



# Chicago Health Solutions

## Fall 2016 Community Health Case Competition



Thank you to Chicago Health Solutions' Board Members for their hard work researching and writing this case: Maryann Deyling, Jacqueline Kloos, Joseph Mocharnuk, Vivek Sarma, Yixuan Song, Richard Wu, Connie Xu, Karen Yang, and Katie Zellner.

# Introduction

The case provided here is a complex scenario about a particular health concern for the city of Chicago. The authors have provided some background information and figures to help teams reading the case; however, teams are responsible for finding any additional information they might need.

Because of the complexity of the health problem, the case does not have a single correct answer and encourages exploring numerous perspectives and methodologies to develop a comprehensive solution.

Below is a timeline with key dates and submission deadlines for the Fall competition.

11/7-11/8	Case released and office hours sign up becomes available <a href="#">here</a> . More office hours will become available throughout the week. You can read the mentors' bios <a href="#">here</a> .
11/10	Kick-off Panel on heart failure and hospital readmissions begins at 6pm in the Stuart 102. This event is strongly recommended as the panelists will provide a good overview and insight on key issues related to the case. Refreshments will be served.
11/11	Office hours sign up closes. Each team must register for at least 2 office hour sessions.
11/12	Office hours will be in the Promontory Point room at the Polsky Center from 9AM-2PM. Lunch will be provided.
11/13	One-page single spaced proposals due at 12pm via email to <a href="mailto:yangk@uchicago.edu">yangk@uchicago.edu</a> , and cc'd to <a href="mailto:uchicago.chs@gmail.com">uchicago.chs@gmail.com</a>
11/14	The top 5 teams will be notified if they have progressed to round 2. Those teams will be assigned pitch mentors to help them further refine their proposals.
11/14-11/19	The teams that advance will work on their proposals with their pitch mentors. A PDF version of your presentation is due to <a href="mailto:yangk@uchicago.edu">yangk@uchicago.edu</a> by 10AM on Sunday, November 20th. Presentations should be no longer than 10 minutes.
11/20	The top 5 teams will present to a panel of public health and policy experts. Teams will present in descending team number starting at 11AM in the Promontory room at the Polsky Center. Each presentation should be 10 minutes, with an additional 5 minutes for Q&A. Teams may decide on the number of team members that present, but all team members are expected to attend the final presentations. Scores will be tallied up at the end of the event, and a networking reception will follow the announcement of the first and second place winners. Refreshments will be provided.

\* The Polsky Center is located at 1452 E 53rd Street, Chicago, IL 60615. The Polsky Express Shuttle picks up and drops off at four locations every 20 minutes. Campus stops include the Booth School (5807 South Woodlawn Avenue) and Levi Hall (5801 S. Ellis Avenue).

# **Prizes for the Fall 2016 Community Health Case Competition**

## **The First Place Team will win the opportunity**

- to present their 10 minute pitch at the spring American Heart Association Chicago Heart Failure Conference 2017,
- to present in an Innovations in Heart Failure webinar for the American Heart Association Midwest Affiliates,
- to attend the Annual Heart Innovation Forum as a VIP in Fall 2017,
- and will be recognized in the Midwest Pulse Communications Newsletter, distributed to affiliates of the American Heart Association.

## **The Second and Third Place Teams**

- will be recognized in the Midwest Pulse Communications Newsletter, distributed to affiliates of the American Heart Association,
- and will be written up in the American Heart Association Chicago Heart Failure Conference 2017 program, distributed to over 150 clinicians.

Thank you to the American Heart Association for their support and generosity.

# Judging Rubric

Category	Score	Comments
<b>Presentation Delivery (25pts)</b>		
<b>Analysis of Problem/Challenge (25pts)</b> -Prioritization -Justification -Logic/Clarity		
<b>Content of Pitch (40pts)</b> -Evidence-based -Feasibility -Partnerships -Creativity/Innovation -Risk Assessment -Implementation Plans -Monitoring and Evaluation -Timeline and Budget -Sustainability Beyond Funding		
<b>Questions &amp; Answers (10 pts)</b> -Thinking on Feet -Clarity of Response		

**General Feedback/Additional comments:**

# The Challenge

Preventable hospital readmissions due to heart failure alone cost Medicare \$1.7 billion in 2011, with over one million readmissions.<sup>1</sup> Therefore, reducing unnecessary readmissions which often stem from a lack of patient compliance is a high priority. In particular, a substantial proportion of patients with heart failure are re-hospitalized within half a year, and many of these re-hospitalizations are connected to the worsening of previously diagnosed heart failure<sup>2</sup>. In addition, the direct costs of heart failure are exorbitant, with more than a million hospitalizations and nearly 3 million ambulatory care visits contributing to costs. According to the Medicare Payment Advisory Commission, the estimated annual cost of unplanned readmissions for heart failure is approximately \$17 billion<sup>3</sup>.

Because reduction in readmission rates might reduce costs and improve quality of care simultaneously, public and private payers have increasingly targeted readmissions as a focus of pay-for-performance initiatives<sup>4</sup>.

The American Heart Association is one of the key players in efforts to reduce hospital readmission rates due to heart failure symptoms. They primarily fund researchers at hospitals across the country, including the University of Chicago Medical Center. Using new scientific evidence, the AHA then develops best practices guidelines which they disseminate to health care practitioners, especially at hospitals. One of the major issues relating to readmissions is the lack of coordination and communication between hospitals, which prevent hospital administrators from adopting the best practices from their peers and collaborating on initiatives.

**Your task is to come up with a proposal to reduce readmission rates in heart failure, addressing specific Chicago needs.<sup>5</sup>**

In your proposal, please include:

1. The specific stakeholders you are addressing (hospital administrators, the AHA, community health organizations, etc).
2. The feasibility of implementation (specific partnerships, timeline, budget, etc).
3. How you will evaluate its success (metrics, qualitative surveys, etc).

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<sup>1</sup> Ron Shinkman, *Readmissions lead to \$41.3B in additional hospital costs* (2014), <http://www.fiercehealthcare.com/finance/readmissions-lead-to-41-3b-additional-hospital-costs>.

<sup>2</sup> [http://www.medscape.com/viewarticle/782534\\_1](http://www.medscape.com/viewarticle/782534_1)

<sup>3</sup> Ibid

<sup>4</sup> Akshay S. Desai and Lynne W. Stevenson. "Rehospitalization for Heart Failure". *Circulation*. 2012;126:501-506, originally published July 23, 2012. <http://dx.doi.org/10.1161/CIRCULATIONAHA.112.125435>

<sup>5</sup> Because of the complexity of the problem, the case does not have a single correct answer and encourages exploring numerous perspectives and methodologies to develop a comprehensive solution. You can propose a start-up, a policy change, an app, or anything else you think of.

# What is Heart Failure?

Heart failure, or congestive heart failure (CHF), is a condition of the heart stemming from the inability to pump blood optimally. Several conditions contribute to heart failure, including narrowed arteries from coronary artery disease or high blood pressure, which adversely affect the heart's primary functions of pumping and circulating blood the rest of the body.

Not all conditions that contribute to heart failure are reversible, but certain treatments can help to alleviate symptoms and extend a patient's life. The most common prescriptions include exercise, reducing salt in one's diet, managing and mitigating stress and losing weight. The easiest ways to prevent or control heart failure is to attend to many of the ancillary conditions that cause it in the first place such as diabetes, obesity, high blood pressure and coronary artery disease.<sup>6</sup>

## Scope of the Problem - Prevalence of HF

Today, of all adults age 40 and above,

**1 in 5**  
Americans will develop  
**heart failure**  
in their lifetime

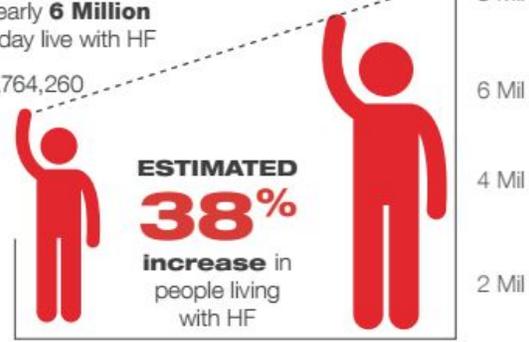


An estimated **8 Million** will live with HF by 2030

Nearly **6 Million** today live with HF

5,764,260

7,932,523



2015 2020 2025 2030



- It is estimated that by 2030, the percentage of the population with HF (or prevalence of HF) in the U.S. will increase by 22 percent.

- The number of patients with HF will increase by 38 percent to almost 8 million people by 2030.

\* 2015 updated data from American Heart Association 2013 Policy Statement, *Forecasting the Future of HF in the US*



<sup>6</sup> <http://www.mayoclinic.org/diseases-conditions/heart-failure/basics/definition/con-20029801>

Graphic: American Heart Association

# The Importance of Reducing Readmission Rates

Avoidable hospital readmissions has become an important issue in improving our health care system. In 2013, Medicare alone reported spending over \$17 billion on unnecessary readmissions.<sup>7</sup> As a way to make health care spending more efficient, the Centers of Medicare & Medicaid Services started the Hospital Readmissions Reduction Program (HRRP) in October 2012. Under this system, CMS began to reduce payments for Inpatient Prospective Payment System (IPPS) hospitals with excess readmissions in six conditions including heart failure.<sup>8</sup>

Over the next year, penalties for high readmission rates will reach a new high and Medicare will withhold about a half billion dollars in payments. More than half (2597) of the nation’s hospitals will be penalized and penalties are expected to total \$528 million. Since the start of HRRP, 1621 hospitals have been penalized all five years.<sup>9</sup>

Principal diagnosis for index hospital stay*	Number of readmissions		Cost of readmissions		Readmission rate (per 100 admissions)
	Number of all-cause, 30-day readmissions	Readmissions as a percentage of total Medicare readmissions	Total cost of all-cause, 30-day readmissions (in millions), \$	Readmission total cost as a percentage of total costs of Medicare readmissions	
Congestive heart failure; nonhypertensive	134,500	7.3	1,747	7.3	24.5
Septicemia (except in labor)	92,900	5.1	1,410	5.9	21.3
Pneumonia (except that caused by tuberculosis or sexually transmitted disease)	88,800	4.8	1,148	4.8	17.9
Chronic obstructive pulmonary disease and bronchiectasis	77,900	4.2	924	3.8	21.5
Cardiac dysrhythmias	69,400	3.8	835	3.5	16.2
Urinary tract infections	56,900	3.1	621	2.6	18.1
Acute and unspecified renal failure	53,500	2.9	683	2.8	21.8
Acute myocardial infarction	51,300	2.8	693	2.9	19.8
Complication of device; implant or graft	47,200	2.6	742	3.1	19.0
Acute cerebrovascular disease	45,800	2.5	568	2.4	14.5
<b>Total</b>	<b>718,100</b>	<b>39.1</b>	<b>9,371</b>	<b>39.0</b>	<b>19.6</b>

Illinois is flagged as one of worst “offenders” of the HRRP. Medical facilities with higher than expected readmission rates from 2010 to 2013 will see their Medicare reimbursements reduced up to 3% in fiscal 2015. With 82 Illinois hospitals seeing their penalty increase since 2012 and more than 100 facing “federal fines in the new fiscal year” after an overwhelming number of patients returned to a hospital within 30 days of treatment.<sup>10</sup>

Furthermore, the penalization in Illinois is more evident than in the country. In 2015, a mere 7 of 127 acute-care hospitals in Illinois in the program were not penalized by Medicare. Thus, Medicare has found that “94% of hospitals in the state had excess readmissions from 2010 to 2013.”<sup>11</sup>

<sup>7</sup> <http://healthaffairs.org/blog/2013/08/16/reducing-hospital-readmissions-its-about-improving-patient-care/>

<sup>8</sup> <https://www.medicare.gov/hospitalcompare/readmission-reduction-program.html>

<sup>9</sup> <http://khn.org/news/more-than-half-of-hospitals-to-be-penalized-for-excess-readmissions/>

<sup>10</sup> <http://www.chicagotribune.com/business/ct-hospital-readmissions-met-20141002-story.html>

<sup>11</sup> <http://www.chicagobusiness.com/article/20140812/NEWS03/140809798/medicare-to-ding-120-illinois-hospitals-over-readmissions>

Table: <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb172-Conditions-Readmissions-Payer.pdf>

The penalties are aimed at making hospitals more involved with patients' well-being after discharge. As such, despite the increase in the amount of penalties, hospitals have been working on improving patient care after discharge and the national readmissions rate has dropped. Nowhere in Illinois is this more witnessed in the Chicago area. Presence Our Lady of Resurrection Medical Center and Presence Resurrection Medical Center, both Cook County hospitals, saw a -.90 (1.00% to 0.10%) and -.73 (.73% - 0.00%) drop in percentages in 2015 from those of 2013, respectively.<sup>12</sup>

While hospitals like Presence Resurrection, which received an impressive 0.00% 2015 Penalty, seem to be the gold standard for reducing readmissions, it is essential to consider the socioeconomic diversity even within Cook County and areas with underserved communities. In contrast, in 2015, Ingalls Memorial Hospital saw a whopping 2.94% jump from fiscal 2013. Likewise, Presence Saint Joseph Medical Center saw a 2.66% jump in 2015 from a meager 1.11% from the year before.

Finally, heart failure in particular has the highest 30-day readmissions rate of 27% and contributes to 55% of Medicare's spending on readmissions.<sup>13</sup> Within 6 months of being discharged, 23% Medicare beneficiaries diagnosed with heart failure are readmitted with a primary diagnosis of heart failure and 48% are readmitted for any reason.<sup>14</sup> Heart failure readmissions becomes especially costly because comorbid conditions account for half of readmissions.<sup>15</sup> For instance, renal failure has been noted to be a strong predictor of heart failure readmission within 30 days.<sup>16</sup>

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<sup>12</sup> <http://graphics.chicagotribune.com/lifestyles/health/hospital-readmissions/>

<sup>13</sup> <http://us.milliman.com/uploadedFiles/insight/2015/heart-failure-cost-medicare-analysis.pdf>

<sup>14</sup>

[http://www.heartfailure.com/hcp/heart-failure-cost.jsp?usertrack.filter\\_applied=true&NovaId=2935377057498238733](http://www.heartfailure.com/hcp/heart-failure-cost.jsp?usertrack.filter_applied=true&NovaId=2935377057498238733)

<sup>15</sup> <http://circ.ahajournals.org/content/126/4/501>

<sup>16</sup> <http://onlinelibrary.wiley.com/doi/10.1002/clc.22260/full>

# Obstacles to Care

Psychosocial and socioeconomic factors pose barriers to care and limit compliance with medications, self-care, and routine follow-ups, thus increasing readmission rates.<sup>17</sup> To improve the quality and effectiveness of chronic heart failure care, it is crucial that patients adhere to chronic disease self-management (CDSM) strategies.<sup>18</sup> However, a variety of obstacles complicate routine practice of CDSM.

Patients with similar socioeconomic risk factors often cluster according to the local geography of their hospitals.<sup>19</sup> Overcrowded hospitals and clinics can limit the amount of time a doctor has with the patient, creating an obstacle to effective shared decision making.<sup>20</sup> Moreover, patients may not have access to primary care physicians and local clinics, and may be limited by the expense of health insurance.

Following discharge, patients may struggle to adhere to self-care instructions regarding medications, therapies, sodium restricted diets, and daily weights, due to poor understanding about care practices, how to schedule appointments, or how to obtain and pay for medications.<sup>21</sup> Although follow-up appointments within the first 7 to 10 days after discharge are particularly important,<sup>22</sup> many patients are unable to keep these appointments due to illness, financial struggles, or lack of transportation. The patient may also lack a support group of caregivers, or those caregivers may not have information necessary to appropriately care for and monitor the patient.<sup>23</sup>

Medical information and recommendations may be complex and difficult for any patient to understand.<sup>24</sup> Written discharge information may be contradictory, confusing, or not tailored to a patient's specific medical status and health literacy.<sup>25</sup> However, this difficulty is exacerbated by language barriers between patient and care provider. According to the U.S. Census Bureau, more than 13 million Americans over the age of five speak little to no English.<sup>26</sup> These minority groups may also experience other risk factors that compound the communication problem: for example, the AHA reported that 29.3% of Hispanics will die from heart and stroke diseases each year, largely due to diet, hypertension, and difficulty accessing healthcare.<sup>27</sup>

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<sup>17</sup> Desai, Akshay S., and Lynne W. Stevenson.

<sup>18</sup> Gardetto, Nancy Jean. "Self-Management in Heart Failure: Where Have We Been and Where Should We Go?" <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3084307/>

<sup>19</sup> Desai, Akshay S., and Lynne W. Stevenson.

<sup>20</sup> American Heart Association. "Overcoming Barriers to Shared Decision Making". [http://www.heart.org/HEARTORG/Conditions/HeartFailure/Overcoming-Barriers-to-Shared-Decision-Making\\_UCM\\_441939\\_Article.jsp](http://www.heart.org/HEARTORG/Conditions/HeartFailure/Overcoming-Barriers-to-Shared-Decision-Making_UCM_441939_Article.jsp)

<sup>21</sup> American Heart Association. "Target: HF".

[https://www.heart.org/idc/groups/heart-public/@private/@wcm/@hcm/@gwtg/documents/downloadable/ucm\\_433444.pdf](https://www.heart.org/idc/groups/heart-public/@private/@wcm/@hcm/@gwtg/documents/downloadable/ucm_433444.pdf)

<sup>22</sup> Desai, Akshay S., and Lynne W. Stevenson.

<sup>23</sup> American Heart Association. "Target: HF".

<sup>24</sup> American Heart Association. "Overcoming Barriers to Shared Decision Making".

<sup>25</sup> American Heart Association. "Target: HF".

<sup>26</sup> American Heart Association. "Overcoming Barriers to Shared Decision Making".

<sup>27</sup> American Heart Association. "Target: HF".

Patients with advanced heart failure and their families often experience fear, stress, and other strong emotions that may interfere with their abilities to process medical information to make important decisions.<sup>28</sup> Depending on the family dynamics, this may manifest in a reluctance to have discussions regarding end of life decisions, which are particularly necessary for elderly readmission patients.<sup>29, 30</sup> Moreover, patients may suffer from depression and anxiety.<sup>31</sup>

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<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Desai, Akshay S., and Lynne W. Stevenson.

<sup>31</sup> American Heart Association. "Overcoming Barriers to Shared Decision Making".

# Current Practices and Innovations

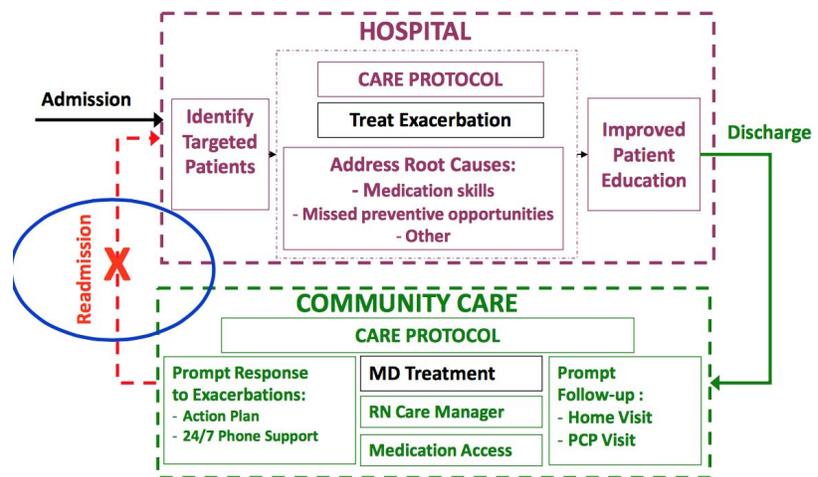
While the task may be daunting, you are not alone in addressing this problem. Below is a non-exhaustive list of current approaches geared towards reducing readmission rates for heart failure patients.

## The Pittsburgh Regional Health Initiative (PRHI)

PRHI created a pilot project aimed at reducing readmissions<sup>32</sup>. The study found two key elements to successfully preventing readmission: care management and patient engagement. Care management involves identifying patients for whom home visits post-discharge would be beneficial. The care manager remains in touch with the patient during the hospital stay, and then makes a home visit within three days after discharge. The care manager educates the patient and encourages them to find local resources, such as pharmacies and physicians. Care management is not usually covered by health insurance. Patient Engagement focuses on the quality of

educational material provided for the patient and a “patient action plan.” Educational material should be an easy to understand guide. With simple language and descriptive graphics, the material should be customizable for individual patient information. The patient action plan is an agreement by the patient to follow all physician instructions after discharge, with necessary warning signs and contact information were a situation to arise. In this multi-year project, the PRHI found that the cost of hiring and training new staff to carry out additional patient management was offset by the savings from reduced readmissions.

## Improved Chronic Disease Management



Pam Burley writes that prescription noncompliance is the reason behind 10% of hospital admissions. Echoing the PRHI, Burley suggests material be written at a sixth-grade reading level. The National Institute for Literacy has estimated the national average reading level to be around seventh- or eighth-grade. Additionally, many people are unable to afford their prescriptions. Burley states that patients should be asked respectfully if this is an issue of theirs; if so, a social worker can be called in to help in the process of contacting pharmaceutical companies to find the cheapest medications. The

<sup>32</sup> Pittsburgh Regional Health Initiative, *PRHI Readmission Reduction Guide: A Manual for Preventing Hospitalizations* (2011), <http://www.prhi.org/documents/ReadmissionReductionGuide-Final2-1-11.pdf>.  
Figure: : <http://www.prhi.org/documents/ReadmissionReductionGuide-Final2-1-11.pdf>

long-term added cost of readmission should be stressed. Cultural/religious beliefs are also a barrier that must be overcome to prevent these readmissions. Communicating about potential religious conflicts in advance can prevent; for example, prescribing medications the patient will not take, and finding an acceptable alternative. Finally, transportation can be a large barrier to returning for follow-up appointments: some patients do not have personal transportation and depend on relatives, while others may live hours from the hospital and so traveling to and from appointments is a logistical and financial burden. Again, social workers may be able to coordinate transportation, but this obstacle must be discovered by hospital staff before discharge so that the issue can be addressed.

### **Telemonitoring:**

Telemedicine, the practice of providing care and health coaching to patients via the internet or phone, has been touted as a way to keep healthcare costs down for both consumers and providers. Many of the infrastructure required are either already in place at a hospital system or can be acquired at a fairly low cost. An extension of telemedicine is telemonitoring, which uses electronic equipment either worn or implanted, to collect a variety of information on patients on a daily basis and sends it to a central database that their providers can access. However, the majority of available evidence shows a lack of effectiveness of such methods in reducing hospital readmissions due to heart failure when presented on top of a traditional case management workflow.<sup>33</sup> However, current research are cautiously noting that the integration of telemonitoring into a restructured process of care (for example, PRHI), may result in a sizable reduction in readmission rates.<sup>34</sup>

### **Provider side analytics**

The strength of any hospital system that seeks to measure changes in outcomes lies in both the quality and quantity of patient data, as well as the ability to extract useful information from them. HealthCatalyst, a data warehouse and analytics company that provides IT expertise to hospitals and healthcare organizations, has reported success in helping a hospital system reduce readmissions rates.<sup>35</sup> This was achieved in two steps. First, HealthCatalyst created a systems-wide heart failure analytics platform that was able to automatically link in information from the hospital EHR and other databases. Then, they worked with staff and clinicians to test certain hypotheses and centrally manage heart failure patients.

The initial problem HealthCatalyst encountered was the lack of relevant data. Patients who were admitted to the hospital with heart failure were seen by hospitalists and primary care doctors in the emergency room or observation units, and not by cardiologists. Thus, the hospital system did not have a rich set of data for medical procedures and interventions. In addition, the hospital system, like many others, only had information on overall hospital readmissions on a lagged basis, and did not specifically track 30-day heart failure readmissions.

In consultation with a group of hospital stakeholders that included cardiologists, nurses, and a billing administrator, HealthCatalyst was able to circumvent those problems by creating a data system in 90 days that directly drew data from the hospital's EHR in real time, and enacted an user-friendly interface for the reams of data that were being pulled in. This interface allowed users to easily visualize

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<sup>33</sup> [jamanetwork.com/journals/jamainternalmedicine/fullarticle/2488923](http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2488923)

<sup>34</sup> <http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2530483>

<sup>35</sup> [https://www.healthcatalyst.com/success\\_stories/hospital-readmissions-reduction-program-for-heart-failure](https://www.healthcatalyst.com/success_stories/hospital-readmissions-reduction-program-for-heart-failure)

trends and summaries of important metrics, and the system was able to automatically push monthly reports to the respective parties.

As a method of reducing readmission rates, the analytics platform also enabled hospital administrators to efficiently schedule and track follow-up appointment rates. This led to a 63 percent follow-up rate from a baseline of 17 percent within 7 days of initial discharge. Whether this has an effect on decreasing the overall readmissions rate remains to be seen.

### **American Heart Association**

The American Heart Association (AHA) is one of the key players in efforts to reduce hospital readmission rates due to heart failure symptoms. They primarily fund researchers at hospitals across the country, including the University of Chicago Medical Center. Using new scientific evidence, the AHA then develops best practices guidelines which they disseminate to health care practitioners, especially at hospitals. Much of this guidance is available on the AHA website. Kathleen O'Neill of the American Heart Association explained barriers to the highest quality of care across hospitals. She stressed the lack of coordination and communication between hospitals, which prevent hospital administrators from adopting the best practices from their peers and collaborating on initiatives.

The AHA resource “Get With The Guidelines®-HF Clinical Tools Library”<sup>36</sup> includes “forms and tools that have proven successful at other hospitals participating in Get With The Guidelines-HF. We offer these documents only to give you an idea of other hospitals' solutions.” While having other hospitals' written resources available is beneficial, direct collaboration between hospitals is even more ideal. In March 2017, the AHA will host a multi-day conference in Illinois to bring hospital administrators together from across the region. This will provide a crucial chance for direct collaboration. Beyond this specific conference, there is much room for innovation in structured communication between hospitals.

To incentivize and reward hospitals for implementing best practices, the AHA recognizes hospitals nationally for meeting “standards to support better outcomes for patients with heart failure during hospital stays, in transition from the hospital to home and during outpatient care.”<sup>37</sup> Naturally, smaller, less-resourced hospitals tend to have more difficulty offering the highest level of advanced heart failure services. However, regardless of resources, hospitals can fairly easily implement online technologies such as the Patient Management Tool.<sup>38</sup>

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<sup>36</sup>[http://www.heart.org/HEARTORG/Professional/GetWithTheGuidelines/GetWithTheGuidelines-HF/Get-With-The-Guidelines-HF-Clinical-Tools-Library\\_UCM\\_305817\\_Article.jsp](http://www.heart.org/HEARTORG/Professional/GetWithTheGuidelines/GetWithTheGuidelines-HF/Get-With-The-Guidelines-HF-Clinical-Tools-Library_UCM_305817_Article.jsp)

<sup>37</sup>[http://www.heart.org/HEARTORG/Professional/HospitalAccreditationCertification/AdvancedCertificationinHeartFailure/Advanced-Certification-in-Heart-Failure\\_UCM\\_439150\\_SubHomePage.jsp](http://www.heart.org/HEARTORG/Professional/HospitalAccreditationCertification/AdvancedCertificationinHeartFailure/Advanced-Certification-in-Heart-Failure_UCM_439150_SubHomePage.jsp)

<sup>38</sup>[http://www.heart.org/HEARTORG/Professional/GetWithTheGuidelines/GetWithTheGuidelines-HF/Get-With-The-Guidelines-HF-Patient-Management-Tool\\_UCM\\_307819\\_Article.jsp](http://www.heart.org/HEARTORG/Professional/GetWithTheGuidelines/GetWithTheGuidelines-HF/Get-With-The-Guidelines-HF-Patient-Management-Tool_UCM_307819_Article.jsp)