Dynamic development of a sequential pathway for AF detection in a tertiary stroke service

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THE CHALLENGE

Sequential prolongation of heart rhythm monitoring after ischaemic stroke has been shown to be clinically and cost effective at detecting undiagnosed Atrial Fibrillation and changes management.[1] However, their implementation requires integrated multi-disciplinary collaboration with timely interval evaluations to ensure appropriate patients are included and excluded.

This service improvement project aims to design and implement a sustainable multi-site service using an iterative learning system.

OBJECTIVES

- To increase the number of AF cases detected in this population
- To reduce the number of inappropriate tests (defined as tests on patients with a known diagnosis of AF)
- To reduce the time taken between index event and pathway completion.
- The workflow should continue to work independent of the service improvement team.
- The workflow should be scalable to other partnered stroke centres in the Trust

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METHODS

We designed the optimal theoretical stepwise workflow in 2023. (Figure 1) This was approved as Standard Operating Procedure by Hospital Board.

PDSA Cycles were performed with interval meetings of the Service Improvement group to identify the roadblock and implement a corresponding intervention. Audits were undertaken as described below following each intervention.

Audit Design: Prospective evaluation.

Population: Patients to the Royal London Hospital Acute Stroke Unit with a primary presentation of a new ischaemic stroke/TIA event

Data Collection: Per-patient Electronic Health Record review of the incidence of workflow investigations and their outcomes. This included diagnoses at baseline, admission ECG, Holter monitoring, and implantable continuous monitoring (ICM).

Intervention 1: Pathway launch and HCP education

Intervention 2: In-patient Holter monitor application

Results

Participant and outcome data is shown in Table 1.

In Audit 1 13 patients had new AF detected on The intervention increased the number of appropriate tests without a signficiant increase in inappropriate tests. (Figure 2)

6/27 (22%) had inappropriate Holter/Zio monitoring for AF detection. 2/27 (7%) patients with new or known AF were referred for Holter monitoring (p=0.22).

AF was detected in 2/35 (6%) patients with Holter/Zio monitoring between January-March 2023 compared to 1/21 (5%) patients in April-May 2024 (X2 (1, N=56)=0.02, p=0.88). AF detection rates were not significantly different in these pilot audit groups. (Figure 2). No patients were referred for ICM consideration within the study period.

Figure 1

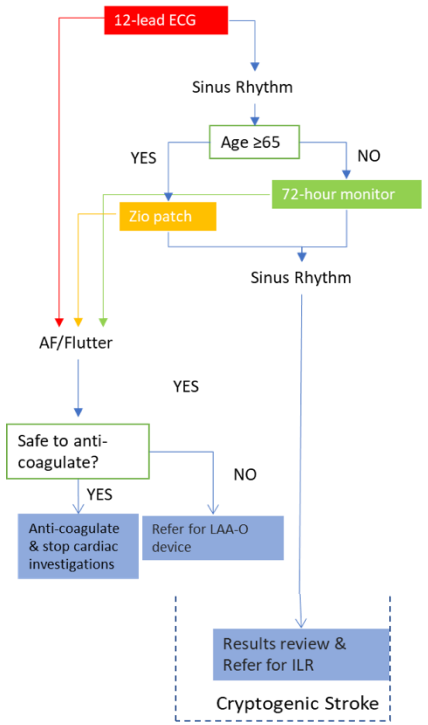
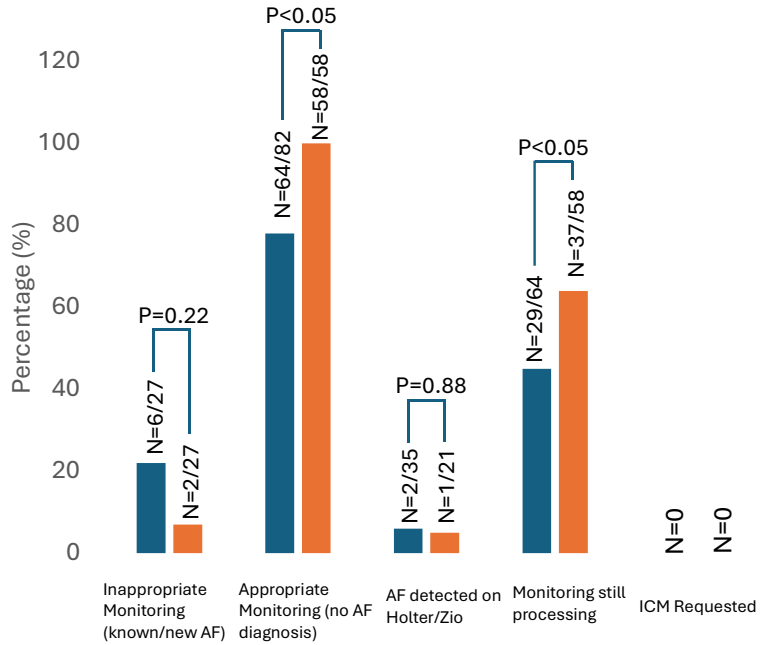


Table 1

	Audit 1: 03-04/2023	Audit 2: 04-05/2024	Audit 3: 03-04/2025
Total admissions	109	85	
Stroke	98	81	
TIA	11	4	
Known AF	14	19	
New AF on admission ECG	13	8	

Figure 2



Conclusion

Our 'wide-funnel' approach is designed to increase pathway sensitivity without increased redundant testing by increasing awareness and reducing time-to-test. Further iterations will continue to refine the pathway.

Intervention 3 will be expedited Holter result review by named Stroke Physician for virtual ILR referral

As a result of this project, we will be piloting an Integrated cardiologist-stroke physician MDT for improved qualitative assessment and expedited decision making.

References

Ahluwalia N, Graham A, Honarbakhsh S, et al. Optimising pathways for implantable cardiac monitoring after cryptogenic stroke. J Stroke Cerebrovasc Dis. 2022;31(7).