

Multidrug-Resistant Organism (MDRO) and *Clostridium difficile*-Associated Disease (CDAD) Module

Training Course Section:

LabID Event Reporting



Department of Health and Human Services

Centers for Disease Control and Prevention

Target Audience

This training session is designed for those who will collect and analyze multidrug-resistant organism (MDRO) data in the MDRO and CDAD Module of NHSN. This may include:

- NHSN Facility Administrator
- Patient Safety Primary Contact
- Infection Preventionist
- Epidemiologist
- Microbiologist
- Professional Nursing Staff
- Trained Support Staff



You should complete the *NHSN Overview and MDRO Infection Surveillance* Training prior to viewing this!

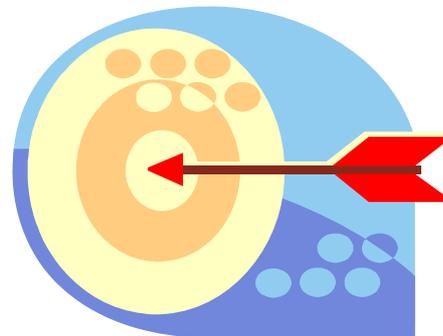
LabID Event

The following documents and forms will be discussed in this training. You may wish to PRINT these to follow along.

- 1) **MDRO and CDAD Module Protocol**
- http://www.cdc.gov/ncidod/dhqp/nhsn_MDRO_CDAD.html
- 2) **Instructions for Completion of MDRO/CDAD forms**
- http://www.cdc.gov/ncidod/dhqp/nhsn_instruct_MDRO_CDAD.html
- 3) **CDC Definitions for Nosocomial Infections document**
- <http://www.cdc.gov/ncidod/dhqp/pdf/NNIS/NosInfDefinitions.pdf>
- 4) **Patient Safety Monthly Reporting Plan**
- http://www.cdc.gov/ncidod/dhqp/forms/A_PSReportPlan_BLANK.pdf
- 5) **MDRO or CDAD Infection Event form**
- http://www.cdc.gov/ncidod/dhqp/forms/57_126_MDROInfectionEvent.pdf
- 6) **Specific NHSN infection event forms (BSI, UTI, SSI, PNEU)**
- http://www.cdc.gov/ncidod/dhqp/nhsn_PSforms.html
- 7) **Laboratory-Identified MDRO or CDAD Event form**
- http://www.cdc.gov/ncidod/dhqp/forms/57_128_LabIDEvent.pdf
- 8) **MDRO and CDAD Prevention Process and Outcome Measures Monthly Monitoring form**
- http://www.cdc.gov/ncidod/dhqp/forms/57_127_MDRONmonthlyReporting.pdf

Goal of MDRO and CDAD Module

- o Specialized monitoring of MDRO and *C. difficile* infection (CDI) may help to evaluate local trends and changes in the occurrence of these pathogens and related infections.
- o This module will provide a mechanism for facilities to report and analyze MDRO and CDAD data, in order to inform infection control staff of the impact of targeted prevention efforts.



Resistant Organisms Monitored

- Methicillin-Resistant *Staphylococcus aureus* (MRSA)
(option w/ Methicillin-Susceptible *S. aureus* (MSSA))
- Vancomycin-Resistant *Enterococcus* spp. (VRE)
- Multidrug-Resistant (MDR) *Klebsiella* spp.
- Multidrug-Resistant (MDR) *Acinetobacter* spp.



LabID Event

Reporting Options

-Infection Surveillance

One of these
two options is required
for participation in MDRO!

-Laboratory-Identified (LabID) Event

-Prevention Process Measures:

-Monitoring Adherence to Hand Hygiene

-Monitoring Adherence to Gown and Gloves Use

-Monitoring Adherence to Active Surveillance Testing

-Active Surveillance Testing (AST) Outcome Measures

**See: Prevention
Process Measures
and Active
Surveillance
Testing Outcome
Measures Training**

Laboratory-Identified (LabID) Event

LabID Event

Purpose

- To calculate proxy measures of MDRO events, exposures, and healthcare acquisition, facilities may choose to monitor Laboratory-identified (LabID) MDRO Events. The main proxy measures are included in a table at the end of this presentation.
- This monitoring method enables a facility to rely almost exclusively on data obtained from the laboratory.



MDRO Definitions:

- **MRSA:** *S. aureus* testing oxacillin resistant; or positive from molecular testing for *mecA* and PBP2a
- **MSSA** (option): *S. aureus* testing oxacillin susceptible or intermediate, or negative from molecular testing for *mecA* and PBP2a
- **VRE:** Any *Enterococcus* spp. testing resistant to vancomycin
- **MDR-Klebsiella:** *Klebsiella* spp. testing intermediate or resistant to ceftazidime or ceftriaxone

MDRO Definitions: (continued)

MDR-*Acinetobacter*: *Acinetobacter* spp. resistant to all agents tested within at least 3 antimicrobial classes, including β -lactams, carbapenems, aminoglycosides, and fluoroquinolones

- β -lactams: ampicillin/sulbactam, piperacillin/tazobactam, cefepime, ceftazidime
- Carbapenems: imipenem, meropenem
- Aminoglycosides: amikacin, gentamicin, tobramycin
- Fluoroquinolones: ciprofloxacin, levofloxacin

Definitions

- **LabID Event**: Non-duplicate MDRO isolate, any specimen source; and unique blood source MDRO isolate (defined below)
- **MDRO Isolate**: Specimen obtained for clinical decision making testing positive for a MDRO (specified for monitoring), exclude active surveillance testing specimens
- **Duplicate MDRO Isolate**: Same MDRO, same patient, same month, any source (except blood)
- **Unique Blood Source**: MDRO isolate from blood in patient with no prior positive blood culture for same MDRO in ≤ 2 weeks
 - The 2 week interval has been selected in order to differentiate between persistent bacteremia and a new bacteremia.

Identifying a LabID Event



Specimen obtained for clinical decision making

Not MDRO being monitored

Not LabID Event

Positive for MDRO

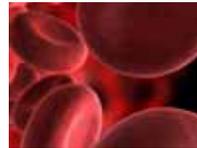
1st in Calendar Month?

YES



NO

Unique Blood Source?



NO

Not LabID Event

NHSN Laboratory-Identified MDRO or CDAD Event SNW No. 0920-0891 Rev. Date: 03/31/2011

*required for saving	
Facility ID:	Event #:
*Patient ID:	Social Security #:
Secondary ID:	
Patient Name, Last:	First: Middle:
*Gender: M F	*Date of Birth:
Ethnicity (Specify):	Race (Specify):
Event Details	
*Event Type: LabID	*Date Specimen Collected:
*Specific Organism Type: (Check one)	
<input type="checkbox"/> MRSA <input type="checkbox"/> MSSA <input type="checkbox"/> VBP <input type="checkbox"/> MDR- <i>Klebsiella</i> <input type="checkbox"/> MDR- <i>Acinetobacter</i> <input type="checkbox"/> <i>C. difficile</i>	

NHSN Laboratory-Identified MDRO or CDAD Event SNW No. 0920-0891 Rev. Date: 03/31/2011

*required for saving	
Facility ID:	Event #:
*Patient ID:	Social Security #:
Secondary ID:	
Patient Name, Last:	First: Middle:
*Gender: M F	*Date of Birth:
Ethnicity (Specify):	Race (Specify):
Event Details	
*Event Type: LabID	*Date Specimen Collected:
*Specific Organism Type: (Check one)	
<input type="checkbox"/> MRSA <input type="checkbox"/> MSSA <input type="checkbox"/> VBP <input type="checkbox"/> MDR- <i>Klebsiella</i> <input type="checkbox"/> MDR- <i>Acinetobacter</i> <input type="checkbox"/> <i>C. difficile</i>	

LabID Event

Minimum Reporting Requirements (if this option is selected)

- All LabID Events for at least one MDRO
- At least one selected location in the healthcare facility
- At least three consecutive months in a calendar year



May



June



July

Settings: 1) Inpatient
2) Outpatient Locations (no outpatient dialysis centers)

Reporting Methods

A. Facility-Wide by Location:*

Report separately from all locations of a facility.

Separate denominators (patient days, admissions, encounters) for all locations.

**This method is not allowed for MDR-Klebsiella or MDR-Acinetobacter*

B. Selected Locations:

Report separately from 1 or more specific locations of a facility.

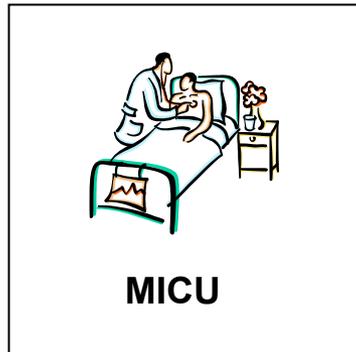
Separate denominators (patient days, admissions, encounters) for each location.

C. Overall Facility-Wide:

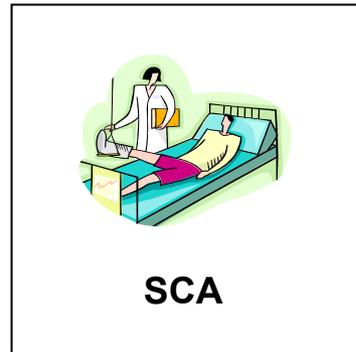
Report all throughout the facility. Single denominators (patient days, admissions, encounters) for the entire facility.

Examples of each are shown on the next three slides.

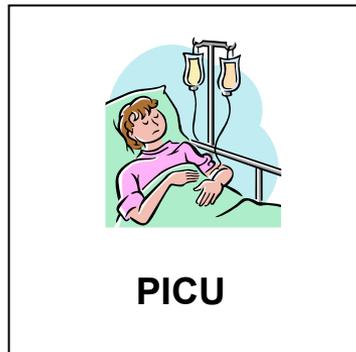
A. Facility-Wide by Location



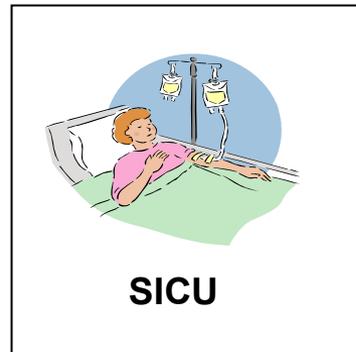
+



+



+



+



B. Selected Locations



MICU



SCA



QP Dialysis



PICU



SICU



NICU

LabID Event

C. Overall Facility-Wide

Patient Days = 2950, Admissions = 300, Encounters = 700



MICU



SCA



~~OP Dialysis~~



PICU



ER



SICU



NICU

Reporting Forms

- 1) Patient Safety Monthly Reporting Plan
- 2) Laboratory-Identified MDRO or CDAD Event form
Numerator – one form per LabID Event
- 3) MDRO and CDAD Prevention Process and Outcome Measures Monthly Monitoring form
Denominators:
IP Locations - Total patient days, admissions
OP Locations - Encounters

Example 1: DHQP Memorial



Betty Brown, our infection preventionist at DHQP Memorial Hospital, has decided that she would like to monitor MRSA LabID Events for 3 ICU locations: MICU, SICU and PICU.

Because she is monitoring selected locations, the reporting method she has chosen is:

B. Selected locations in a facility

An example of her Patient Safety Monthly Reporting Plan is shown on the next slide.

LabID Event

Patient Safety Monthly Reporting Plan

* required for saving

Facility ID: 9999 *Month/Year: **08** / **2008**

No NHSN Patient Safety Modules Followed this Month

Process and Outcome Measures

Locations	Specific Organism Type	Infection Surveillance	%AST Timing	%AST Eligible	Incidence	Prevalence	Lab ID Event	HH	GG
<u>MICU</u>	<u>MRSA</u>	<input type="checkbox"/>	Adm Both	All NHx	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<u>SICU</u>	<u>MRSA</u>	<input type="checkbox"/>	Adm Both	All NHx	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<u>PICU</u>	<u>MRSA</u>	<input type="checkbox"/>	Adm Both	All NHx	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	Adm Both	All NHx	<input type="checkbox"/>				
_____	_____	<input type="checkbox"/>	Adm Both	All NHx	<input type="checkbox"/>				



Example 1: DHQP Memorial (cont)



During the monitoring month at DHQP Memorial, an 8 year-old girl in PICU had an open wound that was cultured. The culture was positive for MRSA. This was the first positive isolate identified during this admission for this patient and therefore, it qualified as a LabID Event. An example of a completed LabID Event form is shown on the next slide.



LabID Event



Laboratory-identified MDRO or CDAD Event

OMB No. 0920-0666
Exp. Date: 03-31-2011

***required for saving**

Facility ID: **9999**

Event #: **445**

*Patient ID: **A086789**

Social Security #:

Secondary ID:

Patient Name, Last:

First:

Middle:

*Gender: M **F**

*Date of Birth: **11/06/2000**

Ethnicity (Specify):

Race (Specify):

Event Details

*Event Type: LabID

*Date Specimen Collected: **08/27/2008**

*Specific Organism Type: (Check one)

MRSA MSSA VRE MDR-*Klebsiella* MDR-*Acinetobacter* *C. difficile*

*Outpatient: Yes **No**

*Specimen Source: **Wound specimen**

*Date Admitted

to Facility: **08/14/2008**

*Location:

PICU

*Date Admitted

to Location: **08/14/2008**

*Documented prior evidence of previous infection or colonization with this specific organism type?

Yes **No**

- Form Fields:
 - Required fields identified by an asterisk*
 - Your facility decides which patient identifiers to report but Patient ID should be unique to that patient and the same across all visits (most facilities use Medical Record Number)
 - Do not use the NHSN “transfer rule” for LabID Event locations
 - Date Admitted to Location refers to the location where LabID Event reporting is being done and where the patient was located at the time of specimen collection
 - Date Specimen Collected is the date the specimen was taken from the patient. It is NOT the date the result was reported, the date the result was obtained in the lab, or any other date
 - “Documented prior evidence of infection or colonization with this organism type” can include any previous documentation by a health care provider or laboratory report. This includes from the current location, a prior location in your facility, or any outside facility.

Example 1: DHQP Memorial (cont)



Three days after the wound specimen collection, the child developed fever and chills. A blood specimen was collected that was positive for MRSA. Because this was the first blood isolate obtained from this patient, also called unique blood source, a 2nd LabID Event form was completed.



LabID Event

Laboratory-identified MDRO or CDAD Event

*required for saving			
Facility ID: 9999	Event #: 445		
*Patient ID: A086789	Social Security #:		
Secondary ID:			
Patient Name, Last:	First:	Middle:	
*Gender: M <input type="radio"/> F <input checked="" type="radio"/>	*Date of Birth: 11/06/2000		
Ethnicity (Specify):		Race (Specify):	
Event Details			
*Event Type: LabID		*Date Specimen Collected: 08/30/2008	
*Specific Organism Type: (Check one)			
<input checked="" type="checkbox"/> MRSA <input type="checkbox"/> MSSA <input type="checkbox"/> VRE <input type="checkbox"/> MDR- <i>Klebsiella</i> <input type="checkbox"/> MDR- <i>Acinetobacter</i> <input type="checkbox"/> <i>C. difficile</i>			
*Outpatient: Yes <input type="radio"/> No <input checked="" type="radio"/>		*Specimen Source: Blood	
*Date Admitted to Facility: 08/14/2008		*Location: PICU	*Date Admitted to Location: 08/14/2008
*Documented prior evidence of previous infection or colonization with this specific organism type?			
<input checked="" type="radio"/> Yes <input type="radio"/> No			





Example1: DHQP Memorial (cont)

At the end of the month, Betty completed her denominator forms for MICU, SICU and PICU. The next slide shows how she completed the form for PICU. Notice that because she is collecting information for LabID Events she enters two monthly denominators:

- 1) Patient days
- 2) Number of admissions

LabID Event

MDRO and CDAD Prevention Process and Outcome Measures Monthly Monitoring

OMB No. 0920-0666
Exp. Date: 03-31-2011

Page 1 of 2

*required for saving **conditionally required based upon monitoring selection in Monthly Reporting Plan

Facility ID #: 9999 *Month: 08 *Year: 2008 *Location Code: MICU

Setting: Inpatient **Days[§]: 565 ** Admissions[§]: 27

Setting: Outpatient (or Emergency Room) **Encounters: _____

MDRO & CDAD Infection Surveillance or LabID Event Reporting

(Specific Organism Type)	MRSA	VRE	MDR- <i>Klebsiella</i>	MDR- <i>Acinetobacter</i>	<i>C. difficile</i>
Infection Surveillance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LabID Event	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Process Measures (Optional)



Example 2: Tinytown Memorial



Bob Jones, an infection preventionist at Tinytown Memorial Hospital, a small local hospital with 40 beds and no outpatient clinics, has decided to initiate LabID Event monitoring for MRSA across his entire facility, including the emergency department, during August 2008.

Because he is monitoring the entire facility the reporting method he has chosen is:

C. Overall facility-wide

In addition, he has selected both IN and OUT patient settings (since he included the ED).

An example of his Patient Safety Monthly Reporting Plan is shown on the next slide.

LabID Event

Patient Safety Monthly Reporting Plan

* required for saving

Facility ID: 9999

*Month/Year: **08** / **2008**

No NHSN Patient Safety Modules Followed this Month

MDRO and CDAD Module

Locations	Setting (Circle one)			Specific Organism Type	*LabID Event
ALL	In	Out	Both	MRSA	X
ALL	In	Out	Both	_____	<input type="checkbox"/>
ALL	In	Out	Both	_____	<input type="checkbox"/>
ALL	In	Out	Both	_____	<input type="checkbox"/>

Process and Outcome Measures

Locations	Specific Organism Type	Infection Surveillance	%AST Timing	%AST Eligible	Inci- dence	Preva- lence	Lab ID Event	HH	GG
-----------	------------------------------	---------------------------	----------------	------------------	----------------	-----------------	-----------------	----	----



Example 2: Tinytown Memorial (cont)

Bob identified a patient seen in the emergency room with a specimen positive for MRSA. The next slide shows how he completed the LabID Event form.

LabID Event

Laboratory-identified MDRO or CDAD Event

*required for saving	
Facility ID: 9999	Event #: 444
*Patient ID: A089678	Social Security #:
Secondary ID:	
Patient Name, Last:	First: Middle:
*Gender: M F	*Date of Birth: 12/06/1976
Ethnicity (Specify):	Race (Specify):
Event Details	
*Event Type: LabID	*Date Specimen Collected: 08/27/2008
*Specific Organism Type: (Check one)	
<input checked="" type="checkbox"/> MRSA <input type="checkbox"/> MSSA <input type="checkbox"/> VRE <input type="checkbox"/> MDR- <i>Klebsiella</i> <input type="checkbox"/> MDR- <i>Acinetobacter</i> <input type="checkbox"/> <i>C. difficile</i>	
*Outpatient: Yes No	*Specimen Source: Wound specimen
*Date Admitted to Facility:	*Location: ED *Date Admitted to Location:
*Documented prior evidence of previous infection or colonization with this specific organism type?	
Yes No	
Required for CDAD (Optional for MDRO)	





Example 2: Tinytown Memorial (cont)

At the end of the monitoring month Bob Jones completes his denominator form. Because he chose to monitor his entire facility, including the emergency room, he enters three monthly denominators:

- 1) Inpatient days
- 2) Admissions
- 3) Outpatient (or Emergency Room) encounters

LabID Event

MDRO and CDAD Prevention Process and Outcome Measures Monthly Monitoring

OMB No. 0920-0666
Exp. Date: 03-31-2011

Page 1 of 2

*required for saving **conditionally required based upon monitoring selection in Monthly Reporting Plan

Facility ID #: **9999** *Month: **_08_** *Year: **_2008_** *Location Code: **ALL IN/OUT)_**

Setting: Inpatient **Days[§]: **_400_** ** Admissions[§]: **_____100_____**

Setting: Outpatient (or Emergency Room) **Encounters: **_550_**

MDRO & CDAD Infection Surveillance or LabID Event Reporting

(Specific Organism Type)	MRSA	VRE	MDR- <i>Klebsiella</i>	MDR- <i>Acinetobacter</i>	<i>C. difficile</i>
Infection Surveillance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LabID Event	X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Process Measures (Optional)

Hand Hygiene

** Performed:

Gown and Gloves

** Used:



Let's Review!



- 1) LabID Event reporting OR MDRO Infection Surveillance in at least one facility location is required for participation in the MDRO Module
- 2) Three reporting methods can be used for MRSA and VRE LabID Events:
 - A. Facility-wide by location
 - B. Selected locations in a facility
 - C. Overall facility-wide
- 3) Reporting methods B & C (but not A) can be used for MDR-*Klebsiella* and MDR-*Acinetobacter*

LabID Events are Categorized through NHSN Calculations as:

- ❑ Healthcare Facility-Onset (HO): LabID Event specimen collected > 3 days after admission to the facility (i.e., on or after day 4)
- ❑ Community-Onset (CO): LabID Event collected as an outpatient or inpatient ≤ 3 days after admission to the facility (i.e., days 1(day of admission), 2, or 3)

LabID Event

Proxy Rates that can be Calculated using LabID Event Reporting (See protocol for further descriptions)

Specific Metrics	Exposure	Infection	Acquisition
Admission Prevalence Rate	√		
Overall Prevalence Rate	√		
Bloodstream Infection Admission Prevalence Rate	√	√	
Bloodstream Infection Incidence Rate		√	√
Overall MDRO Infection/Colonization Incidence Rate			√
Overall MDRO Infection/Colonization Incidence Density Rate			√

LabID Event

SUMMARY

Table 1. Optional Reporting Choices for MDRO and CDAD Module

Reporting Choices	MRSA or MRSA/MSSA	VRE	<i>Klebsiella</i> spp.	<i>Acinetobacter</i> spp.
	Method	Method	Method	Method
<u>Proxy Infection Measures</u> Laboratory-Identified (LabID) Event	A, B, C	A, B, C	B,C	B,C

Questions and Answers



1. My facility is doing active surveillance testing (AST) and LabID Event reporting. If an MDRO is identified during AST is it also a LabID Event?

Answer: No, because a LabID Event is an MDRO isolate obtained for clinical decision making, not as part of routine surveillance.

Questions and Answers



2. My facility uses MDRO and other modules in the Patient Safety Component of NHSN. If I am doing surveillance in the same unit for another NHSN defined event, such as ventilator-associated pneumonia (VAP), and identify a LabID Event in the same patient, what form do I complete?

Answer: You would complete two forms: one for the LabID Event and one for the VAP (PNEU). Be sure to circle "Yes" to the MDRO question on the Pneumonia form.

Questions and Answers



3. I don't have a background in statistics and am not comfortable trying to calculate all these proxy rates. What should I do?

Answer: No problem. The NHSN analysis tool automatically calculates the rates based on the information you provide using the reporting plan, event, and denominator forms.

Questions and Answers



4. If I have a patient with a positive MDRO culture early in the month and one week later he has another positive culture, do I complete a second LabID Event form?

Answer: That depends. If the first and second culture are from non-blood specimens and are both positive for the same organism you are monitoring, then you would not complete a second form. If the second culture was a positive blood isolate you would complete a 2nd form.



Also, if the first culture was a positive blood isolate and any additional positive isolate during that month was from a non-blood specimen, you would not report the additional isolates.

Questions and Answers



5. If I have a patient with a positive MDRO culture late in the month and the following month he has another positive culture, do I complete a second LabID Event form?

Answer: Yes, if you are monitoring in both months. LabID reporting should be performed in a location for at least 3 consecutive months. So, if you are still doing LabID Event monitoring in the following month for the same organism and in the same location, you would complete another form because it would be the 1st positive isolate for that patient in the new month.

Questions and Answers



6. If I have a patient with a positive blood culture early in the month that has a second positive blood culture for the same MDRO > 14 days after the first one, do I complete another LabID Event form for the second positive blood culture?

Answer: Yes, you would complete another form.

Custom Fields

- Alphanumeric fields – labels and dates
- Available with each form
- User can customize the data being collected and submitted (i.e. additional information)

References

Centers for Disease Control and Prevention (CDC)
– National Healthcare Safety Network (NHSN) –

Home Page:

<http://www.cdc.gov/ncidod/dhqp/nhsn.html>

Document Library (main link to all specific forms):

http://www.cdc.gov/ncidod/dhqp/nhsn_documents.html

MDRO and CDAD Module:

http://www.cdc.gov/ncidod/dhqp/nhsn_MDRO_CDAD.html