Preventable readmissions are prevalent and expensive. Biggest problem in four high-volume conditions:

- **Heart Failure**: 24.4%
- **Heart Attack**: 19.9%
- **COPD**: 20.0%
- **Pneumonia**: 17.1%

National rates of readmission within 30 days

Annual readmissions across four above areas: 500,000

Total preventable rehospitalization cost: $12 billion

**READMISSIONS COST $12B TO THE SYSTEM**

COPD = Chronic Obstructive Pulmonary Disease

Sources: Medicare.gov, Jencks et al. NEJM 360 (2006) 1418
Payers have begun to transfer this massive risk transfer to providers

$12 billion

CMS, 2012
Medicare & Medicaid
Private
Uninsured

$500 million through readmission penalties

Sources: AHRQ HCUP Statistical Brief #196, CMS HRRP
Massive Risk Transfer Accelerating

The risk transfer is accelerating with new payer initiatives

All payers are adopting value-based frameworks

1. Quality Contracts
   - Financial penalties for poor performance
   - P4P and shared savings from private payers

2. APMs (Alternative Payment Models)
   - ACOs, Bundles

Target percentage of Medicare FFS payments linked to quality and alternative payment models in 2016 and 2018

Source: CMS Press Release 1/26/2015
Heart Failure (HF) Readmissions by Hospital

NATIONAL 30-DAY RR VARIANCE

<table>
<thead>
<tr>
<th></th>
<th>Average RR</th>
<th>10th Percentile</th>
<th>90th Percentile</th>
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<tbody>
<tr>
<td>Heart Failure</td>
<td>24.4</td>
<td>21.9</td>
<td>27.1</td>
</tr>
<tr>
<td>Heart Attack</td>
<td>19.9</td>
<td>18.4</td>
<td>21.2</td>
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Map data: data.medicare.gov
Table: Krumholz et al., 2009.
Providers lack the capability, culture, and infrastructure to appropriately adapt to manage this new risk

LACK OF KNOW-HOW

- **Hospitals are only designed** to provide care within their four walls, but readmissions depend on patient behavior at home
- **75% of MSSP ACOs made $0** in shared savings bonuses in 2014-2015

FINANCIAL REPERCUSSIONS

- Hospitals have huge legacy capital expenditures with **very low margins** completely dependent on capacity utilization.
- Razor-thin margins mean that any **unexpected costs are disastrous**. And readmissions are expensive ($16k+)
How can we improve population health outcomes and help providers succeed in a value-based world?
Drugs don’t work in patients who don’t take them.
Drugs don’t work in patients who don’t take them.

Devices don’t work in patients who don’t use them.
FAILED ATTEMPTS

To date we have tried to change behaviors by pushing coaching, education, and new technology onto patients.
A new approach based on behavioral economics is needed to overcome the root problem:

Present bias
Many health behaviors we want to change can be affected by behavioral economics

- Medication adherence
- Chronic disease monitoring adherence
- Follow-up adherence
- Physical activity
IMPROVING MEDICATION ADHERENCE

Financial incentives drove a 10x reduction in warfarin nonadherence\(^1\)

DOES THE MED ADHERENCE IMPROVEMENT LAST?

When the incentive reinforces daily habits, the medication adherence improvement lasts after the incentive ends.

When given connected BP Cuffs, Scales, and Glucometers, about one quarter of patients still use them after 6 months.
Paying $1.40/day for 3 months increased device adherence by 2.3x at 6 months

Average adherence among Medicaid patients post hospitalization for MI or coronary revascularization

**CAN YOU IMPROVE FOLLOW-UP ATTENDANCE?**

$198
$2 of $4 kept today

Took medication, kept $2
8:30 AM
Fortamet, Lipitor
COMPLETE AT 8:30 AM

Ate breakfast
8:30 AM
Egg, waffle, sausage

Measure blood glucose
10:30 AM
COMPLETE AT 10:30 AM
2H AFTER EATING BREAKFAST

Take medication to keep $2
8:30 PM
Aspirin
AVAILABLE IN 9H 10M
<table>
<thead>
<tr>
<th>WELLTH</th>
<th>Type 2 Diabetes</th>
<th>Congestive Heart Failure</th>
<th>Cardiovascular Disease</th>
<th>COPD &amp; Asthma</th>
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</thead>
<tbody>
<tr>
<td><strong>Prevalence</strong></td>
<td>9% (+37% prediabetes)</td>
<td>2% (#1 cause of death)</td>
<td>&gt;25%</td>
<td>6% COPD (overall) 9% Asthma (children)</td>
</tr>
<tr>
<td><strong>Annual Cost</strong></td>
<td>$11,000</td>
<td>$22,000</td>
<td>$19,000</td>
<td>$4,000 (COPD)</td>
</tr>
</tbody>
</table>
| **Interventions** | Medications  
BP Monitoring  
BG Monitoring  
Diet | Medications  
Daily Weight  
Diet | Medications  
Diet | Mainten. Therapies  
Rescue Therapies  
Smoking Cessation |
| **Devices** | BP Cuff & Glucometer | Scale | BP Cuff | Smart Inhaler |
How it works for a patient who just had his first HF admission

Enroll in the Hospital
$150 deposited into account, to be paid out in 30-day installments of $50

Reward for Adherence
Adhere to medications and daily weigh-ins to avoid losing $2/day over 90 days

Achieve Good Outcomes
Improved adherence, better health, and lowered risk of hospitalization
Complete your Wellth actions today to keep $2. Weigh in now. Use the toilet but don’t eat or drink.
### Jeffrey Hernandez

- **Address:** 123 Pine St, Wayne, PA 11249 US
- **Phone:** 0000000002
- **Email:** User2@wellthapp.com
- **Gender:** Male
- **Adherence:** 69%

### Adherence

- **Start Date:** 8/1/2016
- **End Date:** 9/14/2016
- **Adherence:** 65%
- **Submitted Actions:** 26
- **Required Tasks:** 40
- **Medication Actions:** 6
- **Glucose Actions:** 20
- **Reward Currency:** USD
- **Total Reward Value:** $12.83

### August 2016

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</table>
Wellth paid pilot with national health insurer demonstrated 78% better medication adherence vs. control.

Ongoing Clinical Trials

1. Heart Failure
2. Heart Attack

(Search for Wellth on ClinicalTrials.gov)
The results from another population (with many dual eligibles) indicates the success we can achieve with the toughest patients

| **Population:** | Patients with T2 Diabetes, A1c > 8%, avg. age = 66, taking oral meds, and consuming long term care |
| **Intervention:** | $250 / 6 months to take meds and lower A1c |

| **ElderServe Health now RiverSpring at Home** |
| **79%** Eligible patients signed up for our program |
| **98%** Medication Adherence as of 3/15/17 |
### Example Savings Opportunity

<table>
<thead>
<tr>
<th>RR Reduction</th>
<th>RR\text{\textsubscript{initial}} \rightarrow RR\text{\textsubscript{final}}</th>
<th>Savings</th>
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<tbody>
<tr>
<td>Conservative</td>
<td>20%</td>
<td>34% \rightarrow 27%</td>
</tr>
<tr>
<td>Aggressive\textsuperscript{3}</td>
<td>40%</td>
<td>34% \rightarrow 20%</td>
</tr>
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</table>

1. Medicare.gov/hospitalcompare
2. Based on data from Jencks et al. NEJM, 360 (2009) 1418
PERSONALIZED INTERVENTIONS

How to make interventions even more targeted by stratifying populations based on diagnoses and other risk factors

Risk adjustment based on diagnoses
- HF Stage (I-IV) risk adjusting

Improve predictive modeling over time based on individual risk factors
- Prior admission within one year
- Prior heart failure
- Comorbidities
- Creatinine level >2.5 mg/dL

Krumholz et al. AHJ 2000; Sherer et al. J Cardiovascular Nursing 2016
Thanks for your time

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