Key references to support the metric	Mohamad Alkhouli, et al. Clinical Impact of Residual Leaks Following Left Atrial Appendage Occlusion: Insights from the NCDR LAAO Registry, JACC: Clinical Electrophysiology, Volume 8, Issue 6,2022, Pages 766-778.[3]
Numerator	No. of cases with residual leak per centre
Denominator	No. of cases per centre

5. Complications

QI Metric Description/Name	**Peri procedural complications**
Why is this important?	Complication rates are well established in LAAO, and any outlying centres should aim to understand the factors that might contribute to higher than expected rates

QI theme	Safety
What is the standard to be met?	Major complication rate <5%
Key references to support the metric	Left atrial appendage occlusion in the UK: prospective registry and data linkage to Hospital Episode Statistics. Willits et al. Euro Heart J Qual Care Clin Outcomes. 2021 Jun 7;7(5):468–475.[4]
Numerator	Centre reported complication rate
Denominator	Total reported complication rate

6. 30-day Mortality

QI Metric Description/Name	**Mortality**
Why is this important?	LAAO Commissioning is aimed at patients expected to survive 3 years; 30-day mortality may also capture catastrophic late complications
QI theme	Safety
What is the standard to be met?	≤ 1%
Key references to support the metric	Incidence and predictors of 2-year mortality following percutaneous left atrial appendage occlusion in the EVOLUTION trial. EP Europace, Volume 26, Issue 7, July 2024.[5]
Numerator	30-day mortality per centre
Denominator	30-day mortality all centres

References

[1] LAAO Commissioning statement: NHS England Reference: 170060P, June 2018. www.england.nhs.uk: 1692-left-atrial-appendage-occlusion.pdf

[2] Reddy, V, Gibson, D, Kar, S. et al. post-approval U.S. Experience with Left Atrial Appendage Closure for Stroke Prevention in Atrial Fibrillation. JACC. 2017 Jan, 69 (3) 253–261: Post-Approval U.S. Experience With Left Atrial Appendage Closure for Stroke Prevention in Atrial Fibrillation | JACC

[3] Alkhouli, M, Du, C, Killu, A. et al. Clinical Impact of Residual Leaks Following Left Atrial Appendage Occlusion: Insights From the NCDR LAAO Registry. J Am Coll Cardiol EP. 2022 Jun, 8 (6) 766–778. Clinical Impact of Residual Leaks Following Left Atrial Appendage Occlusion: Insights From the NCDR LAAO Registry | JACC: Clinical Electrophysiology

[4] Iain Willits, Kim Keltie, Nicholas Linker, Mark de Belder, Robert Henderson, Hannah Patrick, Helen Powell, Lee Berry, Samuel G Urwin, Helen Cole, Andrew J Sims, Left atrial appendage occlusion in the UK: prospective registry and data linkage to Hospital Episode Statistics, European Heart Journal - Quality of Care and Clinical Outcomes, Volume 7, Issue 5, November 2021, Pages 468–475. Left atrial appendage occlusion in the UK: prospective registry and data linkage to Hospital Episode Statistics | European Heart Journal - Quality of Care and Clinical Outcomes | Oxford Academic

[5] Errol W Aarnink, Hueseyin Ince, Stephan Kische, Evgeny Pokushalov, Thomas Schmitz, Boris Schmidt, Tommaso Gori, Felix Meincke, Alexey Vladimir Protopopov, Timothy Betts, Patrizio Mazzone, Marek Grygier, Horst Sievert, Tom De Potter, Elisa Vireca, Kenneth Stein, Martin W Bergmann, Lucas V A Boersma, for the EWOLUTION investigators, Incidence and predictors of 2-year mortality following percutaneous left atrial appendage occlusion in the EWOLUTION trial, EP Europace, Volume 26, Issue 7, July 2024, euae188, https://doi.org/10.1093/europace/euae188