Infection Control and the Power of Clinical Data Integration

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Midas+ Solutions Consultant

Dan Parker MBA, PMP
Midas+ Product Management
Objectives

1. Take a brief look at the work environment of the Infection Preventionist
2. Explore the flow of information available for clinical integration
3. Understand the importance of clinical data integration in infection surveillance activities
4. Explore the common sources of clinical information available for infection control
5. Look outside the box for other sources of clinical information that may be available in your enterprise
6. Envision reporting options and data analysis tools available for communicating to staff making clinical decisions
7. Discover tools available for reporting to regulatory agencies
Infection Preventionist - (IP)

Seeks out infections during a patient’s stay by screening data from many sources:

- Laboratory
- Pharmacy
- Patient Charts
- History & Physical
- Progress Notes
- Vital Signs
- Radiology Reports
- and many more
Infection Preventionist (IP)

- Many mandatory reporting requirements to:
  - Federal agencies (NHSN, CMS)
  - State agencies
  - Independent agencies (TJC)
  - Local agencies
  - Internal

- Many reporting processes are manual.

- Surveillance activities stretch across wide variety of departments in enterprise.
Surveillance can be burdensome…
Moving Beyond Data

The concept of *meaningful use* – making reimbursement for health care contingent on meaningful use of data – will surely drive greater adoption of data analysis.
Key Reasons for Data Analysis

- Government mandates
- Data access
- Declining reimbursement rates and accountable care
Government Mandates Drive Business Priorities

Access to Clinical Data

Leading providers are highly focused on:

• Connecting clinical and financial data for analysis
• Connecting inpatient and outpatient clinical data
• Connecting to external data
Declining Reimbursement Rates and Accountable Care

Transition away from fee-for-service and towards accountable care

- Understanding the cost of care
- Reducing readmissions
- Improving clinical decision making
Clinical Data Integration

• Clinical data integration involves combining clinical data residing in different sources and providing users with tools to gain a unified view of these data.

• Midas+ data integration provides tools to query these data, individually and in combination, in order to provide workflows that will assist clinical staff.
Clinical Data Flow

• Many software systems in an enterprise communicate with other systems.

• Any information that is sent from one system to another provides an opportunity for analysis.

• The data flow in a large organization can include hundreds of connections.
Clinical Integration within the Hospital
Clinical Integration with Midas+
Hospital IT Integration Scenario
Common Sources

There are several sources of clinical data that are common to the surveillance process:

- Laboratory
  - General Lab
  - Microbiology
- Pharmacy
- Admissions/Discharges/Transfers (ADT)
- Discharge Abstract (DAB)
General Lab

• General lab information is typically represented by blood and chemistry tests but can also include serology.

• The majority of these tests usually have discrete numeric results that can be compared to a normal range to determine abnormal values.
Positive Disease Notification

SmarTrack Worklist Rules for Focus Laboratory Results

- Clostridium Difficile
- Helicobacter Pylori
- Influenza
- HIV
- Hepatitis

The list is endless...
Helicobacter Pylori Surveillance
... an example

- Symptoms assessed by clinicians
- Tests ordered by provider
- Results reported through general lab
- Screening/investigative tools
Positive Disease Test Worklist

<table>
<thead>
<tr>
<th>Name</th>
<th>Birth Date</th>
<th>Sex</th>
<th>MRN</th>
<th>Enc. Type</th>
<th>Reviewed By</th>
<th>Assigned To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 3/5/2011</td>
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<table>
<thead>
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<th>Room</th>
<th>Type</th>
<th>Status</th>
<th>Next Review</th>
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<tbody>
<tr>
<td>Falk, Geraldine</td>
<td>3100 East</td>
<td>310-1</td>
<td>I</td>
<td>(Discharged)</td>
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**Helicobacter pylori Positive**
Activity Line Access:
General Lab Focus Study

<table>
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<th>Location</th>
<th>Room</th>
<th>Type</th>
<th>Status</th>
<th>Next Review</th>
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<tbody>
<tr>
<td>Falk, Geraldine</td>
<td>3100 East</td>
<td>310-1</td>
<td>I</td>
<td>(Discharged)</td>
<td></td>
</tr>
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</table>

Select Focus or Add - Falk, Geraldine 1/1/2011 6:52 AM

<table>
<thead>
<tr>
<th>ID</th>
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<th>Focus</th>
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<tr>
<td>11-122</td>
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General Lab Results Focus Study

Name: Falk, Geraldine
Birth Date: 8/6/1969 41Y
Sex: F
MRN: 0783422
Enc. Type: Inpatient

Focus: LABORATORY RESULTS
Date: 1/10/2011
Focus ID: 11-122

Accession Number: 567891234
Department: ...
Ordering Physician: Skillings, Philip
Collection Date/Time: 1/10/2011 6:00 AM
Panel Name: Helicobacter Pylori

Results Grid

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Result</th>
<th>Numeric Result</th>
<th>Unit of Measure</th>
<th>Reference Range</th>
<th>Abnormal Flag</th>
<th>Status</th>
<th>Completion Date/Time</th>
<th>Additional Results</th>
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<tbody>
<tr>
<td>Helicobacter P...</td>
<td>Positive</td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>Final</td>
<td>1/10/2011 10:25 AM</td>
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</tr>
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</table>
Laboratory – *Helicobacter Pylori* Surveillance
Positive Disease Test
SmarTrack
Definition
Start Infection Entry Process

![Image of Infection Control Entry]

- **Name:** Falk, Geraldine
- **Birth Date:** 8/6/1969 (41Y)
- **Sex:** F
- **MRN:** 0783422
- **Facility:** MIDAS General Hospital
- **Account No.:** 03154578
- **Start Date:** 1/1/2011
- **Onset Date:** 1/10/2011
- **Infection:** GI-GE-Gastroenteritis
- **Infection Type:** Healthcare Associated (HAI)
- **Culture Source:** Stool
- **Location:** 3100 East

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Influenza Surveillance
... an example

- Seasonal surveillance
- Community assessment
- Symptoms noted at point of entry
- Screening for possible influenza ordered
- Reported through general lab
- Plan of care implemented
Test Verification (Positive & Negative)

<table>
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<td>Start Date:</td>
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<tr>
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**Reviewed By:** Theodore, Lois
**Date:** 5/1/2012

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<tbody>
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Activity Line Access:
General Lab Focus Study

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<td>Ordering Physician:</td>
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<td>Collection Date/Time:</td>
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<tr>
<td>Panel Name:</td>
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</table>
Serology Surveillance

• Diagnostic identification of serum antibodies
  – Response to infection
  – Foreign proteins
  – Immune deficiencies

• Techniques
  – ELISA
  – Agglutination
  – PCR
  – Complement-fixation
  – Fluorescent antibodies
Microbiology

- Microbiology information is generally represented by culture results.
- Preliminary results, prior to sensitivity findings, can supply information used for notifications.
Positive Culture Surveillance

- **Mandated reporting**
  - Surgical Site Infection (SSI)
  - Central Line Associated Blood Stream Infection (CLABSI)
  - Catheter Associated Urinary Tract Infection (CAUTI)

- **Worklist specificity definition**
  - Multi Drug Resistant Organisms (MDRO: MRSA, VRE)
  - Culture Source (surgical wound, blood, urine)
  - All Positive Cultures
Positive Culture Worklist

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Room</th>
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<tr>
<td>Elmer, Alice</td>
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<td>(Discharged)</td>
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<td>Tuttle, Bonnie</td>
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<td>2/9/2011</td>
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<tr>
<td>Lee, Adeline</td>
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<td>3302</td>
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<td>3/3/2011</td>
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<tr>
<td>Adams, William</td>
<td>3300 West</td>
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<td>3/5/2011</td>
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<tr>
<td>Mordaine, Tyler</td>
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<td>Quesada, Dolores</td>
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<tr>
<td>Elder, Oran</td>
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Activity Line Access:
General Lab Focus Study

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<td>Elmer, Alice</td>
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Select Infection - Miller, Jenny 2/5/2011 8:30 AM

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<td>UTI-UTI-Other Urinary Tract Infection</td>
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More Data: Micro Results Review

Onset Date: 2/5/2011
Infection: UTI-OUTI-Other Urinary Tract Infection

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<tr>
<th>ID</th>
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<th>Source</th>
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<th>Last Import</th>
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Positive Cultures Worklist Definition

**Description:** W-MIC-Cultures with Organism Present in Result

**Code:** 1494

**Title:** Positive Culture

**Monitor:** Multiples

**Multiple:** MICROBIOLOGY RESULTS: ORGANISMS

**Condition Logic:**
- AND
- Custom

**If:**
- MICROBIOLOGY RESULTS: ORGANISMS: Organism
- And
- <Add New Condition>

**Module:** MICROBIOLOGY RESULTS: ORGANISMS: Organism

**Reference Date:** MICROBIOLOGY RESULTS: Collect Date

**Sample Rate:** 100

**Active:**
- Yes

**Follow-up Date:**
- Days
- Attribute
Microbiology Results Wound Culture: More Data

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<tr>
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<th>Organisms/Antibiotics</th>
<th>Interface Transaction</th>
<th>Responses</th>
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<tbody>
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<td>Ordering Provider:</td>
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Microbiology Positive Wound Culture: More Data
Hospital Acquired Infection (HAI) Monitoring

• Collecting facility specific exposures

• Capture unit history of infections
  – Look for patterns
  – Identify opportunities for improvement

• Transparency
## HAI Monitoring

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<tr>
<th>Patient</th>
<th>Location</th>
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<th>Type</th>
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<tbody>
<tr>
<td>Candelwood, Robert</td>
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<td>(Readmit,Discharged)</td>
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<td>Gross, Ivan</td>
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<td>15602</td>
<td>I</td>
<td>(Discharged)</td>
</tr>
<tr>
<td>Falk, Geraldine</td>
<td>3100 East</td>
<td>310-1</td>
<td>I</td>
<td>(Discharged)</td>
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<td>Smith, Neil</td>
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<td>3102</td>
<td>I</td>
<td>(Readmit,Discharged)</td>
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<tr>
<td>Elmer, Alice</td>
<td>3300 East</td>
<td>25901</td>
<td>I</td>
<td>(Discharged)</td>
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<td>Upham, Eleanor</td>
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<td>I</td>
<td>(Discharged)</td>
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<tr>
<td>Tuttle, Bonnie</td>
<td>3300 East</td>
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<td>Lee, Adeline</td>
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<td>Parker, Susan</td>
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<td>Obannon, William</td>
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<td>Adams, William</td>
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Reviewed By: Theodore, Lois  Assigned To: Theodore, Lois  Date: 4/11/2012  Location: None
Activity Line Access:
General Lab Focus Study
### HAI Monitoring Worklist Definition

**Name:** Falk, Geraldine  
**Birth Date:** 8/6/1969 41Y  
**Sex:** F  
**MRN:** 0783422

#### Description:
- **W-IC-HAI Monitoring**
- **Code:** HAI  
- **Title:** HAI Monitoring

#### General

**Monitor:** Module  
**Module:** INFECTION CONTROL EPISODES

**Condition Logic:**
- AND
- OR
- Custom

**If:**
- INFECTION CONTROL: Infection Type
- And
- <Add New Condition>

**Module:**
- Field: INFECTION CONTROL: Infection Type

**Reference Date:**
- INFECTION CONTROL: Onset Date

**Sample Rate:** 100  
**Active:**

**Follow-up Date:**

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<thead>
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<th>Days</th>
<th>Attribute</th>
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<tbody>
<tr>
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</table>
Tracking MDRO

• MDRO surveillance
  – MRSA
  – VRE

• Patient Tracking List
  – Rule-based
  – Email notification at registration

• Facilitates isolation protocols
Step 1: MRSA Patient Tracking List

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<tbody>
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<td>10/31/1928</td>
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<td>Steward, Edith Marie</td>
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Rule Definition: Patient Tracking List

![Patient Tracking List Rule Definition](image-url)
Step 2: Worklist Rule Assignment and email notification

![MIDAS+ Care Management - [Worklist/Rule Definition - Worklist]](image)

<table>
<thead>
<tr>
<th>Description</th>
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<th>Title</th>
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<tbody>
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<td>MRSA-Verify Isolation/Antibiotic</td>
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### General

- **Assignee:**
  - Primary Assignee: Theodore, Lois
  - Virtual Worklist Target: [Field]
  - Access Function: INFECTION CONTROL ENTRY

### Assignment

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<thead>
<tr>
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<th>E-mail Option</th>
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<tbody>
<tr>
<td>Redford, Ricardo</td>
<td>Each Occurrence</td>
</tr>
</tbody>
</table>

**Options:**
- Send E-mail: Each Occurrence
- Appear More Than Once: [Checkbox]
- Remove Worklist Entries That No Longer Qualify: [Checkbox]
# Infection Worklist

**Reviewed By:** Theodore, Lois  
**Assigned To:** Theodore, Lois  
**Date:** 4/1/2012  
**Location:** 

<table>
<thead>
<tr>
<th>Patient</th>
<th>Location</th>
<th>Room</th>
<th>Type</th>
<th>Status</th>
<th>Next Review</th>
<th>Admit Date</th>
<th>IC-Culture Site</th>
<th>IC-Culture Site</th>
<th>IC-Date</th>
<th>IC-Infection</th>
<th>IC-Infection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td>Goldberg, Maurice</td>
<td>3300 East</td>
<td></td>
<td>I</td>
<td>(Discharged)</td>
<td>1/10/2011</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Lee, Adeline</td>
<td>3300 East</td>
<td>3302</td>
<td>I</td>
<td>(Discharged)</td>
<td>3/3/2011</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Norris, Bany</td>
<td>3300 East</td>
<td>3566</td>
<td>I</td>
<td>(Discharged)</td>
<td>2/20/2011</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Parker, Susan</td>
<td>3300 West</td>
<td>0505-A</td>
<td>I</td>
<td>(Discharged)</td>
<td>2/12/2011</td>
<td></td>
<td>Urinary Cathe</td>
<td></td>
<td>2/14/2011</td>
<td>UTI-SUTI-Sym</td>
<td>Healthcare Associated (H)</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
# Daily Surveillance: Compliance

## Isolation Log

<table>
<thead>
<tr>
<th>Isolation Start Date</th>
<th>Isolation Type</th>
<th>Location</th>
<th>Account Number</th>
<th>Patient</th>
<th>ORGANISM</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/03/2010</td>
<td>Contact</td>
<td>2200 East</td>
<td>3492040329</td>
<td>Gold, Monica</td>
<td>Methicillin Resistant Staph Aureus</td>
</tr>
<tr>
<td>01/15/2011</td>
<td>Contact</td>
<td>3100 East</td>
<td>590-35-9995</td>
<td>Cross, Mary</td>
<td>Human T Cell Lymphotropic Viruses</td>
</tr>
<tr>
<td>04/01/2011</td>
<td>Contact</td>
<td>3700 West</td>
<td>7504325A</td>
<td>Mordaine, Tyler</td>
<td>Staphylococcus Aureus</td>
</tr>
<tr>
<td>10/27/2011</td>
<td>Contact</td>
<td>2200 East</td>
<td>SPS123456</td>
<td>Early, Blanche</td>
<td>Staphylococcus Aureus</td>
</tr>
</tbody>
</table>

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Isolation End Date
IsNotEntered AND Isolation Start Date IsEntered
Pharmacy

- Pharmacy information can include an order for a particular drug or the administration of the drug.

- Pharmacy information can come from many sources within the organization:
  - Pharmacy
  - OR
  - Floor dispensing units
Pharmacy Information Use

- TB medications orders or administration
- Antibiotic Stewardship
- Adverse Drug Reactions
- SmarTrack Worklists
  - Quality: Narcan administration, D50W administration
  - Risk: Vitamin K administration
  - Infection Control: Vancomycin administration
- Pharmacist notification from Lab Results
Pharmacy Worklist
ADR notification

Name: Mordaine, Tyler
Birth Date: 5/11/1988 23Y
Sex: M

Reviewed By: Theodore, Lois
Assigned To: Theodore, Lois
Date: 5/1/2012
Location:

<table>
<thead>
<tr>
<th>Patient</th>
<th>Location</th>
<th>Room</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mordaine, Tyler</td>
<td>3700 West</td>
<td>3701</td>
<td>I</td>
</tr>
</tbody>
</table>

Critical Digoxin Level - Enter ADR
Worklist Definition
Critical Digoxin Level

Description: W-F-LAB-Elevated Digoxin Level
Code: 1504
Title: Critical Digoxin Level - Enter AL

Monitor: Module
Module: FOCUS LABORATORY RESULTS

Condition Logic:
- AND

If:
- FOCUS LABORATORY RESULTS: Test Name
  And
- FOCUS LABORATORY RESULTS: Abnormal Flag
  And
  <Add New Condition>

Reference Date: FOCUS LABORATORY RESULTS: DATE OF FOCUS
Sample Rate: 100
Active: ✔
Worklist Rule

Narcan Administration

Exclude ER
**Worklist Rule**

**Vitamin K Administration**

Exclude NICU and Nursery
ADT Information

- Admit, Discharge, and Transfer (ADT) information can be used.
- Many systems may provide admission screening information.
Thinking Outside the Box

• There are many sources of information in the clinical integration environment.

• Midas+ is constantly exploring new sources of data integration.

• Some sources present challenges due to the format of their data.

• Transcribed documents present specific challenges.
Thinking Outside the Box

• Midas+ is working with InterSystems to better understand the capabilities of a tool that identifies clinical concepts within textual documents.

• Other sources include:
  – Radiology
  – Pathology
  – Patient Charts
  – Consults
  – Orders
Radiology

Reporting

- Fluid Overload vs. CHF
- Ventilator Acquired Pneumonia (VAP)
- Tuberculosis
- Empyema
Radiology Report

Patient Name: Tinkerbell

Requesting Doctor: 
Species: Cat
Gender: Female, Spayed
Breed: Burmese
Age: 13Yr 0Mo
Weight: 5.00

HISTORY: hx of dyspnea for 2 days, rdvm drained 100cc of serosanguinous fluid off right side. No heart murmur. Right lateral and vd thorax

THORAX 12/06/10: Two views are provided.

FINDINGS: There is moderate bilateral pneumothorax and mild pleural effusion, more pronounced on the right. There is a round soft tissue mass within the right dorsal thorax. There is widening and increased soft tissue opacity of the cranial mediastinum, with mild dorsal deviation of the caudal thoracic trachea. There is an additional soft tissue mass within the right cranial lung lobe. The cardiovascular structures are within normal limits. There is mineral opacity in the region of the gallbladder. Multiple sites of spondylosis are considered incidental. No other significant abnormalities are seen.

CONCLUSIONS: Bilateral pneumothorax and scant pleural effusion are consistent with recent thoracocentesis. Suspected soft tissue masses within the right caudal and right cranial lung lobes are strongly concerning for primary or metastatic neoplasia. Cranial mediastinal and/or tracheal bronchial lymphadenopathy is also suspected. Gallbladder mineralization is of unknown clinical significance.
Patient Charts

- History & Physical
- Progress notes
- Orders
- Wound Care notes
- Vital Signs
- Infectious Disease consults
Chief Complaint
1) Blood in stools

Vitals

<table>
<thead>
<tr>
<th>Blood Pressure:</th>
<th>Pulse:</th>
<th>Temperature:</th>
<th>Respiration:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP: 120/80</td>
<td>P: 60</td>
<td>Temp: 99°F</td>
<td>Resp: 12/min</td>
</tr>
<tr>
<td></td>
<td>at 12:13</td>
<td>at 12:13</td>
<td>at 12:13</td>
</tr>
</tbody>
</table>

Height: Hgt: 73 inch  BSA: BSA: 2.01
Weight: Wgt: 175 lb  BMI: BMI: 22.9

--- PHYSICIAN NOTE ---

History of Present Illness
Presenting problem started 5 days ago. History comes from patient. Able to get a good history. Presents with symptoms suggestive of a lower GI bleed. This is a new problem, with no prior history of similar episodes. Symptoms developed over several days. Describes stool as black in color. Passing mucoid stools. Streaks of blood noted in stool. Saw gross blood in the bowel movement. Not on iron or Pepto bismol. Estimated blood loss is less than 50 cc. No history of prior GI bleeding. No history orthostatic symptoms, excessive fatigue, or syncope.

Physical Exam
General Presentation: Patient's BMI falls within the normal range. Patient is in mild distress at the beginning of the exam. Patient does not appear acutely ill. Patient appears to be stated age. Skin is warm and dry with good color. Overall well developed, well nourished individual. Alert and appropriate during exam. Well hydrated with moist mucous membranes. No evidence of chronic debility.

Abdominal Exam: Hyperactive bowel sounds. No trouble swallowing. Lower abdomen is moderately tender to palpation. No lateralization. No lower abdominal guarding. Lower abdomen has no palpable abdominal masses or organomegaly. No peritoneal signs noted. Normal rectal sphincter tone is present. External rectal exam normal without significant inflammation, hemorrhoids, or other abnormalities. No stool is present in the rectum. No abnormal rectal masses felt. The prostate is firm, symmetrical, and non tender. No significant tenderness on digital exam. Grossly bloody, guaiac positive stool. Brown stool is present. Stool is frankly bloody.

Orders, Results, Procedures and Course in Department

<table>
<thead>
<tr>
<th>Orders</th>
<th>Cancel</th>
<th>MD</th>
<th>Ordered</th>
<th>Started</th>
<th>Finished</th>
<th>Notes and Updates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) CBC</td>
<td>WHB</td>
<td>WHB</td>
<td>13:45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Platelet count</td>
<td>WHB</td>
<td>WHB</td>
<td>13:45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Dip urine</td>
<td>WHB</td>
<td>WHB</td>
<td>13:45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Stool WBC</td>
<td>WHB</td>
<td>WHB</td>
<td>13:45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) CBC</td>
<td>WHB</td>
<td>WHB</td>
<td>13:55</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tests and Results:
13:45 CBC within normal limits.
13:48 Hct abnormal. Hct (12%)
13:48 Hemoglobin abnormal. Hgb. (7mg%)
Clinical Data Integration
What have you done?
Midas+ Care Management Tools
Reporting Options

Standard Reports

- IC Worksheet for physician review
- QM Readmission
  - Run by Service, Payer, Location, DRG, Dx, Procedure
  - Prints previous visit Dx & Procedure & current Dx
  - Can assist with identifying infection related readmissions
5/3/2012
09:59 AM

MIDAS Health System
Infection Event Summary
CONFIDENTIAL PATIENT INFORMATION

Facility: Midas General Hospital

------------------------------ ENCOUNTER DATA ------------------------------

Start Date: 1/1/2011  MRN: 0783422  Admit Phys: Skillings, Phili
Admit Location: 3100 East  Admit Room: 310-1  Attend Phys: Skillings, Phili
Admit Complaint:  HEADACHE
End Date: 1/15/2011  Disch Dx: Chronic tension type headache

------------------------------ SURGERY DATA ------------------------------

Surg Date:  OR Room:  Surg Class:  Surgeon:
Post OP Dx:  Proc:  Enc. Proc:
Anes Type:  Anes Risk:
Times: Patient:  Anes:  Surgery:

------------------------------ INFECTION DATA ------------------------------

Infection: CNS-SA-Spinal Abscess without MeningitisType: Healthcare AssoOnset Date: 1/12/2011
Culture Source: Cerebrospinal Fluid  Site:
Location: 3100 East  Room: 0900-1  Physician:
Reportable: N
Reported Agency  Date
Organism  Lab Antimicrobial  Sensitivity
Streptococcus Species

Standard Report: IC Worksheet
### Standard Report: Readmissions

**5/3/2012 10:41 AM**

**MIDAS Health System**

**READMISSION REPORT FOR 1/1/2009 to 5/3/2012**

**CONFIDENTIAL PATIENT INFORMATION**

**READMISSIONS WITHIN: 30 DAYS, SAME DAY EXCLUDED**

**PATIENTS SELECTED BASED ON DIAGNOSIS OF LAST ENCOUNTER**

For Facility: Midas General Hospital

**DIAGNOSIS: 482.9 Bacterial pneumonia, unspecified**

<table>
<thead>
<tr>
<th>Univ ID</th>
<th>Patient: Brown, Michelle</th>
<th>MRN: 3940283</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct No.: 85203651</td>
<td>Enc type: I</td>
<td>Facility: Midas General Hospital</td>
</tr>
<tr>
<td>Start Date: 7/23/2010</td>
<td>End Date: 7/25/2010</td>
<td>Age: 37Y</td>
</tr>
<tr>
<td>Start Time: 11:10A</td>
<td>End Time: 11:12A</td>
<td>LOS: 2</td>
</tr>
<tr>
<td>Admit Status: Emergency</td>
<td>Admit Service: Medicine</td>
<td>Days:</td>
</tr>
<tr>
<td>Phys: Primary: Jones, Hilary Kathleen</td>
<td>Specialty: MED-Internal</td>
<td></td>
</tr>
<tr>
<td>Attend: Abbott, Charles Daniel</td>
<td>Specialty: PED-Pediatrics</td>
<td></td>
</tr>
<tr>
<td>Admit: Jones, Hilary Kathleen</td>
<td>Specialty: MED-Internal</td>
<td></td>
</tr>
<tr>
<td>Disp: Home care or self care</td>
<td>Complaint:</td>
<td></td>
</tr>
<tr>
<td>Diag: CHOLECYSTITIS NEC</td>
<td>Proc: Cholecystectomy</td>
<td></td>
</tr>
</tbody>
</table>

| Acct No.: 74520333 | Enc type: I | Facility: Midas General Hospital |
| Start Date: 8/1/2010 | End Date: 8/3/2010 | Age: 37Y |
| Start Time: 11:13A | End Time: 12:56P | LOS: 2 |
| Admit Status: Urgent | Days: 7 |
| Admit Service: Medicine | Loc: 31E |
| Phys: Primary: Jones, Hilary Kathleen | Room: 356-1 |
| Attend: Becker, William James | Ver: Pre-2007 |
| Admit: Becker, William James | Princ. Payer: |
| Disp: Home care or self care | Specialty: MED-Internal |
| Diag: Bacterial pneumonia, unspecified | Specialty: SURG-Cardiac |
| Proc: Pneumonia | Specialty: SURG-Cardiac |
More Reporting Options

SmarTrack Indicators and Profiles
- Counts, Sums and Rates
- SPC charts
- Patient Days on Supports (Days at Risk) or in a Location
- Infection Control Profiles
  - Use for trending & reporting to IC Committee

Ad Hoc Custom ReporTrack Reports
- Document Generation
  - Letters
  - Forms
  - Envelope/Labels
SmarTrack Indicator Examples

- Patients with Infections
- Encounters with Infections
- Total Infection Episodes
- Total Patient Days
- Infections by Type
- Infections by location (unit)
- Reportable Infections

- Provider specific infection rates (OPPE/FFFE profile)
- HAI Rate (total, Proc, Loc)
- Infections by Wound Class
- Critical Care Module
  - Device days (vent, CL, foley) – or use manual indicators
  - Days at risk
More SmarTrack Indicator Examples

- Use final coding to get even more info ......
  - TB cases
  - Meningitis
  - Post-Op & other coded infections

- SCIP (Surgical Care Improvement Project) – use core profile
## SmarTrack: Infection Control

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Jan 2011</th>
<th>Feb 2011</th>
<th>Mar 2011</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare Associated Infections by Location</td>
<td>7</td>
<td>9</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Total Hospital Acquired Infections by Infection</td>
<td>7</td>
<td>9</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Healthcare Associated Infections by Organism</td>
<td>7</td>
<td>9</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Healthcare Associated Central Line Infections by Organism</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Healthcare Associated Central Line Infection Rate</td>
<td>5.56</td>
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<td>1.82</td>
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<tr>
<td>Healthcare Associated Primary Surgical Site Infection</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Total HAI SSI by Wound Class</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>I - Clean</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>II - Clean-Contaminated</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>III - Contaminated</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>HAI - Primary SSI - Class 1 - Clean</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>HAI - Primary SSI - Class 2 - Clean/Contaminated</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>HAI - Primary SSI - Class 3 - Contaminated</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>HAI - Primary SSI - Class 4 - Dirty/Infected</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>
Statit for Statistical Analysis

powered by Statit

Healthcare Acquired Infections
Midas Medical Center for 12/2010 - 4/2011 Monthly

Action Plan: Reducing HAI

Rules Tested
Summary

Value

SmarTrack Trending by Organism
## Reporting: Days to Infection

### Days to Infection Onset by Location

<table>
<thead>
<tr>
<th>Account No.</th>
<th>Admit Date</th>
<th>Onset Date</th>
<th>Days to Infection</th>
<th>Location</th>
<th>Cult Source</th>
<th>Organism</th>
</tr>
</thead>
<tbody>
<tr>
<td>602006581</td>
<td>12/29/2010</td>
<td>12/29/2010</td>
<td>0</td>
<td>Intensive Care Unit</td>
<td>Sputum</td>
<td>Haemophilus Influenzae</td>
</tr>
<tr>
<td>03154578</td>
<td>01/01/2011</td>
<td>01/12/2011</td>
<td>11</td>
<td>3100 East</td>
<td>Cerebrospinal Fluid</td>
<td>Streptococcus Species</td>
</tr>
<tr>
<td>03154578</td>
<td>01/01/2011</td>
<td>01/10/2011</td>
<td>9</td>
<td>3100 East</td>
<td>Stool</td>
<td>Clostridium Difficile</td>
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<tr>
<td>456123789</td>
<td>01/02/2011</td>
<td>01/02/2011</td>
<td>0</td>
<td>Emergency Department</td>
<td>Blood</td>
<td>Hepatitis A</td>
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<tr>
<td>66787679</td>
<td>01/05/2011</td>
<td>01/06/2011</td>
<td>1</td>
<td>3300 East</td>
<td>Stool</td>
<td>Helicobacter Pylori</td>
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<tr>
<td>60300000929</td>
<td>01/10/2011</td>
<td>01/10/2011</td>
<td>0</td>
<td>3300 East</td>
<td>Wound</td>
<td>Methicillin Resistant Staphylococcus Aureus</td>
</tr>
<tr>
<td>240075117</td>
<td>01/13/2011</td>
<td>01/21/2011</td>
<td>8</td>
<td>3900 East</td>
<td>Blood</td>
<td>Escherichia Coli</td>
</tr>
<tr>
<td>240075117</td>
<td>01/13/2011</td>
<td>01/21/2011</td>
<td>8</td>
<td>3900 East</td>
<td>Blood</td>
<td>Staphylococcus Aureus</td>
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<tr>
<td>240091282</td>
<td>01/18/2011</td>
<td>01/21/2011</td>
<td>3</td>
<td>3900 East</td>
<td>Urine</td>
<td>Escherichia Coli</td>
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<tr>
<td>240091282</td>
<td>01/18/2011</td>
<td>01/21/2011</td>
<td>3</td>
<td>3900 East</td>
<td>Urine</td>
<td>Proteus Mirabilis</td>
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<tr>
<td>223344</td>
<td>01/20/2011</td>
<td>01/25/2011</td>
<td>5</td>
<td>NICU</td>
<td>Central Line</td>
<td>Streptococci Beta Hemolytic</td>
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<tr>
<td>25041078</td>
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<td>01/25/2011</td>
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<td>3100 East</td>
<td>Wound</td>
<td>Coccidioides Immitis</td>
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<td>25041078</td>
<td>01/25/2011</td>
<td>01/25/2011</td>
<td>0</td>
<td>3100 East</td>
<td>Wound</td>
<td>Clostridium Difficile</td>
</tr>
<tr>
<td>240111116</td>
<td>01/26/2011</td>
<td>02/01/2011</td>
<td>6</td>
<td>3500 East</td>
<td>Sputum</td>
<td>Enterococcus Species</td>
</tr>
<tr>
<td>240111116</td>
<td>01/26/2011</td>
<td>02/01/2011</td>
<td>6</td>
<td>3500 East</td>
<td>Sputum</td>
<td>Klebsiella Pneumoniae</td>
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<tr>
<td>603000520</td>
<td>01/28/2011</td>
<td>01/28/2011</td>
<td>0</td>
<td>Intensive Care Unit</td>
<td>Stool</td>
<td>Clostridium Difficile</td>
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<tr>
<td>494949494</td>
<td>02/01/2011</td>
<td>02/01/2011</td>
<td>0</td>
<td>2200 East</td>
<td>Sputum</td>
<td>Respiratory Syncytial Virus</td>
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<tr>
<td>240112607</td>
<td>02/01/2011</td>
<td>02/05/2011</td>
<td>4</td>
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<td>Wound</td>
<td>Staphylococcus Aureus</td>
</tr>
<tr>
<td>7846523195</td>
<td>02/05/2011</td>
<td>02/05/2011</td>
<td>0</td>
<td>2200 East</td>
<td>Urine</td>
<td>Escherichia Coli</td>
</tr>
</tbody>
</table>
Midas+ Healthcare Solutions
Mandatory HAI Reporting

• CMS has mandated the reporting of central line associated bloodstream infections (CLABSI) begin in 2011 and surgical site infections (SSI) begin in 2012.

• Infection information is to be submitted through the National Healthcare Safety Network (NHSN).

• NHSN provides a web-based application maintained by the Centers for Disease Control and Prevention.
Mandatory HAI Reporting

• Providers face a challenge collecting infection information required by NHSN.

• Data can be spread across numerous electronic and paper collection systems.

• Infection information, as well as supporting denominator data, must be entered into the NHSN application.
Midas+ NHSN Toolkits

• Midas+ has leveraged its data integration tools to provide a set of data collection and extraction toolkits.

• These toolkits utilize interfaces, Focus Studies, and standard reports to create a set of tools to help collect required data elements and provide a method to transfer this information to the NHSN.
Midas+ NHSN CLABSI Toolkit

The Central Line Associated Bloodstream Infection (CLABSI) toolkit includes:

- An encounter Focus Study for the collection of infection events
- A process Focus Study for the collection of patient and device days
- A standard report that creates the electronic file containing the infection and device information for upload to NHSN
- NHSN dictionaries and configuration Focus Studies
- Soon to include Catheter Associated Urinary Tract Infection (CAUTI) reporting
Midas+ NHSN CLABSI Toolkit
Midas+ NHSN SSI Toolkit

The Surgical Site Infection (SSI) toolkit includes:

- Distributed User fields in the Infection Control Module for the collection of infection events
- Distributed User fields in the Surgery Module for the collection of surgical procedure information
- A standard report that creates the electronic file containing the infection and procedure information for upload to NHSN
- NHSN dictionaries and configuration Focus Studies
Midas+ NHSN SSI Toolkit
Future Considerations

- NHSN MDRO Reporting
- NHSN Lab ID Reporting
- NHSN CLIP Reporting
- CLABSI Validation Reporting
Midas+ NHSN Toolkits

Toolkit Information Resources:

- Your Solutions Consultant

- The Midas+ Clients Only Website
  - Under User Documentation – Search for Toolkit User Guides
  - Under Training – Search for Toolkit then look under the self paced e-Learning tab for recorded sessions
Working with IT

• The integration environment within an organization can be complex and difficult to navigate.

• An organization can have hundreds of interfaces sending data back and forth.

• If there is data that you view, or that is printed from a system, it might be available to bring into Midas+ for use in a worklist rule.

• Work with your IT department to explore the possibilities.
How?

- Client request for interface solution
- Solutions Consultant coordinates request
- Quote submitted to client for approval
- Project Manager assigned
- Midas+ implementation team assembled
- Meetings scheduled
- Project begins
Getting to Go-live

- Live feed to test environment established
- Specifications report submitted to client
- Functional dictionaries and user fields defined
- Coding completed
- Testing and validation
- Process assessment completed
- Rules-based worklists defined
- Go-live attained
Conclusion

• Clinical data integration brings data from disparate systems together for analysis.

• Rule based worklists lessen the burden of surveillance activities.

• Data reporting supports performance improvement.

• Toolkits facilitate mandatory reporting requirements.
Thank you for attending.
Questions, anyone?

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