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A Clinical Network Project Improves Care of Patients with Atrial Fibrillation with Rapid Ventricular Response in Victorian Emergency Departments

Q2 Anne-Maree Kelly, MD, FACEM, FCCP^{*}, Jan Pannifex, RN, On behalf of the Emergency Care Clinical Network, Innovation Hub, Health Service Improvement

Department of Health and Human Services, Melbourne, Vic, Australia

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Objectives

Atrial fibrillation with rapid ventricular response is a common condition in emergency departments (ED) and despite published guidelines, variation in practice is common. The aim of this nine-month evidence-based care improvement project was improving the management of atrial fibrillation with rapid ventricular response (AFRVR).

Methods

This was a quality improvement project, evaluated using before and after chart review methodology. The outcomes of interest were the proportion of patients managed according to a local treatment pathway, the proportion with duration of symptoms documented, the proportion with rate control versus rhythm control strategy documented and the proportion with a CHADS2 score (or equivalent) documented.

Results

Ten ED participated. Management according to a local treatment pathway increased from 8% (27/326) of patients to 68% (191/281); $p < 0.0001$. The proportion of patients with symptom duration documented increased from 62% (201/326) to 81% (227/281); $p < 0.0001$. The proportion of patients with CHADS2 score (similar) documented increased from 16% (49/310) to 47% (126/268); $p < 0.0001$.

Conclusion

This project has led to clinically and statistically significant improvements in management of AFRVR across a health system, although there is still room for improvement. Work continues to embed these gains and make further improvements.

Keywords

Emergency department • Atrial fibrillation • Quality improvement • Change

Introduction

Q3 Atrial fibrillation with rapid ventricular response (AFRVR) is a common condition in emergency departments (ED) and despite published guidelines, variation in practice is common [1,2]. The Victorian Emergency Care Clinical Network (VECCN, Victoria, Australia) works with 40 ED

across the state to improve clinical care by uptake of evidence-based practice and reduction in variation in practice. Member EDs vary in size, staffing and supporting specialist services; approximately half of general EDs are based in rural and regional areas. VECCN has undertaken six annual cycles of improvement projects covering a range of conditions.

^{*}Corresponding author at: Emergency Care Clinical Network, Department of Health and Human Services (Victoria), Melbourne, Email: anne-maree.kelly@wh.org.au

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In 2013 and 2014, the network offered a nine-month evidence-based care improvement project aimed at improving the management of AFRVR. This report documents the results of those projects.

Methods

This was a quality improvement project, evaluated using before and after chart review methodology.

Development of Treatment Recommendations

An expert panel made up of cardiologists, emergency physicians and a rural physician developed recommended treatment strategies based on best available evidence/guidelines [3–6] for treatment of ED patients with AFRVR (online appendix). These recommendations were disseminated to participating ED in February 2013.

Local Implementation

Participating in VECCN projects is by an expression of interest process, as Victoria has a devolved clinical governance structure.

VECCN uses a modified knowledge transfer model (Figure 1). The network management team develops the project parameters, conducts awareness raising activities, provides resources (including published papers, data collection tools), provides project management training for project

leads, analyses data and mentors project leads throughout the project. Local clinical leads and supporting teams develop a local implementation plan (including education), implement changes and collect before and after data. Other than awareness-raising activities (a presentation at annual evidence-based care forum and availability of that presentation on the VECCN website), VECCN did not provide direct training to ED regarding the treatment pathway. A small grant (average \$4500) is provided to support local implementation.

For evaluation of this project, the outcomes of interest were the proportion of patients managed according to a local treatment pathway, the proportion with duration of symptoms documented, the proportion with rate control versus rhythm control strategy documented and the proportion with a CHADS2 score (or equivalent) documented. Regarding the choice of stroke risk stratification tool, the aim was for a suitable tool to be used but the decision regarding which tool was made locally. Some sites chose the CHADS2 score and others, the CHADSVaSc score. Data collected was limited to these items in keeping with the quality improvement nature of this project. Sites were asked to provide data on 30 patients pre-intervention and 30 (or all patients in the 'after' period if less than 30) post-intervention. We also collected qualitative data on project success factors and barriers.

Analysis was by before and after comparison of proportions (Chi square/ Fisher's test) using Analyze-It™ software. No sample size calculation was performed. Most organisations

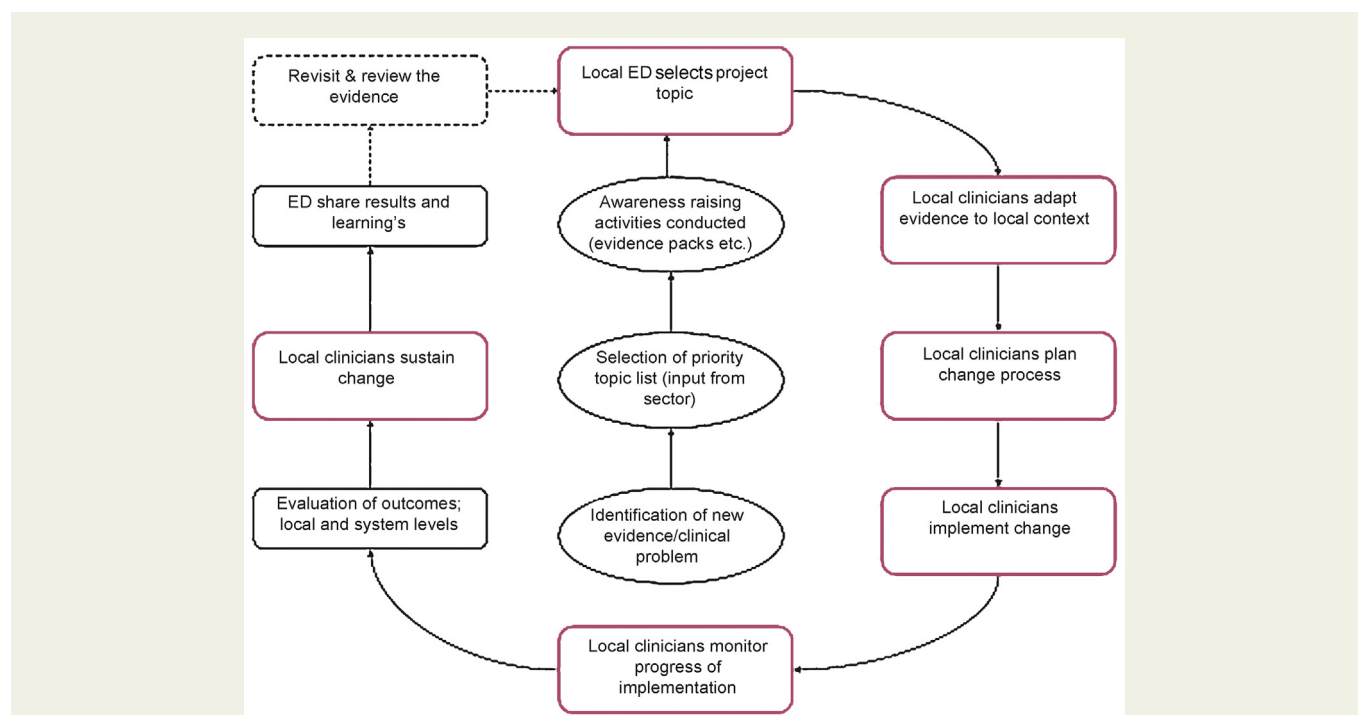


Figure 1 ECCN knowledge transfer model.

regarded this as a quality improvement activity under the relevant NHMRC guidelines [7] and did not require human research ethics committee (HREC) review. In those sites that did require HREC review, approvals were obtained.

Results

Ten ED participated in the project; three metropolitan, two regional and five rural. There were a total 326 patients in the before cohort and 281 in the after cohort.

Management according to a local treatment pathway increased from 8% (27/326) of patients to 68% (191/281); $p < 0.0001$. The proportion of patients with symptom duration documented increased from 62% (201/326) to 81% (227/281); $p < 0.0001$. The proportion of patients with CHADS2 score (similar) documented increased from 16% (49/310) to 47% (126/268); $p < 0.0001$. There was no significant change in the proportion of patients with rate versus rhythm control strategy documented.

Qualitative data collected from project leads showed success factors to be strong local clinical lead supported by a multi-disciplinary team, access to resource materials developed by clinical experts based on evidence, regular feedback to staff about performance against desired outcome throughout the improvement process and creative education and communication e.g. team-based simulation exercises. Barriers identified included high staff turnover (due mainly to rotating medical staff), lack of time for staff education/feedback, the busy ED clinical environment impacting on documentation in clinical records and variation in practice and opinion among cardiologists and local physicians blocking change.

Discussion

This project has resulted in clinically meaningful improvements in management of AFRVR in Victorian ED over a relatively short time with a simple intervention and at low cost. This suggests that the quality improvement model used is effective and that when provided with appropriate evidence and resources, most ED clinicians are willing to modify their practice.

It has also uncovered some important challenges. Not the least of these is the unwillingness of some cardiologists and physicians to accept treatment recommendations distilled by a panel of experts from evidence-based guidelines, even though the project design did allow for some local adaptation of the recommendations if local factors dictated. This is consistent with the findings of Arendts et al. [2] who, using a survey with seven hypothetical acute atrial fibrillation scenarios, found wide variation in reported practice within and between specialties and a significant proportion of responses inconsistent with best practice guidelines. While it is accepted that in some cases personally tailored management is needed, these cases are likely to make up only a small proportion of cases. Efforts to address the variation of

opinion and practice among cardiologists are needed but will not be easy given their numbers, geographical spread and the diversity of opinion.

This data has some weaknesses that should be considered in its interpretation. It is retrospective so subject to issues with documentation. Patient numbers at individual sites were small. We did not collect comprehensive data, as it was outside the scope of the project, thus are unable to explore potential confounders. That said, the data represents the 'real world' ED practice.

Conclusion

This project has led to clinically and statistically significant improvements in management of atrial fibrillation across a health system, although there is still room for improvement. Work continues to embed these gains and make further improvements.

Conflicts of Interest

Professor Kelly and Ms Pannifex are employees of the Emergency Care Clinical Network.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.hlc.2015.07.009>.

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