A Digital Health Decision Support Eco-System for Standardized Atrial Fibrillation Care

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Background

- Atrial Fibrillation (AF) is a common sustained arrhythmia
  - 1-2% of the population in the developed world
  - 250-400K Canadians; 10-20K Nova Scotians
- Knowledge gaps exist in AF management
  - Lack of use of efficacious anti-coagulant drug therapies
  - Uncertainty and variance about when/how to treat rhythm/rate
  - Serious adverse effects → Stroke
- Long-term AF patient care is sub-optimal
  - Lack of patient monitoring
  - Lack of adverse event detection and timely response
  - Lack of oversight by physicians
  - Lack of engagement of patients in the care process (self-management)

Rationale for IMPACT-AF

Among community-based patients with AF, does providing an integrated Clinical Decision Support System (CDSS) to providers and patients improve process of care and clinical outcomes, and, decrease healthcare costs and resource utilizations over 12 months, as compared to usual care?

IMPACT-AF: Innovative Management Program Advancing Community Treatment of Atrial Fibrillation

New Model of Chronic Disease Management Supported by Innovative Digital Health Solutions and Technologies

IMPACT-AF:
Digital Health Inspired Chronic Disease Management

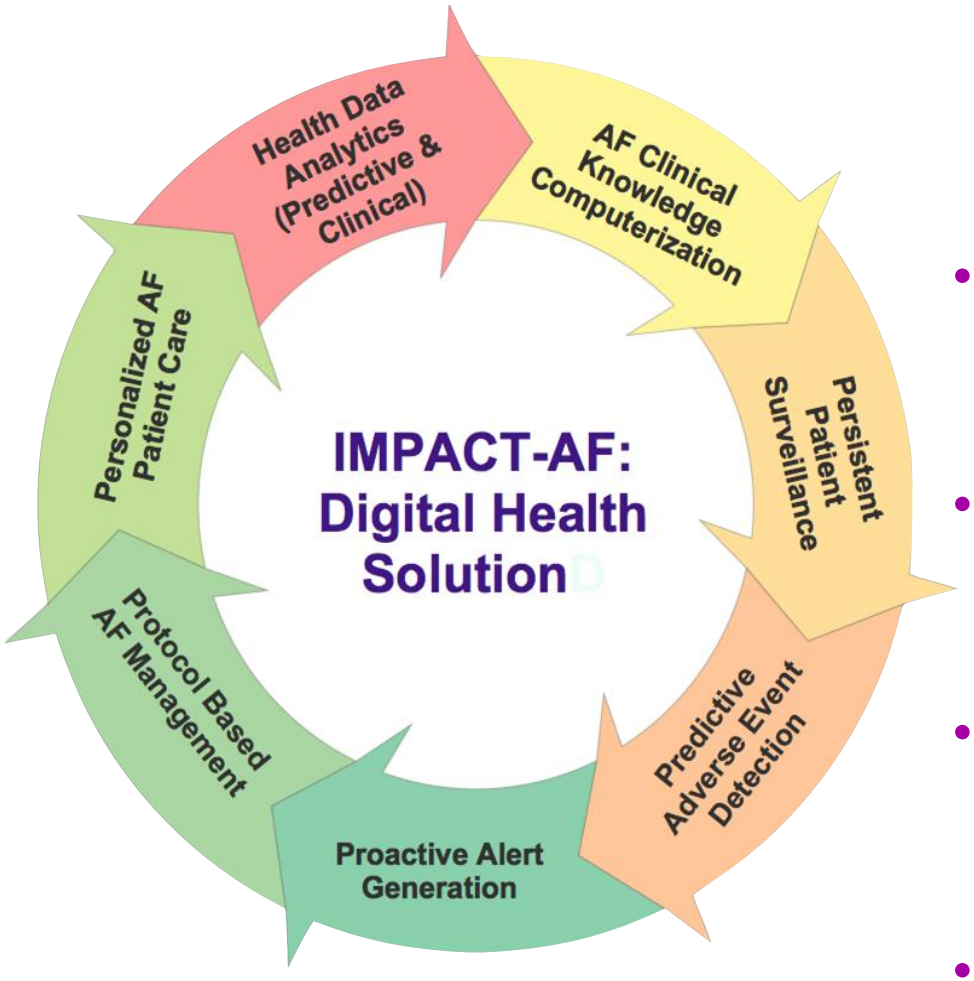
EMPOWER
Primary Care Physicians

- Knowledge translation
- Clinical decision support
- 24x7 AF risk monitoring
- Clinical guideline based AF management

ENGAGE
Patients

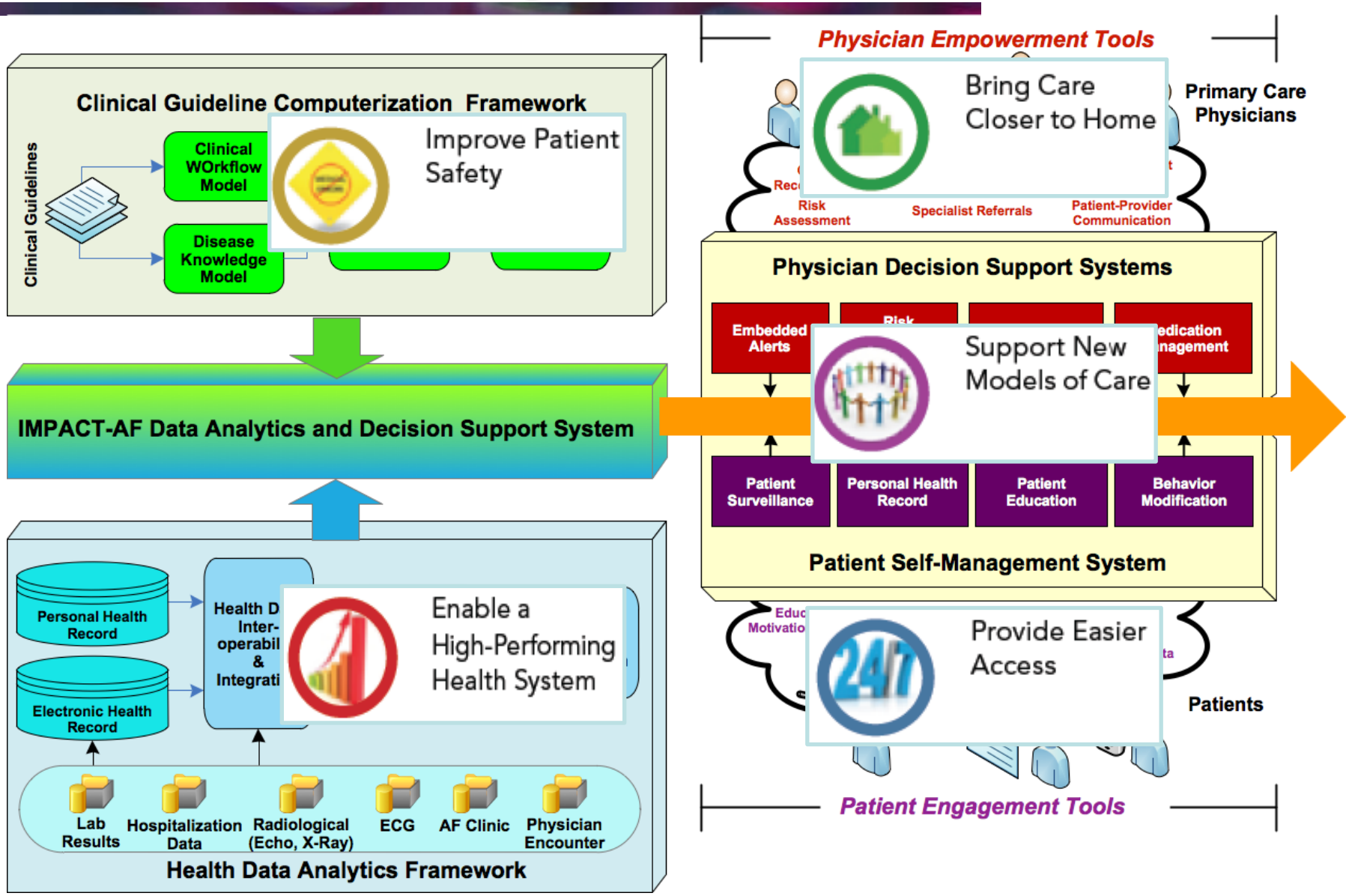
- AF status self-reporting
- Personalized alerts/reminders
- Decision aids for self-management
- Behaviour modification

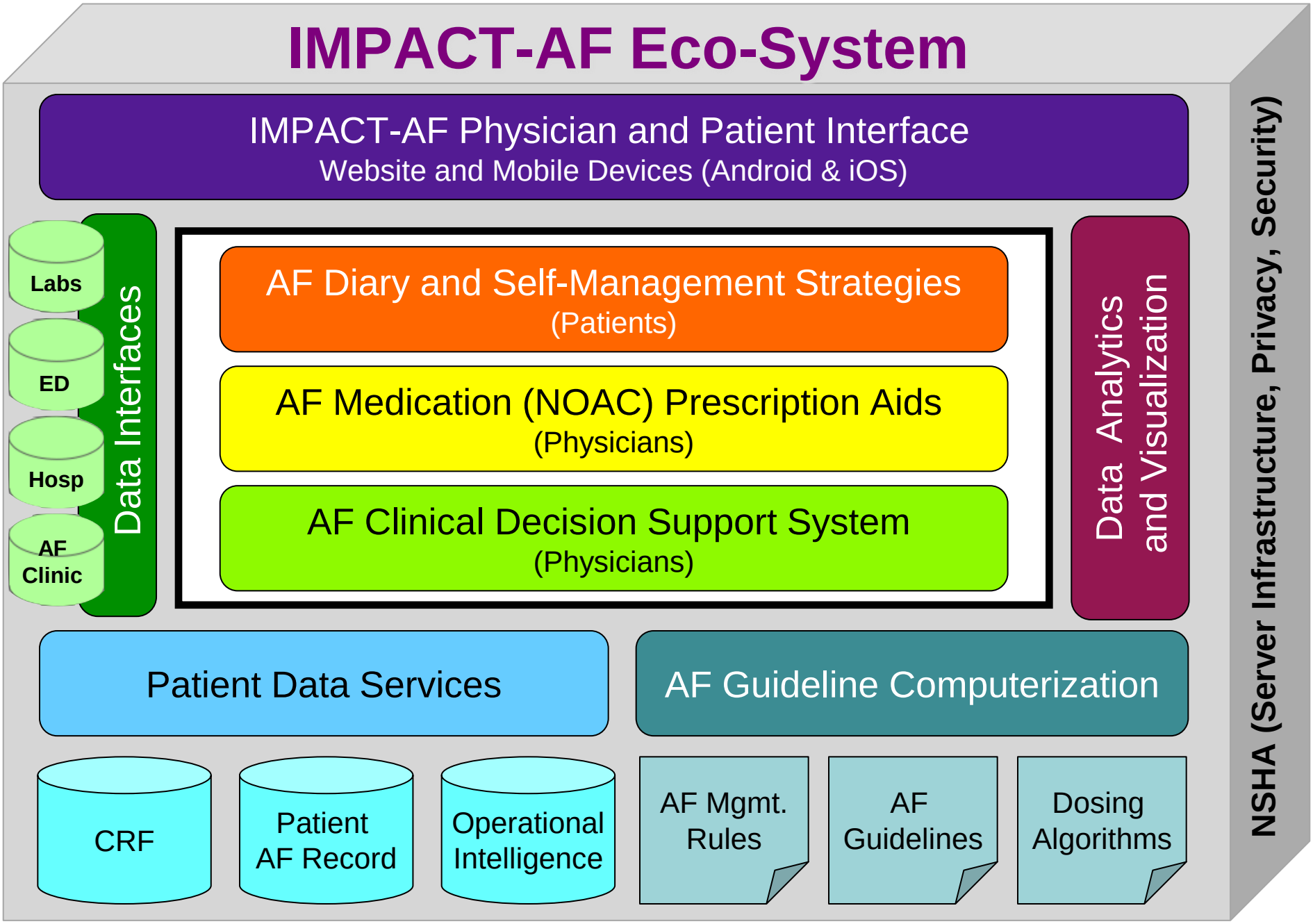
IMPACT-AF Solution Approach



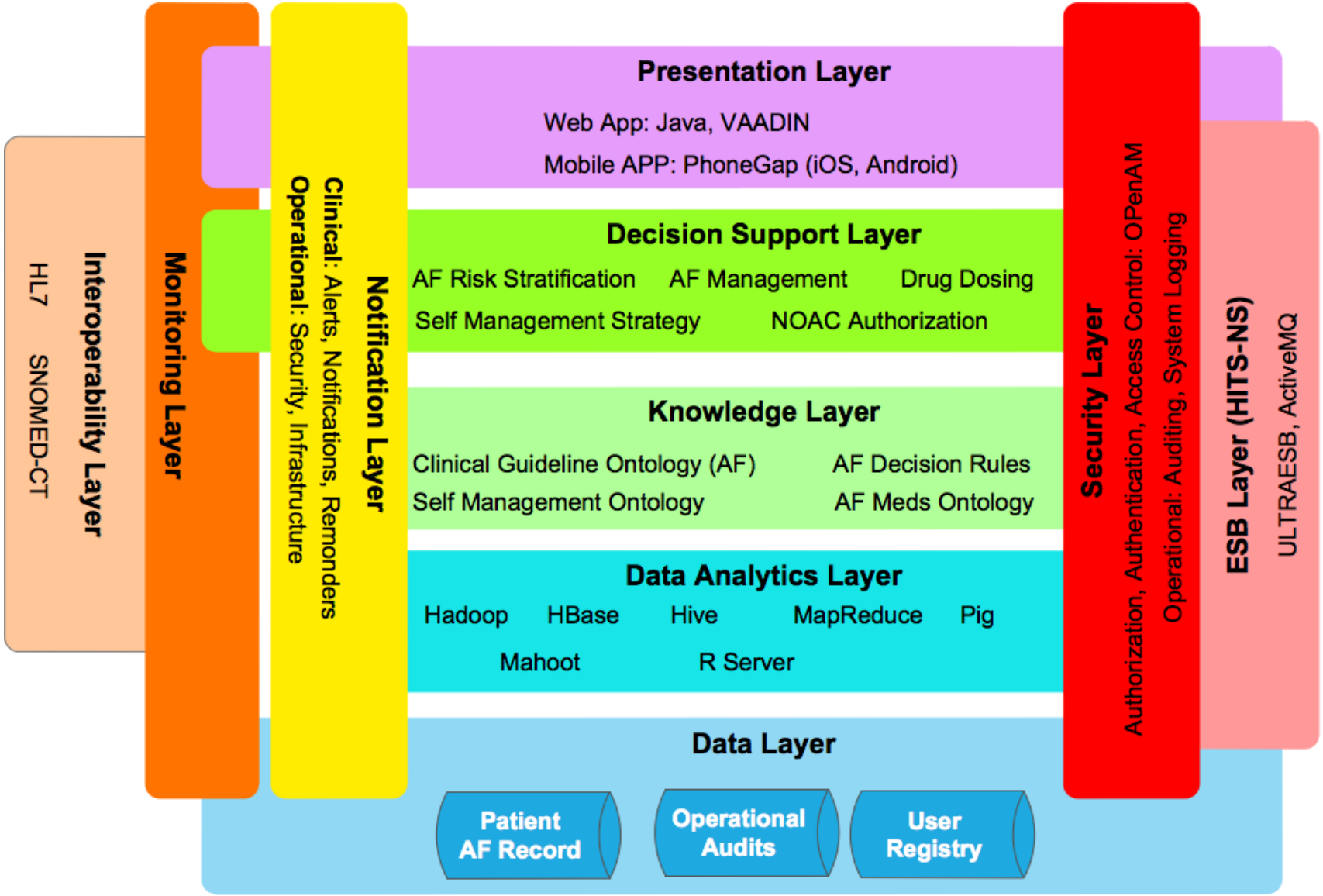
- **Knowledge Translation →** *Computerization of AF Guidelines*
- **Knowledge Execution →** *Clinical Decision Support System*
- **Patient Engagement →** *Mobile Patient Diary*
- **Physician AF Management →** *Physician Dashboard*
- **Personalized Medicine →** *Health Data Analytics*

IMPACT-AF Eco-System



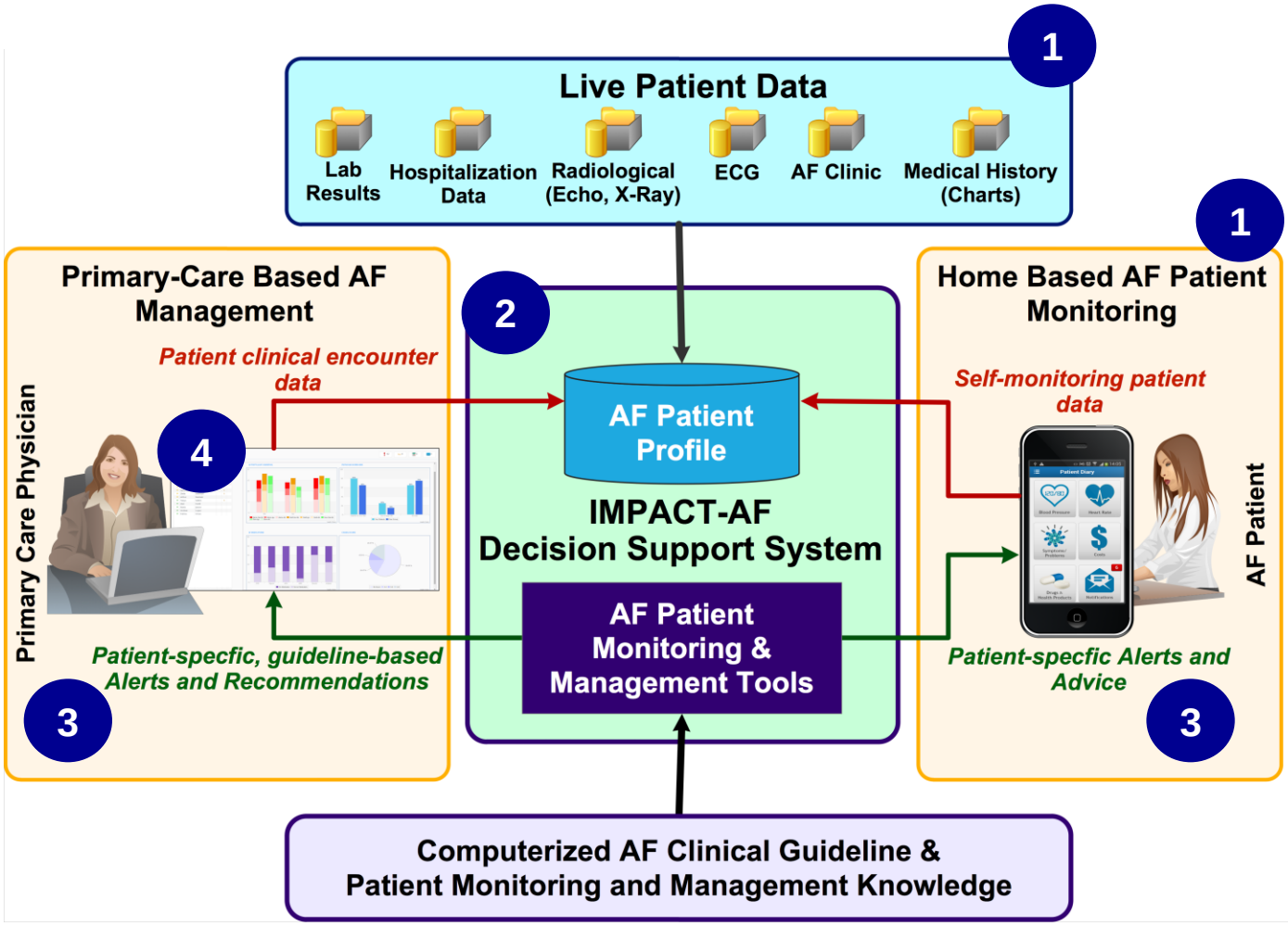

IMPACT-AF Eco-System
IMPACT-AF Physician and Patient Interface
Website and Mobile Devices (Android & iOS)
Labs
ED
Hosp
AF Clinic
Data Interfaces
AF Diary and Self-Management Strategies
(Patients)
AF Medication (NOAC) Prescription Aids
(Physicians)
AF Clinical Decision Support System
(Physicians)
Data Analytics and Visualization
Patient Data Services
AF Guideline Computerization
CRF
Patient AF Record
Operational Intelligence
AF Mgmt. Rules
AF Guidelines
Dosing Algorithms
NSHA (Server Infrastructure, Privacy, Security)

IMPACT-AF Eco-System Architecture



IMPACT-AF in Operation

1. **Monitor**
   Pervasive patient surveillance
2. **Analyze**
   Patient's evolving AF profile
3. **Respond**
   Proactive alerts to physicians and patients
4. **Manage**
   Personalized AF care based on clinical guidelines



Welcome to IMPACT-AF!

A knowledge translation approach to improving care and health outcomes for people with atrial fibrillation.

Contact Us

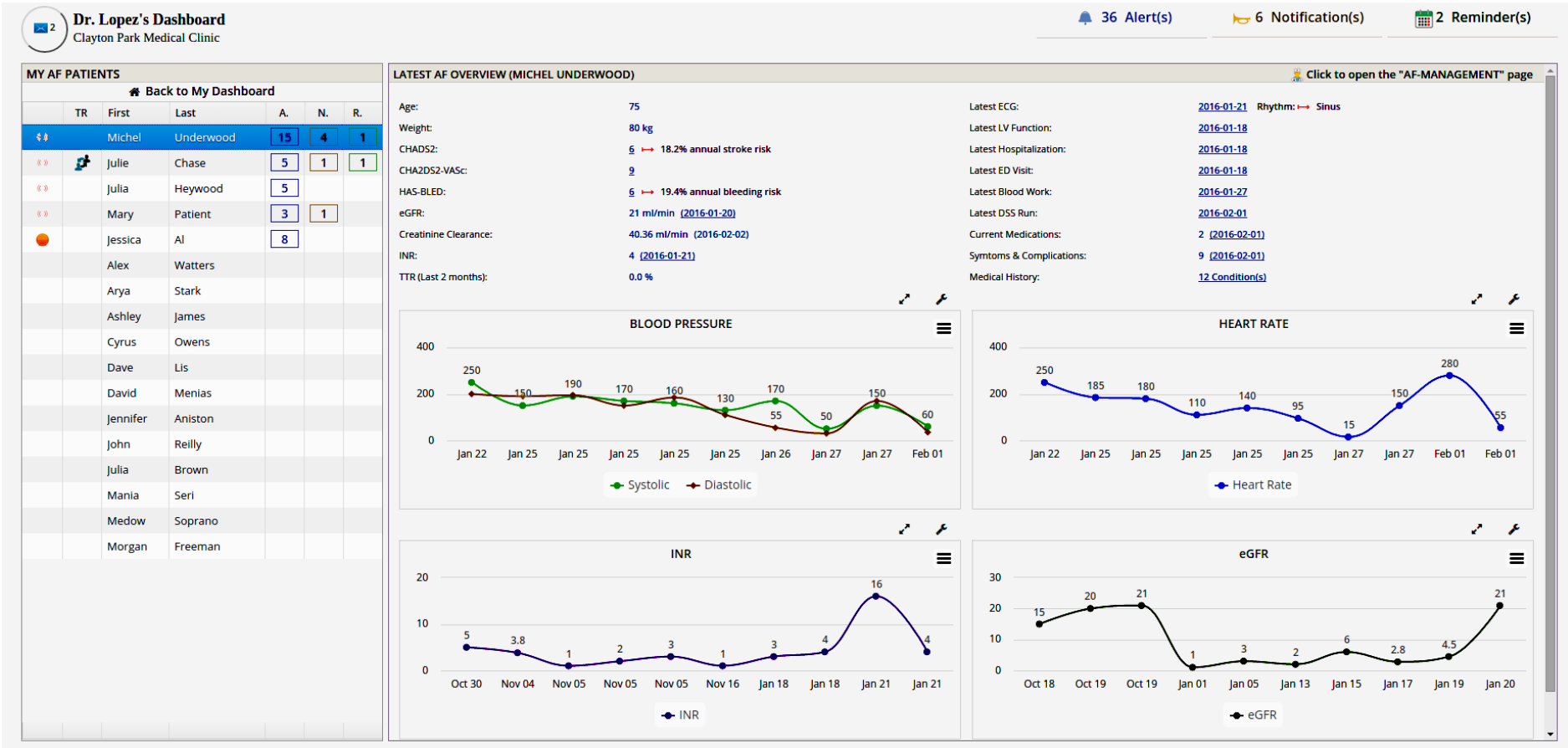
Study ID (Patients) or Email (Providers)

Password

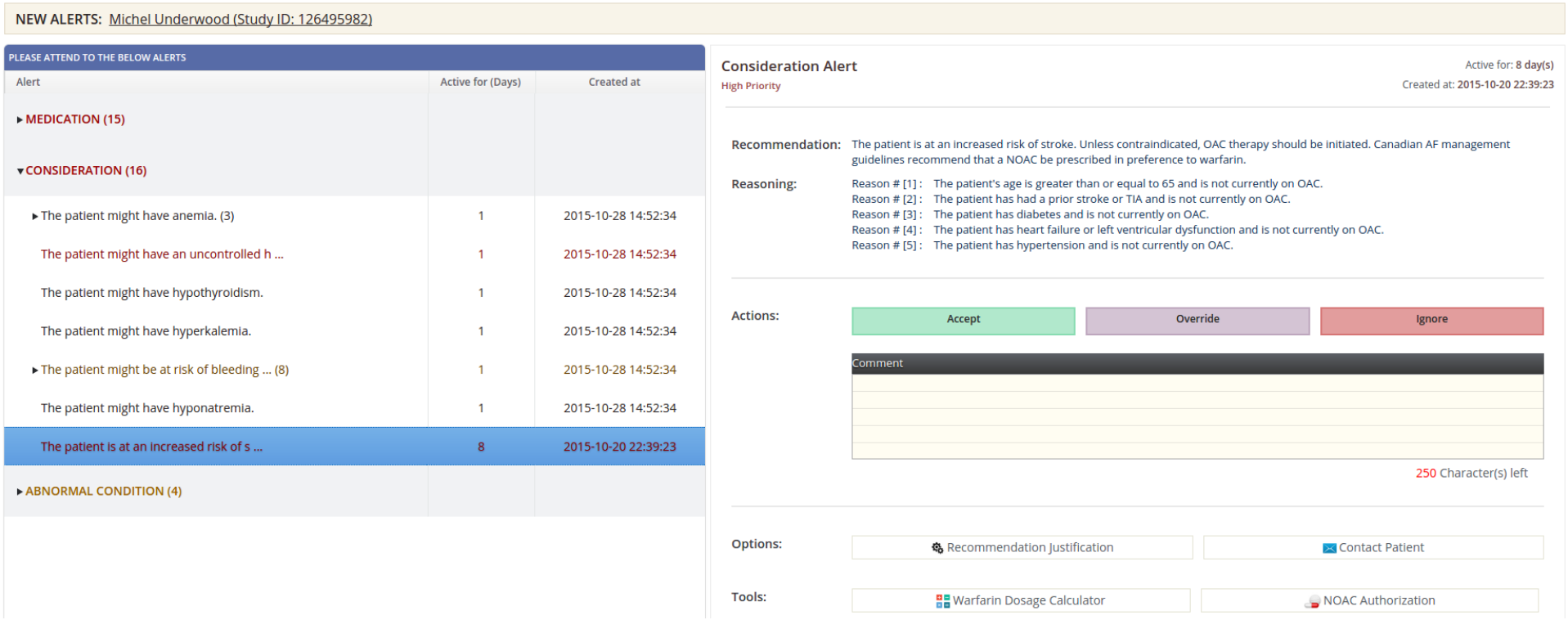
Sign In

Need help!

Physician's Perspective: Patient Management



Physician's Perspective: Decision Support



Physician's Perspective: Medication Management

NOAC AUTHORIZATION FOR MICHEL UND

NOAC AUTHORIZATION FOR MICHEL UNDERW

Step 1: Information | Step 2: Result

- AF Patient (Non-Valvular AF)
- Age: 75
- Gender: FEMALE
- Weight: 87.0 (kg)
- CHADS2: 6
- CHA2DS2-VASc: 9
- HAS-BLED: 6
- Creatinine: 10.0
- Creatinine Clearance: 588.12
- TTR: 100.0
- Prior Stroke: ✓
- TIA: ✓
- Hypertension: ✓
- Diabetes: ✓
- Heart Failure: ✓
- Labile INRs: ✗
- OAC is recommended

hemorrhage
- Hepatobiliary disorders: jaundice, cholestasis, cytolysis hepatitis
- Nervous system disorders: Intra-adcerebral hemorrhage (ICH)*, subdural hematoma, epidural hematoma, hemiparesis
- Skin and subcutaneous tissue disorders: Stevens-adJohnson syndrome

NOVA SCOTIA PROVINCIAL PHARMACARE PROGRAMS

Request for Coverage of Dabigatran (Pradaxa®), Rivaroxaban (Xarelto®), or Apixaban (Eliquis®)

PATIENT INFORMATION

PATIENT SURNAME	PATIENT GIVEN NAME	HEALTH CARD NUMBER	DATE OF BIRTH
Underwood	Michel	123456789	May/1940

PATIENT ADDRESS: 6050 University Ave, Halifax NS, B3H4R2

DOSE REQUESTED

☐ Pradaxa® 110mg bid ☐ Pradaxa® 150mg bid ☐ Xarelto® 15mg once daily ■ Xarelto® 20mg once daily

☐ Eliquis® 2.5mg bid ☐ Eliquis® 5mg bid

DIAGNOSTIC INFORMATION

DIAGNOSIS:

1. ☐ Treatment of DVT without symptomatic pulmonary embolus (Xarelto only). Usual dose: 15mg twice daily for three weeks then 20mg once daily. Coverage duration: 6 months

2. ■ Non-valvular atrial fibrillation (AF) ■ $CHADS_2$ score: 6

Creatinine clearance [CrCl]: 588.12 mL/min Date 2015/10/28

Selected notes regarding dosing in AF (Refer to monograph for complete dosing information):

Pradaxa dosing:
- Usual dose 150mg bid
- CrCl ≤ 30 mL/min: use is contraindicated

Xarelto dosing:
- Usual dose 20mg once daily
- CrCl ≤ 30mL/min: use is contraindicated

Eliquis dosing:
- Usual dose 5mg bid
- CrCl ≤ 25mL/min: use is contraindicated

Agents Tried:

☐ Warfarin

☐ Other_____

Dose, length of therapy & outcome: (i.e., inadequate anticoagulation*, etc.)

** Please provide the percentage of INR testing results that are outside the desired INR range.*

If warfarin has not been tried, please indicate the reason why:

■ Warfarin contraindicated Warfarin Allergy

☐ Other _____

PHYSICIAN NAME & ADDRESS:		
Dr. Alex Lopez	Digitally Signed by: Alex Lopez CPAP=995801 email=alex.lopez@epactaf.com Date:2015-10-28	2015/10/28
995801 CPSNS #	PHYSICIAN SIGNATURE	DATE

If you need assistance, please contact the Pharmacare Office at (902) 496-7001 or 1-800-305-5026

Please Return Form To: Nova Scotia Pharmacare Programs
P.O. Box 500, Halifax, NS B3J 2S1
Fax: (902) 468-9402

12/2013

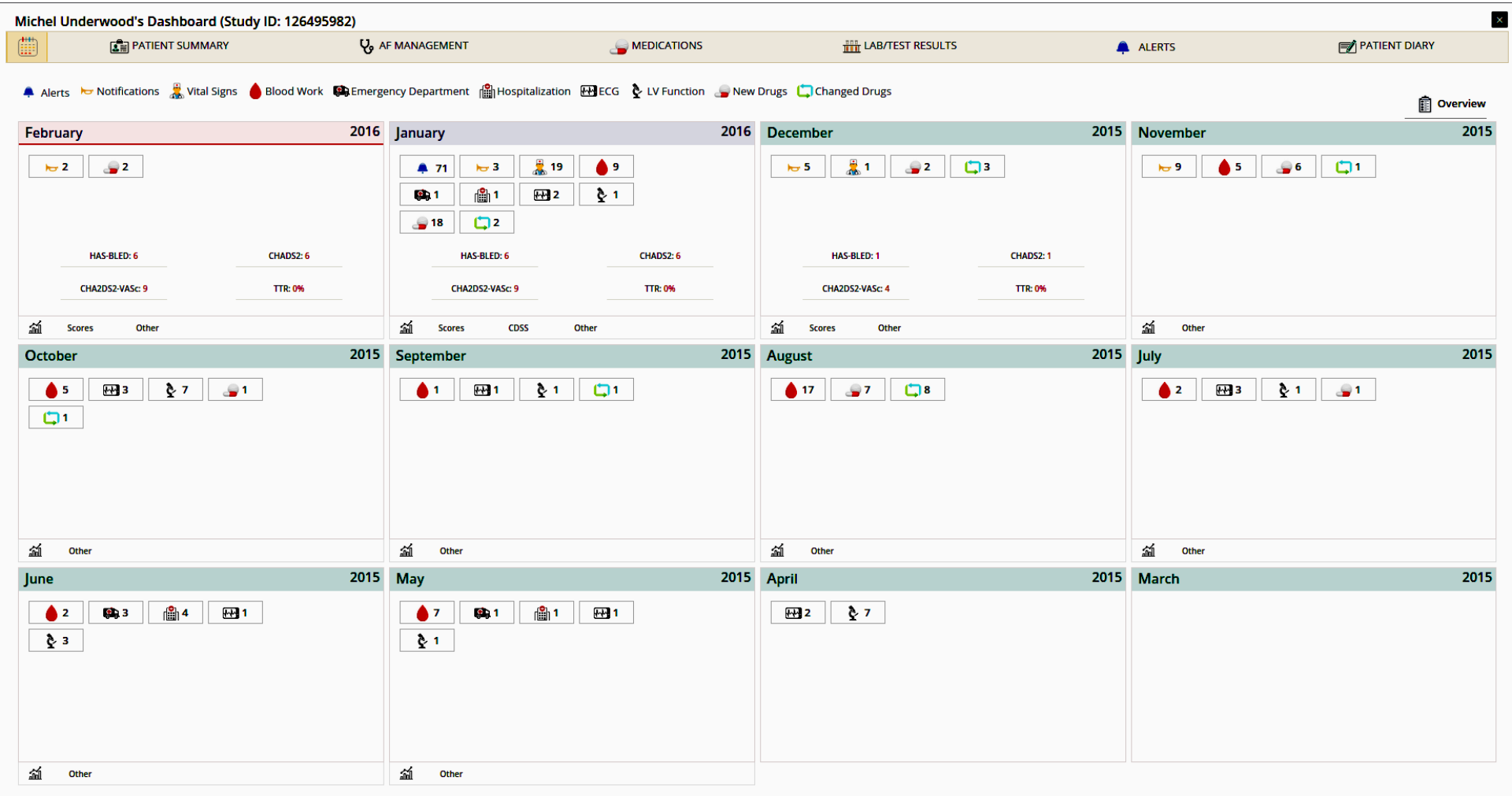
NOVA SCOTIA

Dabigataran (Pradaxa®)

10 mg BID OR strongly consider another NOAC

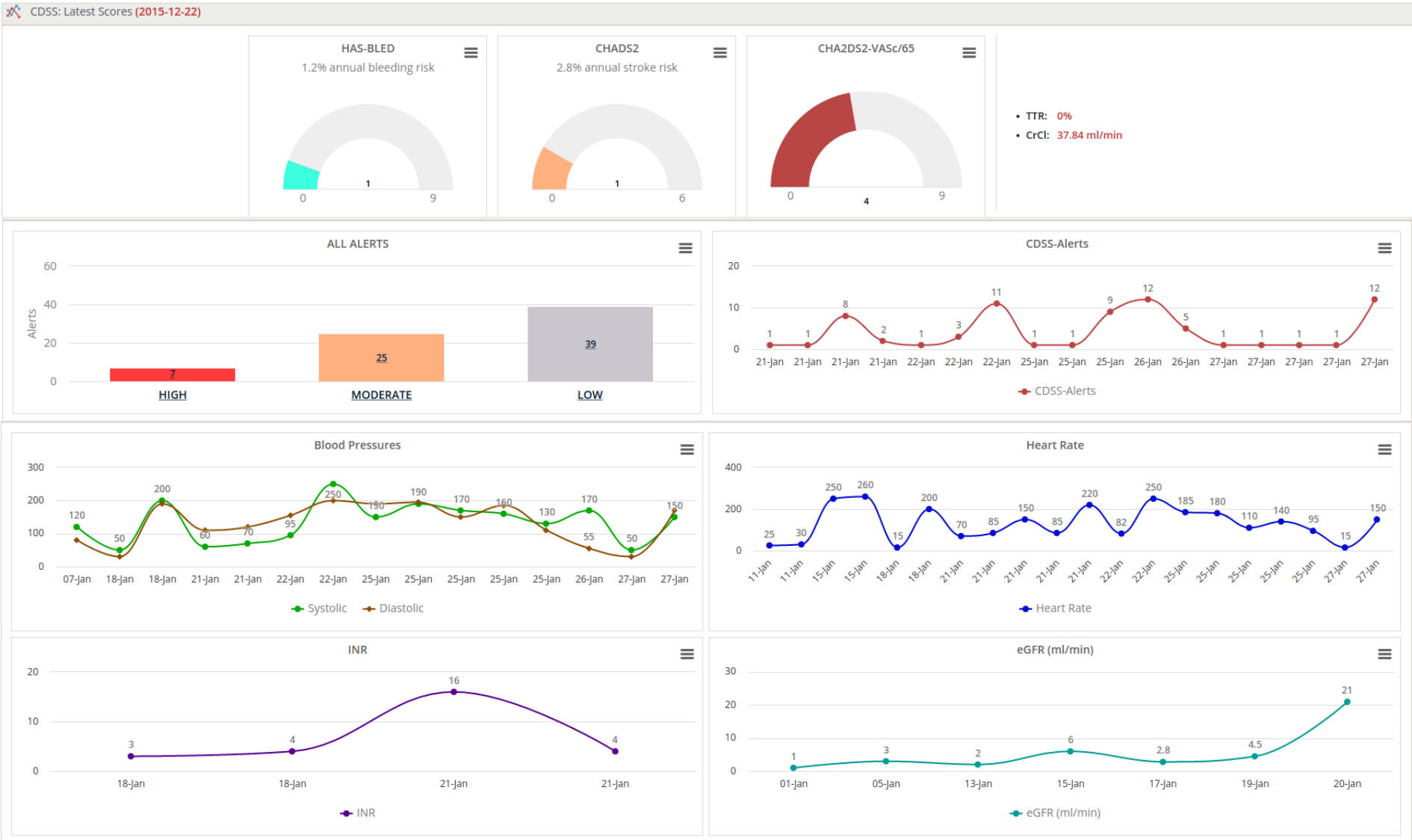
SAVE THE RESULT

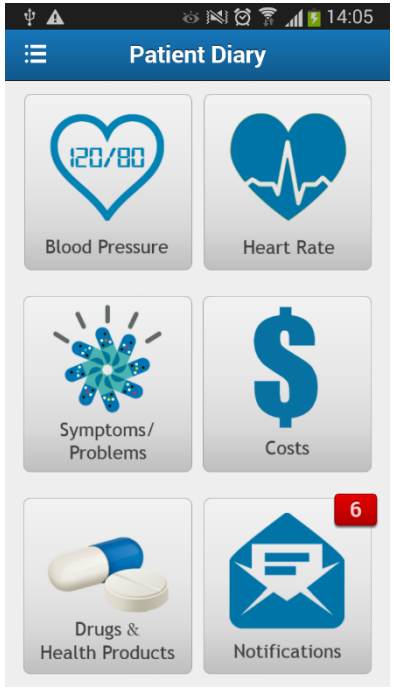
Patient's Perspective: Patient AF Diary

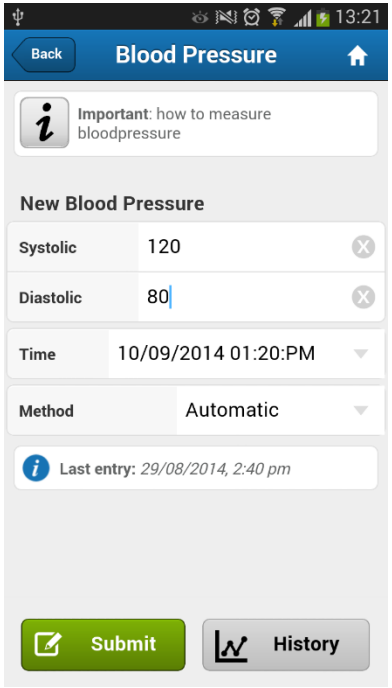


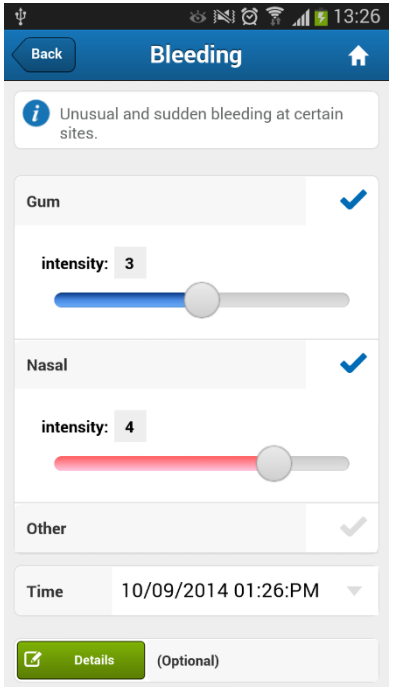
Patient's Perspective: Risk Assessment

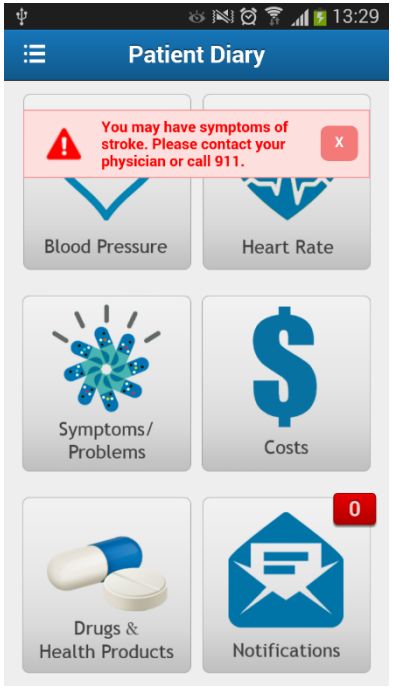
Michel Underwood (December 2015)

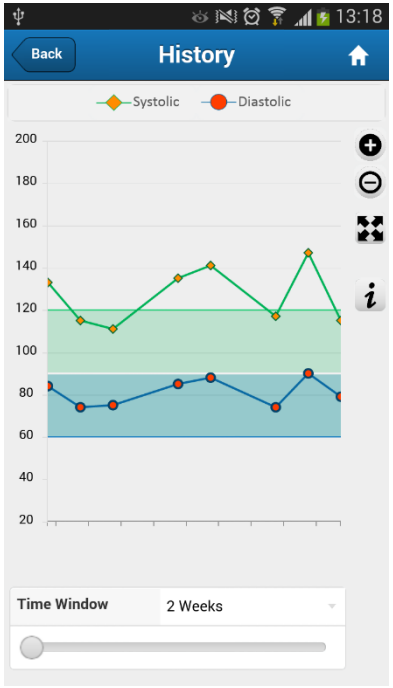


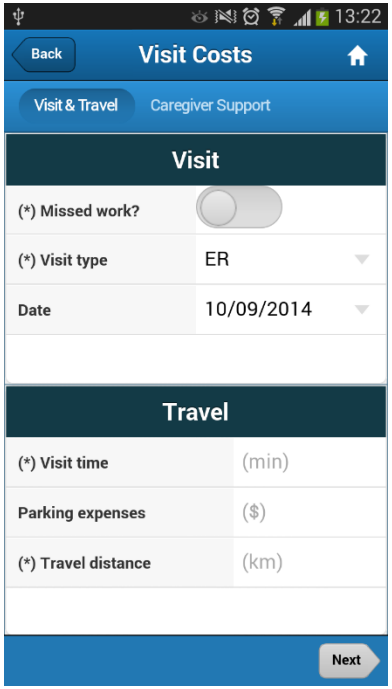

14:05
Patient Diary
120/80
Blood Pressure
Heart Rate
Symptoms/ Problems
Costs
Drugs & Health Products
6
Notifications


13:21
Back
Blood Pressure
Important: how to measure bloodpressure
New Blood Pressure
Systolic
120
Diastolic
80
Time
10/09/2014 01:20:PM
Method
Automatic
Last entry: 29/08/2014, 2:40 pm
Submit
History


13:26
Back
Bleeding
Unusual and sudden bleeding at certain sites.
Gum
intensity: 3
Nasal
intensity: 4
Other
Time
10/09/2014 01:26:PM
Details
(Optional)


13:29
Patient Diary
You may have symptoms of stroke. Please contact your physician or call 911.
X
Blood Pressure
Heart Rate
Symptoms/ Problems
Costs
Drugs & Health Products
0
Notifications


13:18
Back
History
Systolic
Diastolic
200
180
160
140
120
100
80
60
40
20
Time Window
2 Weeks


13:22
Back
Visit Costs
Visit & Travel
Caregiver Support
Visit
(*) Missed work?
(*) Visit type
ER
Date
10/09/2014
Travel
(*) Visit time
(min)
Parking expenses
($)
(*) Travel distance
(km)
Next

IMPACT-AF: Study Objective

Among community-based patients with AF, does providing an integrated Clinical Decision Support System (CDSS) to providers and patients improve process of care and clinical outcomes, and, decrease healthcare costs and resource utilizations over 12 months, as compared to usual care?

- Cluster randomized (provider level; urban / rural)
- 200 Primary Care Providers
  - Internet Access required; minimum 15 patients with AF
  - 50% Intervention, 50% Usual Care
- 2,000 AF patients
  - Confirmed AF, English speaking, ≥ 18 years of age
  - Only patients of participating primary care providers
- 12 month follow-up
- Comparison with specialist AF Clinic

IMPACT-AF: Study Outcomes

1^0 study outcome

CV hospitalization

2^0 study outcomes

a. Process of Care

Access to specialist consultation, echo, catheter ablations

b. Clinical

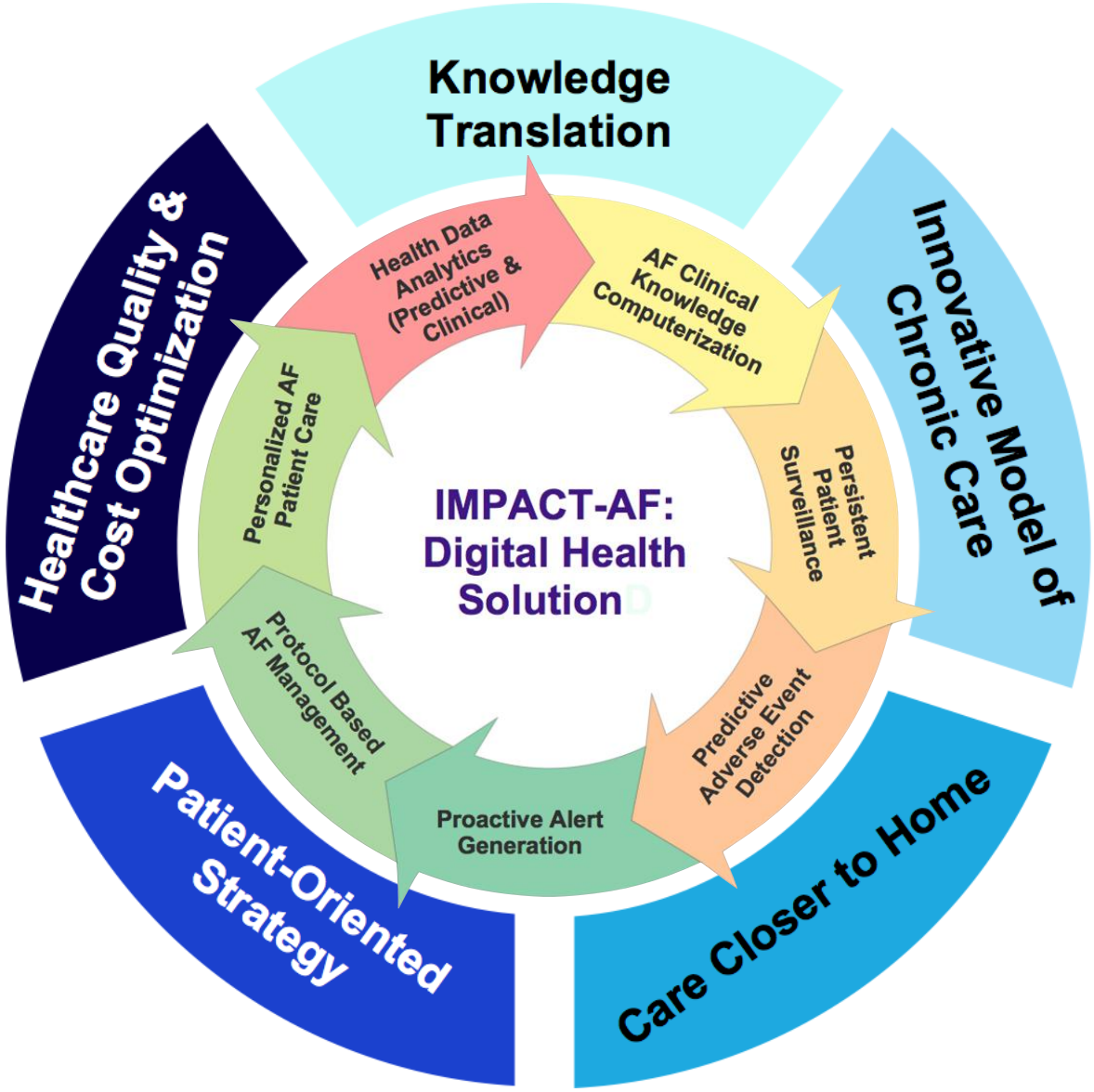
Mortality; ED visits; Appropriate anticoagulant therapy

c. Quality of Life / Cost effectiveness

Health Related QoL

Costs of CDSS / AF care

IMPACT-AF: A Paradigm Shift in Chronic Disease Management



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Thank You

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The one constant is change!