CLINICAL INTEGRATION
LAB, MICRO, BLOOD BANK
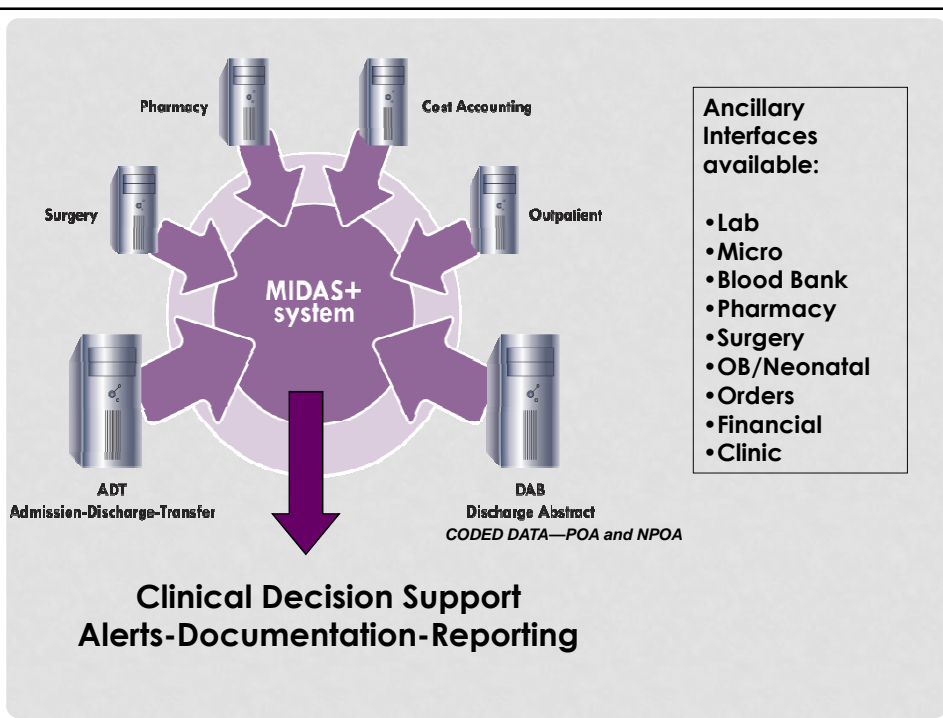
ADVOCATE HEALTH CARE
JANUARY 6, 2012

Patty Dietz RN, BSN, CPHQ

Regional Consultant

Patty.dietz@acs-inc.com

Pharmacy

Cost Accounting

Surgery

Outpatient

MIDAS+ system

ADT
Admission-Discharge-Transfer

DAB
Discharge Abstract
CODED DATA—POA and NPOA

Ancillary Interfaces available:

- Lab
- Micro
- Blood Bank
- Pharmacy
- Surgery
- OB/Neonatal
- Orders
- Financial
- Clinic

**Clinical Decision Support
Alerts-Documentation-Reporting**

CLINICAL DATA INTEGRATION

- Laboratory Data
  - Microbiology
  - General Lab
    - Chemistry, Hematology, Serology
  - Blood Bank
  - Pharmacy
  - Surgery

DEPARTMENTS SUPPORTED BY CLINICAL INTEGRATION

- **Infection Control**
- **Pharmacy**
- **Risk Management**
- **Patient Safety**
- **Quality**
  - OPPE/FPPE
  - Core Measure Abstractors
- **Clinical Documentation Improvement**
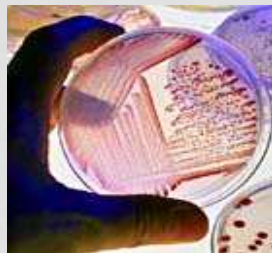- **Other Ancillary Services**

MIDAS+ CLINICAL DATA INTEGRATION

- Automated Real-time Alerts
- Documentation of event follow up
  - Regulatory Compliance
  - Performance Improvement
- Reporting
  - SmarTrack
  - ReporTrack
  - Document Generation

INTERFACE--MICROBIOLOGY DATA

- Diagnostic Test
- Ordering Physician
- Culture Source
- Culture Site
- Culture Date/Time
- Collection Location & Room
- Method
- Organisms
- Drug associated Sensitivities & MIC

MICROBIOLOGY DATA IN RESULTS TABLE

LABORATORY DATA TO FOCUS STUDY

- Chemistry
  - Glucose Monitoring
  - Drug Levels (Digoxin, Dilantin, Theophylline)
- Hematology
  - Complete Blood Count
  - Coagulation Studies
- Serology
  - Disease-specific Screening

INTERFACE-LABORATORY DATA

- Ordering Physician
- Collection Date & Time
- Panel Name
- Panel Comments
- Test Name
- Result (Text and Numeric)
- Reference Range
- Unit of Measure
- Abnormal Flag
- Status
- Completion Date/Time
- Test Result Comment

CHEMISTRY, HEMATOLOGY AND SEROLOGY TO FOCUS

| Focus: | LABORATORY RESULTS | Date: | 4/20/2010 | Focus ID: | 10-72 |

Save
Save & Print
Files
Qualifying Criteria
Close

Accession Number: H359573
Department: Chemistry
Ordering Provider: Brown,Lisa
Panel Name: Basic Metabolic Profile
Collection Date/Time: 4/20/2010 5:01 AM

Results Grid

Test Name	Test Results	Numeric Results	Reference Range	Unit of Measure	Abnorm
GLUCOSE	120	120	70-110	MG/DL	High
CREATININE	2.4	2.4	0.8-1.3	MG/DL	High
BUN	34	34	7-20	MG/DL	High
SODIUM	141	141	137-145	MMOL/L	
POTASSIUM	3.4	3.4	3.5-5.3	MMOL/L	Low
CHLORIDE	106	106	99-111	MMOL/L	
CO2 TOTAL	28	28	22-35	MMOL/L	
CALCIUM	8.0	8.0	8.5-10.5	MG/DL	Low
ANION GAP	7	7	5-14	MMOL/L	
EST GLOMERULAR FILTRATION RATE	26.3	26.3	>60	ML/MIN/1.73M2	Low

INTERFACE-BLOOD BANK

- Component ID
- Component
- Order Type
- Units ordered
- Units transfused
- Transfusion date and time
- Ordering physician

BLOOD BANK / MORE BUTTON

BLOOD BANK REPORTING

- Blood Usage evaluation
- Use of Autologous PRBC in Elective Surgeries
- Transfusion Reaction Rate

Indicator	Jan-Mar 11
Major Joint Encounters	221
Major Joint Encounters w/ Autologous Blood Use	2
Major Joint Encounters w/ Allogeneic Blood Use	79
Percent Major Joint Encounters w/ Blood Usage	36.652
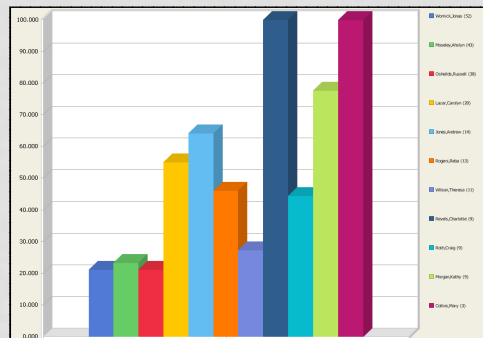
QUALITY MONITORING –
UNITS MEETING CRITERIA

Process:
- Transfusion Information is interfaced into the blood bank module
- Worklist notification of transfusion (Sampling)
- Reviewer reviews associated lab work
- Determine if episode meets criteria
- Complete 'Justified' field for component
- Optional: enter transfusion criteria that was met

WORKLIST RULE - NOTIFICATION OF TRANSFUSION (ANY TYPE) (SAMPLE)

Description: W-BB: transfusion notification   **Code:** 1226

Copy From: **Title:** transfusion notification

General | Assignment

Monitor: Multiples   **Multiple:** BLOOD BANK:COMPONENTS

If: BLOOD BANK:COMPONENTS:Units Transfused
And If: BLOOD BANK:COMPONENTS:Justified
And If: <Add NewCondition>

If

Module:Field:

SmarTrack Rule Definition Instructions - Worklist

Instructions:

Review associated lab work
Determine if meets criteria
Complete 'Justified' field for component
Optional: enter transfusion criteria that was met

OK   Close

Reference Date: BLOOD BANK:COMPONENTS:Transfusion Date

	Days	Attribute
Follow-up Date:		

WORKLIST NOTIFICATION

Reviewed By: Quinn,Gregory   **Assigned To:** Quinn,Gregory

Date: 4/21/2011   **Location:**

Select/Deselect Worklist Rules:

QM event
qm number
PRBC, single unit transfusion
Surg EBL > 500 cc
transfusion notification

WORKLIST WITH INSTRUCTIONS

Reviewed By:	Quinn,Gregory	Assigned To:	Quinn,Gregory
Date:	4/21/2011	Location:	

Patient	Type	Status	Next Review	BB-Comp	BB-Order Type
Doggett,Melvin	I				
transfusion notification					

Special Instructions - transfusion notification

Instructions:

* Review associated lab work
  Determine if meets criteria
  Complete 'Justified' field for component
  Optional: enter transfusion criteria that was met

[OK]

BLOOD BANK ENTRY –CRITERIA MET

General | Abstract/Actions | Comments | User Fields

Components

Component	Order Type	No. Transfused	Date	Time	More...
Packed RBC		2	12/5/2010		

Final Disposition:

Components - More Data Entry

Component | Tests | Reviews

Units

Ordered: 2   Wasted: Autologous: ☐   STAT Order: ☐   Justified: Yes

Cell Saver: ☐

Physician: Mackey,Michael

Transfusion Criteria 1:

Transfusion Criteria 2:

Reaction	Confirmed	Unit ID Number
▶ Febrile	☑	
	☐	

Component Comments:

[OK] [Close] [Help]

BLOOD BANK ENTRY –
PHYSICIAN REVIEW DETAILS

BLOOD BANK ENTRY –
TRANSFUSION REACTION

BLOOD BANK REPORTING

- Indicators for sums and rates
  - Sum of units transfused
  - Rate of units meeting transfusion criteria
  - By transfusion date and ordering physician (can go onto OPPE)
- Profile
  - Transfusion Statistics for committee
  - Physician information for OPPE

TRANSFUSION PROFILE - TOTAL

Indicator	Mar 2008	Apr 2008	May 2008	Jun 2008	Jul 2008	Total
Blood Bank-Total Patients Transfused	145	167	150	87	42	591
Blood Bank-Autologous Whole Blood	213	236	241	125	55	870
Blood Bank-Fresh Frozen Plasma Use	5	2	4	7	3	21
Blood Bank-Packed RBC Utilization	145	164	148	85	42	584
Blood Bank-Usage of Albumin	0	0	0	0	0	0
Blood Bank-Use of Platlets	3	3	3	5	4	18
QM-Transfusion Reactions/Mismatch	21	14	16	19	10	80
Blood Bank-Transfusion of Single Unit Packed RBC's	20	30	19	26	15	110
Blood Bank-Inpatient Usage of Autologous Blood	0	0	0	0	0	0
Blood Bank-Total Units Packed RBC Used	204	212	248	364	157	1185
Blood Bank-Total Units Platelets Transfused	7	55	36	30	36	164
Blood BAnk-Total Units Platelets Transfused on Inpatients	7	55	36	30	36	164

TRANSFUSION PROFILE - PROVIDER

Provider: Cannon, Joseph Sort By: Name

Default Service: Surgery Default Specialty: SURG-Pediatric

Indicator	Mar 2010	Apr 2010	May 2010	Jun 2010	Jul 2010	Total
Blood Bank-Total Patients Transfused	4	2	3	3	2	14
Blood Bank-Autologous Whole Blood	0	0	0	0	0	0
Blood Bank-Fresh Frozen Plasma Use	0	0	0	0	0	0
Blood Bank-Packed RBC Utilization	6	4	9	3	2	24
Blood Bank-Use of Platelets	0	0	1	0	0	1
Transfusion Reactions/Mismatch - QM	2	0	3	3	0	8
Blood Bank-Transfusion of Single Unit Packed RBC	1	1	1	1	0	4
Blood Bank-Inpatient Usage of Autologous Blood	0	0	0	0	0	0
Blood Bank-Total Units FFP Transfused	0	0	0	0	0	0
Blood Bank-Total Units Packed RBC Transfused	7	3	6	25	12	53
Blood Bank-Total Units Platelets Transfused	0	0	10	0	0	10
Inpatient Transfusions Not Justified	0	0	2	2	1	5
Rate of Inpatient Transfusions Not Justified	0	0	66.67	66.67	50	35.71

DEPARTMENTS SUPPORTED BY CLINICAL INTEGRATION

- Infection Control
- Pharmacy
- Risk Management
- Case Management
- Patient Safety
- Quality
  - OPPE/FPPE
  - Core Measure Abstractors
- Clinical Documentation Improvement
- Other Ancillary Services

LAB INTERFACE--WORKLIST TRIGGERS

Elevated BNP

Prolonged PT/INR

Elevated Digoxin Level

Core Measures

Care Coordination

Risk Management

Quality

Patient Safety

Elevated Troponin

Elevated HbA1c

Elevated Cord Glucose
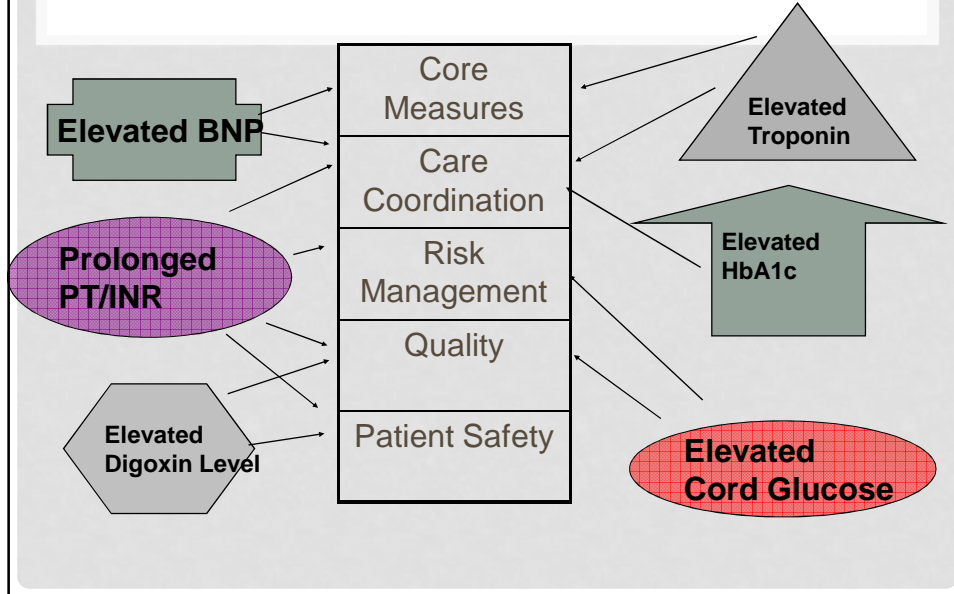
LAB ALERT VARIATIONS

Low	Critical	Positive	Negative	Elevated
Glucose *Insulin Management*	Potassium *Medication Management*	C Diff	Rapid Strep Screen	Elevated Bilirubin
Digoxin Level *Medication Management*	Calcium	Tuberculin *Isolation precautions- Reporting requirements*	Rapid Influenza-*Care management*	Digoxin – *Medication Management – Need for Community Case management*
INR *Medication Management*	Hemoglobin		C Diff *Medication management*	CEA *Community Case management*

SMARTRACK WORKLISTS

- Site Specified, Automated Alerts
    - Presence of specific pathogens
    - Re-admits
    - Critical lab values
- Single field or multiples fields can be combined for Alerts
- Efficiently & Effectively Manage Workflow
- Automated Critical Event Alerts

EXAMPLES OF WORKLIST RULES

- Laboratory
    - Rapid influenza positive
    - MRSA growth on wound culture
- Encounter
    - Readmissions
    - LOS > x days
- IHI Global Triggers for Adverse Events
    - Positive Blood Culture
    - Infection of any kind (CL, SSI, UTI)
    - C. diff +
    - Pneumonia in ICU

WORKLIST EXAMPLE

	Patient	Location	Room	Type
Infection Preventionist	Madeya, Christina	3100 East	15302	I
	MRSA - Verify Isolation/Antibiotic			
	Vitamin K Admin, Check for Prolonged INR & Bleeding			
Risk Analyst	Rachwitz, Everett	3300 East	234	I
	Elevated CEA - Enter CCM Problem			
Quality Specialist	Early, Jonnie	3300 East	25602	I
	Influenza Negative - Verify DC Screens			
	Benadryl Admin, Check for Allergic Rx			
Case Manager	Kaiser, Jessica	3300 East	26502	I
	Elevated Hbg A1C - Enter CCM Problem			
Cardiac Nurse Case Manager	Page, Marcus	3300 West	21402	I
	Elevated Troponin - Enter Core AMI Focus			
	Romazicon Admin, Check for Benzodiazepine Admin			
	Jablonski, Marcia	3300 West	22202	I
	Critical Digoxin Level - Enter ADR			
Performance Improvement Coordinator	Wagner, Arnold	3700 West	40702	I
	Elevated BNP - Enter Core CHF Focus			
	Narcan Admin, Check for Narcotic Overdose			
	Bennett, Baby Girl	Nursery	NUR-1	I
	NB Low Cord pH - Enter QM Event			
Neonatal Nurse Practitioner	Nolan, Baby Boy	Nursery	NUR-3	I
	NB Elevated Bilirubin - Enter QM Event			
	NB Low Glucose - Enter QM Event			

OUTPATIENT DATA – CONTINUUM OF CARE

- PSA level in males > age 50
- LDL-C level in Diabetes Mellitus
- HgbA1C in Diabetes Mellitus
- HCT in ESRD
- Lipid Profile in CAD
- Urine Albumin in Diabetes Mellitus

PT SAFETY –IHI 5 MILLION LIVES

Indicator	Jan 2008	Feb 2008	Mar 2008	Apr 2008	Total
Total Positive Clostridium Difficile Toxin Specimens	19	30	17	0	66
Total Elevated Partial Thromboplastin Time Studies	6	7	9	0	22
Total Elevated Internationalized Normalized Ratio Studies	6	8	8	0	22
Total Low Blood Glucose Studies	7	9	5	0	21
Total Instances of Vitamin K Administration	10	12	9	0	31
Total Instances of Benadryl Administration	17	16	40	0	73
Total Instances of Romazacon Administration	1	0	3	0	4
Total Instances of Narcan Administration	5	3	3	0	11
Total Instances of Antiemetic Administration	54	79	67	0	200

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 (use on reappointment 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

SMARTRACK INDICATOR EXAMPLES

- Percent of central line associated primary bloodstream infections per 1000 central line days by unit
- Rate of post-operative sepsis per 1000 elective surgical discharges
- Incidence of bacterial pneumonia
- Rate of hospital acquired urinary track infections
- Percent of patients with documented infection placed in appropriate isolation precautions
- Automated reporting of communicable diseases to state agencies
- Incidence of ventilator associated pneumonia by unit
- Rate of C.Diff positive cultures by unit
- Ratio of hospital acquired to community acquired Acinetobacter baumanii infections
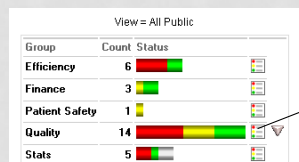

Dashboard Scorecard Examples

View = All Public

Group	Count	Status
Efficiency	6	
Finance	3	
Patient Safety	1	
Quality	14	
Stats	5	

Figure piMD-8: Midas+ Statit piMD Dashboard.

Quality   View: All Public

Status	Indicator	Current Value	Target	SPC Alert	Updated
Quality					
● ▼ ☑	Nosocomial C Difficile Rate	2.00	1.00		Apr 09
● ▼	Nosocomial MRSA Rate	1.22	1.00		Apr 09
● ▼	Readmit Within 14 Days of DC	15.3%	14.0%		Q3 09
● ▲ ☑	Geriatic Average LOS	51.7	47.0		Apr 09
● ▲ ☑	Average Length of Stay	4.61	4.50		Q2 09
● ▼	Inpatient Mortality	3.8%	4.2%		Q2 09

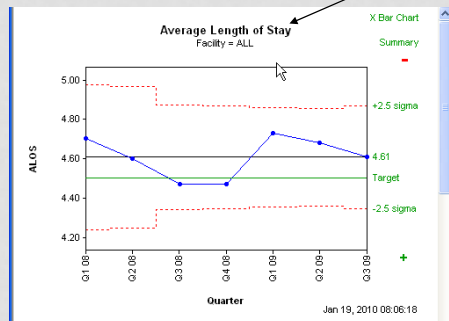**Figure piMD-9**: Midas+ Statit piMD Scorecard.

Figure piMD-10: Midas+ Statit piMD Analysis.

Dashboard Scorecards allow for the review of performances at a high-level drilling into the detailed scorecard.

Midas+ Statit has the ability to import data from multiple disparate data sources allowing the user to review performances at a high level and drill into the detailed scorecards.

17

VAP EVENTS-DAYS BETWEEN
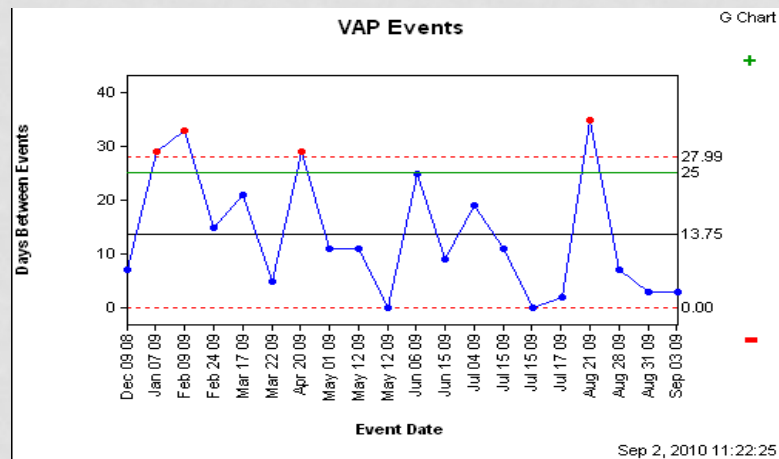
REPORTRACK REPORTS

- Health Department Reporting
- Pathogen/Organism Summary Report
- Worksheets
- Letters for follow-up
- Daily scheduled reports to identify clusters/trends
  - By loc, organism, Dx, etc
- … possibilities are endless !

REPORTING-REPORTRACK

INFECTION CONTROL

11/15/2005 7:50:49

Infection Type	Infection	Patient	Start Date	Onset Date	LOS	Admit Physician
AIDS	BACTEREMIA	FLORES,KEVIN	06/02/2005	10/24/2004	3	
	RESP,PNEUMONIA	FOREST,MARY	03/01/2004	03/24/2004	5	ABEDRABU,DONALD
	RESP,PNEUMONIA	MAISCH,CHARLES	06/26/2005	06/26/2005	4	
	RESP,PNEUMONIA	RACHMITZ,EVERETT	05/31/2005	05/31/2005	1	
	Total:	**4**				
COMMUNITY ACQUIRED	SYS,BLOODSTREAM INFECTI	ERICKSON,TODD	05/17/2005	05/17/2005	4	MCKINNEY,EDWARD
	SYS,HIV POSITIVE	GUERENA,BRUCE	03/18/2005	03/18/2005	3	
	SYS,HIV POSITIVE	KONKLE,JUAN	03/19/2005	03/20/2005	6	
	SYS,BLOODSTREAM INFECTI	METZGER,JOHN	06/21/2005	06/21/2005	6	CONKLIN,JOHN
	SYS,HIV POSITIVE	POPE,ROBERT	06/23/2005	06/23/2005	6	WHALEN,RAMON
	SYS,AIDS	PYLE,JAMES	06/15/2005	06/15/2005	2	ROBBINS,HELENA
	SYS,AIDS	SANCHEZ,GUY	06/02/2005	06/02/2005	1	CHAMPINE,JOHN
	SYS,BLOODSTREAM INFECTI	SCULLY,BESSIE	03/16/2005	03/17/2005	8	MILLER,ANN
	SYS,BLOODSTREAM INFECTI	SHANKSTER,LORETTA	03/15/2005	03/15/2005	1	NELSON,TAMMY
	SYS,AIDS	VALENZUELA,DONALD	03/18/2005	03/18/2005	22	
	Total:	**10**				
NOSOCOMIAL	BRONCHITIS	ABEDRABU,VICTORIA	04/24/2005	04/26/2005	3	
	WOUND,NON SURGICAL	ALLEN,JASON	05/24/2005	05/28/2005	5	THURINGER,VICTOR
	GUGYN,UTI SYMPTOMATIC	ARCE,CHRISTINA	04/27/2005	05/06/2005	17	KANTO,ERIC
	SURG,INCISIONAL WOUND IN	ARMENDAREZ,DALE	05/29/2005	06/22/2005	3	COURTNEY,ARSENIO
	GUGYN,UTI SYMPTOMATIC	ATHANS,PAMELA	05/20/2005	06/08/2005	27	OBERLICK,JOHN

DOCUMENT GENERATION-LETTER

Infection Control Department
MIDAS General Hospital
4801 East Broadway Blvd
Tucson, AZ 85711

January 26, 2010

Monica Gold
89234 East Calle Monte Vista
Tucson, AZ 95872

Dear Monica Gold:

On 08/02/2007, Ms. Gold had a lab test for an infection in IV Site culture. This was done as an Inpatient at MIDAS Medical Center. The organism that was found was Methicillin Resistant Staph Aureus.

Attached is the information give to patients found to have Methicillin Resistant Staph Aureus in the hospital. At home, good hand washing is the most important way to protect yourself and others to from infection.

In you have any questions, feel free to call MIDAS Medical Center Infection Control Department at 1-800-455-9898 or call your doctor.

Sincerely,
Jennifer Embrich
MIDAS Medical Center

DOCUMENT GENERATION-FORM

ILLINOIS STATE DEPARTMENT OF HEALTH
DIVISION OF EPIDEMIOLOGY

County of Residence: _____

CONFIDENTIAL CASE REPORT

Serial # _____

Date Form Received _____
Date Supplemental Received

Patient Name: Test, Test Mode   **Maiden**: _____

Phone No: 123-456-7890   **Work**: 123-456-7895

Address: 123 Main Street
City: Morrison   **Zip code**: 99999   **Date of Birth**: 01/14/1985   **Age**: 25

Occupation/Setting: **Pregnant**: N

Race/Ethnicity: White   **Sex**: M

Hospitalized?   Yes   **Admission Date**: 11/22/2010   **Discharge Date**:

Name of Hospital: Midas Medical Center   **Chart #** 1210127

Disease: Chlamydia trachomatis infection
Site of Infection: Eye

Date of First Symptoms: Date of Diagnosis: Date of Report: Date of Death:
12/04/2010   12/16/2010   1/4/2011

QUESTIONS?