Crimson Real Time
Readmissions

Work Smarter to Prevent Readmissions – Point of Care is Key

Using Crimson Real Time to Prevent Readmissions

Road Map

1 **Readmission Prevention Challenge**

2 Case Study: Robert Wood Johnson University Hospital Hamilton

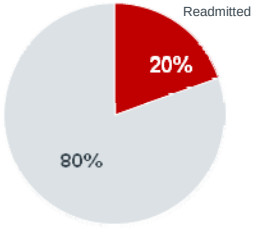
3 Conclusion

An Obvious Place to Focus

Data Show Readmissions Are Frequent, Preventable, and Costly

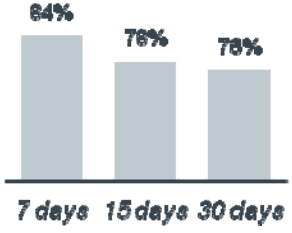
Alarmingly Frequent

Percentage of Medicare Patients Readmitted within 30 Days



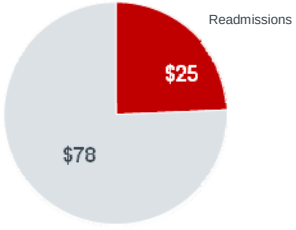
Highly Preventable

Percentage of Readmissions among Medicare Patients Considered Preventable



Enormously Costly

Readmissions as a Proportion of Total Medicare Spending, 2005 ($ billions)



Medicare Readmissions Program is a Highly Visible Quality Indicator for Regulators and Peers

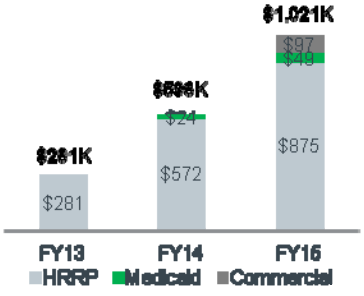
FY 2013	*FY 2015*	*FY 2018*
• 1% of Medicare revenue at risk • Private payors expected to follow	• 3% of Medicare revenue at risk • CMS adds COPD, THA and TKA to the list of penalized categories	• Increased adoption of accountable payment models adds teeth to penalties

Source: Clinical Advisory Board

Medicare and Commercial Payers Moving Swiftly

Medicare Financial Penalties to Increase Five-Fold from 2013 to 2015

Penalties for Subpar 250 Bed Hospital ($ thousands)



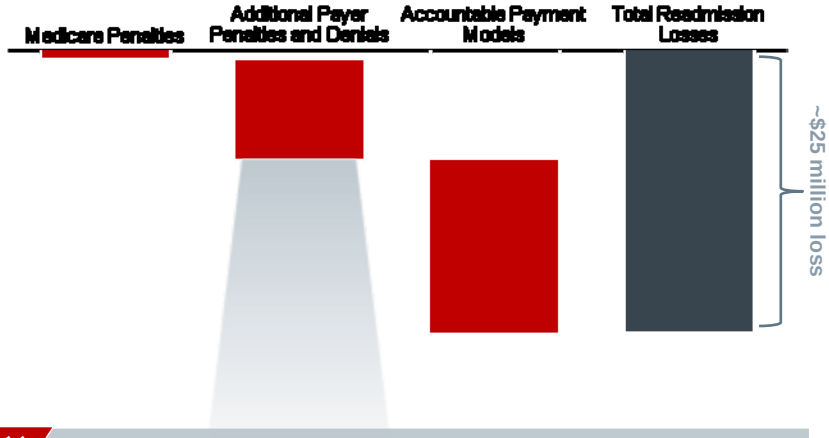
Impact of Penalties Already Widespread

66% Hospitals that will face some penalty

$280 million Total expected losses by US hospitals next year

Ultimately, All Reimbursements Attributable to Readmissions Will Be at Risk

Worst Case Future State for a Subpar 250 Bed Hospital



The Ominous Memo in Your Inbox

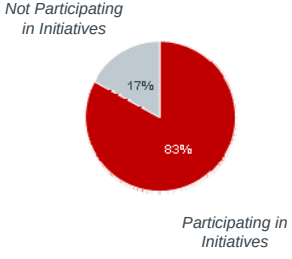
Quote from CFO at Hospital in Ohio

"To be honest, the memo notifying us that our payments for readmissions could be denied by one of our private payers came as a surprise. While Medicare has been relatively slow with its penalty program, private payers can act quickly and unilaterally. The discussion about our changing financial dynamics was certainly a challenging one to have with our board."

Reasons to Act Go Beyond Payment Penalties

The Real End Game is Improved Quality of Care and Financial Outcomes

The Majority of Institutions Have Already Taken Action

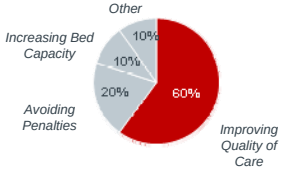


New Care Delivery Models

- Value Based Purchasing Program
- Medicare Shared Savings Program
- Medicare Bundled Payments for Care Improvement Initiative
- Accountable Care

Care Quality

Primary Motivation to Act



Transparency

Increasing Scrutiny from Public Sources

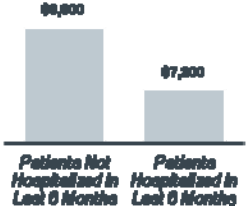
The New York Times

THE WALL STREET JOURNAL.

Medicare.gov
The Official U.S. Government Site for Medicare

Capacity Constraints and Improved Margins

Average DRG Payment

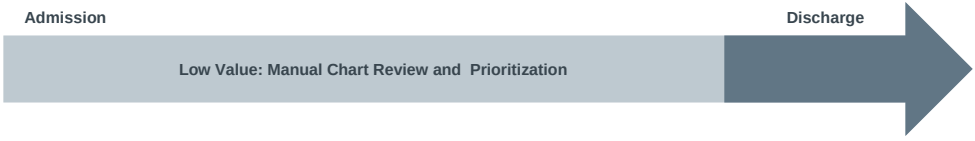


Source: Health Care Advisory Board

Key Obstacles Blocking Success

Current Approaches Full of Flaws

Existing Approaches Are Inefficient



"I need a prioritized list of patients, including the crucial social elements"

"I need risk specific interventions as early as possible in the hospital stay"

And Current Solutions Are Insufficient

	'Gut Instinct' Risk Stratification	Manual, Paper-Based Surveys	Simple Automated Stratification Tools
Description	✓ Patients at risk for readmission are identified based on care team instinct	✓ Surveys at admission or during stay look for a small set of key risk factors	✓ Academic tools like BOOST or LACE designed on a global patient data set
Pitfall	✓ Interventions determined according to past experience	✓ Assessment designed for documentation and retrospective analysis	✓ Stratification conducted using a small amount of risk factors

Even when these flaws are resolved, a successful solution still needs targeted interventions and the ability to track impact

What If You Could Predict the Future?

Out of Industry Insight Key to Long Term Success

Today, across Many Industries, Predictive Modeling Is Integral to Success

Correctly Allocating Resources According to Demand

Walmart — Save money. Live better.

Bank of America

Knowing about Big Life Events Before Your Family Does

Avoiding Delays Before They Happen

UPS

NETFLIX

PANDORA

amazon.com

Predicting What You May Want to Buy Next

An Innovative Approach to Predictive Analytics

1 Comprehensive Global Data

- One in four inpatient admissions flow through Crimson every year
- This data, coupled with a broad literature review, produces an optimal database for modeling

2 Customized Local Data

- Model, however, is customized using local data from your own institution/market
- This ensures that key local variances are integrated into the predictive analysis

3 Free-Text Analytics

- State of the art free text analytics allows the model to capture unstructured data from notes
- This captures hard-to-identify social risk factors

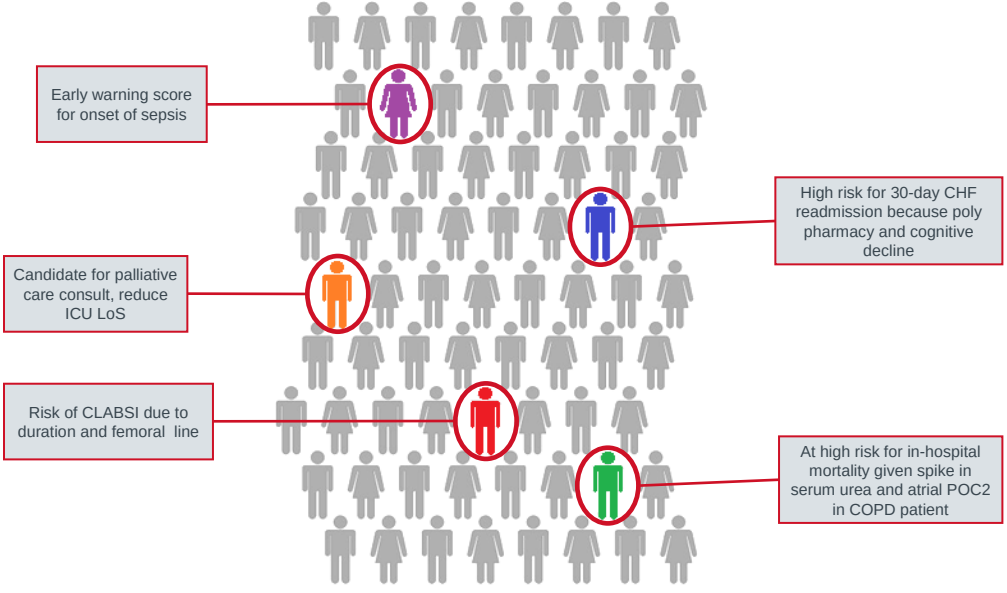
4 Adaptive Model Refinement

- Regular model assessment means that analytics are always calibrated
- Model algorithms are refined based on changes in the patient population

Impact Requires Knowing Both Who and Why

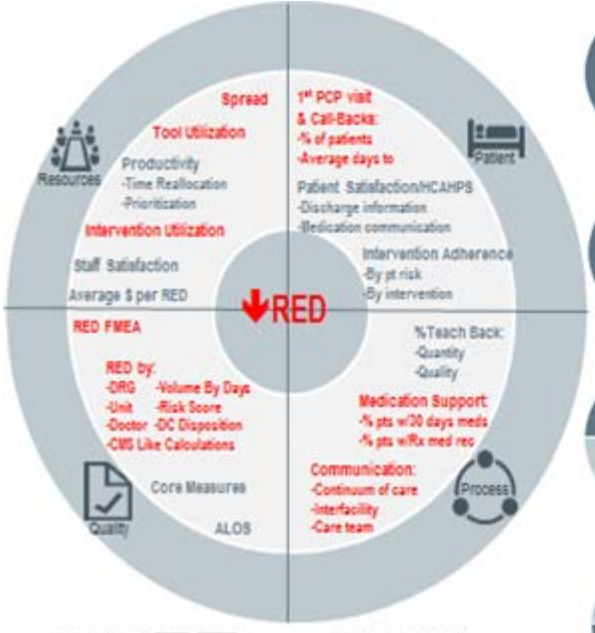
Scaling across patients & outcomes to identify salient risks & interventions

Proactive, Simultaneous Identification of 'Who and Why'



Targeting Readmissions Key Metrics

RWJUHH is Targeting Crucial Metrics to Drive Success



Working with Premedex to improve call-backs
Automating information to Premedex
Monitoring HCAHPS for responsive improvements

Adding EMR prompts to improve intervention tracking
Creating EMR communication supports
Joining pharmacy to daily readmission huddle

FMEA for readmission opportunities
Working on moving to risk prioritization
Tracking readmissions by DRGs

Getting trial unit right and moving to spread
Tracking interventions through EMR
Monitoring tool utilization through CRTR

Road Map

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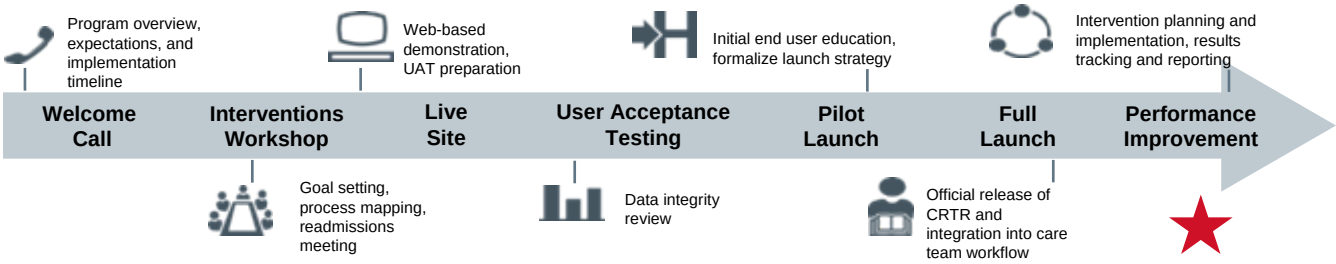
RWJUHH Innovation Partner Project Overview

Delivery Process



Summary of Progress to Date

- ✓ Readmissions application live in production since February 2013, expansion occurred July 2013
- ✓ 41 users have been trained and granted access to the application
- ✓ Pilot launched on TeleNorth to explore workflow integration
- ✓ Models validated and heavily utilized by champions on the pilot units

Model Validation (May-June)

Risk Band	Total Patients	Readmitted Patients	Readmission Rate
High	85	26	30.59%
Medium	127	21	16.54%
Low	212	21	9.91%

Care teams target 40% of readmissions focusing on 20% of pts

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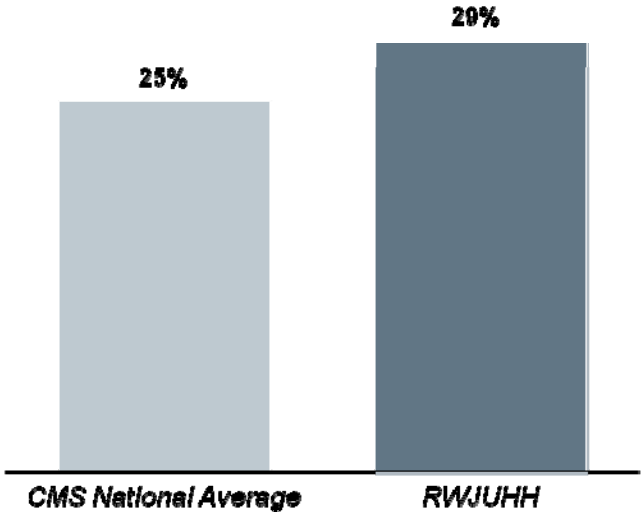
Multiple Factors Driving Readmission Reduction

Using the Readmission Diagnostic as a Starting Point

Avoid Medicare Readmissions Penalty

Heart Failure 30-Day Readmission Rate

2010



Deliver on Patient Care Mission

Care coordination provides better care, improves patient experience

Capitalize on Grant Opportunities

Robert Wood Johnson Foundation grant provided additional incentives to address readmissions

Mitigate Negative Margin Impact

Already tight operating margins at further risk if readmissions not reduced

A Team Makes All The Difference

RWJUHH Readmissions Team

Daily Unit Rounds Team

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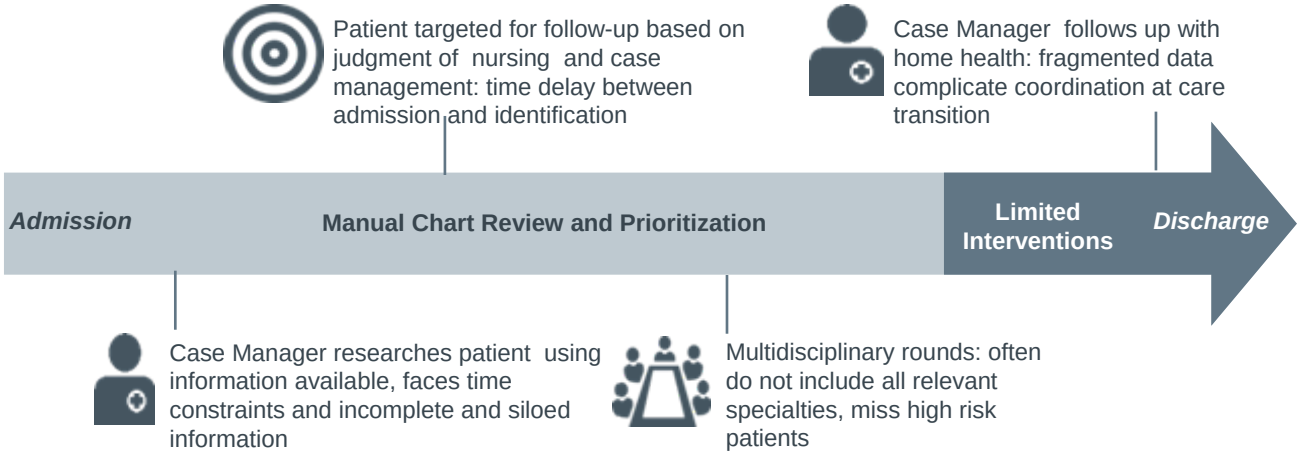
Labor Intensive, Limited Impact

Process Workflow Evaluation Reveals Opportunities for Improvement

Before: A Labor-Intensive Risk Identification Process with Limited Impact

Typical Process Prior to Implementing Crimson Real Time



Evaluating Our Current Work Against Best Practice

Readmission Intervention Summary

	NEXT STEPS
1	lead with why upon admission
2	focus on teachbacks
3	know high risk readmissions
4	ensure PCP appointments are scheduled (and happen)

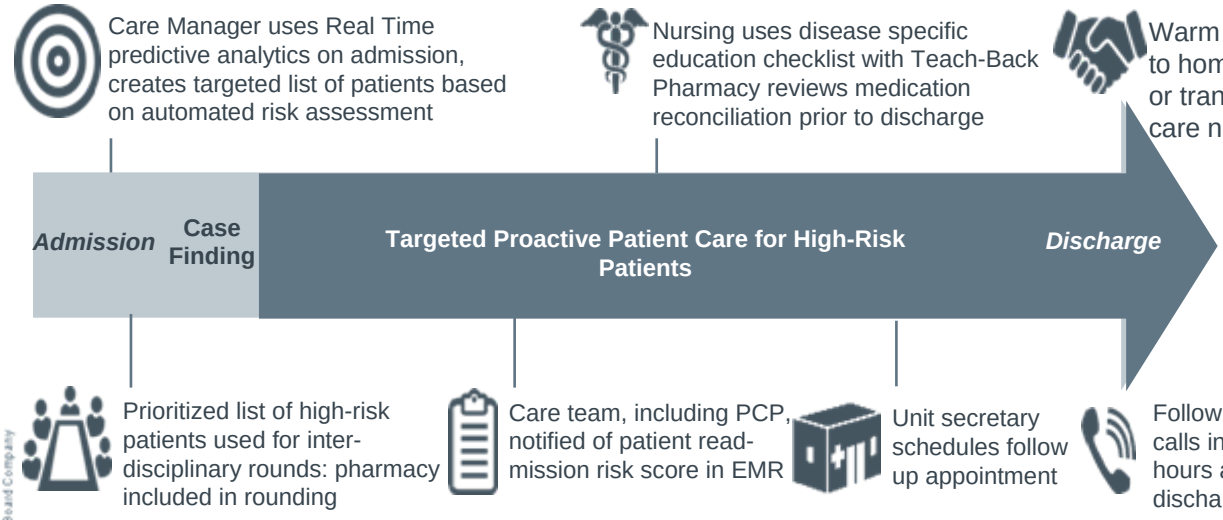
Grading Key*
A - 80-100%
B - 60-79%
C - 40-59%
D - 20-39%

Risk Level	Suggested Intervention	Start Grade Mar 2013*	Grade June 2013	Stakeholder
Low Risk	1. Provide disease education	D		nurse
	2. Complete medication reconciliation	A - B+		nurse
Medium Risk	1. Initiate social work assessment for pyschosocial and financial factors	D-F		admitting nurse, social worker
	2. Provide disease education with Teach Back	D		nurse
	3. Complete medication reconciliation with pharmacist	F		pharmacy director and Admin
	4. Schedule PCP appointment within 7 days	F		unit secretary
	5. Complete follow up phone call within 48 hours of discharge	F		3rd party vendor
High Risk	1. Initiate social work assessment for pyschosocial and financial factors	D-F		admitting nurse, social worker
	2. Provide disease education with Teach Back for patient and care giver	D		nurse
	3. Complete med reconciliation with pharmacist	F		pharmacy director and Admin
	4. Provide prescription prior to discharge if possible	A		physician, nurse
	5. Consider home care	B		case management
	6. Schedule PCP appointment within 3 days of discharge	F		unit secretary
	7. Call PCP office notifying of high risk IP admission	F		
	8. Schedule outpatient follow up testing	F		n/a
	9. Complete follow up phone call within 24 hours of discharge	F		3rd party vendor

Implementing Data-Driven Readmission Prevention

Intervention Workshop Facilitates Best Practice Adoption

New Process Supported by Crimson Real Time Readmissions



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Interventions Key to Reducing Readmissions

Moving the Grade to Success

Risk Level	Suggested Intervention	Start Grade Mar 2013*	Grade April 2013	Grade May 2013
Low Risk	1. Provide disease education	D	D (Heart Failure A)	C
	2. Complete medication reconciliation	A	A	A
Medium Risk	1. Initiate social work assessment for pyschosocial and financial factors	D-F	A	A
	2. Provide disease education with Teach Back	D	C	A
	3. Complete medication reconciliation with pharmacist	F	F	C
	4. Schedule PCP appointment within 7 days	F	A	A
	5. Complete follow up phone call within 48 hours of discharge	F	F	A
High Risk	1. Initiate social work assessment for pyschosocial and financial factors	D-F	A	A
	2. Provide disease education with Teach Back for patient and care giver	D	D (Heart Failure A)	C
	3. Complete med reconciliation with pharmacist	F	F	C
	4. Provide prescription prior to discharge if possible	A	A	A
	5. Consider home care	B	A	A
	6. Schedule PCP appointment within 5 days of discharge (suggested 3 days)	F	A	A
	7. Place readmission risk assessment score in the SCM header (Call PCP office notifying of high risk IP admission)	F	A	A
	8. Schedule outpatient follow up testing - on hold	HOLD	HOLD	HOLD
	9. Complete follow up phone call within 48 hours of discharge (suggested 24 hours)	F	F	A

Building the Infrastructure of Accountability

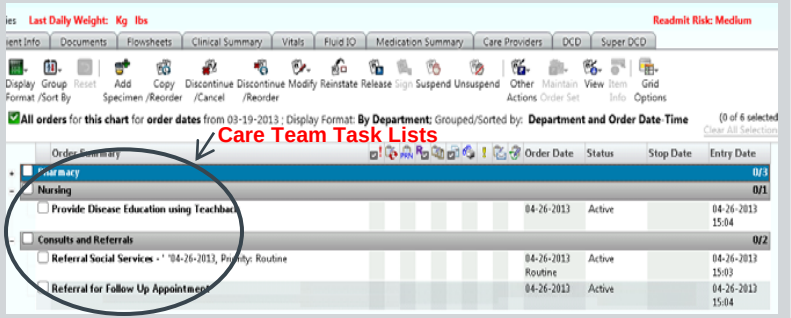
Accountability Supported by Crimson Real Time Readmissions and EMR

EMR Solutions

- Top Information Bar in EMR has patient readmission risk score for all care team to see

- Triggers built in EMR to identify and track interventions by high, medium and low risk options

- Request messages go to individual care team members task lists for each intervention and EMR can track implementation of each intervention



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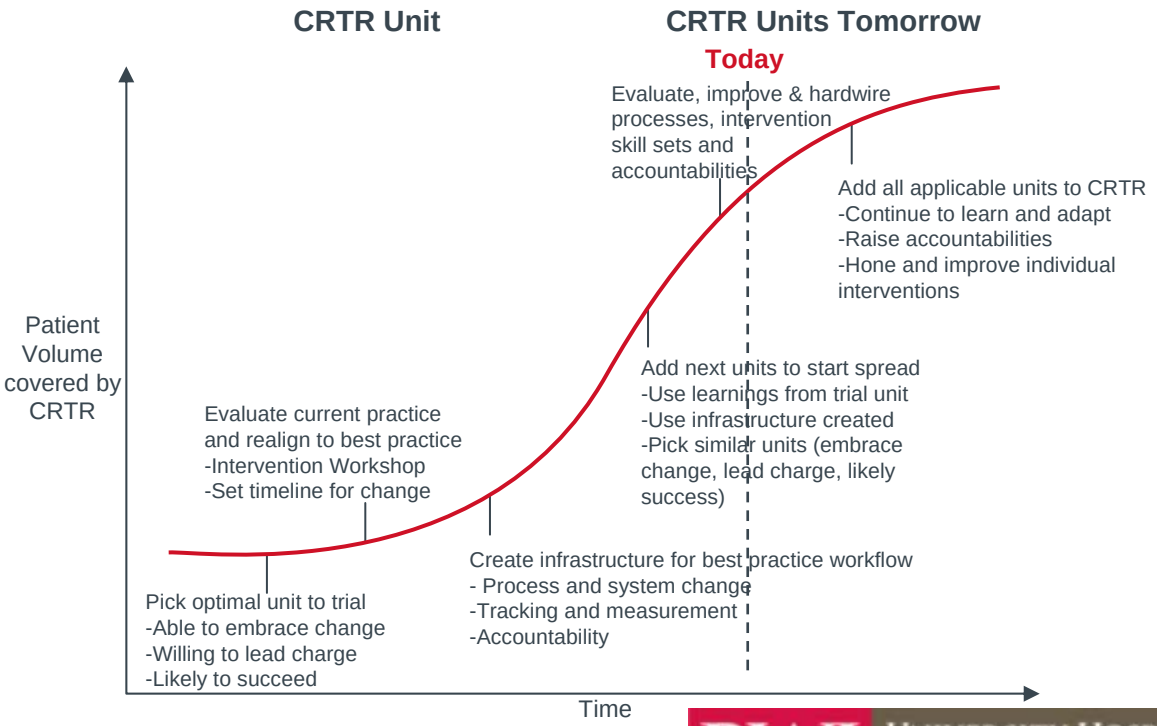
Lessons Learned and Getting to Spread

Reducing Barriers to Change



Transition Nursing Services Improve Care for Cardiac Patients[1]

Case Study: Robert Wood Johnson University Hospital Hamilton

About the Organization

- 250-bed hospital in Hamilton, NJ
- Crimson member since 2010

Challenge

- Hospital team recognizes performance gaps for AMI and Heart Failure patients
- Care transition gaps and disconnects recognized as major drivers of longer stays and high readmission rates

Solution

- Registered Nurse is hired as dedicated transition coach for AMI and Heart Failure cases
- Transition coach works with patients and families to promote compliance with post-discharge care, with focus on four pillars of care:
  - ✓ *Medication management*
  - ✓ *Warning signs and symptoms*
  - ✓ *Personal health record*
  - ✓ *Follow-up with PCP*

Impact

- Over 30% reduction in readmission rate for cardiac patients
- LOS reduction of over 500 annual inpatient days, amounting to $251k in cost avoidance annually[2]

From Discharge Instruction to Patient Education: Four Pillars for Better Care

Medication Management

- Medication reconciliation
- Promoting patient compliance

Warning Signs and Symptoms

- Educating patients and families to recognize symptoms and react accordingly

Personal Health Records

- Educating patients to track and document their symptoms and overall health

Follow-Up with Primary Care Physician

- Improve post-discharge follow-up care with PCP
- Promote long-term care plan and improved compliance

Significant Quality and Utilization Impact

Improving Quality of Care

30-day readmission rates (Any APR-DRG)

Readmission Observed vs. Expected Ratio

Impacting LOS Performance

Inpatient LOS Comparison (Days)

Total: 279 Cases

$251k
Annualized cost avoidance[2]

1) AMI and Heart Failure cases, MS-DRG 280-285, 291-293
2) Based on estimated cost of $500 per inpatient day

RWJUHH data in Crimson, Jan 2011 – June 2013

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Road Map

1 The Readmission Prevention Challenge

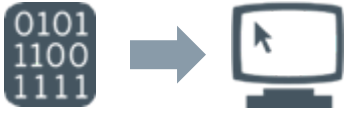
2 Member Case Study: Robert Wood Johnson University Hospital Hamilton

3 **Conclusion**

Key Takeaways from Our Partnership

Moving from Data to Insight

1 **The Right Information Makes the Difference**

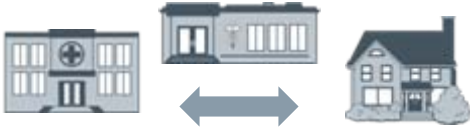


Get the right information to the point of care in order to kick start our efforts

2 **Start Small and Work Out the Kinks**

Set processes for targeted change and create the infrastructure for measurement

3 **Create Successful Partnerships**



Improve provider-patient communications to promote optimal care paths and support

4 **Plan Growth Wisely**

Expand use of CRTR throughout hospital and improve intervention skill set

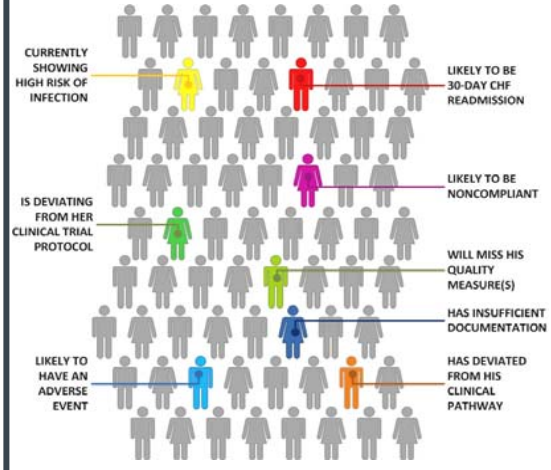
Real-Time Tools Support Broader Capabilities

Real-Time Automated Chart Review and Analytics Transforms Data into Targeted Actions

Data

- EMRs including inpatient, outpatient, and home care
- Ancillary systems, including laboratory, pharmacy, and radiology information systems
- Admission / discharge / transfer (“ADT”) systems
- Billing and revenue cycle data
- Nonstandard data such as surveys, free text documents, etc.
- An **EMR is not required**, in full nor partial form. However, access to clinical and operational data is required for higher accuracy

Insight



Action

- ✓ Risk Quantification
- ✓ Risk Stratification
- ✓ Case Finding
- ✓ Care Coordination
- ✓ Care Pathways
- ✓ Data Validation
- ✓ Longitudinal Record
- ✓ Early Warning
- ✓ Reimbursement Justification
- ✓ Utilization Review

Achieving Clinical Cost Reduction

Delivering "Population Management " Inside the Four Walls

Automate

- ✓ Automate chart review for the simultaneous identification of risks across all patients
- ✓ Aggregate data from multiple sources and care settings to ensure a holistic view of patients

Predict

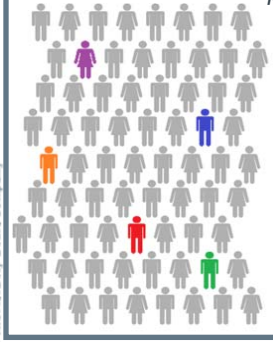
- ✓ Pull forward complete patient story, comprehensive patient and "sub-population" summaries
- ✓ Distill the most salient components of risk for various outcomes

Intervene

- ✓ Target specific patients with appropriate interventions to prevent negative outcomes
- ✓ Optimize resource allocation and avoid preventable cost escalation

An Invitation to Participate in an Executive Briefing

Explore Methods to Lower Average Cost per Case while Improving Outcomes



- **Prioritize patients by risk for various outcomes in real time**
- **Trigger appropriate intervention based on the granular assessment of dominant risk factors, including psychosocial risks**
- **Contribute to and draw from an expanding catalog of best practice interventions & outcomes**
- **Access a growing, comprehensive library of outcome predictions** *(e.g. Early Warning Sepsis, Readmissions, Complex Case ID etc.*)
- **Utilize customized workflow support to ensure follow through**
- **Leverage "single source documentation" through EMR and/or case mgmt. system integration**
- **Demonstrate effectiveness through results tracking**

To learn more about Dynamic Clinical Intelligence, please contact **CrimsonRealTime@advisory.com**

Presenters

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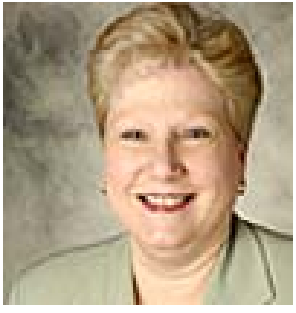
RWJ University Hospital Hamilton



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ABCo in Numbers

- ✓ **3,600+** healthcare organization memberships
- ✓ **2,200+** healthcare professionals employed
- ✓ **165,000+** healthcare leaders served by our **Research and Insights**
- ✓ **$500+** million realized value per year from our **Performance Technologies**
- ✓ **1,300+** engagements completed from our **Consulting and Management**
- ✓ **6,200+** employee-led improvement projects with our **Talent Development**

RWJUHH in Brief

- ✓ 287-bed teaching hospital located in Hamilton Township, NJ
- ✓ Part of the Robert Wood Johnson Health Network
- ✓ Cancer Institute of New Jersey Hamilton, a cancer center on the hospital's campus
- ✓ Malcolm Baldridge National Quality awardee
- ✓ Outstanding survey by The Joint Commission
- ✓ Specialty accreditation by The Joint Commission for knee and hip replacement, stroke and diabetes programs