

Creating GIS enabled dashboards to help TCM nurses decrease hospital readmissions

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HEALTH

Abstract

Title: Creating GIS enabled dashboards to help TCM nurses decrease hospital readmissions

Geographic Information Systems (GIS) was used to design a customizable hospital readmissions dashboard that will help transitional care management teams and coordinating care for complex patients after they are discharged. The identification of health assets and community resources that are in close proximity to their patients neighborhoods are important to understanding geographic determinants, population health and avoidable reimbursement penalties.



Objectives

OVERVIEW

- DESCRIBE HOSPITAL AND GIS INTEGRATION
- USES OF GIS IN HOSPITALS AND PUBLIC HEALTH
- HOW MAPS CAN BE USED FOR POPULATION HEALTH AND DECISION MAKING
- CONNECTING PEOPLE TO SERVICES

GAIN GIS KNOWLEDGE & SKILLS

- SPATIAL THINKING
- INTEGRATING HEALTH AND GEOGRAPHIC DATA
- HOW GIS CAN BE LEVERAGED TO ANALYZE AND REPRESENT HEALTH-RELATED INFORMATION

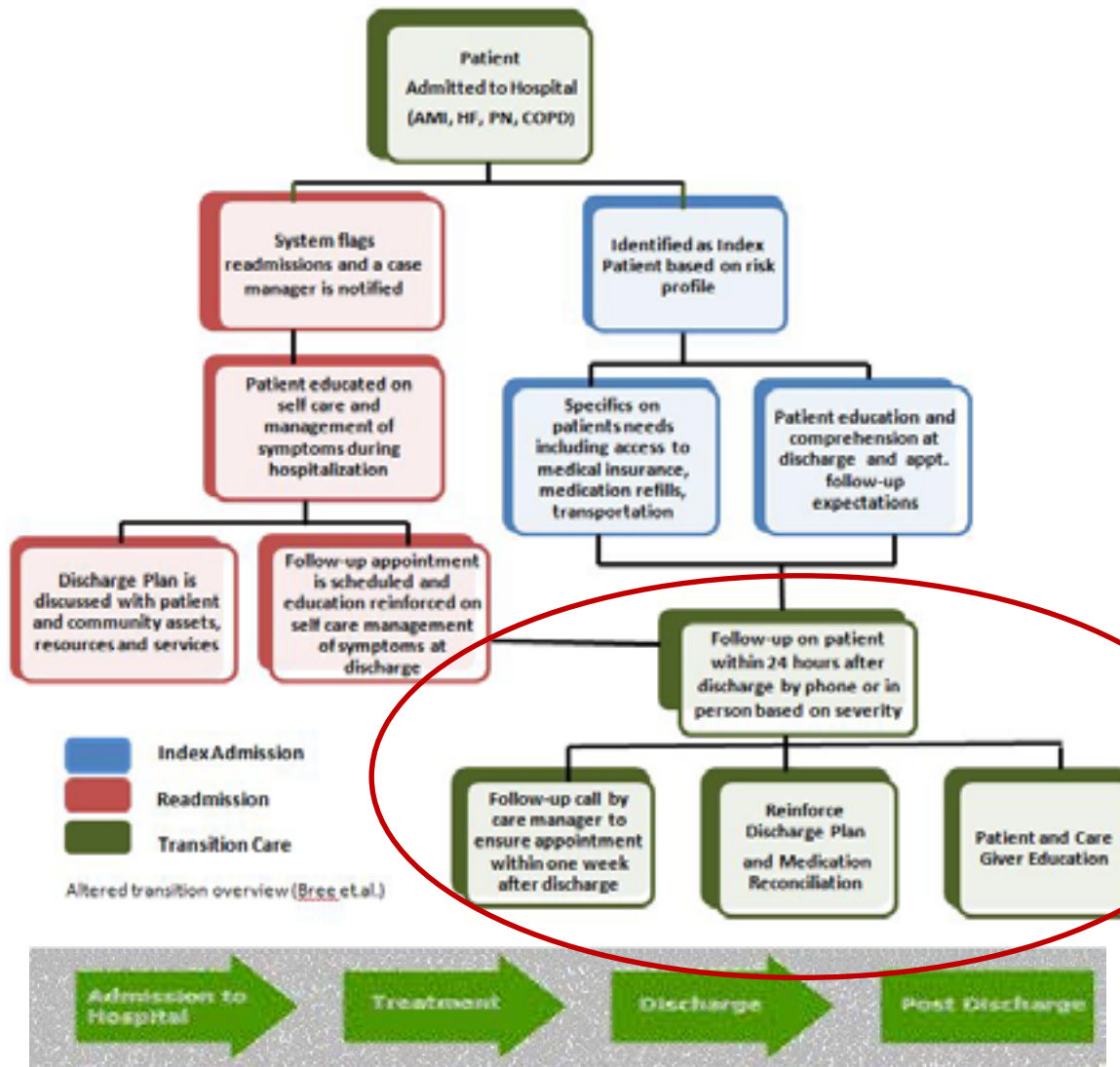


Background

- **Hospital Readmissions Reduction Program** - Section 3025 of the Affordable Care Act added section 1886(q)
- Readmission is when a patient is admitted to the hospital within 30 days of a discharge (cms.gov)
- **Readmissions of the following conditions:**
 - Acute Myocardial Infarction (AMI)
 - Heart Failure (HF)
 - Pneumonia (PN)
 - Chronic Obstructive Pulmonary Disease (COPD)
 - Elective hip and knee replacements (THA/TKA)
- **Readmissions cost** Medicare \$17 billion per year.
- **Readmission Mobile Solutions** will help improve hospital quality improvement efforts, Coordinating Care for Complex Patients and avoidable reimbursement penalties.



Flow Chart for Readmissions



Year 1: FY 2012

- Heart Failure
- Myocardial Infarction
- Pneumonia

Year 3: FY 2014

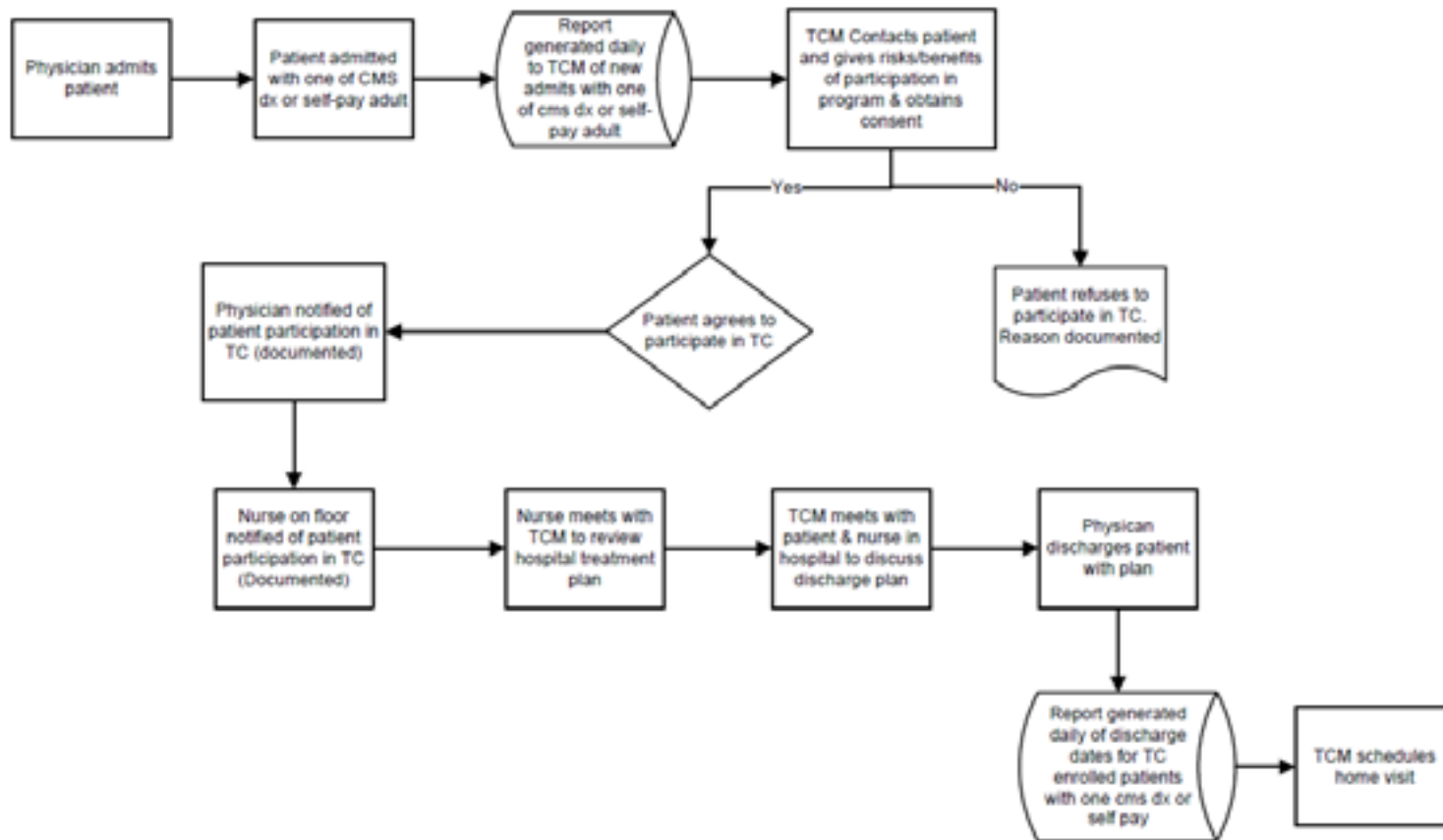
- COPD
- THA/TKA

Year 4: FY 2015

- Expand to other conditions (TBD)



Transitional Care Management (TCM) Flow



TC = Transitional Care Program

TCM = Transitional Care Manager



Visualization Plan

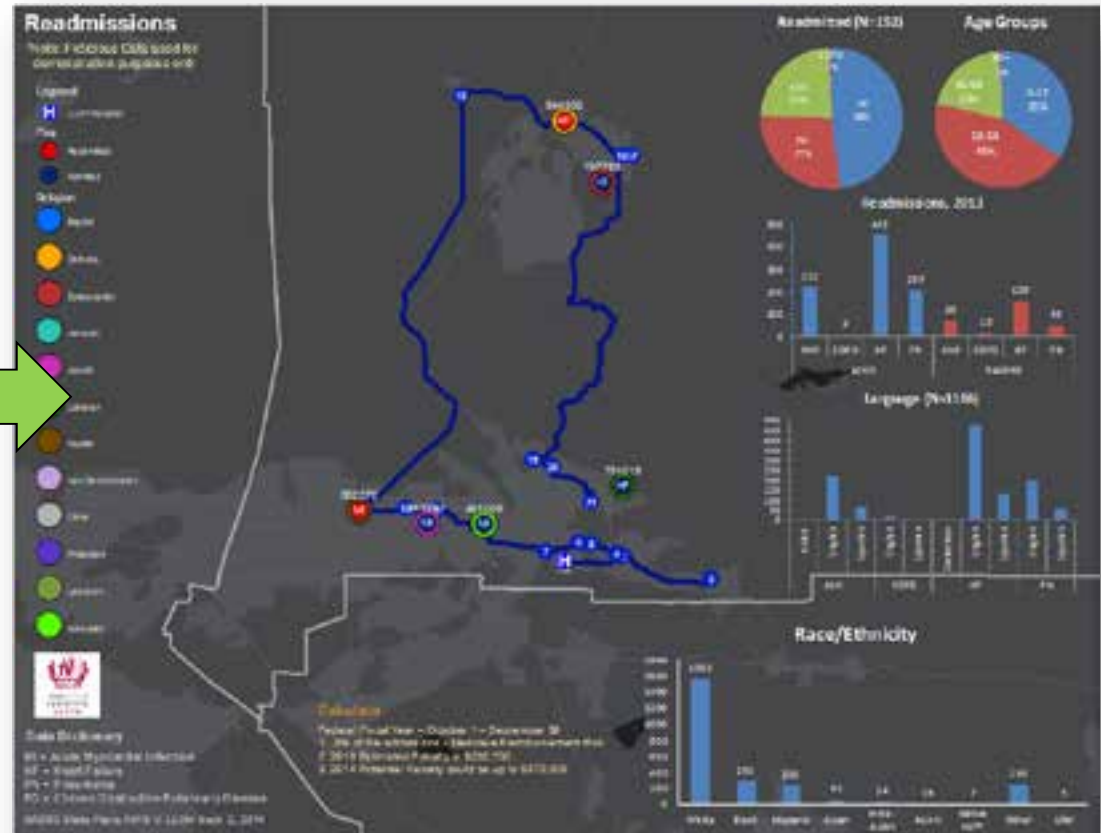


Readmissions Dashboard

Spreadsheet

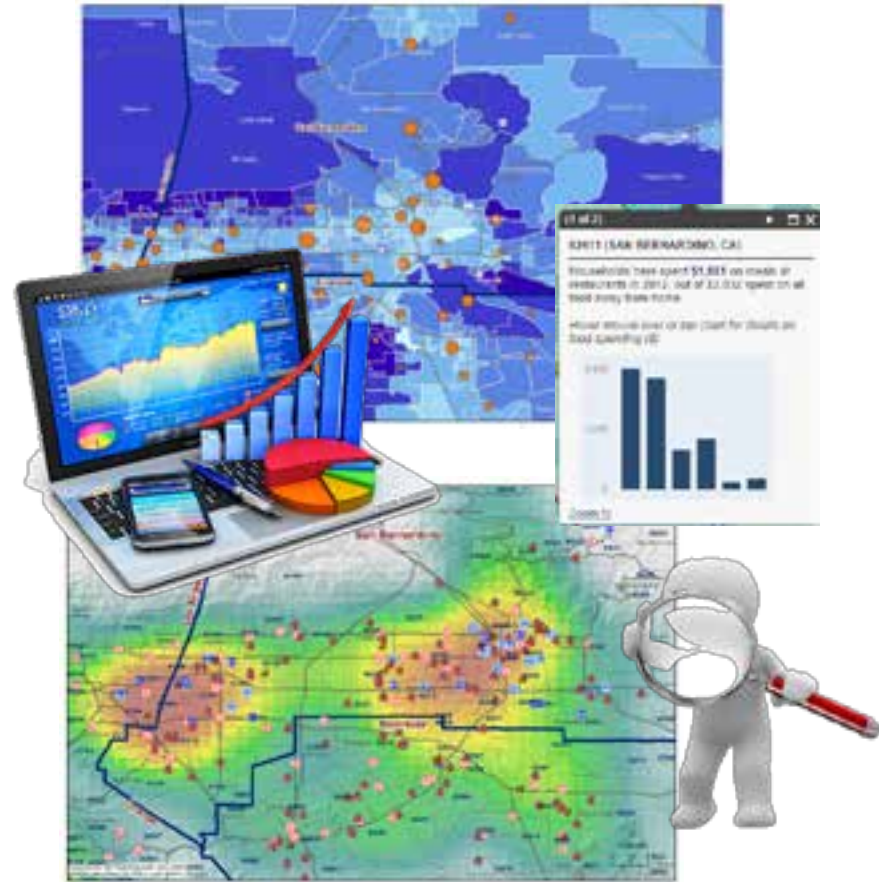
Characteristics	AMI	Heart Failure	Pneumonia	HSA/HSA
N Admissions Not Readmitted (%)	61 (94.4)	164 (17.3)	44 (14.4)	17 (13.6)
Average Age (SD)	71 (8.1)	70 (8.3)	70 (12.1)	69 (8.6)
Age Category (%)				
65-74 years	41 (63.1)	16 (16.7)	16 (52.0)	3 (23.1)
75-84 years	33 (58.3)	43 (45.6)	8 (26.0)	10 (78.4)
85+ years	17 (28.7)	21 (22.0)	16 (52.0)	2 (15.5)
Majority Race (%)	20 (22.2)	28 (28.6)	11 (35.5)	6 (46.2)
City, n (%)				
Bozeman	4 (6.4)	7 (7.3)	1 (3.1)	2 (15.4)
Butte	5 (7.7)	3 (3.1)	1 (3.1)	1 (7.7)
Great Falls	3 (4.8)	1 (1.0)	1 (3.1)	1 (7.7)
Helena	3 (4.8)	1 (1.0)	1 (3.1)	1 (7.7)
Missoula	3 (4.8)	1 (1.0)	1 (3.1)	1 (7.7)
Whitefish	3 (4.8)	1 (1.0)	1 (3.1)	1 (7.7)
Average Length of Stay (LOS)	7.0 (2.8)	7.3 (2.3)	4.4 (2.7)	7.0 (2.8)
LOS Category (%)				
< 7 days	44 (72.3)	49 (50.6)	16 (50.0)	10 (78.4)
7-14 days	14 (22.4)	29 (29.9)	17 (51.5)	7 (55.8)
15+ days	7 (11.3)	11 (11.5)	1 (3.1)	1 (7.7)
Discharge Destination (%)				
Home	67 (88.1)	17 (17.6)	14 (43.8)	1 (7.7)
Skilled Nursing Facility	4 (6.4)	6 (6.2)	3 (9.4)	2 (15.4)
Skilled Nursing Facility	1 (1.6)	1 (1.0)	0 (0.0)	0 (0.0)
Extend	10 (15.3)	7 (7.3)	2 (6.2)	0 (0.0)
Skilled Nursing Facility	3 (4.8)	1 (1.0)	4 (12.5)	1 (7.7)
Subsidiary Facility	3 (4.8)	2 (2.1)	1 (3.1)	0 (0.0)
Long Term Care (Assisted)	1 (1.6)	2 (2.1)	1 (3.1)	0 (0.0)
Short Term Hospitalization	5 (7.7)	0 (0.0)	0 (0.0)	0 (0.0)
Left Against Medical Advice	0 (0.0)	3 (3.1)	1 (3.1)	0 (0.0)
N Admissions Readmitted (%)	14 (22.4)	49 (50.6)	14 (43.8)	8 (62.3)
Average Age (SD)	71 (7.1)	71 (8.1)	70 (8.1)	64 (5.1)
Age Category (%)				
65-74 years	8 (12.6)	18 (18.5)	5 (15.6)	0 (0.0)
75-84 years	2 (3.2)	19 (19.3)	7 (21.9)	1 (7.7)
85+ years	1 (1.6)	12 (12.2)	2 (6.2)	2 (15.4)
Majority Race (%)	5 (7.7)	14 (14.4)	3 (9.4)	0 (0.0)
City, n (%)				
Bozeman	1 (1.6)	4 (4.1)	1 (3.1)	0 (0.0)
Butte	2 (3.2)	4 (4.1)	1 (3.1)	0 (0.0)
Great Falls	1 (1.6)	1 (1.0)	0 (0.0)	0 (0.0)
Helena	1 (1.6)	1 (1.0)	1 (3.1)	1 (7.7)
Missoula	2 (3.2)	1 (1.0)	1 (3.1)	1 (7.7)
Whitefish	1 (1.6)	1 (1.0)	1 (3.1)	1 (7.7)
Average Length of Stay (LOS)	7.0 (2.8)	7.1 (8.2)	5.7 (2.8)	7.3 (5.1)
LOS Category (%)				
< 7 days	5 (8.0)	11 (11.3)	11 (34.4)	1 (7.7)
7-14 days	3 (4.8)	11 (11.3)	3 (9.4)	2 (15.4)
15+ days	1 (1.6)	7 (7.1)	1 (3.1)	0 (0.0)
Discharge Destination (%)				

Dashboard (real-time concept)



Capabilities

- Real-time data feeds
- Routing for TCM nurses to follow-up with patients after they are discharged.
- Assets of pharmacies and other lifestyle resources, like walking trails, parks, bike paths, farmers markets, healthy restaurants, community clinics and support groups.
- Community overlays with census and zip code data (i.e. population, insurance spending, income, economics, and etc.)



Partnering with 211: Linking patients to Community Resources

LLUH United Way 2-1-1



Use the LLUH United Way 2-1-1 service lookup to access information about community, social, health and government services in San Bernardino or Riverside County.

GetConnected. GetAnswers. Speak to a live, bilingual call specialist 24 hours a day - dial 2-1-1 or 888-435-7565.

To find resources you can enter any of these search terms and then hit search:

- agency names
- service terms
- programs
- city
- zip code

Once the results have been returned, click an "Get more information" to see additional details for each resource.

Get started by using one of these categories or enter your own search terms in the search box below:

[Clothing](#) | [Dental Care](#) | [Ezod](#) | [Clinic](#) | [Food](#) | [Housing](#) | [Mental Health](#) | [Translation](#) | [Support Groups](#)

Search Agency Names Search All Fields

Look for resources in or near a location, add filters, then click Search for Resources to apply filters:

City:

Zip Code:

Location Filter:

Sort Alphabetically Sort by Proximity to chosen zip code



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Next Steps: Mobile Solutions

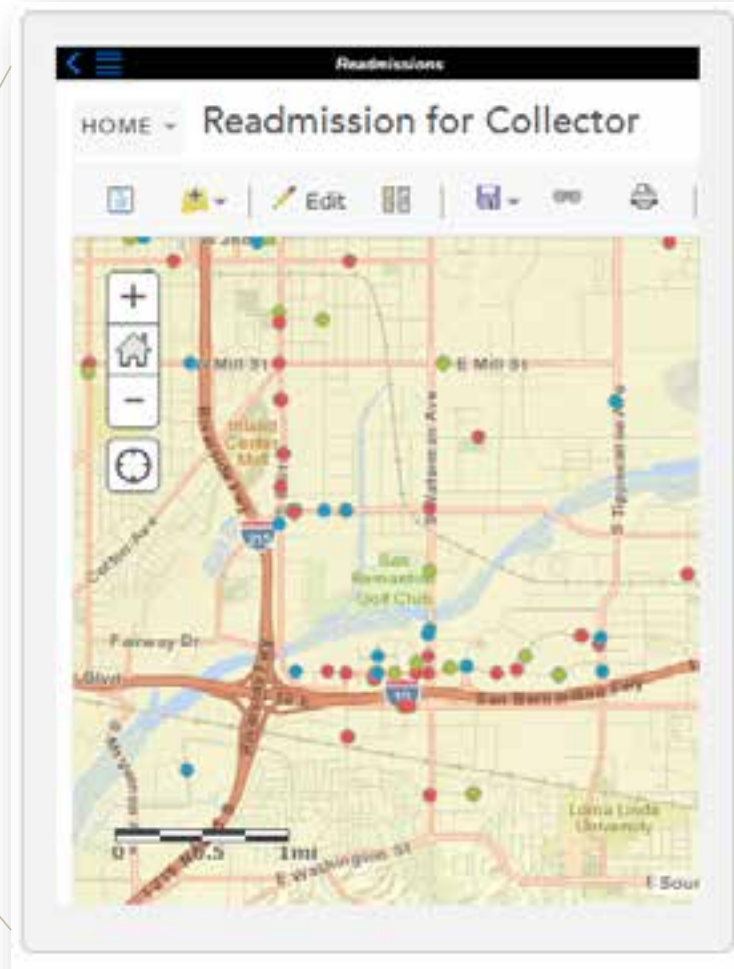
Collecting data about patients In the field

Create the phone app based on four basic functions needs



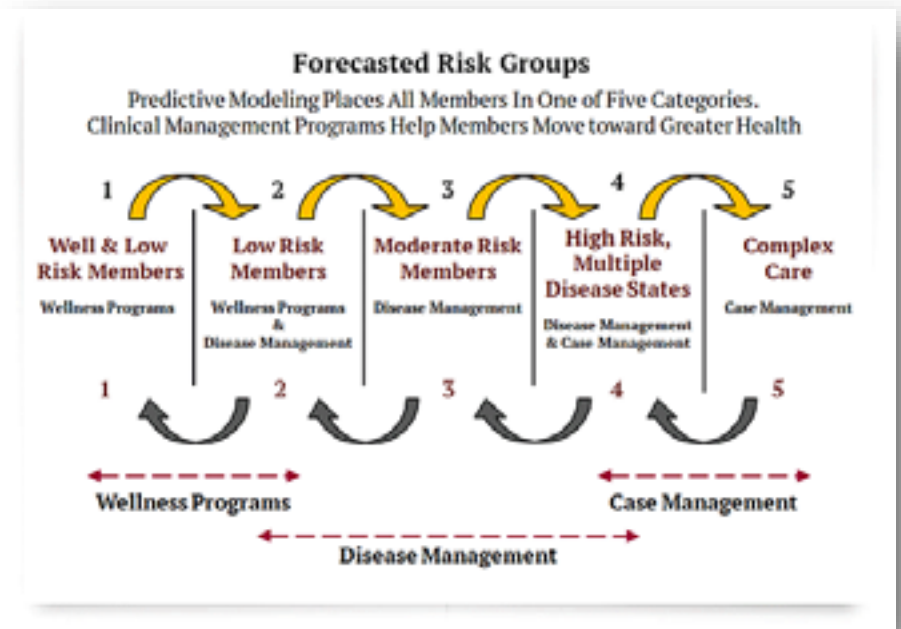
Mobile Solutions

Ability to search for assets and routing capabilities



Mobile Solutions

Risk Stratification Calculator for identifying more complex patients

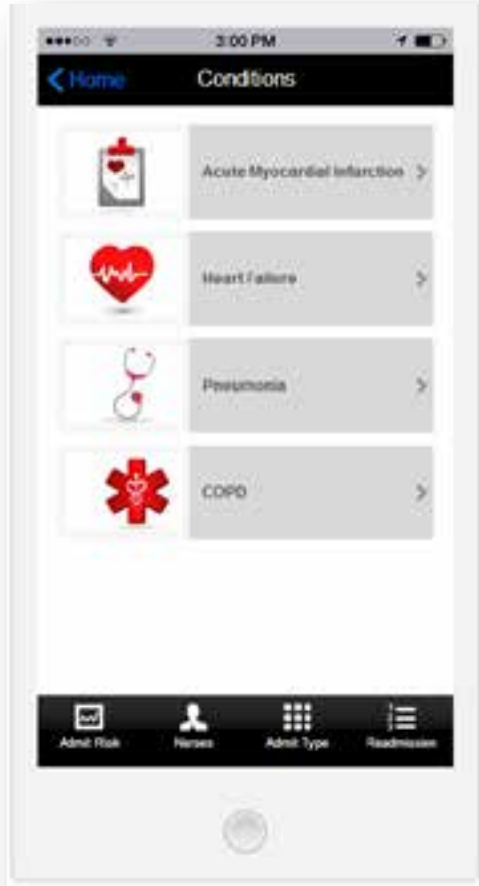


Readmission Risk Calculators



Mobile Solutions

Assist patient with knowledge regarding managing their health, needs and goal setting



Health Education



Basic Needs

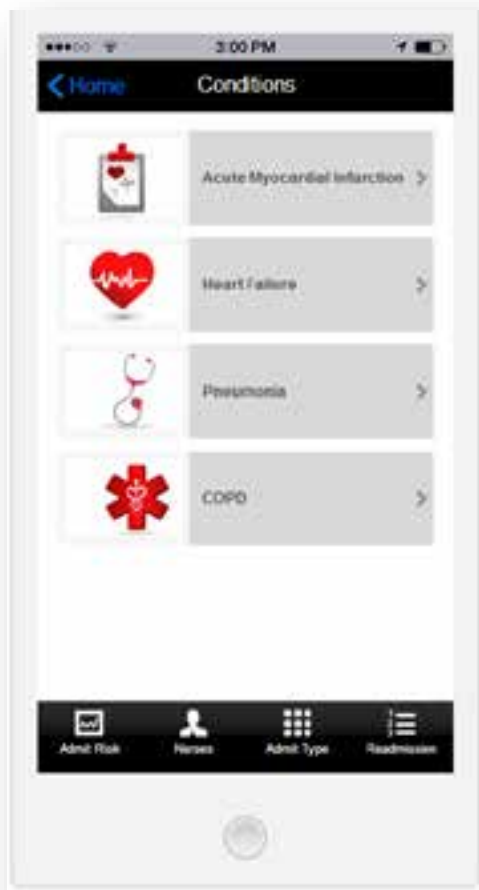


Strengths/Challenges



Mobile Solutions

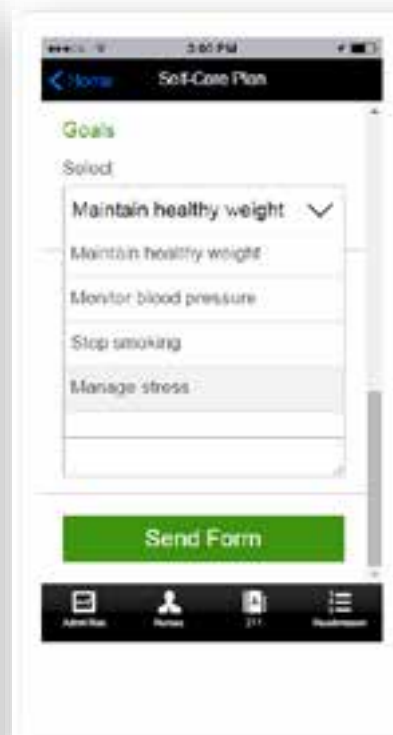
Health Management Tools



Management



Setting Goals



Journal



Thank You

Questions, Comments or Recommendations?

A hand holding a tablet displaying a heart rate monitor in a hospital room. The background shows a patient in a hospital bed and medical equipment.

Streamlining Big Data to Help Hospitals
Save Lives

Image source: [washingtonpost.com](http://www.washingtonpost.com)



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