Think Globally, Act Locally: Case Studies in Personalized Population Health Management

M. Turner Billingsley, MD, FACEP, CMO, InterSystems

InterSystems®
Health | Business | Government

© 2016 InterSystems Corporation. All rights reserved.

Agenda

- Introduction
- Data Driven Medicine and Interoperability
- Case Studies
- Summary, Discussion, Q&A

 © 2016 InterSystems Corporation. All Rights Reserved.

Introduction

Global Healthcare Imperatives

- Create high value, sustainable health & care systems
- Enhance population health through empowered individuals
- Deliver safe, evidence-based care, efficiently & cost effectively
- Leverage information & technology
- Unleash innovation

 © 2016 InterSystems Corporation. All Rights Reserved.

Data-Driven Medicine and Interoperability

Data Driven Medicine

Today – well beyond tipping point of EHR installation

Challenges:

- interoperability “gaps”
- too much data, not enough information
- gaps in communication
- population health needs to happen where it matters

How do we…

- Get to what matters?
- Extract and deliver value from the electronic health records and systems?
- Keep promise to clinicians - *“it will be worth it”*

 © 2016 InterSystems Corporation. All Rights Reserved.

Personalized Population Health Management

Population health management takes place one patient at a time, in the context of a learning health system

 © 2016 InterSystems Corporation. All Rights Reserved.

 © 2016 InterSystems Corporation. All Rights Reserved.

"People actively involved in their health and health care tend to have better outcomes – and, some evidence suggests, lower costs"

Health Affairs http://www.healthaffairs.org/healthpolicybriefs/brief.php?brief_id=86

"Importantly, the Government should be clear with the public that access to the NHS involves patient responsibilities as well as patient rights."

Report to the House of Lords on the Long-term Sustainability of the NHS and Adult Social Care, April 2017

"Care should be provided by the most decentralized unit in the system: the patient. Policy makers should also invest in the development and diffusion of technologies that extend the patient's capacity for self-care."

Health Affairs http://content.healthaffairs.org/content/32/4/653.full.html

 © 2016 InterSystems Corporation. All Rights Reserved.

Data Driven Medicine: Data, Data and More Data

- Disparate data sources
- Structured & unstructured data
- Information overload vs. “What am I missing?”
- Expanding access to patient records
- Clinicians must consider increasing volumes of clinical research data
- Important information may be unstructured

Source: FY16 HIE inPractice Task Force (2016). Blending *Structured and Unstructured Data to Develop Healthcare Insights*.

Where can data be leveraged to make a difference?

- Providers and healthcare organizations need
  - Right information
  - At the right time
  - In the right format
- Provide relevant knowledge at the point of care
- Improve patient care delivery, increase efficiency
- Meet organizational goals and regulatory requirements
- Support population health initiatives

How do we enable providers to achieve these goals?

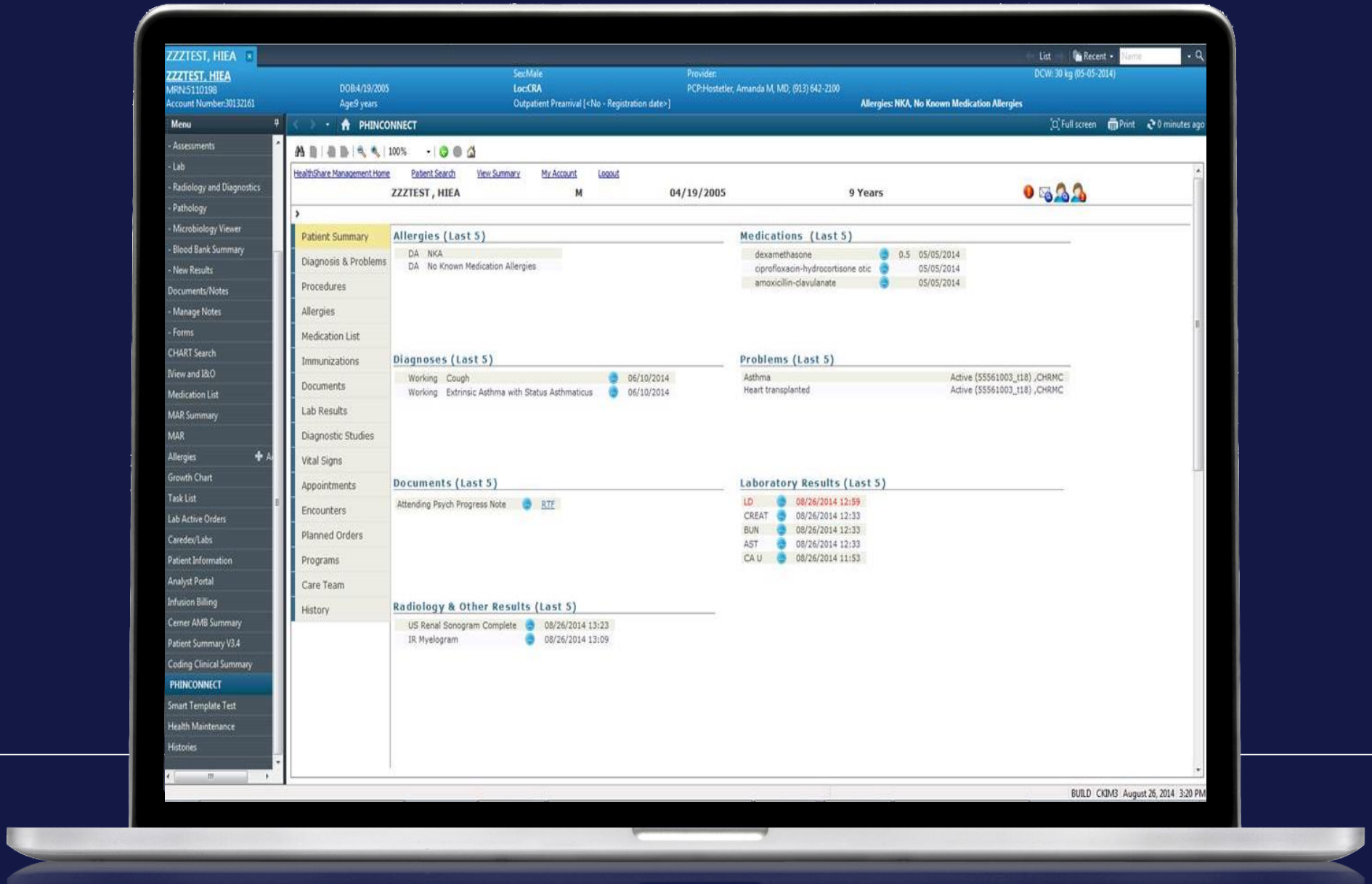
- Make it part of the normal workflow: Within the comprehensive community care record
- Provide relevant, actionable insight and value
- “Tell me something I didn’t know / need to know”

Case Studies

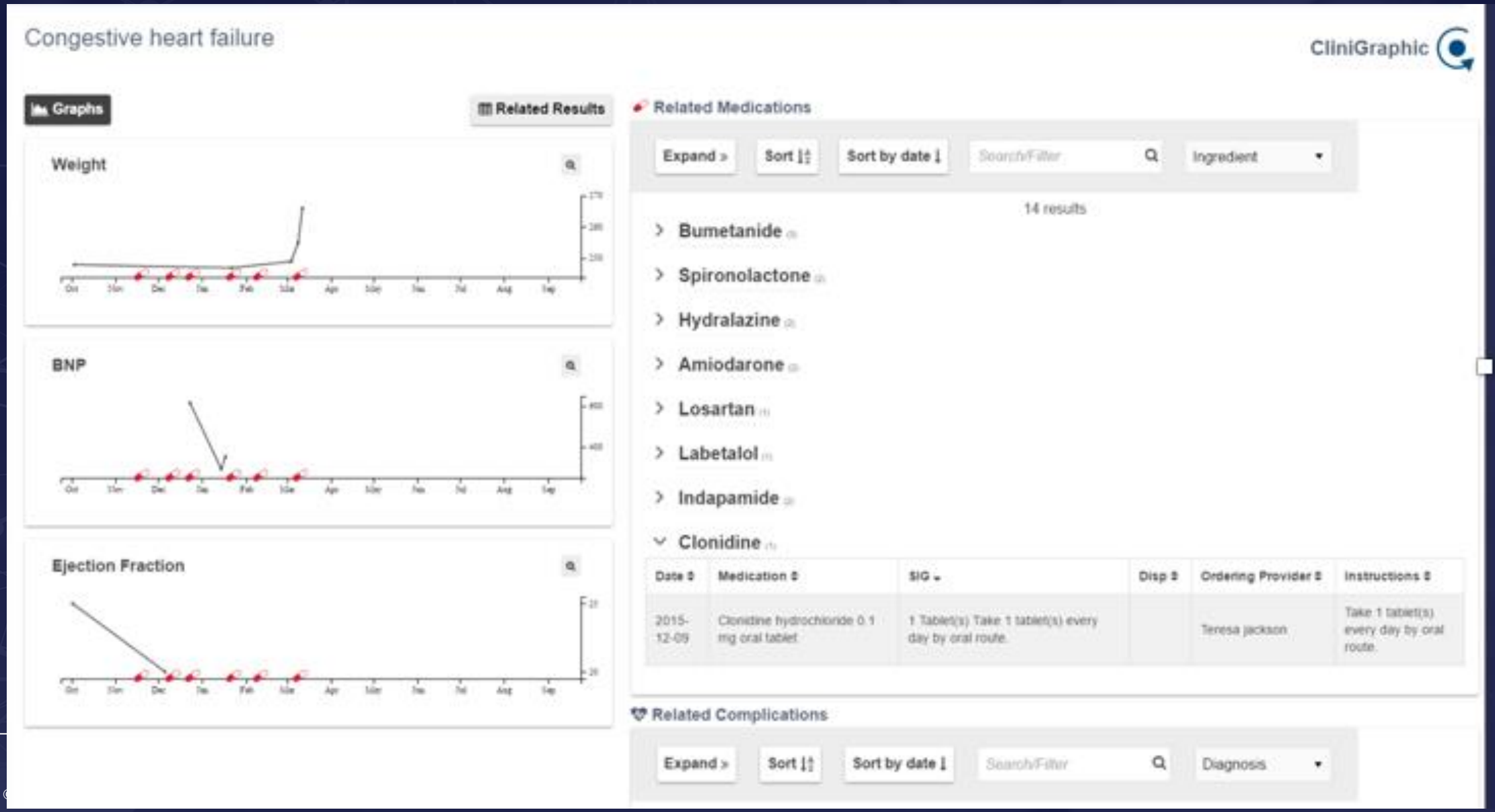
Leveraging Ontologies: Decision support when and where it counts

- Consolidated views of clinical data
- Building out clinical alerts (for gaps in care, missed procedures, vaccinations, labs, missing diagnoses, etc.)
- Clinical Inferences

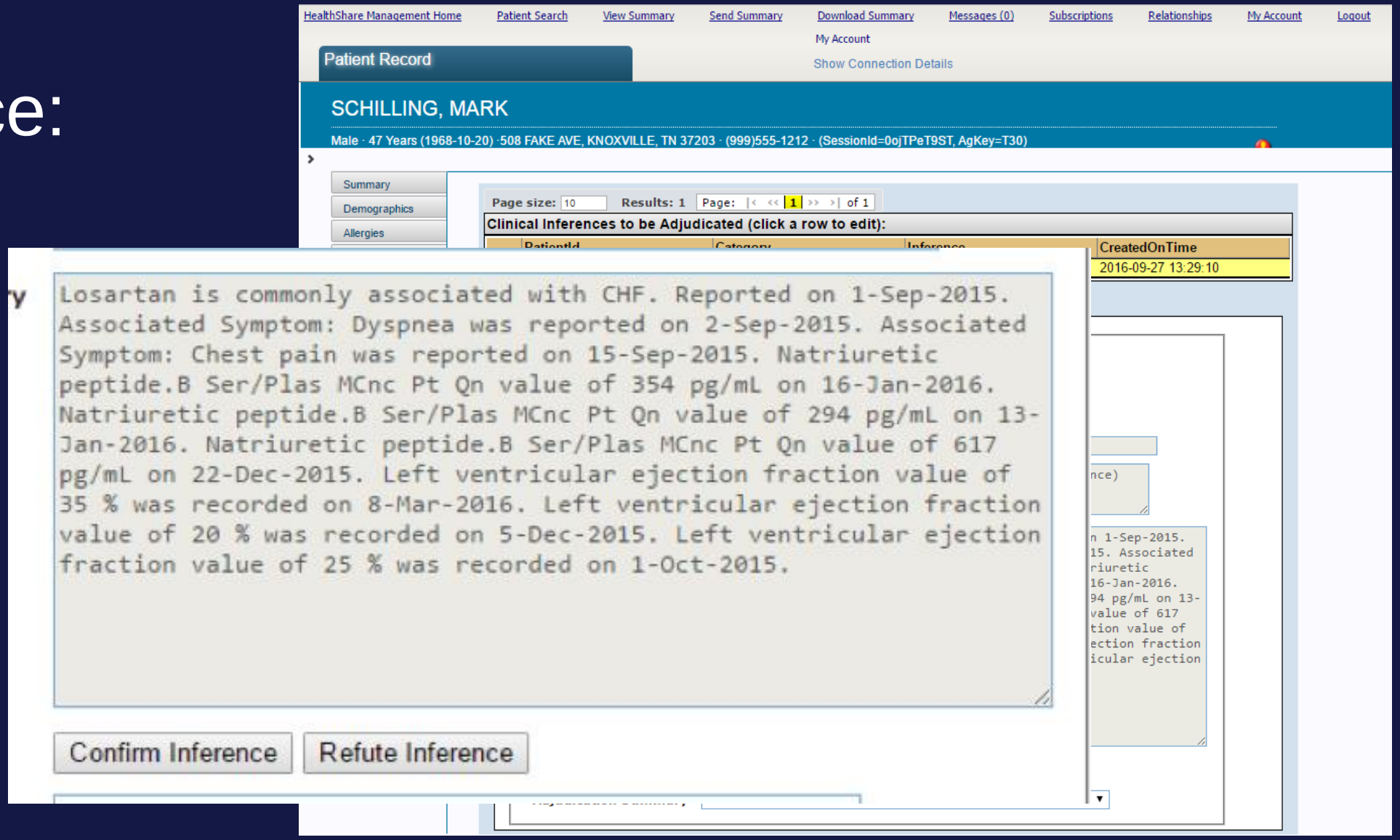
Integration at Point-Of-Care



CliniGraphic Presentation: CHF

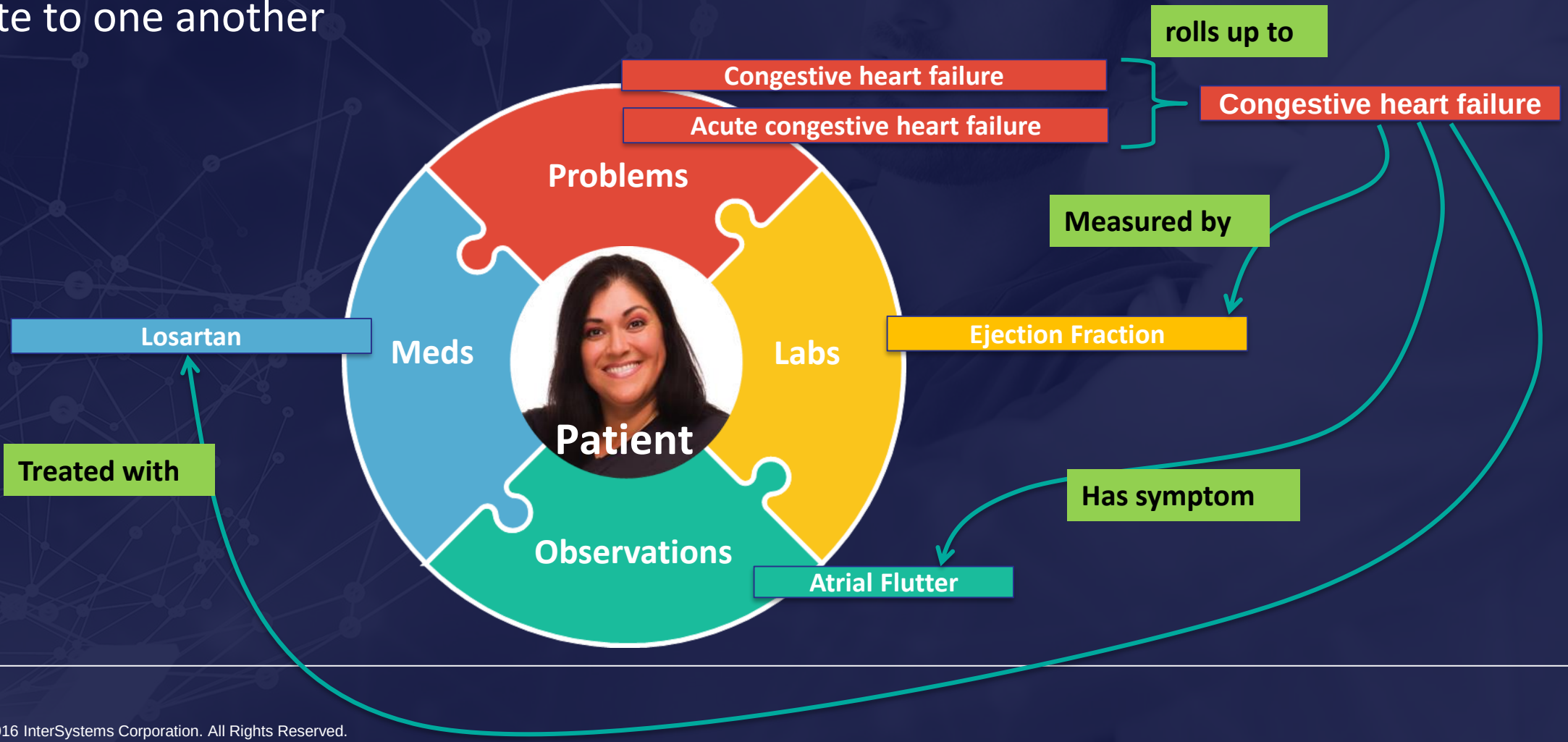


Clinical Inference: CHF



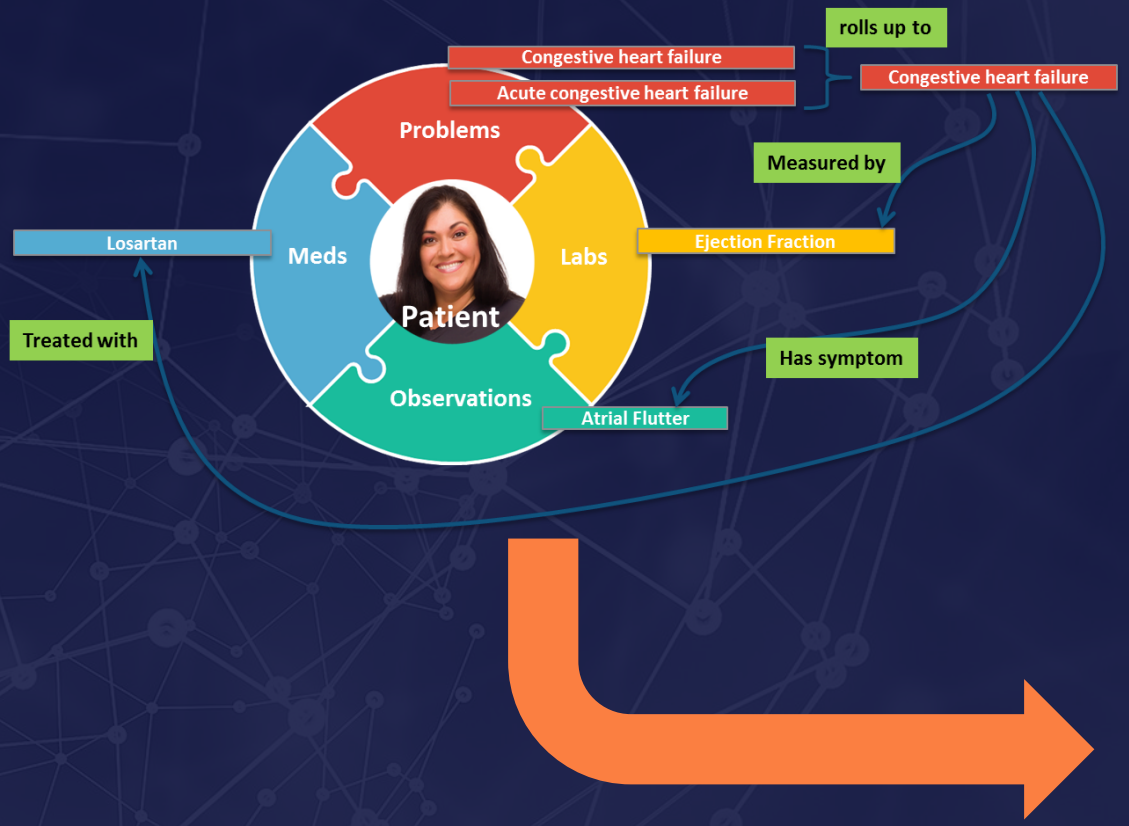
Ontological Reasoning

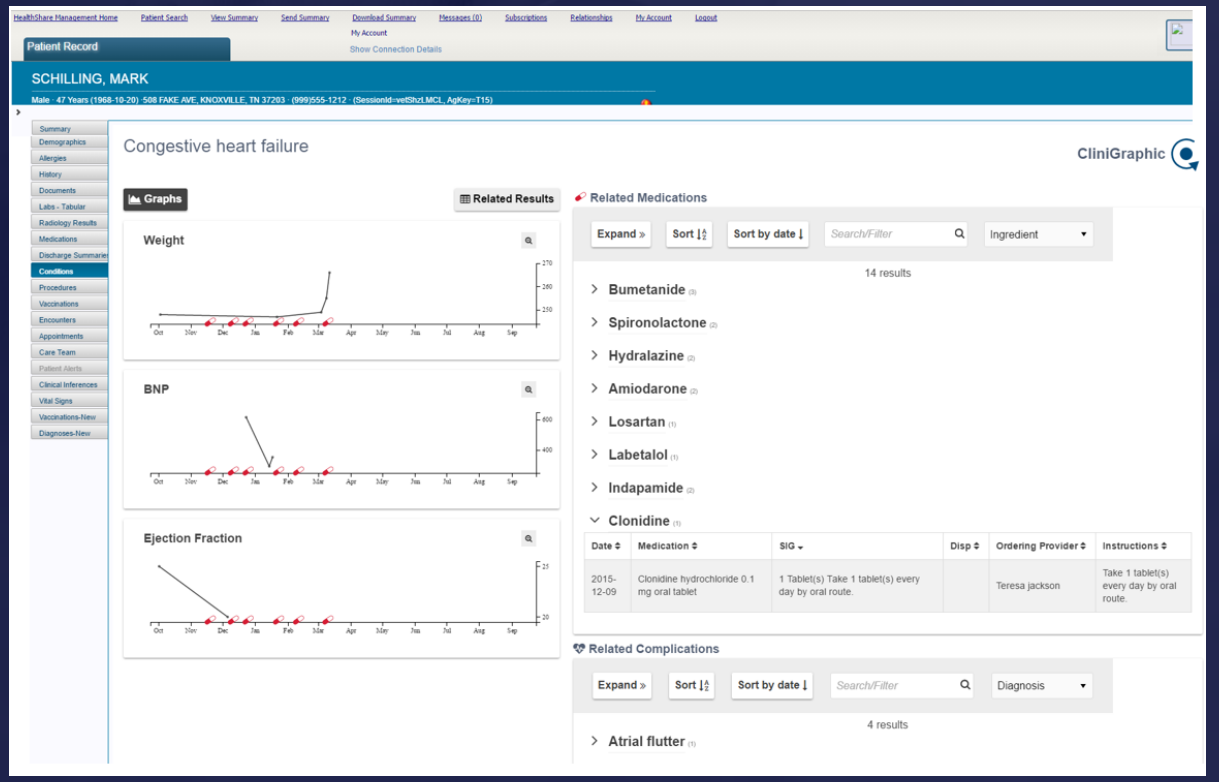
Ontologies allow software to summarize data and understand how the different pieces relate to one another



 © 2016 InterSystems Corporation. All Rights Reserved.

Ontological Reasoning

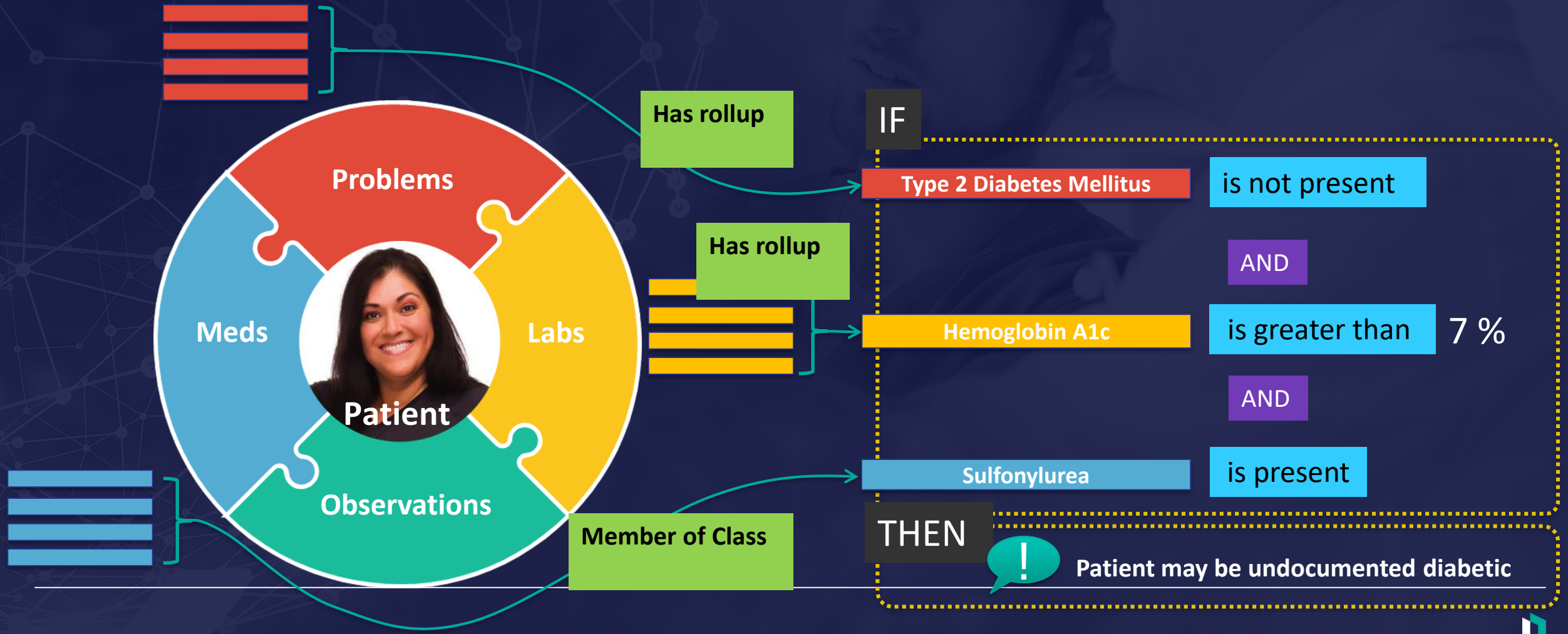




 © 2016 InterSystems Corporation. All Rights Reserved.

Inferences

Inferences leverage *patient information*, *ontologies* and *logical reasoning* to look for patterns of interest



Healthix

Largest Public Health Information Exchange in the US

 © 2016 InterSystems Corporation. All Rights Reserved.

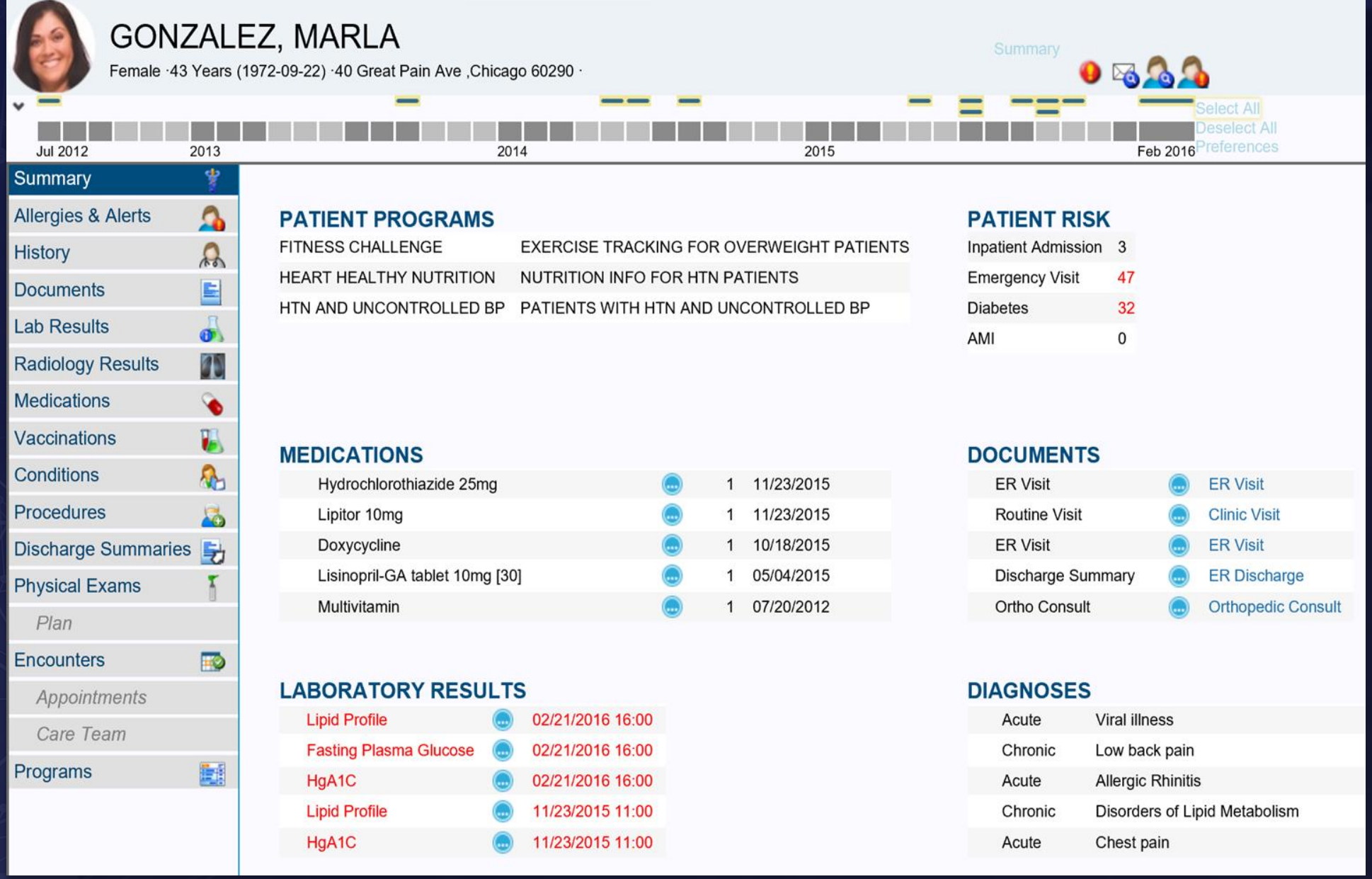
Knowing Where to Focus

Predictive risk models

Intervention cohorts

16 million patient records

 © 2016 InterSystems Corporation. All Rights Reserved.



 © 2016 InterSystems Corporation. All Rights Reserved.

Elevated risks highlighted in red

- 47% likelihood of ED visit in next 12 months
- 32% likelihood developing diabetes in next 12 months

 © 2016 InterSystems Corporation. All Rights Reserved.

516,257

Clinical event notifications in January 2017

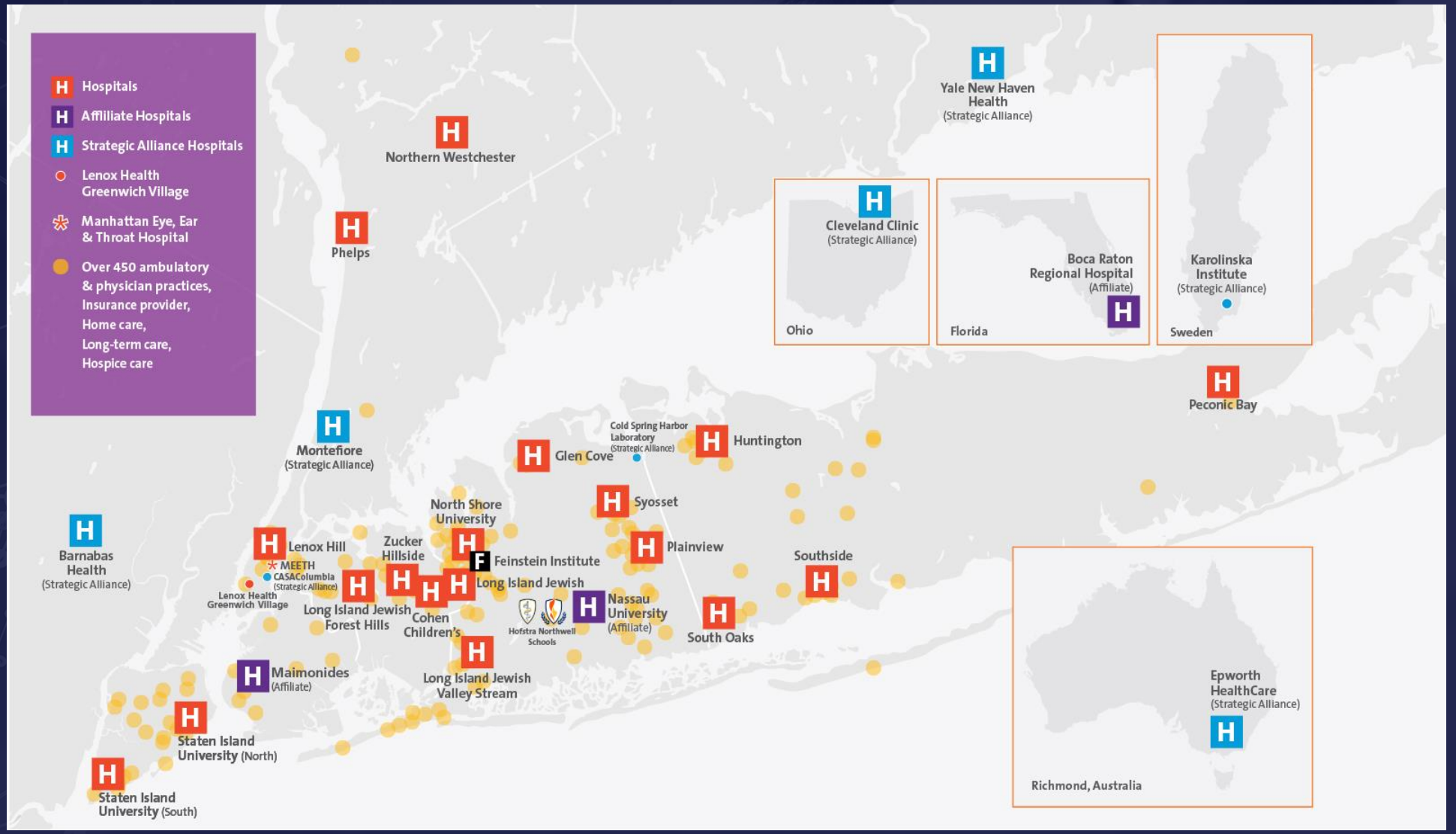
15% → 85%

Patient engagement rates in one IDN

 © 2016 InterSystems Corporation. All Rights Reserved.

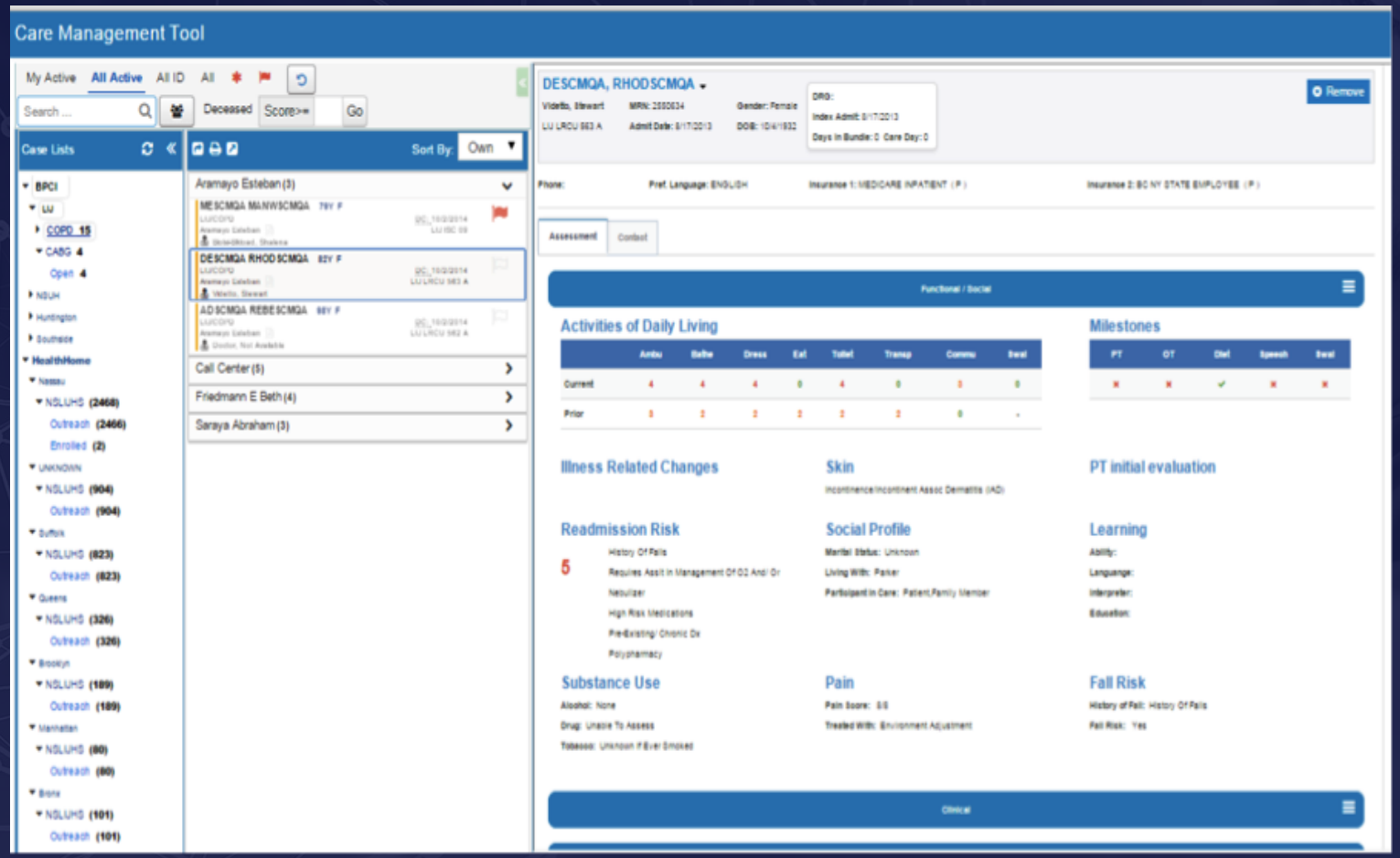
Northwell Health

14th largest healthcare system in the U.S.



 © 2016 InterSystems Corporation. All Rights Reserved.

Care Tool
Patient-centered care management service model

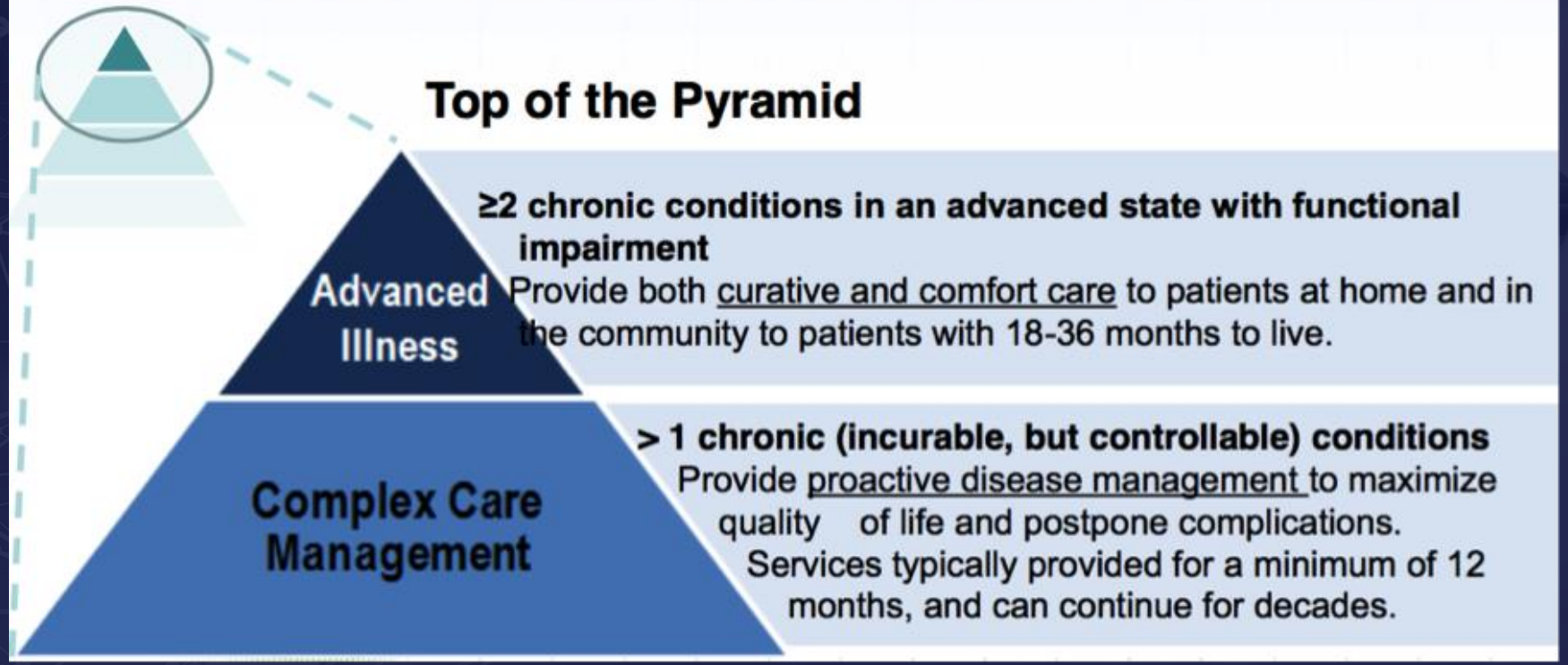


- Clinical resource specialist
- Social worker
- Nurse care manager

 © 2016 InterSystems Corporation. All Rights Reserved.

Risk stratification

Initial care management programs should be targeted to people with *multiple disease conditions*, who are at *high-risk for unnecessary care*, and who have the greatest opportunity for reducing health care costs.

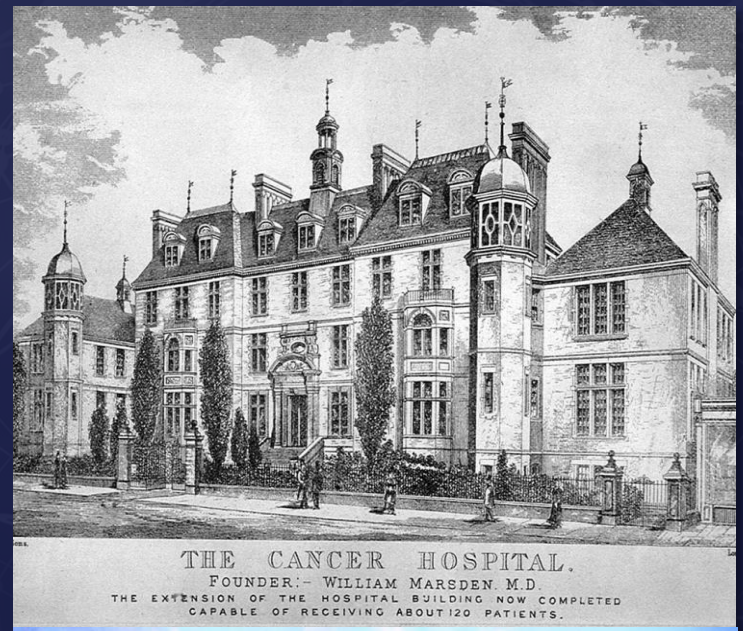


Rule-based system

 © 2016 InterSystems Corporation. All Rights Reserved.

Coordinate My Care

Redesigning Urgent Care for Serious Illness



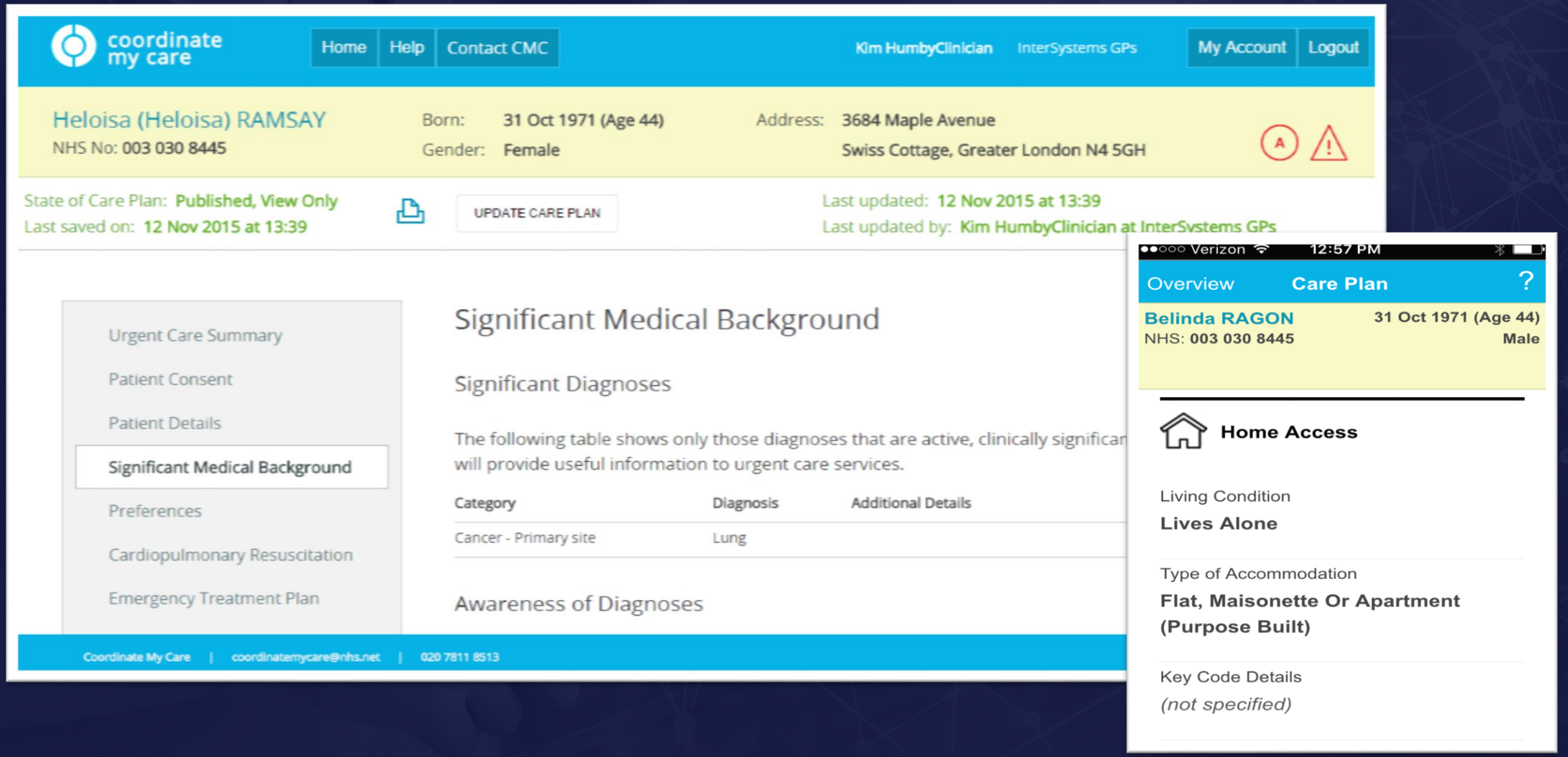
 © 2016 InterSystems Corporation. All Rights Reserved.

Conversation

Documentation

Communication

 © 2016 InterSystems Corporation. All Rights Reserved.



 © 2016 InterSystems Corporation. All Rights Reserved.

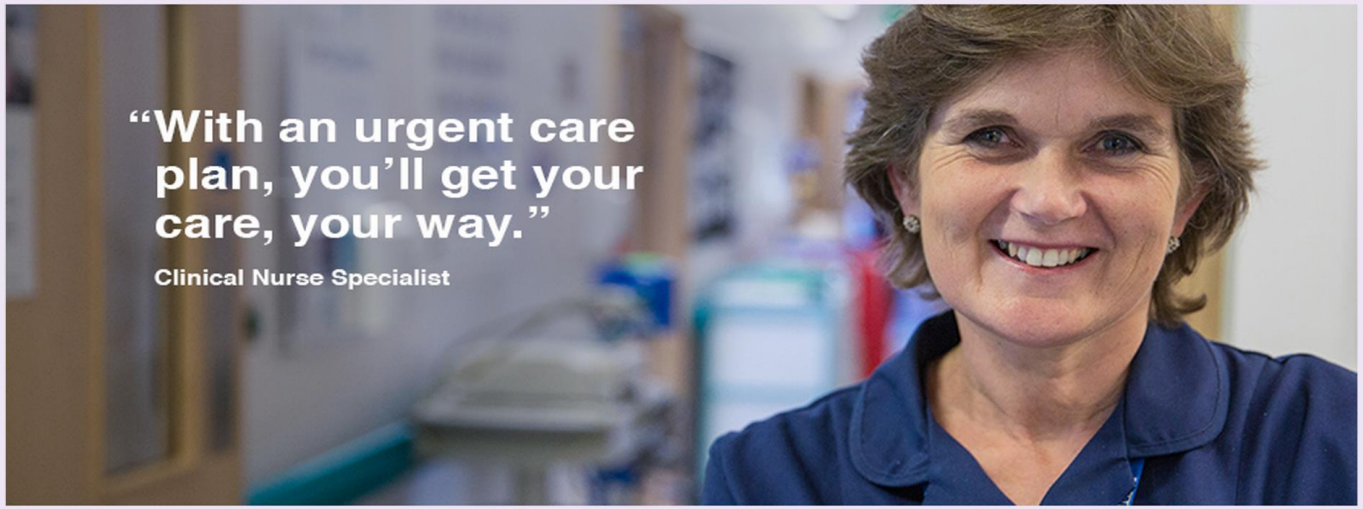
coordinate my care

mycmc

coordinatemycare@nhs.net
020 7811 8513

?

Home



Start your CMC Plan

If you're ready to start creating your plan click here:

View your CMC Plan

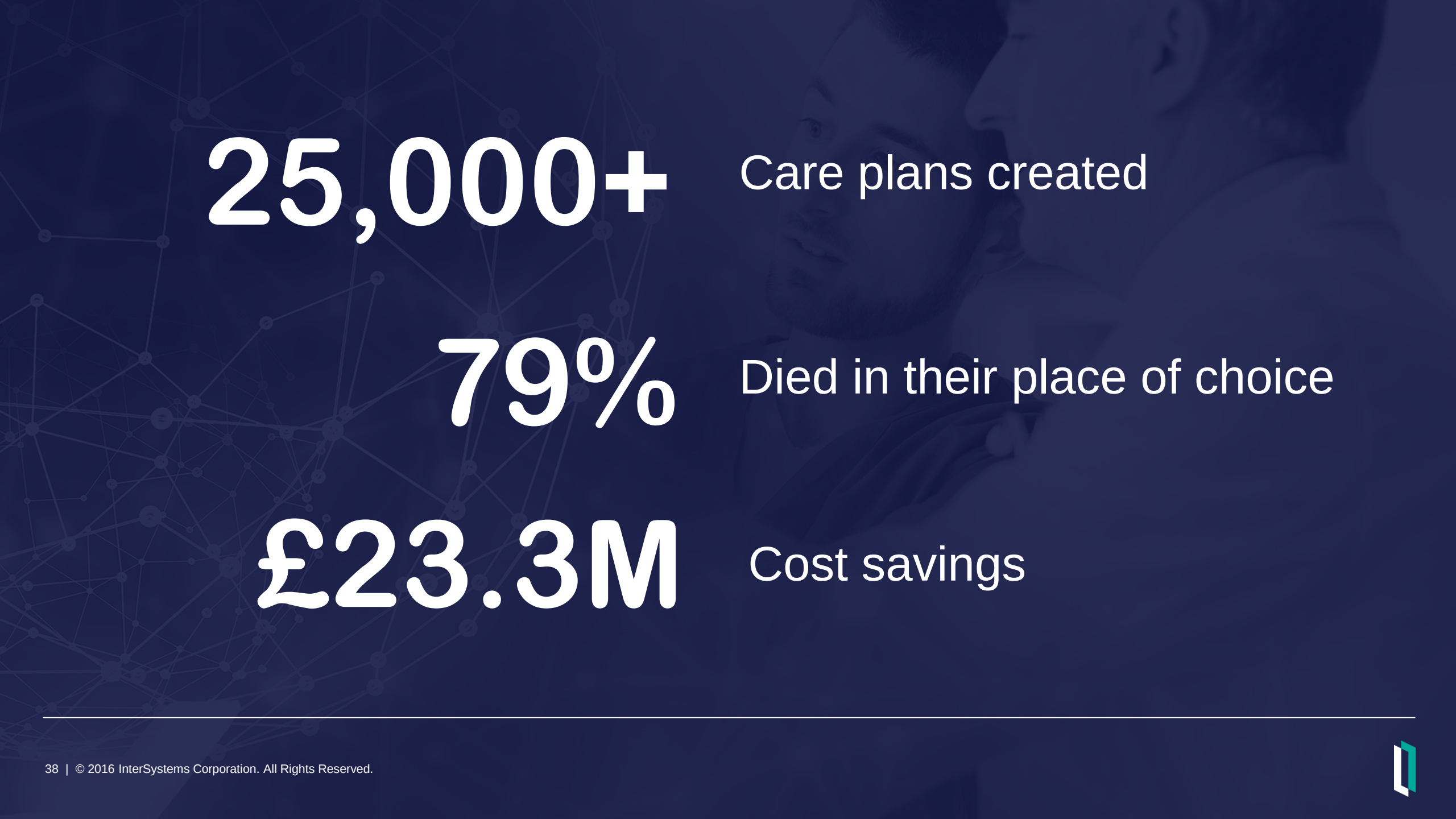
If you already have a CMC plan, you can view and update it here:

Email address — Please enter your username

Password — Please enter your password (required)

Visit coordinatemycare.co.ukCoordinate My Care 2016

 © 2016 InterSystems Corporation. All Rights Reserved.



25,000+ Care plans created

79% Died in their place of choice

£23.3M Cost savings

 © 2016 InterSystems Corporation. All Rights Reserved.

Summary

Actionable insight from patient data

UNCOVER undiagnosed patient conditions / undocumented diagnoses

BROADEN the circle of knowledge

IMPROVE information available to care providers

EXPAND information for population health efforts

- Quality improvement, gaps in care, etc.
- Disease registries
- Care coordination

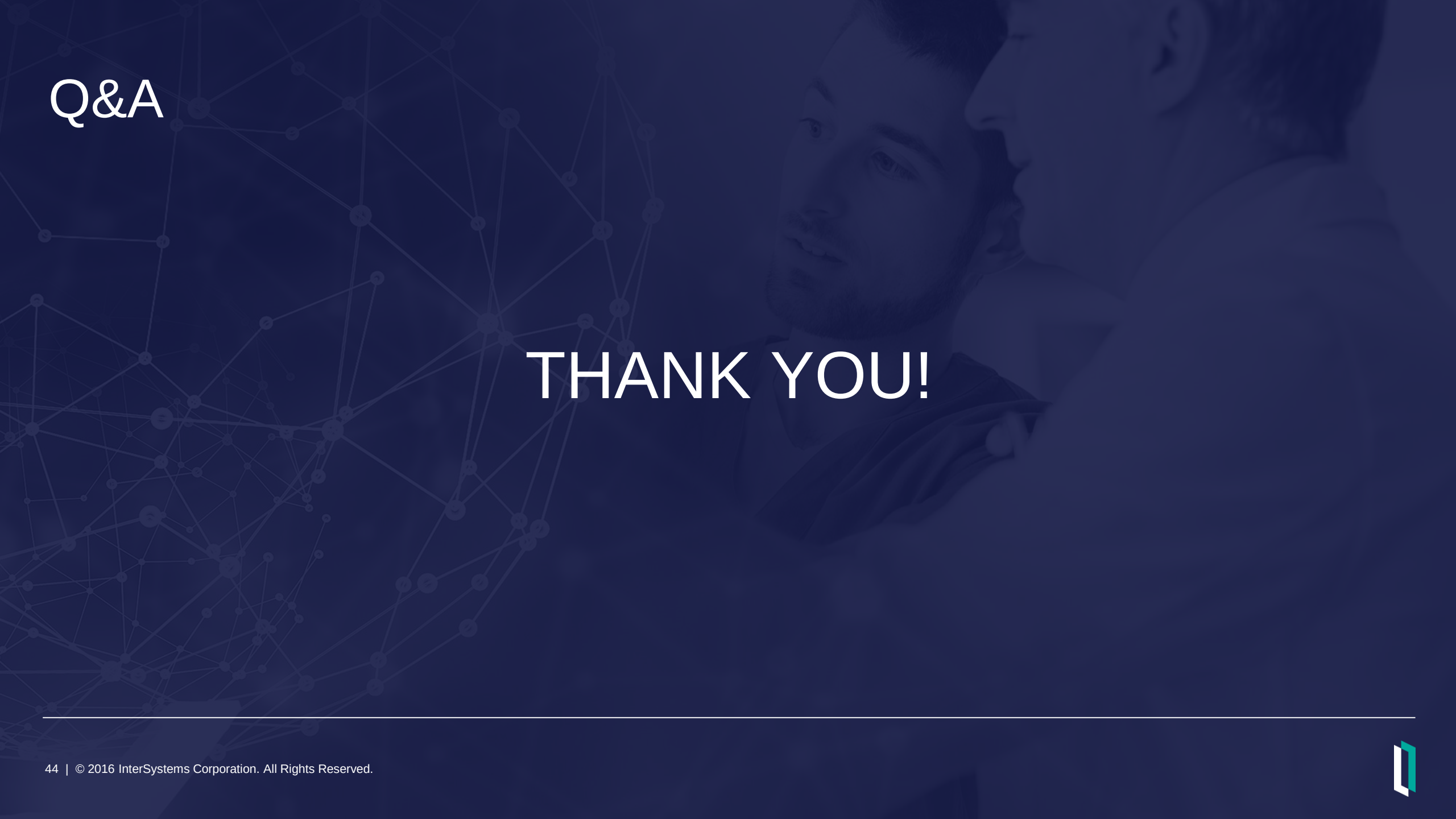
AVOID unintended consequences

27.8% US diabetics Undiagnosed

Cost: $2864/pp/yr

 | © 2016 InterSystems Corporation. All Rights Reserved.

Q&A



THANK YOU!

 © 2016 InterSystems Corporation. All Rights Reserved.