CANet
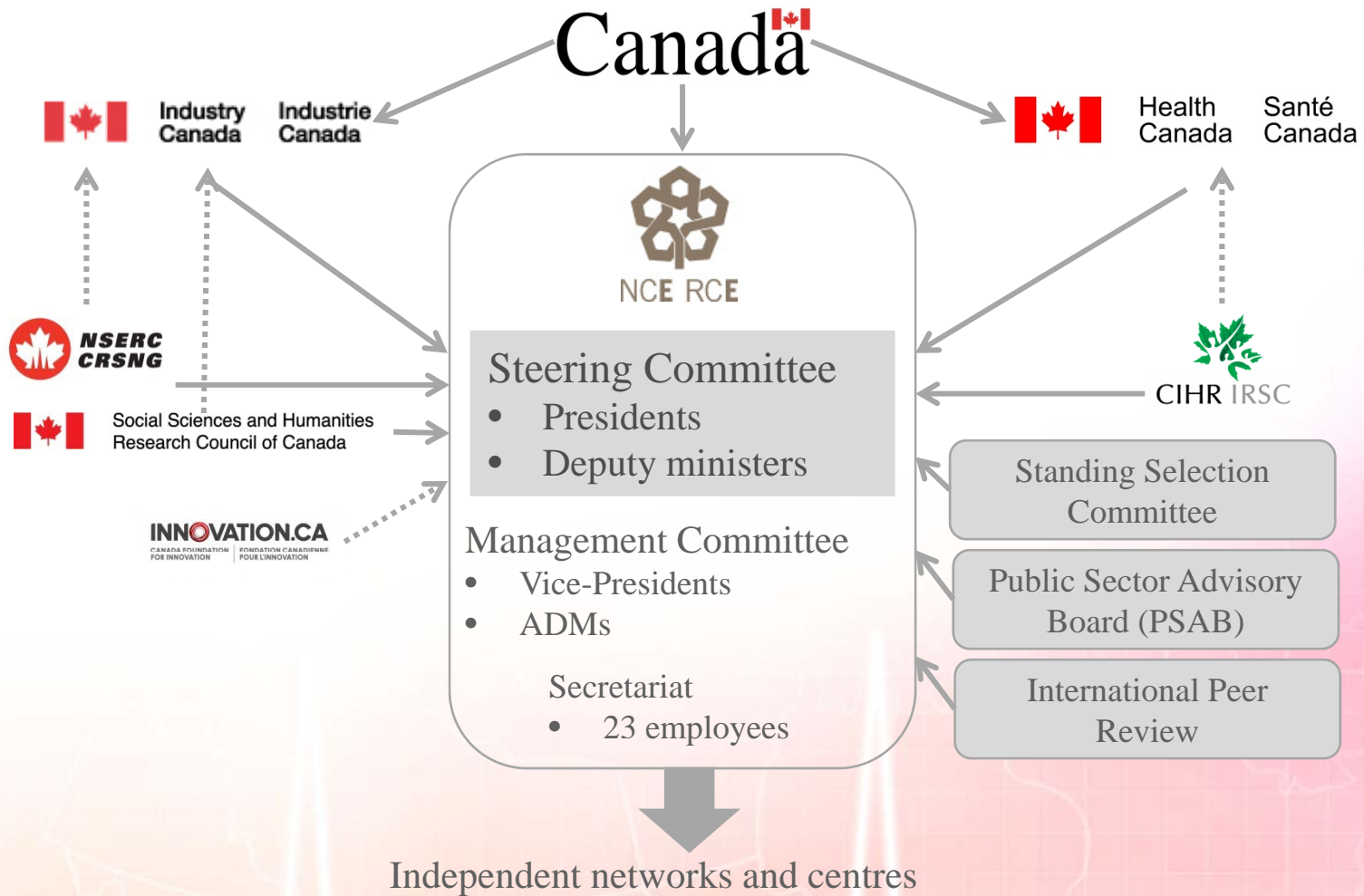Cardiac Arrhythmia Network of Canada
Réseau canadien sur l'arythmie cardiaque

Cardiac Arrhythmia Network
Opportunity to Improve AF Care

NCE Governance

Canada

Industry Canada · Industrie Canada

Health Canada · Santé Canada

NSERC CRSNG

Social Sciences and Humanities Research Council of Canada

INNOVATION.CA — CANADA FOUNDATION FOR INNOVATION | FONDATION CANADIENNE POUR L'INNOVATION

NCE RCE

CIHR IRSC

Steering Committee
- Presidents
- Deputy ministers

Management Committee
- Vice-Presidents
- ADMs

Secretariat
- 23 employees

Standing Selection Committee

Public Sector Advisory Board (PSAB)

International Peer Review

Independent networks and centres

NCE | Networks of Centres of Excellence of Canada

NCE Mission

"To mobilize Canada's research talent in the academic, private and public sectors and apply it to the task of developing the economy and improving the quality of life of canadians"

Current Classic NCEs (13)

Environmental science and technologies (3):
- ArcticNet
- Canadian Water Network (CWN)
- Marine Environmental, Observation, Prediction and Response Network – MEOPAR

Natural resources and energy (1):
- BioFuelNet

Information and communication technologies (0):

Manufacturing (1)
- AUTO21

Social Sciences and Wellness (0)

Health and related life sciences and technologies (8):
- AllerGen
- Stem Cell Network (SCN)
- NeuroDevNet
- Canadian Frailty Network
- AGE-WELL
- BioCanRx
- CANet
- GlycoNet

NCE | Networks of Centres of **Excellence** of Canada

What is CANet?

- **Cardiac Arrhythmia Network of Canada**

- A Network Focus on improving Arrhythmic Conditions:

  - Atrial Fibrillation

  - Sudden Cardiac Death

  - Syncope

CANet – VISION

- A transformed Canada that delivers personalized, patient-driven, integrated care resulting in improved access, quality, effectiveness and efficiency of arrhythmia care.

Value Propositions-Deliverables

A) Clinical (10-year)

- 10% drop in sudden cardiac death

- 20% drop in atrial fibrillation hospitalization and ED visits

- 30% drop in syncope hospitalization and ED visits

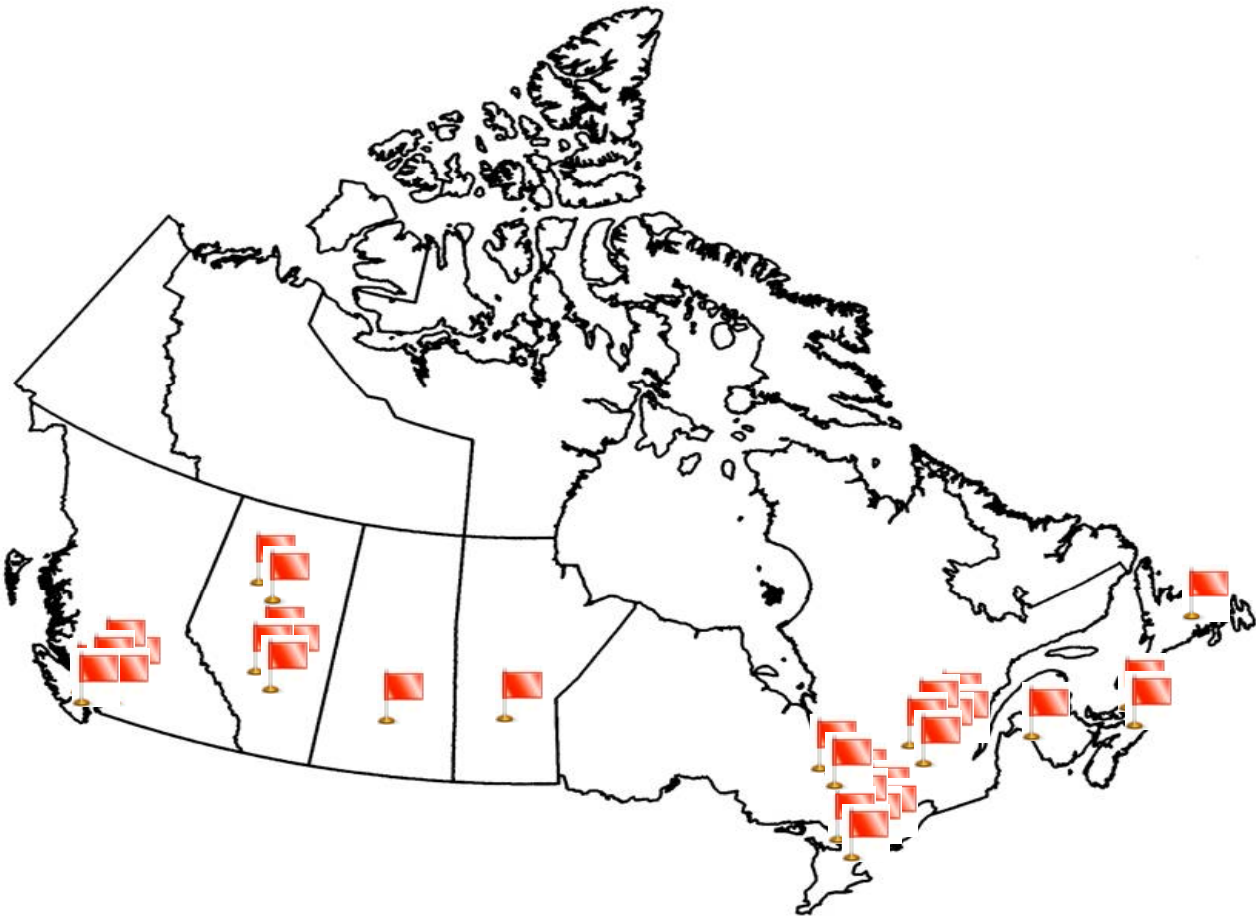B) Commercialization (5-year)

- 5-7 new technologies

C) Highly Qualified Personnel (5-year)

- 30-40 new talents launched in public and private research

D) Improving accessibility, efficiency, and cost-effective arrhythmia care

E) Networking and Partnership

- Partner funds ($39.6 M) match with NCE ($26.3 M)

# Networking & Partnerships

Networking & Partnerships

Over 100 Investigators

19 Academic/Research Institutions

4 non-profit partners

Over 15 Industry Partners

**7** Provincial Government partners

Atrial Fibrillation

The Problem

- AF is most common sustained rhythm disorder
- The prevalence of AF is increasing each year due to the aging population

CircRes.2014;114:1453-1468

Naccarelli, Am. J Cardiol 2009;104:1534-1539
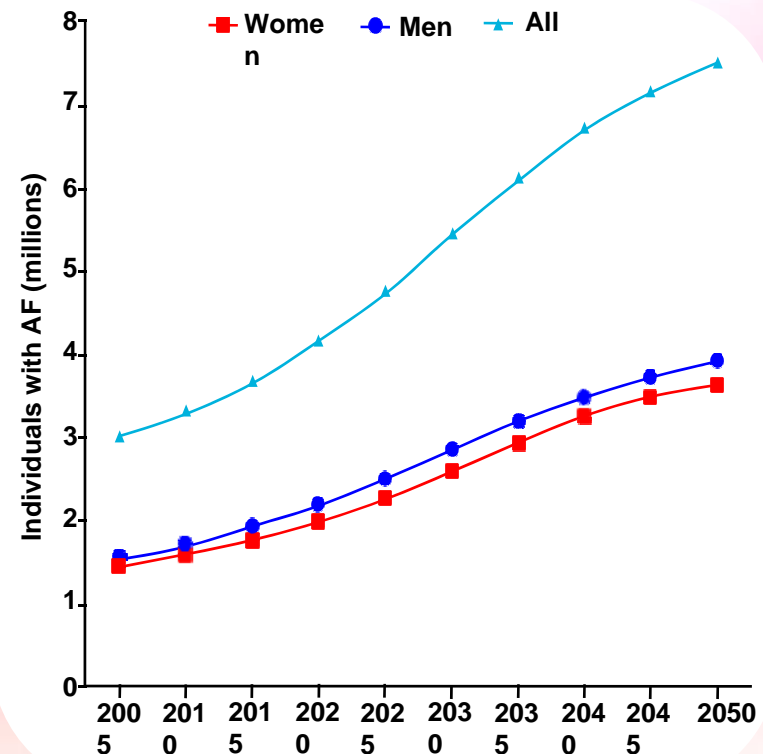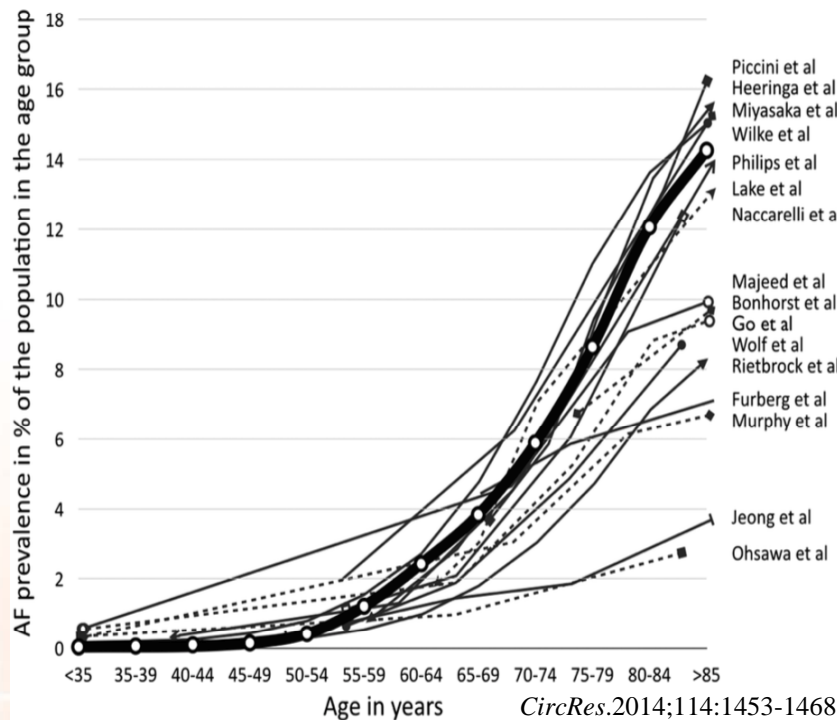
The Problem

- AF is most common sustained rhythm disorder
- The prevalence of AF is increasing each year due to the aging population
- It is estimated that 1 in 4 adults (40 years and older) in the developed countries, like Canada, have or will have AF in their lifetime
- Direct costs of care are $5,000 annually per patient, driven primarily by repeated emergency room visits and hospitalization

ED visits for AF to Ontario EDs

Ann Emerg Med. 2013;62:570-577
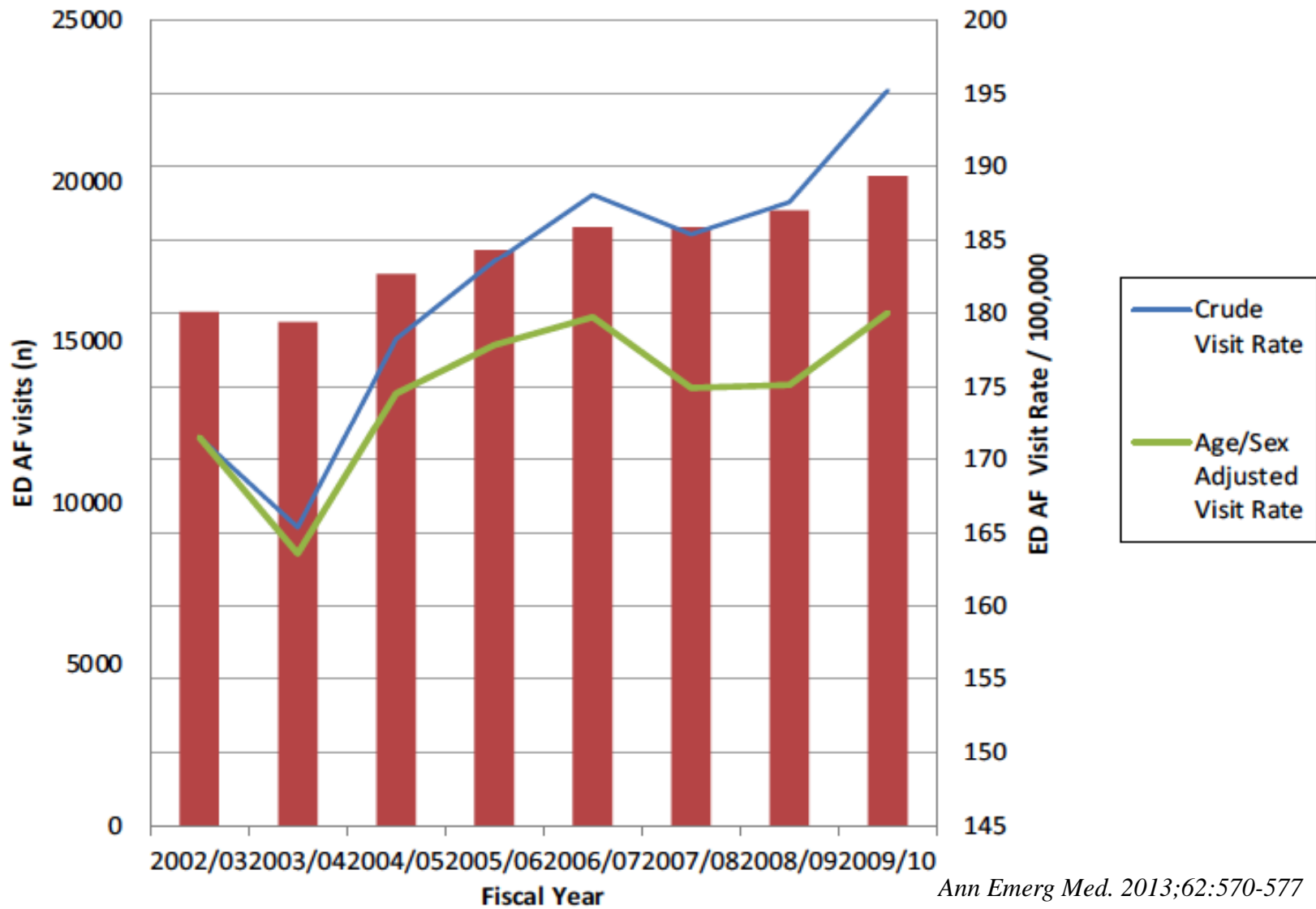
ED Use in Patients with AF

- 12,772 index ED visits, the mean (SD) age was 77 (7.4) years
- ~ 40% hospitalizations
- 14-day mortality was 0.7% (95% ci 0.5%-0.8%).
- For those discharged from ED, within 14 days,
  - 67.8% had no follow-up care,
  - 19.4% saw solely a family physician, and
  - 12.8% saw a specialist (internist or cardiologist).
- 90 days mortality was higher in patients without follow-up care (hazard ratio [HR] 2.27; 95% CI 1.50 to 3.43).
- There were 1,310 (10.3%) repeat ED visits made by 1,146 (9.0%) patients.

AF Track

Mandate:

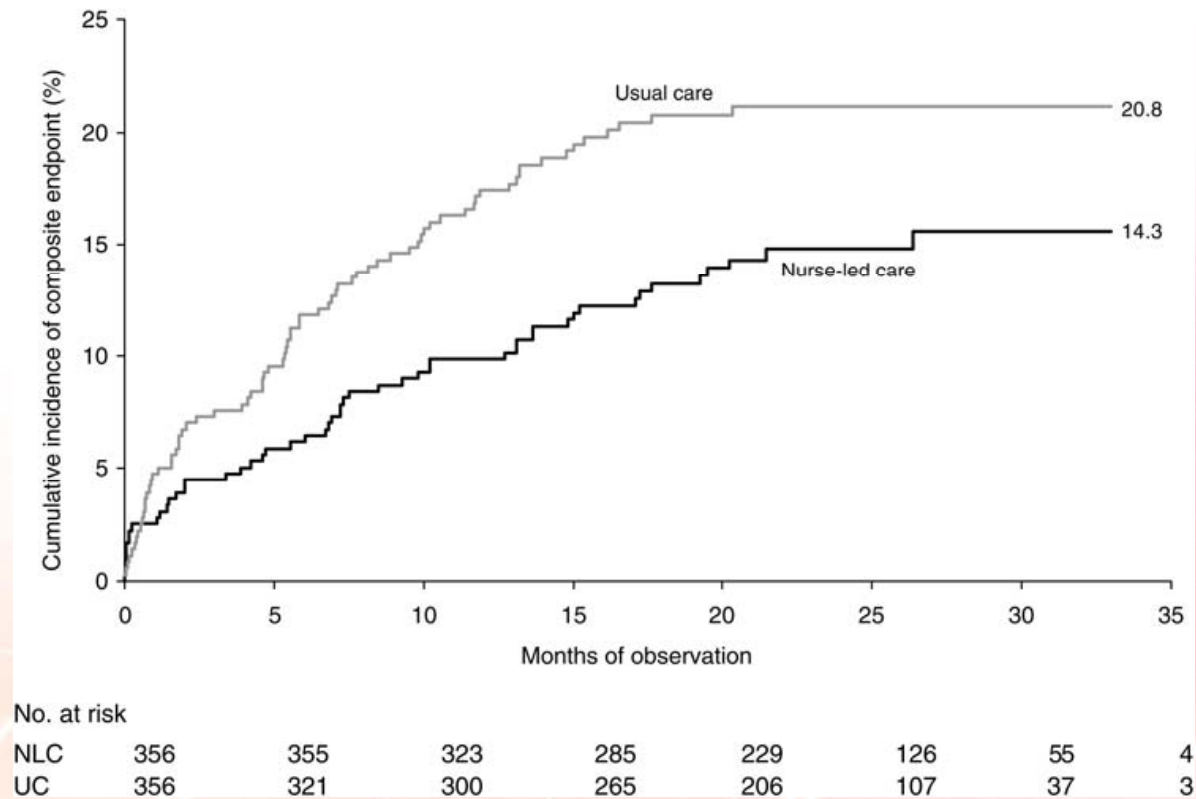**To reduce AF-related ED vists and hospitalizations by 20% over 10 yrs**

Challenges

- Due to the intermittent nature and non-specific symptoms, diagnosis is often delayed. In addition, there is insufficient public awareness of AF and its consequence.

AF Clinic

- Multi-disciplinary clinics

Hindricks JML EHJ 2012;33:2692

Challenges

- Due to the intermittent nature and non-specific symptoms, diagnosis is often delayed. In addition, there is insufficient public awareness of AF and its consequence.

- AF clinics are inconsistent across the country are not available to the wider population beyond the tertiary institutions especially for the remote and special populations.

- Prevention and early treatment of AF are appealing but not developed.

Vision of the AF Track

The long-term vision of the AF track is a Canadian care system that utilizes technologies to embrace a virtual personalized patient-driven care program that will provide high quality, efficient AF care across geographic barriers.

Virtual Patient-driven Personalized Arrhythmia Care (VPPAC)

Privacy
Consent
Included

Step 1 Patient specific Contextual Data
       Hx Meds CHADS-VASc Abl
       Prior episodes of AF
       Other data – from other sources
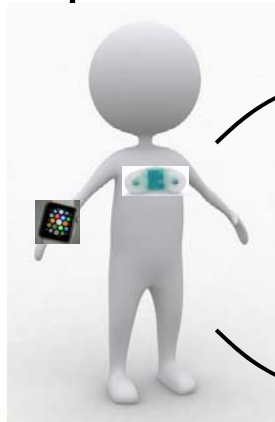   *Risk Assessment*

**Can we Change
Behavior
With Data &
Reassurance?**

Privacy
Consent
Included

Step 1 Patient specific Contextual Data
        Hx Meds CHADS-VASc Abl
        Prior episodes of AF
        Other data – from other sources
        Risk Assessment

**Can we Change
Behavior
With Data &
Reassurance?**

Step 2 Biosensors:
HR, Rhythm, BP

Privacy
Consent
Included

Step 1 Patient specific Contextual Data
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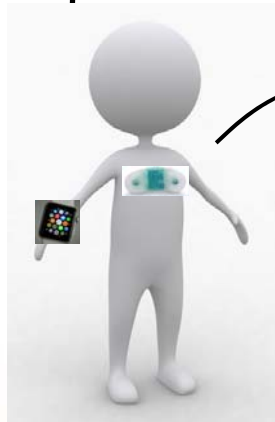
Step 3 Symptom Assessment:

Ok / not ok

Privacy
Consent
Included

Step 1 Patient specific Contextual Data
 Hx Meds CHADS-VASc Abl
 Prior episodes of AF
 Other data – from other sources
 Risk Assessment

**Can we Change
Behavior
With Data &
Reassurance?**

Step 2 Biosensors:
HR, Rhythm, BP

Step 4 NP Analytics

Step 3 Symptom Assessment:

Ok / not ok

Privacy Consent Included

Step 1 Patient specific Contextual Data
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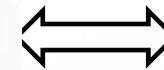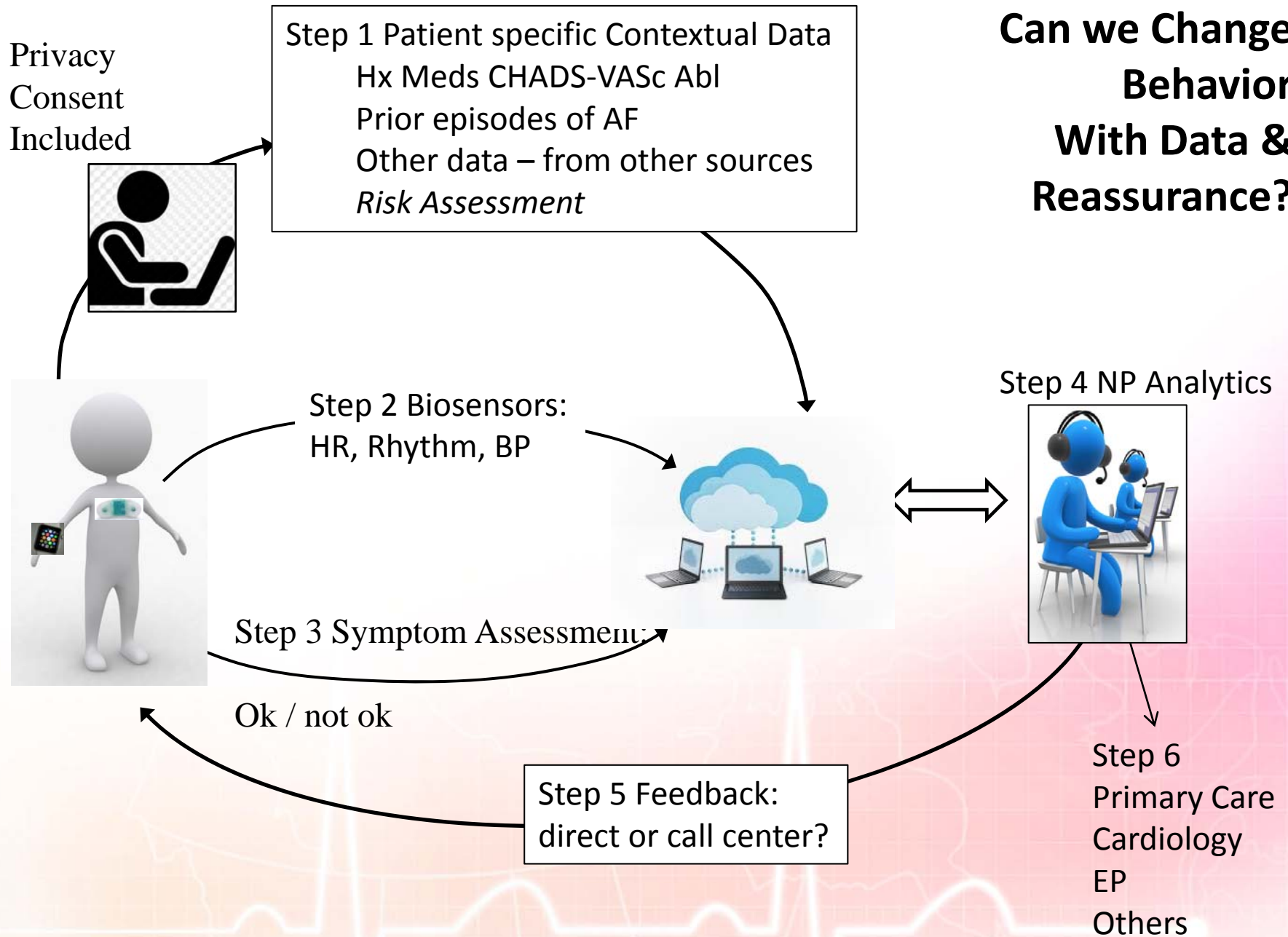**Can we Change Behavior With Data & Reassurance?**

Step 4 NP Analytics

Step 2 Biosensors: HR, Rhythm, BP

Step 3 Symptom Assessment

Ok / not ok

Step 5 Feedback: direct or call center?

NP / Allied Professional interacts with patient to provide direct therapeutic strategies

Privacy Consent Included

Step 1 Patient specific Contextual Data
   Hx Meds CHADS-VASc Abl
   Prior episodes of AF
   Other data – from other sources
   Risk Assessment

Can we Change Behavior With Data & Reassurance?

Step 2 Biosensors: HR, Rhythm, BP

Step 3 Symptom Assessment

Ok / not ok

Step 4 NP Analytics

Step 5 Feedback: direct or call center?
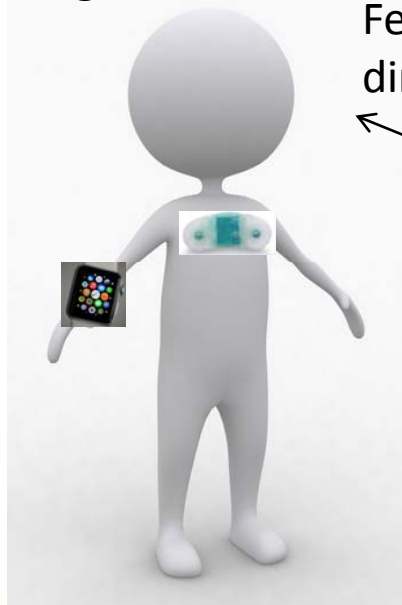
Step 6 Primary Care Cardiology EP Others

NP / Allied Professional interacts with patient to provide direct therapeutic strategies

26

Virtual AF Care v1

REASSURANCE?
Change Behavior?

Feedback:
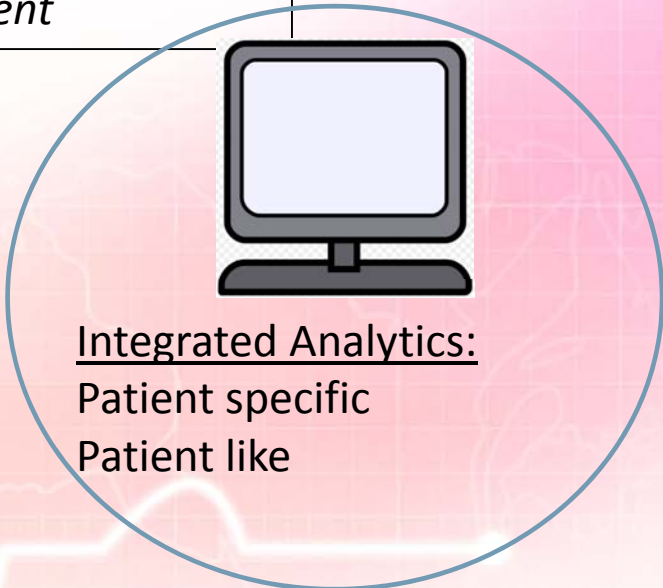direct or call center?

NP Analytics

Patient specific Contextual Data
    Hx Meds CHADS-VASc Abl
    Prior episodes of AF
    Other data
    Risk Assessment

Biosensors:
HR, Rhythm, BP

Symptom Assessment:
Ok / not ok

Primary Care
Cardiology
EP
Others

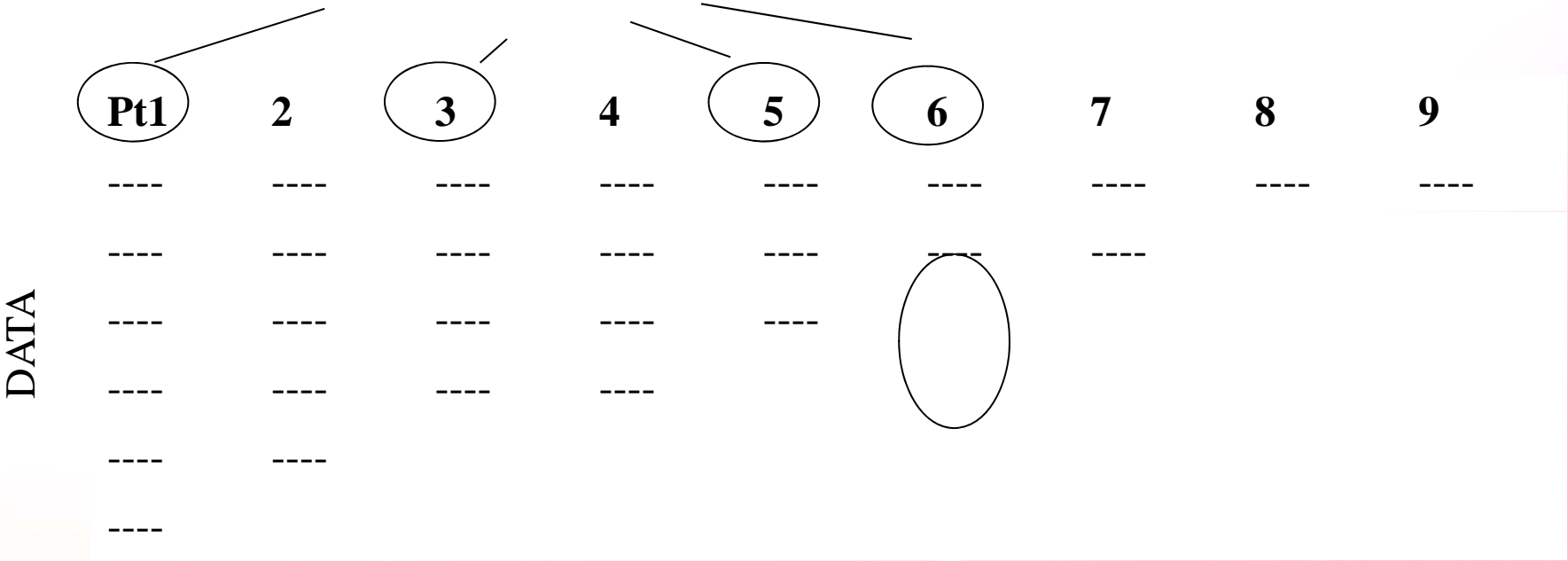Integrated Analytics:
Patient specific
Patient like

NP / Allied Professional interacts with patient to provide direct therapeutic strategies

Machine learning to give best advice?

	Pt1	2	3	4	5	6	7	8	9
	----	----	----	----	----	----	----	----	----
	----	----	----	----	----	----	----		
DATA	----	----	----	----	----				
	----	----	----	----					
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Machine learning to give best advice

Similar patients

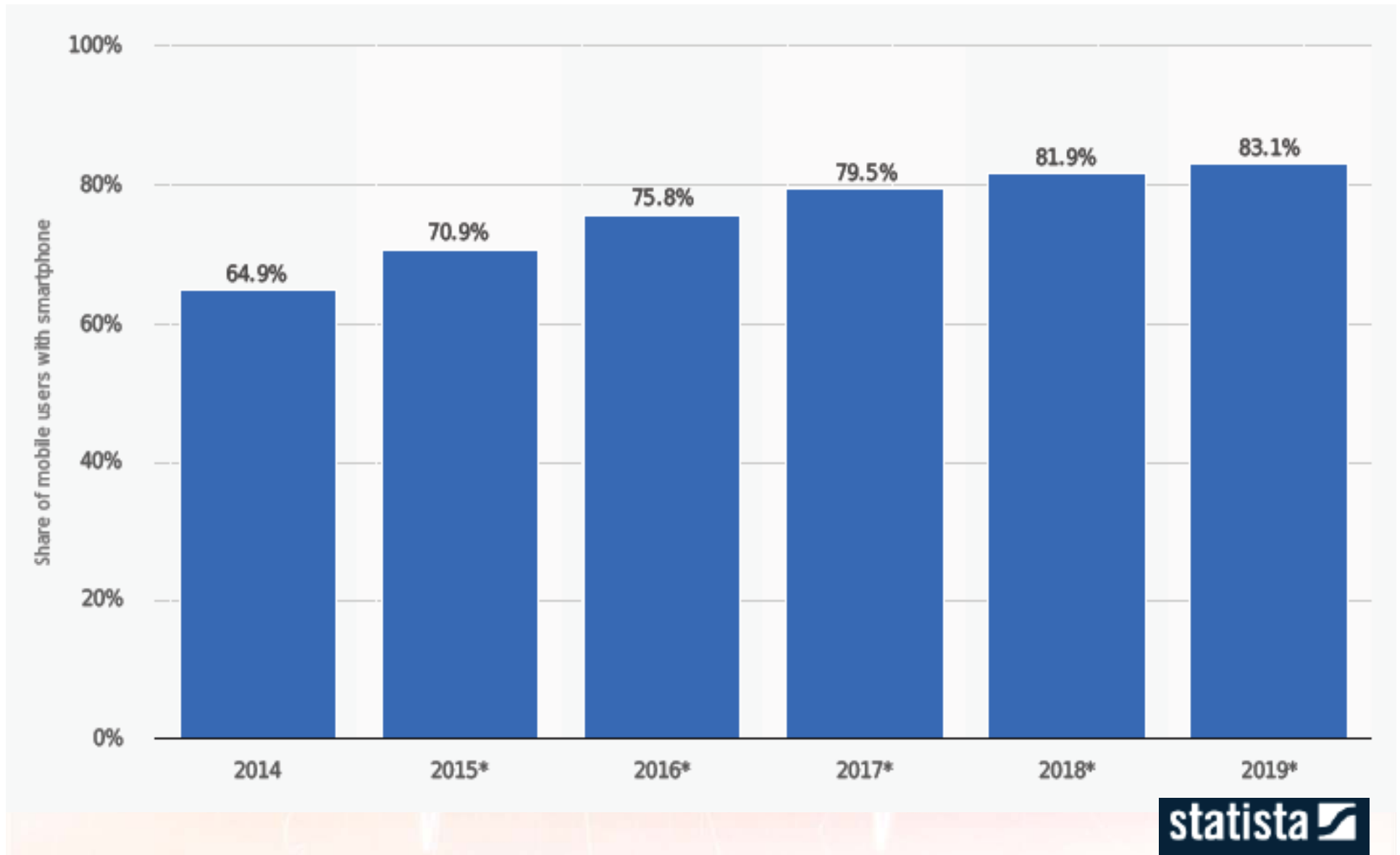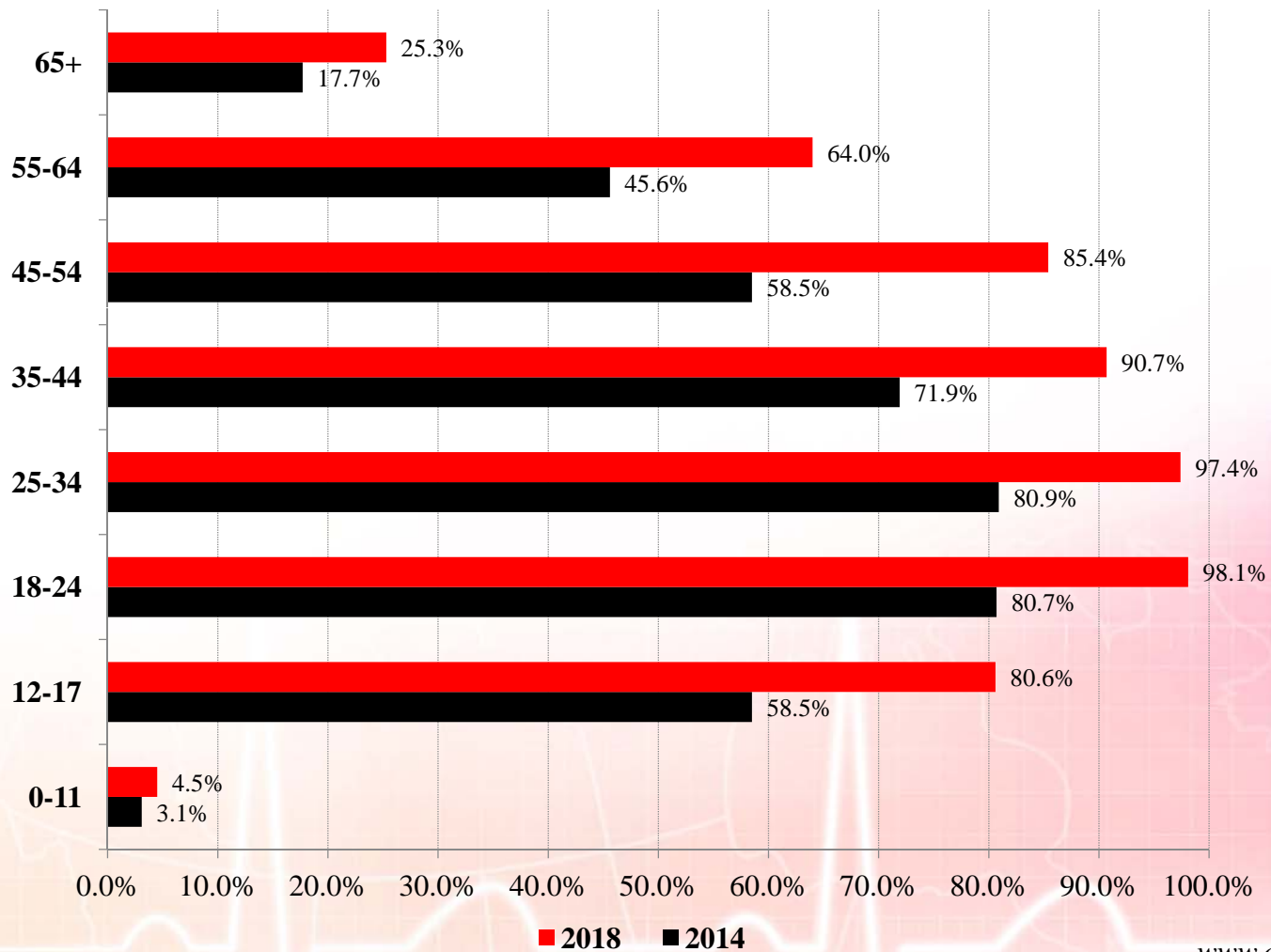| Pt1	2	3	4	5	6	7	8	9
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DATA

Technology Acceptance and Penetration

Smartphone Use in Canada

Smartphone User Penetration in Canada

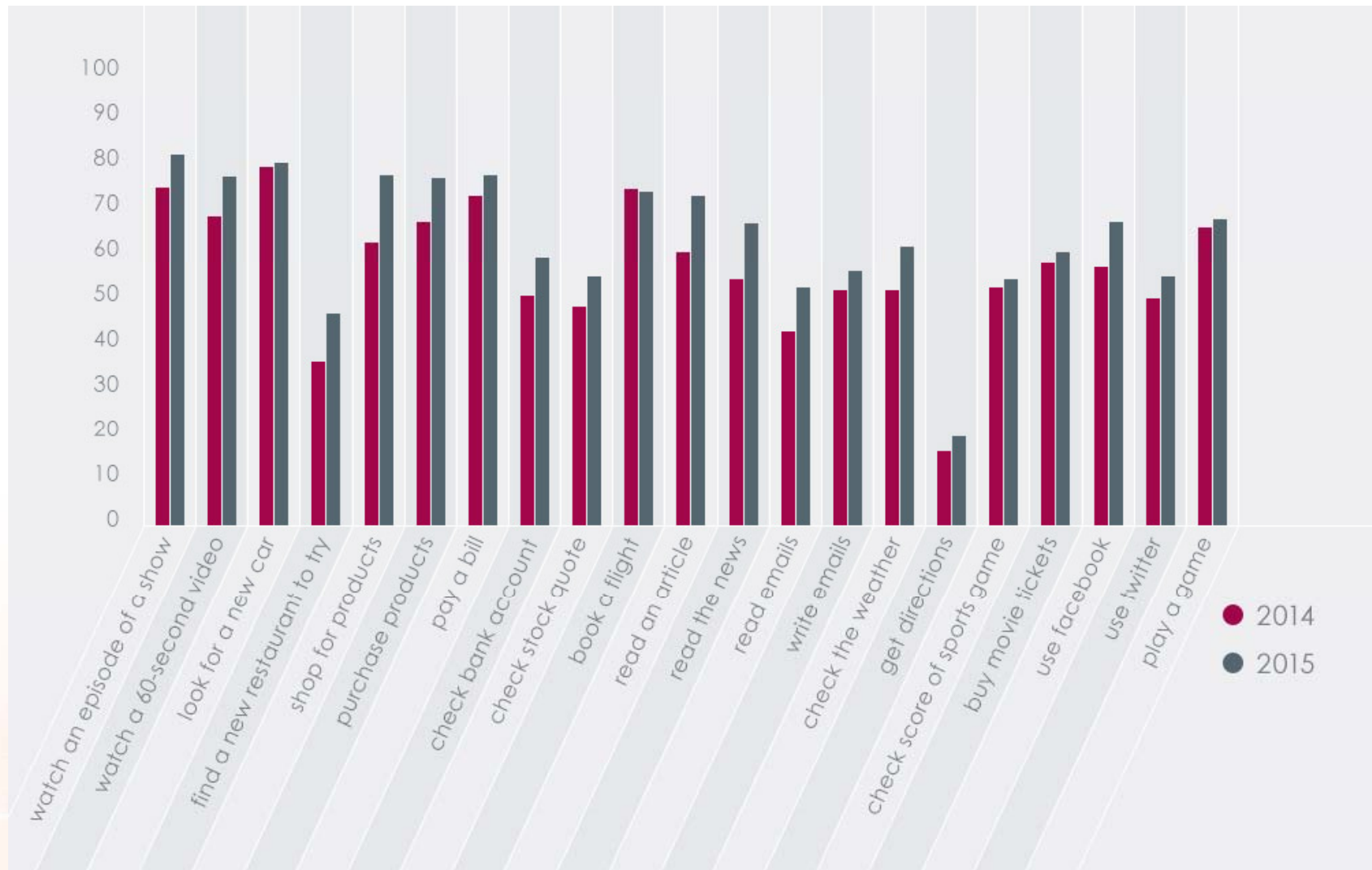| Age Group	2018	2014
65+	25.3%	17.7%
55-64	64.0%	45.6%
45-54	85.4%	58.5%
35-44	90.7%	71.9%
25-34	97.4%	80.9%
18-24	98.1%	80.7%
12-17	80.6%	58.5%
0-11	4.5%	3.1%

■ 2018 ■ 2014

www.emarketer.com

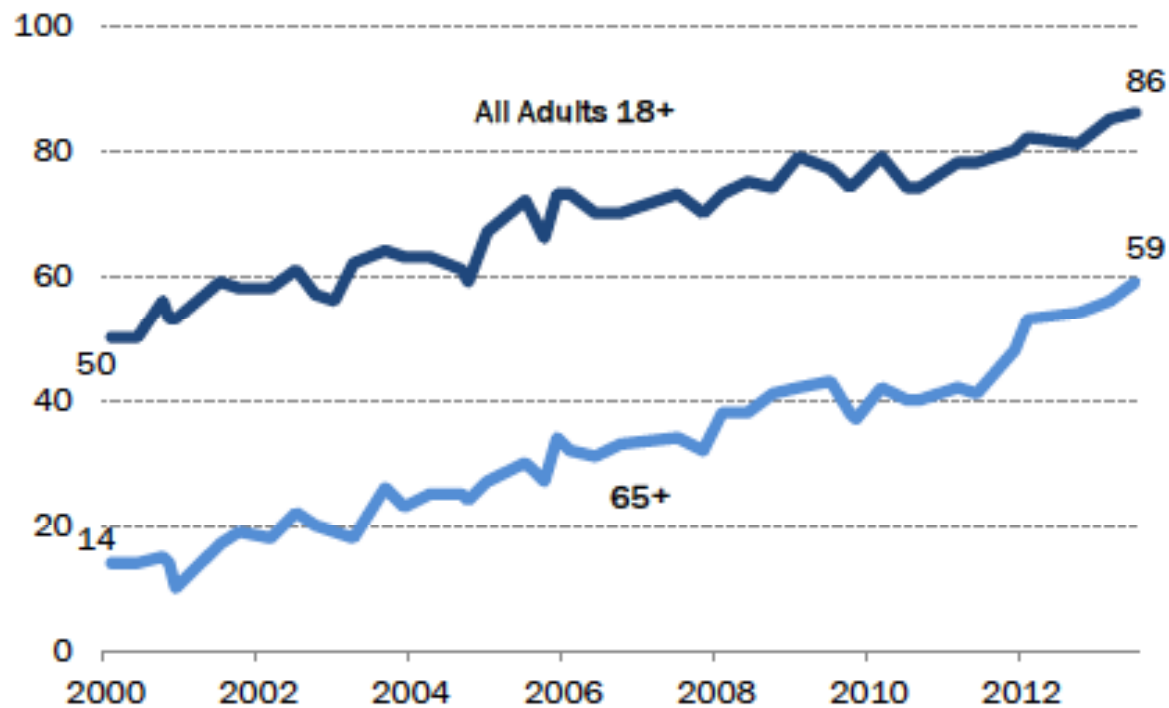Who are using smartphone?
Who are not using smartphone?

What do Canadians use their Smartphone for?

Catalyst.ca

Internet Adoption

Internet adoption over time, seniors vs. all adults

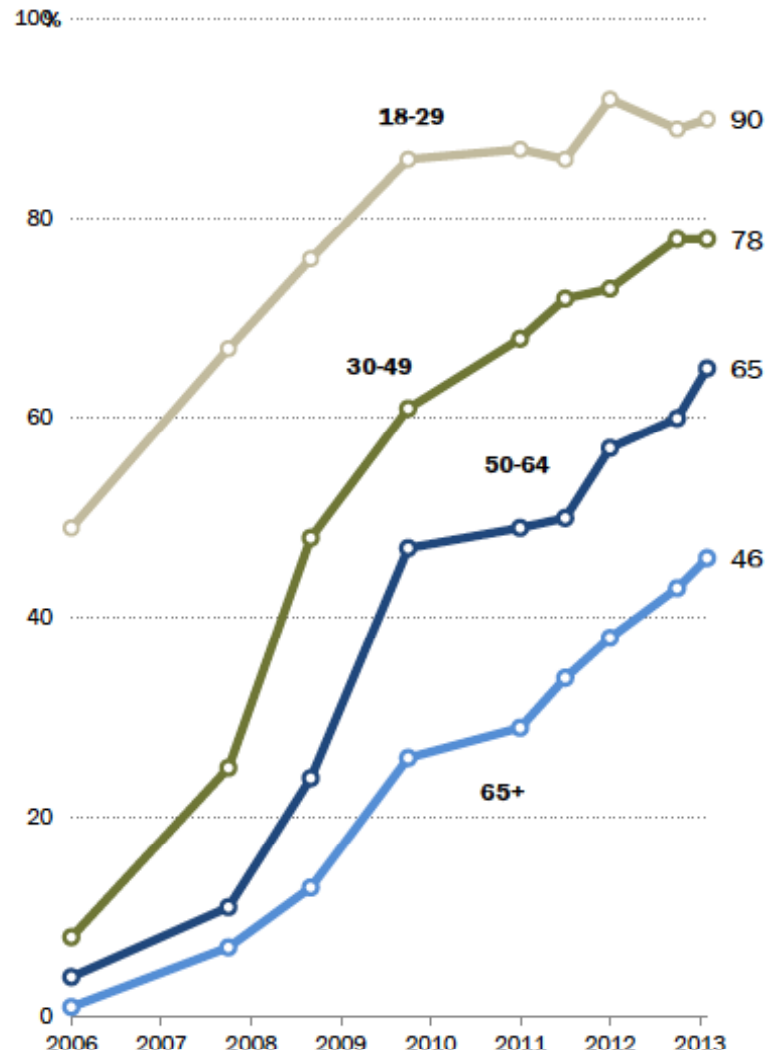*% of seniors/all adults who go online, 2000-2013*

Pew Research Center's Internet Project tracking surveys.

PEW RESEARCH CENTER

Social networking site use over time, by age group

% of internet users in each age group who use social networking sites

18-29 — 90
30-49 — 78
50-64 — 65
65+ — 46

Pew Research Center's Internet Project surveys.

PEW RESEARCH CENTER

Senior Care Mobility Trends

59%
of seniors are
going online
(up 6% from 2013)

47%
have a broadband
connection
in their home

77%
of older citizen
have a cellphone

Percentage of Seniors are Using the internet to:

Easily communication
with family and
friends

Shop for products
and services

Get information
About Healthcare

Keep up
with the news

75%

58%

53%

40%

"Older adults and technology use" April 2014

AF Directed Therapy

- Prevention of AF – secondary prevention
  - Reduction of risk factors - hypertensive, diabetes, obesity, sleep apnea, inactivity, alcohol consumption and smoking
- Early detection and treatment to abolish AF with catheter ablation
- Later in AF progression
  - Determination of factors (clinical, imaging, genetic) predictive of catheter ablation success