

RESOURCE USE AND COST ASSOCIATED WITH A COMPUTERIZED DECISION SUPPORT SYSTEM FOR MANAGING PATIENTS WITH ATRIAL FIBRILLATION

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Background

- Atrial fibrillation (AF) is the most common arrhythmia, affecting approximately 200,000 Canadians.
- Because of its increasing prevalence among an aging population, and the rates of acute care and hospitalization among patients, the economic burden of AF is substantial.
- It has been estimated that AF accounts for 4.6% of Canadian acute care inpatient costs and 2.6% of all hospital admissions in Canada.

Methods

Trial design

- The Integrated Management Program Advancing Community Treatment of Atrial Fibrillation (**IMPACT-AF**) study was a prospective, randomized, unblinded, cluster designed comparing atrial fibrillation (AF) management with a computerized decision support system (CDSS) to usual care in the primary care setting of Nova Scotia, Canada.
- Registration number: NCT01927367

Intervention

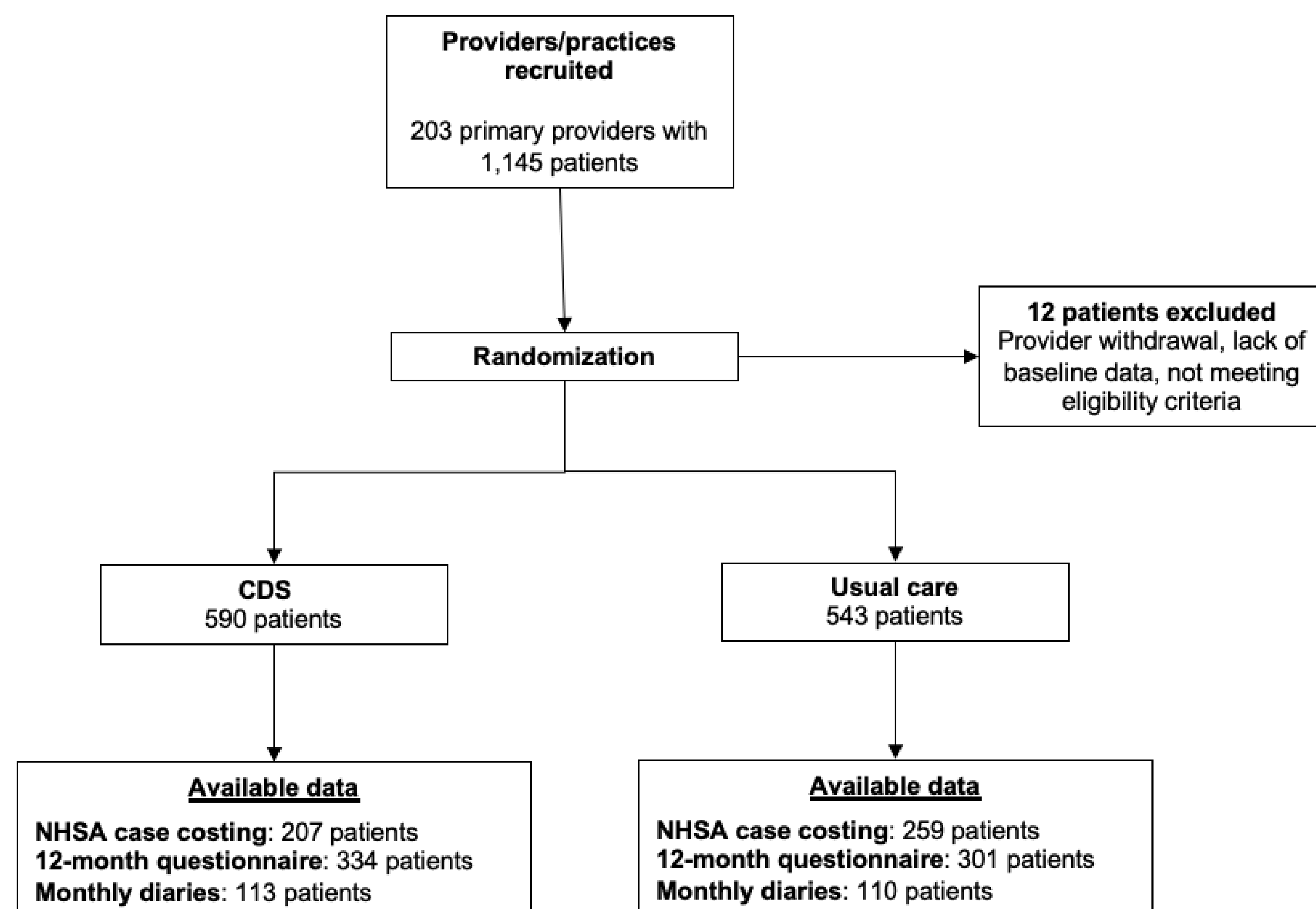
- The CDSS was a web-based tool designed to support the management of AF patients in primary care. It offered best practice recommendations per clinical guidelines and allowed surveillance of AF patients through a range of data sources (electronic laboratory results and patient-reported data), prompting primary care providers to respond to critical alerts and trends. The system also had web-based education and support for providers and patients.

Results

Study sample

- A total of 1,145 patients enrolled in the trial (Figure 1).
- Case costing data were available for 466 participants (41.1%), 12-month self-administered questionnaire data for 635 participants (56.0%) and monthly diary data for 223 participants (19.7%).
- Among participants, the average age was 72.3 years. Most participants were male (61.9%) and lived in a rural area (54.1).

Figure 1. Patient flow



Conclusions

- Similar to other costing studies among the AF patient population, ER visits and hospitalizations comprised the most costly component of AF care.
- While costs were generally minimal, some participants reported driving long distances to receive care. Fifty-four percent of patients lived in a rural area, where access to labs and family physicians are limited. The fact that they reported travelling long distances for INR testing could be a consideration for why AF patients should receive a NOAC instead of warfarin as these medications don't require lab monitoring.
- A key limitation is that a significant percent of participants did not complete the monthly diaries. In addition, few providers used the CDS tool regularly due to implementation issues (e.g., slow internet, lack of integration with key datasets, need for data entry and double login). This could explain the lack of any significant differences in costs and resource use between CDS and usual care groups.

Disclosures

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Objective

To evaluate whether an electronic clinical decision support system designed to assist both providers and patients with evidence-based management strategies for AF could reduce resource use and costs for AF patients compared to the usual standard of care.

Data sources

- Clinical, laboratory, and treatment data were collected through **medical record review**. **Case costing data** recorded public payer costs for AF-related hospitalizations and ER visits. **Self-administered questionnaire** recorded patients' reported AF-related resource use during the trial in addition to sociodemographic characteristics and health-related quality of life. **Monthly diaries** provided a more detailed picture of resource use for each patient (e.g., time, expenses and distance travelled to receive care).

Statistical analysis

- Descriptive statistics were used to summarize the sociodemographic and clinical characteristics of patients.
- All costs cover the 12-month period of participation in the study and are presented in 2021 Canadian dollars. Given the amount and nature of missing data, results are reported as complete case analyses.
- Sensitivity analyses were conducted to explore differences in resource use and costs between participants living in rural and urban locations.

Case costing

- ER visits were the most frequent type of encounter and mean total per-patient direct costs were \$1,433 and \$1,307 within CDS and usual care groups, respectively.
- There were no statistically significant differences between CDS and usual care groups.

12-month questionnaire

- More patients reported seeing a specialist for their AF (n = 158 CDS, n = 141 usual care) than a GP (n = 91 CDS, n = 101 usual care). Cardiologist was the most common specialty consulted for AF.
- With regard to medication, 136 (40.7%) participants in the CDS and 128 (42.5%) participants in the usual care group reported using a NOAC. For these medications, private insurance was the most common form of medication coverage.
- There were no statistically significant differences between CDS and usual care groups.

Monthly diaries

- INR testing was the category with the most intensive resource use for participants. Participants reported an average of 6.30 and 6.90 INR visits among CDS and usual care groups, respectively. The second most common AF-related resource use was family physician visits.
- The average distance traveled was highest for INR testing (mean 112.23 km CDS, mean 129.86 km usual care), followed by family physician visits (mean 64.24 km CDS, mean 51.72 km usual care).
- There were no statistically significant differences between CDS and usual care groups.

Sensitivity analysis

- Between participants living in rural and urban locations, there were statistically significant differences for the time missed from work for GP visits (p-value = 0.0084), time missed from work for INR visits (p-value = 0.0354), number of specialist visits (p-value = 0.0010), distance travelled for walk-in visits (p-value = 0.0261), and distance travelled for GP visits (p-value = 0.0285).

Practical Implications

While much of the AF literature reports on management by cardiologists or other specialists, AF is a common cardiac arrhythmia that primary care providers frequently manage. Understanding the full spectrum of AF-related resource use and costs can contribute to the development of new approaches for care delivery in the face of an increasing prevalence of AF in an aging population with a shrinking number of providers.

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