



SCREENING FOR ATRIAL FIBRILLATION IN CANADIAN PHARMACIES IS COST-EFFECTIVE

Jean-Eric Tarride PhD, Lisa Dolovich PharmD MSc, Gordon Blackhouse MSc, MBA, Jason Guertin PhD, Natasha Burke MSc, Veena Manja MD MSc, Alex Grinvalds BSc, Ting Lim MSc, Jeff Healey MD MSc, Roopinder Sandhu MD MPH

CADTH 2017

Disclosure

I have no actual or potential conflict of interest in relation to this topic or presentation.

- **Source of Funding:** The PIAAF-Pharmacy study was supported by the Canadian Stroke Prevention Intervention Network, Boehringer Ingelheim and in-kind support from CardioComm.
- **Acknowledgment:** We acknowledge the pharmacists and managers from Rexall Pharmacy Group for their involvement in facilitating the pharmacy screening sessions.



Outline

- Background and objectives
- Methods and cost effectiveness results
- Discussion and conclusions
- Questions and Answers

BACKGROUND AND OBJECTIVES



AF is a major public concern

- More than 25% of Canadians aged 75 years and older will develop atrial fibrillation (AF), an abnormal rhythm of the heart.
- AF is a leading cause of strokes with an estimated 15% of all strokes due to AF
- AF-related strokes are preventable with oral anticoagulation therapy (OAC)
- AF is often unrecognized or known.



- Funding
- Institutes
- Strategies
- Initiatives
- Collaboration
- Research highlights

Home > News > Health research news

- News**
- Health research news
 - News releases
 - Expert alerts
 - Study results
 - Notices
 - Canadian MS research priorities
- Events
- Photo gallery

Canadian Stroke Prevention Intervention Network

Goal

The Canadian Stroke Prevention Intervention Network (C-SPIN) will develop actionable strategies that will make Canada a global leader in clinical stroke research; ensure sustainability of these efforts through strategies to recruit, train, support, and retain clinical scientists; and, in collaboration with other networks, government, and stakeholder groups, implement strategies to reduce the incidence of embolic stroke in Canada by 10% within ten years.

Health burden addressed

Atrial Fibrillation (AF), an abnormal rhythm of the heart, is an ongoing epidemic with a clear relationship to stroke and dementia. AF causes 15% of the 50,000 strokes suffered in Canada each year. The prevalence of AF and the proportion of strokes attributable to AF increases substantially with advancing age and more than 25% of Canadians over age 75 will develop AF, making AF-associated stroke a critical public health issue and a burden for patients and their families.

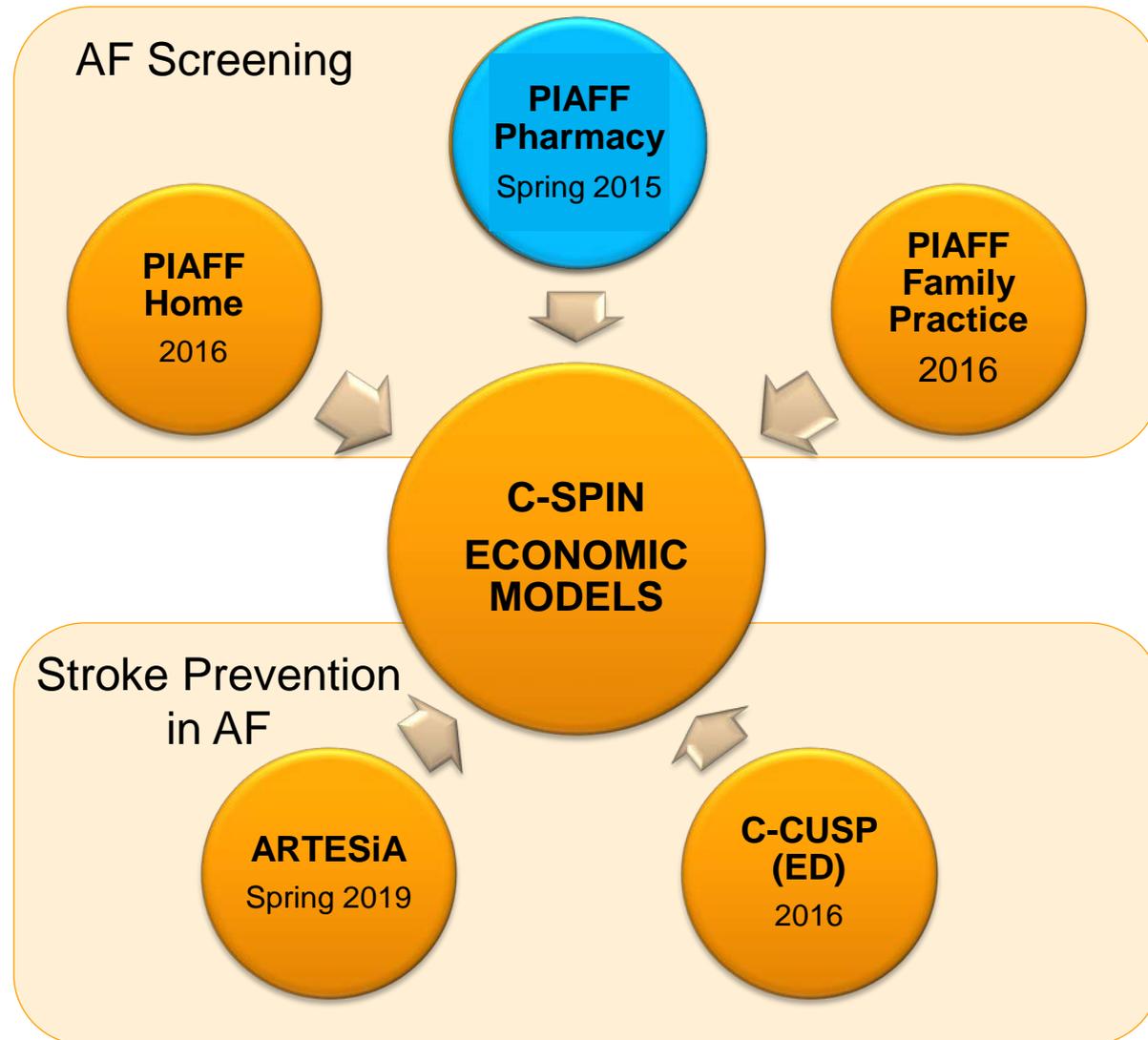
Approach

C-SPIN brings together a nation-wide multidisciplinary team of cardiologists, neurologists, cardiac surgeons, emergency room physicians, family practitioners, pharmacists, statisticians, methodologists, knowledge translation (KT) experts, and population scientists to pursue a common goal of a major reduction in stroke by means of shared expertise, resources, and harmonized research efforts. C-SPIN will also support the recruitment and retention of the next generation of Canadian clinical researchers in this field. C-SPIN will answer challenging questions that will revolutionize our understanding of AF and stroke, improve healthcare strategies, and reduce the rate of stroke among Canadians.

Key Investigators

Name	Role in C-SPIN	Main Affiliation
Dr. Jeff Healey	PI and Chair of the Canadian Stroke Prevention Intervention Network (C-SPIN)	McMaster University and Hamilton Health Sciences
Dr. Stuart Connolly	Executive Committee, Theme Leader (Clinical)	McMaster University and Hamilton Health Sciences
Dr. Richard Whitlock	Theme Leader (Clinical)	McMaster University and Hamilton Health Sciences
Dr. Robert Hart	Theme Leader (Clinical)	McMaster University and Hamilton Health Sciences
Dr. Robby Nieuwlaat	Theme Leader (Health Services and Systems)	McMaster University and Hamilton Health Sciences

C-SPIN TRIALS: 3 AF screening trials and 2 stroke prevention in AF trials



openheart High prevalence of modifiable stroke risk factors identified in a pharmacy-based screening programme

Roopinder K Sandhu,¹ Lisa Dolovich,² Bishoy Deif,³ Walid Barake,¹ Gina Agarwal,² Alex Grinvalds,³ Ting Lim,³ F Russell Quinn,⁴ David Gladstone,⁵ David Conen,⁶ Stuart J Connolly,³ Jeff S Healey³

To cite: Sandhu RK, Dolovich L, Deif B, *et al.* High prevalence of modifiable stroke risk factors identified in a pharmacy-based screening programme. *Open Heart* 2016;3:e000515. doi:10.1136/openhrt-2016-000515

Received 3 August 2016
Revised 23 September 2016
Accepted 1 November 2016

ABSTRACT

Background: Population-based screening for atrial fibrillation (AF) is a promising public health strategy to prevent stroke. However, none of the published reports have evaluated comprehensive screening for additional stroke risk factors such as hypertension and diabetes in a pharmacy setting.

Methods: The Program for the Identification of 'Actionable' Atrial Fibrillation in the Pharmacy Setting (PIAAF-Pharmacy) screened individuals aged ≥ 65 years, attending community pharmacies in Canada, who were not receiving oral anticoagulation (OAC). Participants were screened for AF using a hand-held ECG device, had blood pressure (BP) measured, and diabetes risk estimated using the Canadian Diabetes Risk Assessment Questionnaire (CANRISK) questionnaire. 'Actionable' AF was defined as unrecognized or undertreated AF. A 6-week follow-up visit with the family physician was suggested for participants with 'actionable' AF and a scheduled 3-month visit occurred at an AF clinic.

Results: During 6 months, 1145 participants were screened at 30 pharmacies. 'Actionable' AF was identified in 2.5% (95% CI 1.7 to 3.6; n=29); of these, 96% were newly diagnosed. Participants with 'actionable AF' had a mean age of 77.2 \pm 6.8 years, 58.6% were male and 93.1% had a CHA₂DS₂-VASc score ≥ 2 . A BP>140/90 was found in 54.9% (616/1122) of participants and 44.4% (214/492) were found to be at high risk of diabetes. At 3 months, only 17% of participants were started on OAC, 50% had improved BP and 71% had confirmatory diabetes testing.

Conclusions: Integrated stroke screening identifies a high prevalence of individuals who could benefit from stroke prevention therapies but must be coupled with a

KEY QUESTIONS

What is already known about this subject?

► Population-based screening for atrial fibrillation (AF) is a promising public health strategy to prevent stroke. Recently, increasing data are emerging from different countries on AF screening in the community setting; however, more studies are needed on the optimal screening methods, settings and target population applicable to different healthcare systems.

What does this study add?

► This study is the first to screen individuals aged 65 years or older for AF using a hand-held ECG device in addition to measuring blood pressure and assessing diabetes risk in the pharmacy setting. This comprehensive stroke-screening programme was conducted in community pharmacies using an existing healthcare infrastructure, which may allow for more sustainability over time. We identified a high prevalence of individuals who could benefit from stroke prevention therapy. Although screening results were provided to the family physician, few individuals with newly diagnosed AF or known AF but undertreated had initiation of oral anticoagulation therapy.

How might this impact on clinical practice?

► An integrated community stroke-screening programme is feasible. However, for screening to be effective, it must be coupled with a well-defined care pathway to ensure timely follow-up and treatment.

1,131 seniors were screened for AF, diabetes and hypertension in 30 pharmacies in Alberta and Ontario

Prevalence of 'Actionable' AF = 2.5%.

96% were new AF (2.4%).



► <http://dx.doi.org/10.1136/openhrt-2016-000515>

“Actionable AF” defined as those with (i) previously unrecognized AF and (ii) known AF but not taking OAC medication.

What is the economic value of screening for AF in pharmacies?

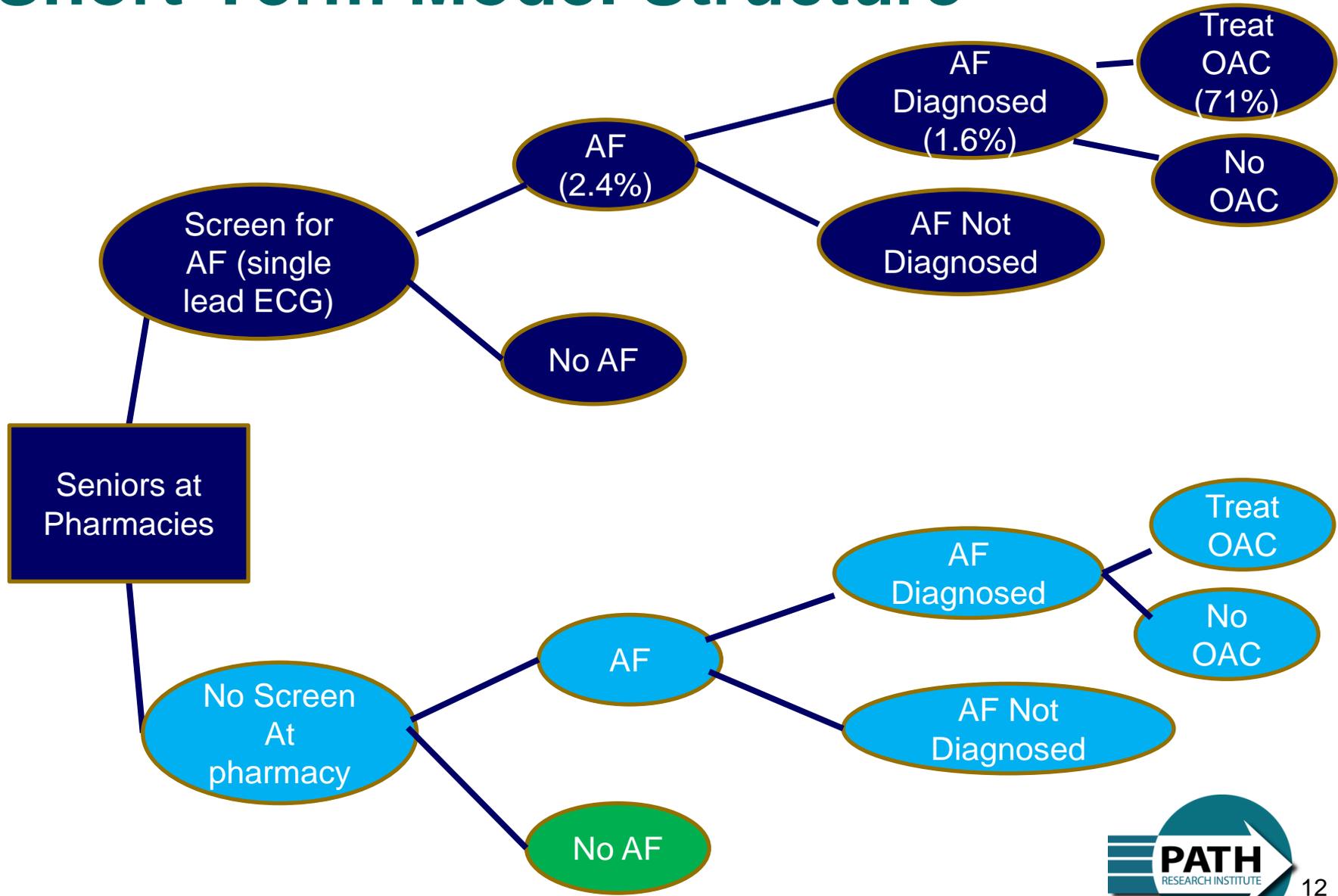
- To better inform decision-makers about the value of screening AF in Canadian pharmacies, we conducted an economic evaluation of the PIAAF-Pharmacy Study.

METHODS

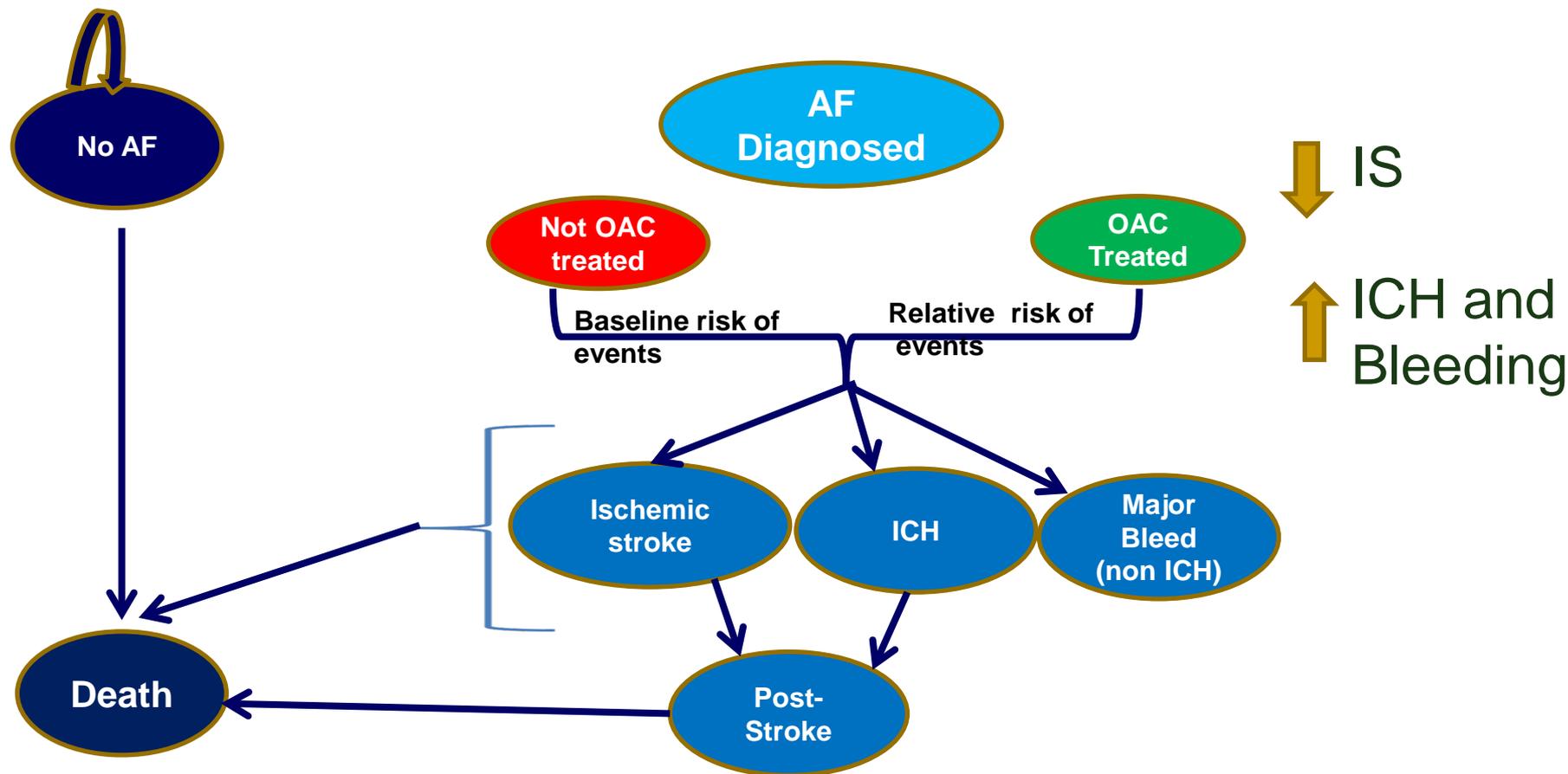
Study Overview

- Decision analytic techniques were used to estimate the short- and long-term costs and effects associated with screening AF in pharmacy compared to no AF screening.
- This cost-utility analysis was conducted over a lifetime horizon from a payer perspective (e.g. physician, hospitalization and drug costs).
- Costs and Quality Adjusted Life Years (QALYs) were used to compare screening versus no screening.
 - QALYs combine quantity of life with quality of life expressed on a 0-1 scale (0=death and 1= full health)
- Sensitivity analyses were conducted to test the robustness of the results.

Short-Term Model Structure



Long-Term AF Model Structure



Abbreviations: AF-atrial fibrillation, ICH-intracranial hemorrhage, OAC-oral anticoagulants. ICH was further divided into hemorrhagic stroke and non-hemorrhagic stroke

COST-EFFECTIVENESS RESULTS

Expected Costs per Screened Individual

- AF screening in pharmacy is almost cost-saving compared to no screening
 - Additional cost of screening (\$65/pt) and associated OAC treatment costs (\$49/pt) are mostly offset by a reduction in the costs of IS (-\$144/pt) and increase in ICH (\$20/pt) and bleeding (\$11).

	Screening	OAC	Ischemic stroke	ICH	Major bleeds	Total
PIAAF-Pharmacy Screening	\$65	\$49	\$168	\$53	\$21	\$356
No Screen	\$0	\$0	\$312	\$33	\$10	\$355
Incremental	\$65	\$49	-\$144	\$20	\$11	\$2

Abbreviations:

PIAAF-Pharmacy = Program for the Identification of 'Actionable' Atrial Fibrillation: in the Pharmacy Setting, OAC = oral anticoagulants, ICH = intracranial hemorrhage



Cost-Effectiveness Results

- AF screening in pharmacies results in better outcomes compared to no screening in terms of LYs and QALYs.
- The incremental cost (\$2) per QALY gained (0.0039) is \$375

Intervention	Costs	LYs	QALYs	Incremental \$/LY gained	Incremental \$/QALY gained
PIAAF-Pharmacy Screening	\$356	7.496	5.714		
No Screen	\$355	7.493	5.710		
Incremental	\$2	0.0039	0.0045	\$428	\$375

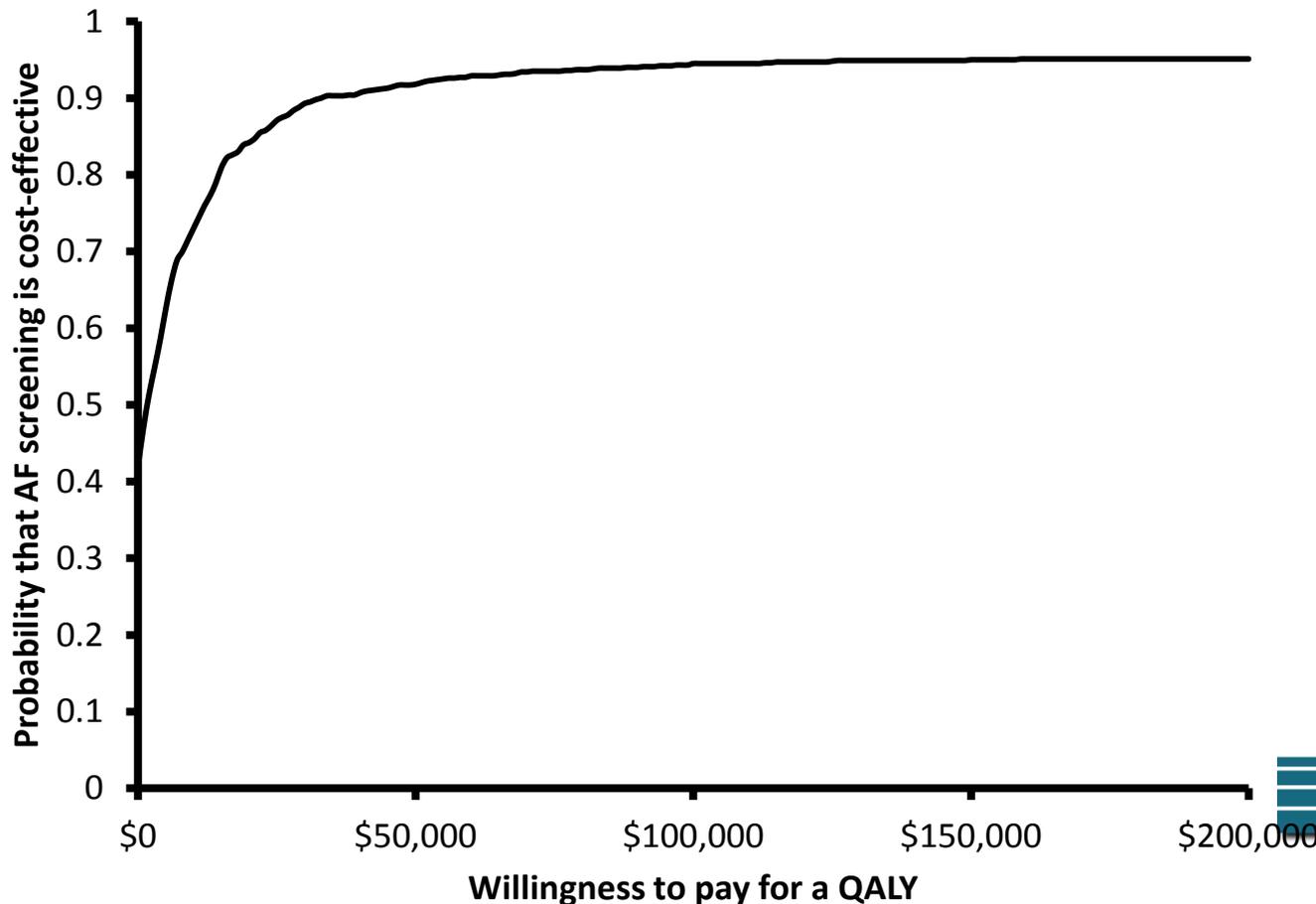
Abbreviations:

PIAAF-Pharmacy= Program for the Identification of 'Actionable' Atrial Fibrillation: in the Pharmacy Setting, LYS = Life Years, QALYs = Quality Adjusted Life Years



Cost-effectiveness acceptability curve

The probability that AF screening is cost-effective is 93% and 95% if the willingness to pay for a QALY gained is \$50,000 or \$100,000, respectively



Additional analyses

- Following review by CMAJ, 3 changes in model assumptions:
 1. Assume that 3% of undiagnosed AF will be detected every year without screening
 2. Assume 10% annual discontinuation rate with OACs (Aristotle study: 25% of apixaban patients and 27% of warfarin patients had discontinued treatment after 30 months of treatment; NEJM 2011)
 3. Include cost of confirmatory 12-lead ECG and Holter

New ICER: \$7,480/QALY gained

DISCUSSION AND CONCLUSIONS

Discussion

- Results robust against changes in key assumptions (i.e. AF screening in pharmacy is dominant or cost-effective).
- Findings consistent with CE of an Australian pharmacy AF screening program of individuals 65 years or older (AUD\$5,988/QALY gained or CAN\$5,928/QALY gained).
- Limitations: non-comparative study and short period of follow-up (e.g. extrapolations over time)
- Additional benefits of screening such as detection of diabetes and blood pressure were not included, resulting on an underestimation of the benefits.

Conclusions

- Results support that screening for AF among high-risk patients in Canadian pharmacies is feasible and cost-effective.
- Efforts should be made by provincial governments and pharmacies to implement such pharmacy-based programs in Canada (for example during Flu season).