DIGITIZATION OF MODERN MEDICINE - THE CRIMSON WAY

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1. Raritan Bay Medical Center and Residency Program

2. Using Crimson

3. Big Data for Big Impact
Who We Are

• Medical Center consisting of two divisions, one in Perth Amboy and one Old Bridge, NJ
• Part of the Robert Wood Johnson Health Network
• 501 bed acute care medical and surgical hospital
• >1000 physicians on staff
• Joined Crimson in 2009

Hospital Mission: Raritan Bay Medical Center, a non-profit health care organization, is committed to providing professional, compassionate and quality health care to all patients and to meeting the changing health care needs of our communities.
1. Raritan Bay Medical Center and Residency Program

2. Using Crimson

3. Big Data for Big Impact
## Advisory Board Company in Numbers

<table>
<thead>
<tr>
<th><strong>3,600+</strong></th>
<th><strong>2,200+</strong></th>
<th><strong>1,500+</strong></th>
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</thead>
<tbody>
<tr>
<td>Hospitals and health care organizations in our membership</td>
<td>Health care professionals employed</td>
<td>Hospitals using our performance technologies</td>
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</tbody>
</table>

### RESEARCH AND INSIGHTS
- **Memberships Offering Strategic Guidance and Actionable Insights**
  - Dedicated to the most pressing issues and concerns in health care
  - 300+ industry experts on call
  - 200+ customizable forecasting and decision-support tools

### PERFORMANCE TECHNOLOGIES
- **National Peer Collaboratives Powered by Web-Based Analytic Platforms**
  - Leading provider: Over 50% of inpatient admissions in the United States flow through our technology platforms
  - Over 1.5 million user sessions annually
  - Key challenges addressed: physician performance, population health, revenue cycle, referral growth, surgical profitability, and supply/service cost

### CONSULTING AND MANAGEMENT
- **Seasoned, Hands-On Support and Practice Management Services**
  - 2,500+ years of “operator” experience in hospital and physician practices
  - Principal terrains: hospital-physician alignment/practice management, transition to value-based care, revenue cycle optimization, hospital margin improvement
  - Range of engagements from strategy/diagnostic to best practice installation to interim management to fully managed services

### TALENT DEVELOPMENT
- **Partnering to Drive Workforce Impact and Engagement**
  - Impacted the achievement of 76,000+ executives, physicians, clinical leaders, and managers
  - 17,000+ outcomes-driven workshops tailored to partners’ specific needs

### Survey Solutions
- Customized strategies for improving employee and physician engagement
- National health care-specific benchmarking database of 480,000 respondents

<table>
<thead>
<tr>
<th><strong>165,000+</strong></th>
<th><strong>$500+</strong></th>
<th><strong>1,300+</strong></th>
<th><strong>6,200+</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health care leaders served globally</td>
<td>Million in realized value per year</td>
<td>Engagements completed</td>
<td>Employee-led improvement projects</td>
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# Crimson Project Introduction

## Crimson Continuum of Care

<table>
<thead>
<tr>
<th>Inpatient Solutions</th>
<th>Hospital Outpatient Solution</th>
<th>Ambulatory Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborate with physicians to advance cost and quality goals; provide access to severity-adjusted, visually intuitive individual performance profiles.</td>
<td>Gain visibility into Emergency Department, Observation, and Ambulatory Surgery performance; surface opportunities to reduce unnecessary variation.</td>
<td>Track aggregate and physician-level performance on PQRS measures for employed physicians; drill down to individual cases to identify care gaps.</td>
</tr>
</tbody>
</table>
| **OPPE Module** | - Reduce inappropriate utilization of diagnostic tests and preference items  
- Better manage length of stay for observation patients | **Clinical Integration Module**  
Extend capabilities to independent physicians, support Clinical Integration program management, and demonstrate value to payers and employers. |
| **Guidelines Module** | | |
| Assess and improve adherence to clinical guidelines and evidence-based order sets. | | |

**700+** Partnering with 700+ hospitals to deliver higher value care  
**400 K+** Reaching 400,000+ physicians nationwide  
**26%** Representing 26% of inpatient admissions

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**Providing Visibility Across Care Settings**

- Continuum of care metrics highlighting organizational and physician performance across all sites of care  
- Integrated patient care record allowing physicians and teams to view encounters across the care network
### Crimson Clinical Advantage

<table>
<thead>
<tr>
<th>Crimson Continuum of Care</th>
<th>Crimson Care Management</th>
<th>Crimson Real Time</th>
<th>Crimson Population Risk Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage physicians in cost reduction and quality improvement.</td>
<td>Support cross-continuum care management with real-time workflow tools.</td>
<td>Generate real-time insights to prioritize patients and inflect quality outcomes.</td>
<td>Manage total cost of care and outcomes for defined populations.</td>
</tr>
<tr>
<td>• Visibility across all sites of care— inpatient, hospital outpatient, and ambulatory</td>
<td>• Proprietary care plan and task generation engine supporting automated care plan customization to patient</td>
<td>• Dynamic risk stratification to identify patients at risk for avoidable adverse episodes, e.g. readmission, sepsis extended LOS</td>
<td>• Exclusive alliance with Milliman MedInsight for risk-adjusted population benchmarks representing 45M+ lives</td>
</tr>
<tr>
<td>• Guided, insight-oriented analytics with clinically actionable detail</td>
<td>• Real-time ADT data integrated with EMR, lab, claims for rapid response to patient activity and coordinated care</td>
<td>• Statistical models, natural language processing to detect risk factors in structured and unstructured data</td>
<td>• Comprehensive cost and quality assessments of population health</td>
</tr>
<tr>
<td>• Proven technology solution for Clinical Integration programs</td>
<td></td>
<td>• Care gap analyses based on evidence-based guidelines</td>
<td>• Customized market projections and support for physician outreach</td>
</tr>
</tbody>
</table>

### Crimson Business Performance

<table>
<thead>
<tr>
<th>Crimson Market Advantage</th>
<th>Crimson Medical Referrals</th>
<th>Crimson Practice Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengthen physician referral network to drive strategic growth.</td>
<td>Facilitate and coordinate referrals and prevent referral leakage.</td>
<td>Raise operational and financial performance of physician practices.</td>
</tr>
<tr>
<td>• Visibility into referral patterns for physicians within and outside of network</td>
<td>• Patient-provider matching intelligence</td>
<td>• Consolidated view of providers, practices and service lines</td>
</tr>
<tr>
<td>• Proprietary network analytics that reveal PCP and specialist loyalties</td>
<td>• Seemless cross-facility referral transfer through an EMR-agnostic platform</td>
<td>• Benchmarks and “what-if” modeling that predict optimal returns</td>
</tr>
<tr>
<td>• Customized market analytics including leakage trends and changes in physician loyalty</td>
<td>• Real-time referral network analytics</td>
<td>• Proven platform for engaging providers in improvement initiatives</td>
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A National Peer Collaborative of 1,200+ Member Hospitals and Health Systems
A Screen Print of the Quality Tab

Explain the ‘Anatomy’ of each metric – Remember the Question Mark!
1 Raritan Bay Medical Center and Residency Program

2 Using Crimson

3 Big Data for Big Impact
Physician Collaboration Central to Delivering Value-based Care

Regulators
Physician-focused CMS Core Measures

Consumers
Comparative Websites

Hospitals
OPPE Mandate

Payers
Payer P4P Programs

Yet Most Physicians Still Operating in the Dark

Physicians with Access to Performance Data

Physicians Views on Accuracy of Data


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Replacing Disparate Databases with a Credible Tool

Transforming Siloed Data Elements

Core Elements
- Change/ Patient Billing
- Core Measures Data
- Physician Roster

Optional Data Sources
- Cost Accounting
- Hospital Outpatient Data
- Physician Practice Data
- Custom Data (e.g., OPPE, Patient Satisfaction
- Evidence-Based Medicine Order Sets

Conducting Credible Analysis

Driving Meaningful Performance Improvement

Chief Medical Officer
- Conduct detailed performance reviews with outlier physicians

Program Administrators
- Measure individual, group, and system outcomes
- Report outcomes to outside agencies

Physicians
- Review CI “score”
- Review quality performance across panel – determine improvement opportunities

VP, Quality
- Analyze physician performance against key quality metrics

Case Managers/ Quality Analysts
- Monitor performance of quality initiatives
Statistical Models Define Crimson Functionality

Applying Severity-Adjusted Methodology with the 3M™ APR-DRG Grouper

Ensuring Fair Practice Comparisons

Inpatient

- Clinical and coding data is analyzed and categorized
  - Each inpatient case is assigned to:
    - APR-DRG
    - Severity level
    - Risk of mortality level

- Levels of severity and risk of mortality
  - 1 – minor
  - 2 – moderate
  - 3 – major
  - 4 – extreme

Outpatient

- Emergency Department & Observation Cases
  - Same ICD-9 primary diagnosis

- Outpatient Procedures
  - Outpatient Grouper
    - ICD-9 procedures or CPTs/HCPCs

- Most physician performance metrics in Crimson are compared to variance from the system average
- Variation data distinguishes outlier behavior based on standard deviations from the mean
- Crimson displays data using a green, yellow, red color scheme

Green: below ½ standard deviation above the average
Yellow: between ½ - 1 standard deviation above the average: Possible outlier
Red: greater than 1 standard deviation above the average: Outlier performance
Raritan Bay Case Study #1

About the Organization
• 501-bed hospital in Perth Amboy, NJ
• Crimson member since 2009

Challenge
• Crimson analysis identifies opportunity among the Medical Faculty who work solely with the medical residents.
• Detailed review of analysis identifies initial opportunity among lab and radiology utilization. Upon further review, opportunities in LOS and readmissions are also present.
• Residents have a tendency to order significantly more consults and testing than other attendings.

Solution
• The Medical Faculty reviewed data in Crimson regularly with all residents. They highlighted their over utilization and often reviewed specific cases with overutilization.
• The Residents were challenged to practice evidence based medicine rather than ordering tests that were not necessary.
• One on one time was spent with each resident discussing specific cases.

Impact
• Reduction in overall 30 Day readmission rates by 23%.
• Reduction in total cost per case of $1,556 or a total of $1.9M in charge savings for the year.

Targeting the Resident Quality and Utilization Through Multiple Approaches

Regularly Reviewing Crimson Data
• Medical Faculty present Crimson data at all Departmental meetings.
• Medical Faculty discuss utilization at all meetings – morning report, critical care rounds, nightly rounds and the Quality Assurance Committee.
• Regular discussion on what types of testing is not acute and could be pushed to the outpatient setting.

Creating a Partnership between Medical Faculty and Residents
• Medical Faculty pushed residents to utilize evidence-based medicine.
• Residents were often pushed to think about the consequences of ordering additional tests and consults – i.e. an unnecessary CT exposes the patient to unnecessary radiation.

Training Residents in Targeted Opportunities
• Faculty met one on one with Residents to review utilization patterns. They often challenged the residents to think through why they think they need to order the extra test or additional consultation prior to ordering it.
• Residents are required to document the rationale for all consult orders.

Translating Targeted Efforts into Hospital Gains

Reducing 30-Day Readmission Rates

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<tr>
<th></th>
<th>July 2009 - June 2010</th>
<th>July 2010 - June 2011</th>
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</thead>
<tbody>
<tr>
<td>30-Day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>14.88%</td>
<td>11.53%</td>
</tr>
</tbody>
</table>

Reducing Total Charge per Case

<table>
<thead>
<tr>
<th></th>
<th>July 2009 - June 2010</th>
<th>July 2010 - June 2011</th>
</tr>
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<tbody>
<tr>
<td>$54,084</td>
<td></td>
<td>$52,528</td>
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</table>

$1.9M Total Charge Savings
141 Days Actual number of days saved
Empowering Staff to Optimize Observation Throughput Using Crimson

Raritan Bay Medical Center, 501 Beds, Perth Amboy, NJ

- **About:** Raritan Bay Medical Center (RBMC) consists of two divisions—one division in the inner city, which includes its Internal Medicine Residency Program, and the second is a suburban division.

- **Challenge:** For a variety of reasons, observation length of stay within RBMC was steadily increasing year-over-year since CY2010.

- **Solution:** Crimson helped residents understand observation length of stay trends over time. As a result, house staff began rounds earlier in the day and prioritized scheduling necessary tests for this patient population.

- **Impact:** The average observation length of stay for cases the residents managed decreased by 6.1 hours, which resulted in a decrease of 3,800 annual hours per year.

### Identifying Opportunities Using Crimson and Jointly Addressing the Problem

- **Understanding Current Observation Performance**
  
  Crimson Dedicated Advisor presented an opportunity assessment to the house staff and residency program leadership on current observation performance compared to the Crimson cohort.

  Residents and faculty connected as early as possible after the observation admission to discuss the patient’s status and anticipated risk. Both parties jointly prioritized the rounding schedule with an understanding that observation patients who were expected to be discharged in the morning would be addressed first.

- **Enhancing the Care Plan**

- **Improving Ordering Patterns**

  Residents collaborated to analyze laboratory and consult orders, helping them understand where opportunities existed to eliminate or expedite utilization. For example, during a follow-up meeting, one resident suggested that the timing between troponin tests could be decreased for chest pain patients.

**Impact Highlights**

- **3,800 Hours**
  
  Decrease in total observation patient hours per year
Measuring the Impact of Interventions

Observation Length of Stay

- **Q42012**: 33.9
- **Q42013**: 27.8

<table>
<thead>
<tr>
<th>Obs ALOS</th>
<th>Chest Pain Obs ALOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.1</td>
<td>20.9</td>
</tr>
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</table>

**Total Gains**

- **18.0%**: Percent change in the average observation length of stay
- **16.2%**: Percentage point decrease in number of observation cases staying more than 24-hours

Empowering Staff in Performance Improvement

1. **Engage Residents and Train Staff to Use Crimson**
   - Provide Crimson training and access for all residents so that they can see data for faculty they work under

2. **Enfranchise them with Quality Improvement Opportunities**
   - Present opportunities to residents in a collaborative environment where they can discuss interventions among themselves

3. **Ensure Crimson Knowledge is Shared with New Staff**
   - Ask PGY 2 & 3 residents to train first year residents on Crimson and how they have utilized Crimson to drive change

Interested in learning more about **Crimson**?

Contact us at crimson@advisory.com or visit www.advisory.com/crimson.
Physician-Led Service Line Improvement

Coaching and Best Practice Sharing, Leads to Aggregate Progress

Readmissions? Length of Stay? Mortality Rate? Complications? Who has the opportunity here?
Step 1: Consider Three Main Questions

1. What is the goal of the meeting?

2. What will the physician/s be interested in?

3. Do I need to prepare a take-away or bring additional resources (e.g. documentation tips)?
Step 2: Set the Context

Ten Talking Points For Physicians Who Lead Physicians

1) Setting the Context for Crimson
   • Data Transparency for Quality
   • Data Transparency for Cost Containment
   • A Learning Tool

2) A Few Metaphors
   • The Microscope in the 1700’s
   • Crimson the Google Search Engine
   • Winning – measures and metrics => ROM SOI

3) Data Issues & Concerns
   • “Not My Patient”
   • “Not My Complications”
   • Not Actionable Data
   • Data in Crimson Equal but Different than Clinical Data

4) The Meaning of Variation in Crimson
   • Use of Stop Light Colors
   • Unwarranted Variation Matters

5) Results
   • Crimson Is for Insight and Action

6) Why Should Doctors Use Crimson?
   • A Tool Designed by Physicians for Physicians
   • Data empowers leaders
   • Physician Led Performance Improvement

7) Who Else Can See This Data
   • Already sent by hospital to:
     • Private Payers, CMS, Healthgrades – CMS gives to others

8) Supporting Quality and Utilization Programs
   • At Your Meetings
   • Allowing an “Interested Physician” Broader Access?

9) Self Service
   • OPPE
   • Negotiation for higher fees

10) Miscellaneous Points
    • Charges Are Not Costs
    • What Is a CDM?
Step 3: Introduce Crimson and the Methodology

- Discuss how the data is generated from the hospital and HCA – there is no such thing as “Crimson data” only “your data” in Crimson
- Crimson is a “search engine” for physicians to look at their data
- All cases are severity adjusted so comparison’s are “like patient-to-like patient”
- Opportunity to discuss how documentation drives the generation of this data and contributes to the severity level and risk of mortality level
Step 4: Log The Physicians Into Crimson

- Set up posters and flyers with instructions and information to remind physicians to login to the tool: "Dr. X has low LOS with NO readmits – Data found in Crimson"
- Recruit physicians in the physician lounge or in the cafeteria to login and view their data – use a gas gauge of interest screen print in an email as a teaser
- Leverage quality or PI coordinators to help walk physicians through the data but helps to have a physician presence to articulate the why for Crimson
- Trolling with iPad
Step 5: Walk Through the Home Screen

- Discuss how the physician can see themselves individually or as a group in their specialty.
- Highlight the “Help” feature as a way to watch video tutorials in case the physician “forgets everything you say.”
- Emphasize the need to learn new acronyms of measurement: what is CMI – Case Mix Index, ROM - Risk of Mortality, SOI - Severity of Illness. HACs - Hospital Acquired Conditions.
Step 6: Introduce Overview and Focus

- Walk through “Physician Status” table first to understand attribution
- Discuss “Patient Age” to understand tile and gas gauge
- Talk about “Case Mix Index (CMI)” and provides an opportunity to talk about Clinical Documentation Improvement (CDI) with physician documentation
- Walk through main tabs “Period,” “Role,” and “Comparison” in the focus feature and mention “you can compare to peer groups with whom you want to be compared”
Step 7: Discuss Quality and Utilization

- Ask the physician which metric they want to dig into whether that be “readmissions,” “mortality rate,” or “complications” in particular
- Describe how data in Crimson and data that is transmitted to other entities such as payers and insurance companies
- Crimson is “patient centric” not “physician centric”
Step 8: Dig Into the Details – Behind the Numbers

- Explain how with Crimson, physicians can see the individual cases that contribute to the high level numbers on the Quality or Utilization tabs
- Show how you can see the other physicians on the case and how this case will show up on their profile as well
- Describe how a physician can see the patient’s name and look up the chart in Meditech for further information
- Touch on the “Timeline” feature to show how ordering patterns can contribute to LOS
Step 9: Provide Pocket Card

- Leave physician with pocket card that provides quick overviews of each Crimson tab
- Tell physician that they can login to Crimson at home through any browser and can even use their iPad or iPhone
- Provide them contact information in order for them to ask questions and help correct data inaccuracies
- Hand out pocket cards to physicians who have not logged into Crimson
Step 10: Determine Concrete Next Steps

- Discuss areas of interest that the physicians want to look at and improve on
- Copy screenshots of Crimson gas gauges to entice physicians to use the tool for their benefit
- Talk about next steps for improvement and for greater accountability have physician sign document
From the Office of the Medical Director

Bill Lynagh, MD
Crimson Medical Director

Email: LynaghW@advisory.com
Follow me on Twitter: @MDCrimson

As Crimson’s resident Medical Director, Dr. Lynagh supports Crimson Continuum of Care member organizations in leading and influencing the changes required to improve healthcare performance. He has extensive experience in physician leadership development and coaching and has worked one-on-one with hundreds of executives, clinicians, and physician leaders across the country.

Dr. Lynagh earned his MD from the University of Maryland in Baltimore, and completed his residency in family practice at St. Vincent’s Medical Center in Jacksonville, Fla. He is presently Board Certified in Family Medicine.

Prior to joining the Advisory Board Company, he was Vice President Medical Affairs at United Healthcare of North Carolina, Medical Director of Piedmont Healthcare Alliance of Charlotte, and a founding member of Jacksonville Healthcare Group.
Crimson Support Team

Andrew Talcott, MHA  
Crimson Dedicated Advisor

Email: TalcottA@advisory.com

As Crimson’s Raritan Bay’s Dedicated Advisor, Andrew oversees the Crimson Project at RBMC for the Advisory Board Company and is charged with ensuring that maximum value is being provided from the tool. He has experience in the manufacturing and healthcare sectors and serves organizations throughout the East Coast of the US.

Andrew completed his Bachelors of Science in Industrial Engineering at Clemson University and his Master of Healthcare Administration at the Medical University of South Carolina.

Prior to joining the Advisory Board Company, he was the Administrative Fellow at New York University Langone Medical Center where he reported to the Senior Vice President of Hospital Operations. While at NYU Langone, he worked on projects such as increasing surgical throughput and creating a market analyses throughout the New York City Metro Area.
THANK YOU