

CDI: Monitoring for Adherence and Improvement



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Learning Objectives

- Discuss ways to identify opportunities for improvement by analyzing National Healthcare Safety Network (NHSN) *Clostridioides difficile* infection (CDI) data
- Use the Targeted Assessment for Prevention (TAP) strategy to prioritize improvement activities
- Identify how audit and feedback can be used to drive CDI prevention activities



Anywhere Hospital USA

The hospital is struggling with CDI rates that are continuing to rise:



- **Hospital leadership:** Why are the rates up and how do they compare to other hospitals in the area?
- **Infection control committee (ICC):** Where are the infections occurring?
- **Infectious diseases chief:** Are the cases community-acquired (CA) or healthcare-associated (HA)?
- **Unit nurse managers and environmental services managers:** What data should be shared with frontline staff?



CDI Surveillance Definitions

- Healthcare onset (HO): day 4 or greater of hospitalization
- Community onset (CO): prior to day 4 and no admissions within 4 weeks
- Community onset, healthcare-associated: if discharged from facility less than 4 weeks



Analyzing CDI Data

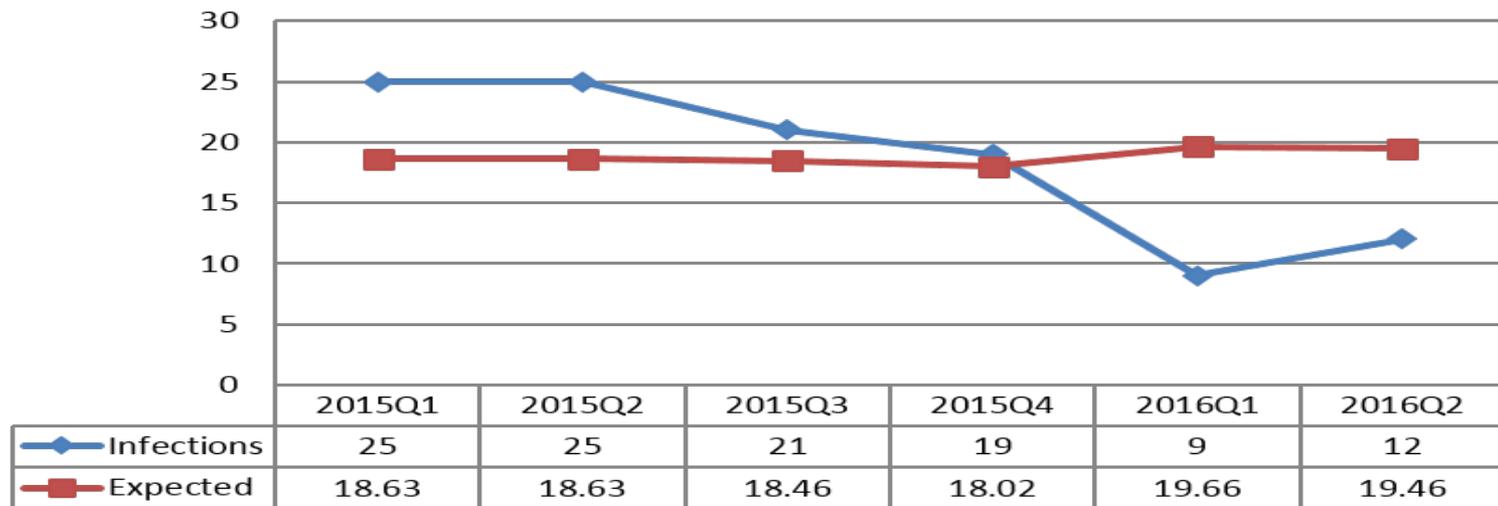
patID	spcOrgTyp	location	outpatient	prevPos	onset	admitDate	locationAdm	specimenS	specimenDa
111	CDIF	ICU	N	N	HO	1/20/2016	ICU	STOOL	1/16/2016
222	CDIF	2ND	N	Y	HO	2/1/2016	2ND	STOOL	2/14/2016
333	CDIF	4TH	N	N	HO	2/10/2016	4TH	STOOL	2/14/2016
444	CDIF	4TH	N	N	HO	2/10/2016	ICU	STOOL	2/16/2016
555	CDIF	2ND	N	N	HO	3/1/2016	2ND	STOOL	3/8/2016
666	CDIF	ICU	N	N	HO	6/10/2016	4TH	STOOL	6/16/2016
777	CDIF	4TH	N	N	HO	2/18/2016	4TH	STOOL	2/23/2016
888	CDIF	ICU	N	N	HO	5/1/2016	ICU	STOOL	5/5/2016
999	CDIF	4TH	N	N	HO	2/1/2016	4TH	STOOL	2/14/2016
113	CDIF	3RD	N	Y	HO	4/2/2016	3RD	STOOL	4/7/2016
223	CDIF	4TH	N	N	HO	2/8/2016	4TH	STOOL	2/14/2016
334	CDIF	4TH	N	N	HO	2/8/2016	4TH	STOOL	2/23/2016
445	CDIF	ICU	N	N	HO	5/12/2016	4TH	STOOL	5/17/2016



CDI Standardized Infection Ratio (SIR)

Summary	location	Infections	Expected	SIR	confidence level
2015Q1	FACWIDEII	25	18.63	1.342	0.888, 1.952
2015Q2	FACWIDEII	25	18.63	1.342	0.888, 1.952
2015Q3	FACWIDEII	21	18.46	1.138	0.723, 1.709
2015Q4	FACWIDEII	19	18.02	1.054	0.654, 1.616
2016Q1	FACWIDEII	9	19.66	0.458	0.223, 0.840
2016Q2	FACWIDEII	12	19.46	0.617	0.334, 1.048

***C. difficile* Infections by Quarter**



Targeted Assessment for Prevention (TAP) Report



Anywhere Hospital USA 2015

HO Cases	Expected	SIR	P Value	CAD
81	72	1.13	0.3	29.87

<http://www.cdc.gov/hai/pdfs/prevent/TAP-Guide-for-Individual-Facility-User.pdf>



Monitoring Data for Action

Date of Assessment:

Facility Name or ID:

Facility Type: Other, Please Specify:

Unit Name or ID:

Unit Type:

Title or role of person completing tool: Other, Please Specify:

Years of experience at facility: (Numeric Response)

I. General Infrastructure, Capacity, and Processes	Response	Comments (and/or "As Evidenced By")
1. Does your facility's senior leadership actively promote CDI prevention activities?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unk	
2. Is unit-level leadership involved in CDI prevention activities?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unk	
3. Does your facility have a team/work group focusing on CDI prevention?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unk	
4. Does your facility have a staff person with dedicated time to coordinate CDI prevention activities?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unk	
5. Does your facility have a nurse champion for CDI prevention activities?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unk	
6. Does your facility have a physician champion for CDI prevention activities?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unk	



<https://www.cdc.gov/hai/pdfs/tap/CDI-TAP-Facility-Assessment-Tool-v4.0-July2016-Reader-Enabled.pdf>



Prevention Practices

TAP *Clostridium difficile* infection (CDI) Implementation Guide: Links to Example Resources

- General Infrastructure, Capacity, and Processes
- Antibiotic Stewardship
- Early Detection and Isolation, Appropriate Testing
- Contact Precautions/Hand Hygiene
- Environmental Cleaning
- Laboratory Practices

<http://www.cdc.gov/hai/prevent/tap/cdiff.html>



Sharing Data with Administration

HO Cases	Expected	SIR	P value	CAD
81	72	1.13	0.3	29.87

- Anywhere Hospital had 9 more cases than predicted/expected
- SIR is 13% higher than predicted
- Data are not statistically significant, but there are opportunities for improvement
- To meet the HHS reduction goal 30 *C. difficile* infections need to be prevented
- Average excess cost per case is \$4,800 - \$18,000
- Meeting this goal would mean a cost avoidance of
 - **\$140,000 - \$540,000**



Monitoring and Feedback

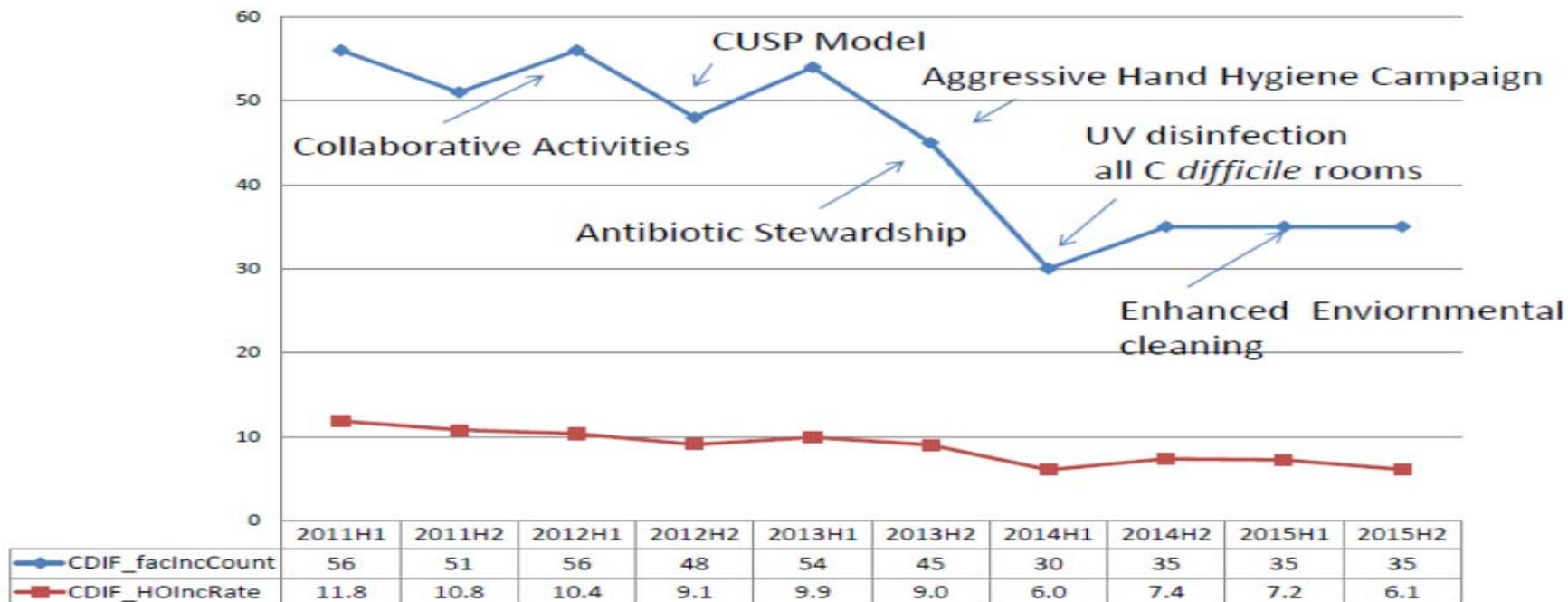
Gaps:

- Lack of physician champion
- Lack of nurse champion
- Lack of standardization of lab policies for specimens
- Antibiotic Stewardship lacking, reason for antibiotic not documented
- Dissemination of data lacking
- Lack of monitoring of isolation adherence



Disseminating CDI Data

C. difficile Hospital Onset Cases 2011 - 2015



Feedback *C. difficile* Incidence

What happened? (brief description)			
Why did it happen? (what factors contributed)			
+		-	
<u>What prevented it from being worse?</u>		<u>What happened to cause the defect?</u>	
What can we do to reduce the risk of it happening with a different person?			
Action Plan	Responsible Person	Targeted Date	Evaluation Plan – How will we know risk is reduced?
With whom shall we share our learning? (Communication plan)			
Who	When	How	Follow up

<https://www.ahrq.gov/hai/cusp/toolkit/learn-defects.html>



Deep Dive Tool

Event Description	Detailed Narrative Description/Chronology of Event
<p>What happened? A detailed description of the adverse event must include: the date, area/service involved, unit or department, who was involved by title, and a detailed chronology of pertinent facts that includes:</p> <ul style="list-style-type: none"> ▪ Co-morbid conditions ▪ Possible transmission ▪ C-diff plan compliance 	<p>Patients primary Dx: _____ Comorbidities: _____</p> <p>Risk factors: <input type="checkbox"/> Advanced age <input type="checkbox"/> underlying illness <input type="checkbox"/> immunosuppression <input type="checkbox"/> tube feeds <input type="checkbox"/> hx of colon disease <input type="checkbox"/> recent non-surgical gastrointestinal procedure <input type="checkbox"/> recent hospital/nursing home encounter <input type="checkbox"/> previous hx of c-diff</p> <p>Admit Date: _____ S/S Onset Date: _____ Location of patient at S/S onset: _____ Last UV treatment Date: _____ Previous patient with c-diff: <input type="checkbox"/> Yes <input type="checkbox"/> No Contact Isolation Date: _____ Positive Sample Date: _____ <input type="checkbox"/> PCR <input type="checkbox"/> EIA Laxatives <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Other cases on unit prior to onset of S/S: <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please provide information for each case.</p> <p>MR#: _____ Room(s): _____ Admit Date: _____ DC Date: _____ Early recognition: <input type="checkbox"/> Yes <input type="checkbox"/> No Timely isolation: <input type="checkbox"/> Yes <input type="checkbox"/> No Dedicated equipment: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>MR#: _____ Room(s): _____ Admit Date: _____ DC Date: _____ Early recognition: <input type="checkbox"/> Yes <input type="checkbox"/> No Timely isolation: <input type="checkbox"/> Yes <input type="checkbox"/> No Dedicated equipment: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>MR#: _____ Room(s): _____ Admit Date: _____ DC Date: _____ Early recognition: <input type="checkbox"/> Yes <input type="checkbox"/> No Timely isolation: <input type="checkbox"/> Yes <input type="checkbox"/> No Dedicated equipment: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>MR#: _____ Room(s): _____ Admit Date: _____ DC Date: _____ Early recognition: <input type="checkbox"/> Yes <input type="checkbox"/> No Timely isolation: <input type="checkbox"/> Yes <input type="checkbox"/> No Dedicated equipment: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Patient taking proton pump inhibitors <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, why indicated _____</p> <p>Antibiotics history (3 months) <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, fill out the information below for each antibiotic.</p> <p>Antibiotic: _____ Indication: _____ Start Date: _____ DC Date: _____ Appropriate: <input type="checkbox"/> Yes <input type="checkbox"/> No Antibiotic: _____ Indication: _____ Start Date: _____ DC Date: _____ Appropriate: <input type="checkbox"/> Yes <input type="checkbox"/> No Antibiotic: _____ Indication: _____ Start Date: _____ DC Date: _____ Appropriate: <input type="checkbox"/> Yes <input type="checkbox"/> No Antibiotic: _____ Indication: _____ Start Date: _____ DC Date: _____ Appropriate: <input type="checkbox"/> Yes <input type="checkbox"/> No Antibiotic: _____ Indication: _____ Start Date: _____ DC Date: _____ Appropriate: <input type="checkbox"/> Yes <input type="checkbox"/> No Antibiotic: _____ Indication: _____ Start Date: _____ DC Date: _____ Appropriate: <input type="checkbox"/> Yes <input type="checkbox"/> No Antibiotic: _____ Indication: _____ Start Date: _____ DC Date: _____ Appropriate: <input type="checkbox"/> Yes <input type="checkbox"/> No</p>



Communication Tools - Huddle

Huddle Problem Solving

- Hold ad hoc, “touch-base” meeting maintain situational awareness
- Discuss critical issues and emerging
- Assign resources
- Express concerns



Monitoring



Isolation: Observation of Area Exterior to Contact Isolation Rooms

TB-1

Instructions: Observe areas outside of isolation rooms. Observe each practice and record the observation. In the column on the right, sum (across) the total number of “Yes” and the total number of observations (“Yes” + “No”). Sum all categories (down) for overall performance. Disregard not applicable categories. For example, cover gowns should be outside contact precautions rooms, but may not be required outside a room with airborne isolation precautions only.

Isolation room: Observation Categories		Room 1	Room 2	Room 3	Summary of Observations	
					Yes	Total “Yes” & “No”
1	Is an isolation sign at the patient’s door?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
2	Are gloves available outside of each patient room or treatment area?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
3	Are cover gowns available near each patient room or treatment area?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
4	Is other PPE for standard precautions (e.g., eye protection, face masks) available near each patient room or treatment area?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
5	Are surgical face masks or face shields or N95 respirators available near patient room?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
6	Is dedicated patient equipment, such as stethoscopes or blood pressure cuffs, available?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
TOTAL (Do not include N/A in totals)						

(CDC, *Quick Observations Tools for Infection Prevention*, <https://www.cdc.gov/infectioncontrol/tools/quotes.html>, 2019)



Tracking Process Measures

O = NOT CLEAN, X = CLEAN, LEAVE BLANK = NOT EVALUABLE **NOTE - USE CAP LETTERS "X"**
 The percentage of individual surfaces cleaned will be automatically calculated in Sheet 2 (Aggregate Score Sheet)
 Please report aggregate scores calculated for each category highlighted in Sheet 2 (Aggregate Score Sheet)

Unit	Rm No.	Date of Marking (if applicable)	Date of Evaluation	High Touch I			High Touch II		
				Bed rails	Tray table	IV pole	Call box / button	Telephone	Bedside table handle

TERMINAL CLEANING

Automatic calculation of Aggregate Scores Across Surfaces and Rooms

	High Touch I			High Touch II		
	Bed rails	Tray table	IV pole	Call box / button	Telephone	Bedside table handle
# of Surfaces Cleaned	18	18	10	14	14	16
# of Surfaces Evaluated	20	20	15	16	14	24
% of Surfaces Cleaned	20.00%	90.00%	66.67%	87.50%	100.00%	66.67%
Category: Total # of Surfaces Cleaned	46			44		
Category: Total # of Surfaces Evaluated	55			54		
Category TDC Score: % of Surfaces Cleaned	83.64%			81.48%		

<https://www.cdc.gov/HAI/toolkits/Appendices-Evaluating-Environ-Cleaning.html>



Objective Process Measures

Fluorescent Gel

High Touch Object



Bed Control



Phone and Call button



Light switch



Flush handle

ATP Bioluminescence



Pros and Cons

Method	Ease of Use	Identifies Pathogens	Useful for Individual Teaching	Directly Evaluates Cleaning
Direct Practice Observation	Low	No	Yes	Yes
Swab cultures	High	Yes	Not Studied	Potentially
Agar slide cultures	Good	Limited	Not Studied	Potentially
Fluorescent gel	High	No	Yes	Yes
ATP system	High	No	Yes	Potentially

<https://www.cdc.gov/HAI/toolkits/Appendices-Evaluating-Environ-Cleaning.html>



Dissemination of Data

Board Score Card

Measure	Result 2014	Result 2015	HH goal	Status, Comments and Actions
C Difficile	SIR 0.97  Goal not met, High Priority	SIR 0.56  Better than benchmark	SIR 0.76	<p>Ensuring appropriate specimen collection</p> <p>Actions taken:</p> <p>Guidelines for specimen collection</p> <p>Audit and provide feedback EVS on enhanced cleaning protocols</p> <p>Immediate feedback to units and review of all cases</p>

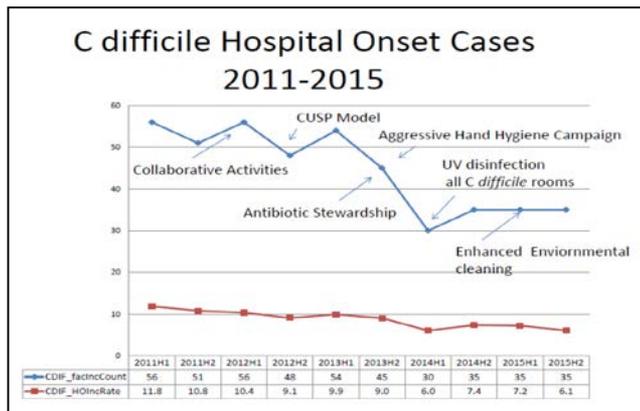
Newsletter and E-mails



Isolate Suspect/ Confirmed CDI Patients

1. If it is expected that it will take > 4 hours to obtain *C. difficile* testing results, move symptomatic patient to private room if possible
2. If private room is unavailable, isolate patient in cubicle & provide dedicated commode
3. Initiate precautions procedures
4. Upon CDI confirmation, transfer patient to private room (if not already done). Perform a terminal clean of the room from which the patient was transferred.
5. Continue isolation until patient has ended treatment and diarrhea is resolved (consult Infection Prevention for patients with chronic diarrhea from causes other than *C. difficile* before removing them from isolation)
6. Notify Environmental Services (EVS) when a CDI patient is taken off isolation so that a terminal clean can be performed. A terminal clean should be performed even if the patient has not been discharged.

Unit Information Boards



Posters



DEADLY DIARRHEA:
C. DIFFICILE CAUSES IMMENSE SUFFERING, DEATH

IMPACT

- 500,000 Cases close to half a million illnesses in one year.
- Comes back at least once in about 1 in 5 patients who get *C. difficile*.
- Caused 15,000 deaths in one year.
- 1 in 11 people 65 and older died within a month of *C. difficile* infection diagnosis.

RISK

- People on antibiotics are 7-10 times more likely to get *C. difficile* while on the drugs and during the month after.
- Being in healthcare settings, especially hospitals or nursing homes.
- More than 80% of *C. difficile* deaths occurred in people 65 and older.

www.cdc.gov/HandHygiene



How Did Anywhere Hospital Do?



C.difficile TAP Report Jan- June 2016

C. diff incidence	Number expected	Facility CAD	SIR	P Value	Confidence level
17	38.2	- 9.79	0.44	0.0001	0.267- 0.697



General Barriers

- The definitions can be confusing
- Specimen collection is not done in a timely or appropriate manner
- Old data are not meaningful to staff
- Staff may not be aware of how to use data to drive improvement



Strategies to Overcome Barriers and Keys to Success

- Be clear - know your audience
- Provide feedback in real time
- Consider developing guidelines for specimen collection based on clinical indications
- Use resources provided by the CDC
- Use a QI model such as Plan Do Study Act (PDSA) to drive change
- Celebrate success



References

- CDC Evaluating Environmental Cleaning. Centers for Disease Control and Prevention, CDC. Available at: <http://www.cdc.gov/HAI/toolkits/Appendices-Evaluating-Environ-Cleaning.html>
- CDC Multidrug-Resistant organism & *Clostridium difficile* Infection. Centers for Disease Control and Prevention, CDC. Available at: http://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf
- Compendium of Strategies to Prevent HAIs. 2014. The Society for Healthcare Epidemiology of America, SHEA. Available at <https://www.shea-online.org/index.php/practice-resources/priority-topics/compendium-of-strategies-to-prevent-hais>
- Guide to the TAP Report. Centers for Disease Control and Prevention, CDC. Available at: <http://www.cdc.gov/hai/pdfs/prevent/TAP-Guide-for-Individual-Facility-User.pdf>
- Learn from Defects Tool. Agency for Healthcare Research and Quality. Available at: <http://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/toolkit/learndefects.html>
- NHSN Your Guide to the Standardized Infection Ratio(SIR). Centers for Disease Control and Prevention, CDC. Available at: http://www.cdc.gov/nhsn/PDFs/Newsletters/NHSN_NL_OCT_2010SE_final.pdf
- Quick Observation Tools. Centers for Disease Control and Prevention, CDC. Available at: <https://www.cdc.gov/infectioncontrol/tools/quots.html>
- TAP strategy. Centers for Disease Control and Prevention, CDC. Available at: <http://www.cdc.gov/hai/prevent/tap/cdiff.htm>



Speaker Notes



Speaker Notes: Slide 1

This module, titled “Monitoring for Adherence and Improvement,” provides an overview of barriers and strategies to decrease *C. difficile* infections. It explores ways in which hospitals can use both process and outcome data to identify gaps in practice, monitor adherence to evidence-based practices, communicate with key stakeholders and turn their data into actionable information to drive improvement.



Speaker Notes: Slide 2

This module was developed by national infection prevention experts devoted to improving patient safety and infection prevention efforts.



Speaker Notes: Slide 3

In order to assess the effectiveness of any infection prevention strategy, it is important to look at both process and outcomes. This module will focus on how to best analyze your *Clostridioides difficile* infection, or CDI, data and monitor and assess your hospital's infection prevention efforts to ensure optimum patient outcomes.



Speaker Notes: Slide 3 Continued

We will do this by focusing on the following learning objectives:

- We will discuss ways to identify opportunities for improvement by analyzing CDI data reported into the National Healthcare Safety Network (NHSN);
- Utilize the Targeted Assessment for Prevention, or TAP, strategy to prioritize improvement activities; and
- Identify how audit and feedback can be used to drive CDI prevention activities.



Speaker Notes: Slide 4

Let's start out by discussing some of the challenges related to a hospital whose *C. difficile* infection (CDI) rates are rising. This slide depicts a scenario in a fictitious hospital. Today, with public reporting, value-based purchasing and the Centers for Medicare and Medicaid Services (CMS) Hospital-Acquired Condition Reduction Program (HACRP), executives are increasingly concerned about rising costs, organizational reputation and healthcare quality.



Speaker Notes: Slide 4 Continued

As CDI rates are rising:

- Hospital leadership would want to know why the rates are up and how these rates compare to other hospitals in the area;
- The infection control committee (ICC) would want to know in what locations the infections are occurring;
- The infectious disease chief would want to know if these cases are community-acquired (CA) or healthcare-associated (HA); and
- The unit nurse managers and environmental services managers would want data to share with frontline staff so that staff can improve their infection prevention practices, such as hand hygiene and environmental cleaning.



Speaker Notes: Slide 5

This example shows that different stakeholders are motivated by different pieces of information. So, effectively translating your data to engage stakeholders can help drive prevention activities. To begin, it's important for staff to understand necessary surveillance definitions so they are able to track and report data and then communicate and disseminate the information appropriately. For a brief refresher, let's look at some of the definitions for public reporting based on lab identification.



Speaker Notes: Slide 5 Continued

Please keep in mind that this differs from a clinical definition.

- First, healthcare onset, or HO, is when a positive *C. difficile* test is obtained on or after day four of hospitalization
- Community onset, or CO, is when a positive test is obtained prior to four days of hospitalization and the patient had no health care admission within the past four weeks.
- And lastly, a specimen is community onset but healthcare-associated if the individual was discharged from a health care facility within the past four weeks.



Speaker Notes: Slide 6

There are numerous ways to look at the data, and a good place to start may be to look at your hospital's infections, possibly by generating a line list. This will give you a perspective on dates of onset of infection. *C. difficile* lab ID, reports the date the clinical test was positive. This slide displays CDI hospital onset data for Anywhere Hospital USA. The hospital would also be able to obtain the community onset data. In this example, Anywhere Hospital had five community onset cases, but 13 hospital onset cases in that time frame.



Speaker Notes: Slide 6 Continued

If you look carefully, you will see that a number of these patients were admitted to the fourth floor and the specimen was sent from that unit as well. This information might provide some insight into potential opportunities to intervene. Perhaps the fourth floor might be an area for more intensive auditing and feedback, which we'll discuss later in the module.



Speaker Notes: Slide 7

In addition to the line list, it is important to look at the SIR. The SIR, or Standardized Infection Ratio, is a measure which tracks healthcare-associated infections, known as HAIs, at the national, state and local levels. The SIR is used by CMS for their value-based purchasing and healthcare-associated conditions (HAC) penalty program. The SIR compares the actual number of HAIs reported with a baseline period. This measure is much like the standard mortality measure which is expressed as a ratio of observed or predicted. The lower the SIR, the better the performance.



Speaker Notes: Slide 7 Continued

In this slide, we can see that this unit initially had more infections than predicted in the first two quarters of 2015, for a SIR of 1.342. Generally speaking, a SIR above one is reflective of more infections than predicted. You can see though, there is a steady improvement by the first quarter of 2016 there were only nine infections for a SIR of 0.458. If you look at the right side of your screen, you'll see that in the first quarter of 2016, the confidence level ranges from 0.223 to 0.840. Because it did not cross one, you can be fairly certain that the difference did not occur by chance. In the next several slides, we'll look at another way to use the SIR data and how you can translate the SIR into potential actions.



Speaker Notes: Slide 8

You may also consider looking at the TAP report, another analytic strategy that uses the SIR. The Targeted Assessment for Prevention strategy, or TAP strategy, is a method developed by the Centers for Disease Control and Prevention (CDC) to use data for action to prevent HAIs. The TAP strategy is a way to identify facilities or units within a facility with the highest excess numbers of infections, so that prevention efforts may be directed toward facilities or units in greatest need of improvement. The TAP report displays a cumulative attributable difference, or CAD, which for Anywhere Hospital USA is shown at the far right in the table on the slide.



Speaker Notes: Slide 8 Continued

The CAD is the number of infections a facility or unit would need to prevent to reach the Health and Human Services (HHS) CDI reduction goal. CAD helps hospitals and units to use data for action by translating a target SIR into an HAI prevention goal. This provides a concrete goal to drive action. It also helps to translate the SIR into a simple message for frontline healthcare personnel.

The CAD of 29.87 for Anywhere Hospital means that 29.87 or 30 infections need to be prevented to reach the hospital's infection prevention goal. The TAP guide on the CDC website, which can be accessed via the link on the slide, describes the CAD in more detail.



Speaker Notes: Slide 9

The TAP strategy also includes tools and resources to guide hospitals in addressing their identified gaps. This slide displays simple questions to ask about your hospital, which may help identify organizational gaps. The assessment also includes a laboratory and stewardship section.



Speaker Notes: Slide 10

Finally, the TAP strategy provides links to resources which can assist the hospital and staff in developing and implementing improvement strategies. Many of these important strategies are discussed in other modules. The link to this website is displayed on the slide and included in the reference section.



Speaker Notes: Slide 11

The administration of Anywhere Hospital wants to know how they compare with other hospitals and what needs to be done to improve their CDI rates. This slide emphasizes some important points to include when discussing and sharing information with hospital administration, and this is great information to include in an infection prevention business case. As you can see from this slide:

- Anywhere Hospital had 9 more cases than predicted or expected. So, to meet the HHS goal, they need to prevent 30 CDIs.



Speaker Notes: Slide 11 Continued

- Using the SIR, you can communicate how much higher the hospital is than baseline. For example, using a SIR of 1, if a hospital's SIR was 1.5 it would be 50% higher than baseline. The SIR for Anywhere Hospital is 1.13, so it's 13% higher than predicted. However, the P value indicates that their SIR is not statistically significant, but there is a clear increase in cases of CDI, and Anywhere Hospital has an opportunity for improvement.



Speaker Notes: Slide 11 Continued

- Based on estimates from the 2014 SHEA Compendium of Strategies to Prevent HAIs, the average excess cost per CDI case is between \$4,800 - \$18,000, so meeting the HHS goal would mean a cost avoidance of between \$140,000 - \$540,000.
- So, now that Anywhere Hospital analyzed its data and identified the attributable costs, it needs to look at tools to assess its systems and processes.



Speaker Notes: Slide 12

Let's return to the analysis. Assume that Anywhere Hospital's gap analysis demonstrated that they did not have a nurse or physician champion, there was no standardized method to reject stools that are not suitable for testing and that there is no policy or protocol for physicians to document the reason for antibiotics. Most nurses don't know the *C. difficile* rates and do not receive feedback in a timely manner. Also, adherence to isolation practices and environmental cleaning practices is not routinely monitored.



Speaker Notes: Slide 13

If dissemination of data is lacking, consider using a run chart to display numbers of cases, interventions and progress.

Here is an example of *C. difficile* rates and actual number of cases pulled from NHSN. This type of information can be valuable to the hospital as it begins to work on improvement efforts. It also displays the interventions that have taken place. An annotated run chart is a nice way to display and communicate information to health care personnel.



Speaker Notes: Slide 14

One barrier identified at Anywhere Hospital is the fact that data are disseminated to the units long after the cases occur. In order to heighten awareness and engage frontline staff, it is important to disseminate information and also to give feedback to a unit when a new case of *C. difficile* is identified. This may be either a hospital onset case or perhaps a facility-associated community onset. There are several ways to do this. One method is to use a learning from defects tool or a special form to specifically take a “deep dive” into the identified *C. difficile* cases. An example of a learning from defects tool is displayed on the slide.



Speaker Notes: Slide 14 Continued

When possible, staff involved in the delivery of care related to a defect should be present when this defect is evaluated. The staff should discuss why it happened. This is a good time to look at practices. Are staff aware of issues or breaks in policies? Are inappropriate specimens being sent? What opportunities are identified?



Speaker Notes: Slide 15

You can also use a special form to specifically take a “deep dive” into the *C. difficile* cases. As you can see, this tool provides timely information on recognition, isolation, patient placement, antibiotic use and other patients on the unit who may also be positive for *C. difficile*. Not only does this help the staff, but aggregate data over several cases may provide important information on patterns, trends and gaps.



Speaker Notes: Slide 16

Since one of the identified gaps for Anywhere Hospital was communication, the huddle is a good tool that could be used to address this gap. The huddle is a quick start meeting to quickly communicate and disseminate information. Let's assume that you just received information that there is a fourth *C. difficile* case on the fourth floor in the past week and a half. You are concerned because this unit typically has only one case per month. A huddle is a good way to stop, pull staff together, inform everyone of the situation, analyze what's going on and prepare next steps. Don't forget to include other staff such as environmental services, physical therapy or others who are routinely on the unit. They can provide valuable information on what's actually occurring on the unit.



Speaker Notes: Slide 17

Anywhere Hospital also identified a lack of monitoring of processes as a gap. Adherence to isolation practices is a basic core strategy and discussed in detail in the foundational Personal Protective Equipment (PPE) course. Monitoring and feedback for adherence with these practices are essential when attempting to improve *C. difficile* incidence. CDC's Quick Observation Tool is one example of a tool that can be used to monitor isolation practices.



Speaker Notes: Slide 18

It's important to engage the environmental services staff in your CDI initiatives. Hospitals need to audit cleaning processes and provide feedback to staff to assure best practices are being utilized. The third CDI module discussed how hand hygiene, PPE and environmental cleaning can be targeted to improve CDI prevention. An example of a basic environmental cleaning assessment tool was presented in the foundational module on environmental cleaning. The aforementioned CDC checklist can be entered into an Excel spreadsheet which automatically calculates aggregate data. This feedback can provide important information to environmental services. This slide displays an example of tracking and producing aggregate data and can be accessed at the CDC website.



Speaker Notes: Slide 19

In addition to direct monitoring, it's good practice to use objective measures to assess environmental cleanliness. Two popular tools are fluorescent gel and the ATP bioluminescence gel is placed on a surface before cleaning. After cleaning is complete, a black light will display whether or not the gel has been removed. The slide shows examples of areas where gel can be placed in high-touch areas, which is still present after cleaning. The presence of ATP can indicate the presence of organic matter, such as bacteria, fungi, etc. ATP creates a bioluminescence which can be measured. The result is a numerical display of relative light units (RLUs).



Speaker Notes: Slide 19 Continued

Organizations can set parameters related to this measure. A number of organizations consider less than 250 RLUs to indicate effective cleaning. Conversely, very high readings may represent either a viable bioburden, organic debris including dead bacteria or a combination of both. It is important, though, to remember that this does not necessarily indicate microbial growth. The use of fluorescent gel and ATP are excellent teaching tools which can provide immediate feedback to staff.



Speaker Notes: Slide 20

One of the advantages of the previously described methods is that they can provide both education and immediate feedback. Remember that it is important to provide education and feedback to the environmental services staff especially when it occurs in “real time.” This slide highlights the pros and cons of various methods.

Use the link included on the slide for information on each method.



Speaker Notes: Slide 21

By now, the auditing and analysis of NHSN data at Anywhere Hospital has provided important information about practices and outcomes of care. It's important to disseminate data widely at the organizational and individual unit levels. Dissemination should be a bi-directional process both to the board of directors as well as to health care personnel at the unit level. Board score cards, unit based information boards, newsletters and posters are all examples of dissemination of information. Please note, these posters are from and can be found on the CDC website.



Speaker Notes: Slide 22

Anywhere Hospital has now put a number of strategies into place and has audited their adherence to patient care processes. It is important to continually assess these intervention strategies. This TAP report shows the first six months of 2016 at Anywhere Hospital and reveals that they now have almost 10 infections fewer than the HHS goal! The TAP report identifies and prioritizes areas or hospitals that have the greatest opportunities. On this slide, we have displayed the information with the SIR, confidence level and P value to demonstrate that our decline is statistically significant. The next step is to communicate and celebrate this success with all staff involved in achieving this goal.



Speaker Notes: Slide 23

As you move forward with your CDI prevention efforts, it's inevitable that you are going to face challenges and barriers. CDI definitions and surveillance can be confusing and may be a potential barrier. Earlier in this module, we discussed some important Lab ID definitions. There may be instances when distinctions between healthcare onset and community onset CDI may not be clear, for example, if a patient with a positive CDI test is transferred from one hospital to another. On the patient's fifth day after admission, say a physician decides to get a specimen from the patient hoping to see if the patient "cleared their *C. diff.*" When the test comes back positive, the physician can't understand why it is a healthcare onset case.



Speaker Notes: Slide 23 Continued

This is also an example of specimen collection that might not be clinically indicated. Conversely, the staff may not collect a specimen in a timely manner, say until after the patient has been in the hospital four or five more days, thereby changing this patient's case from a community onset to healthcare onset. It is also important to remember that old data are not always meaningful to staff. Finally, staff may have difficulty being aware of how to use these data to drive improvement.



Speaker Notes: Slide 24

The previous slide mentioned general barriers. It is important to anticipate barriers and address them early. For example, sometimes rates or SIRs are confusing for frontline staff. It's important to know your audience. The ancillary staff on a unit may just wish to know how many new cases they had each month, while the infection preventionist and the infection prevention and control committee will want to look at rates and the hospital SIR. The CAD on the TAP report is something everyone can relate to; how many cases do we need to prevent?



Speaker Notes: Slide 24 Continued

Ask yourself if data is communicated in real time. Real-time reporting will lead to more focused intervention efforts. Another issue is that projects sometimes fail because the scope is too large. One strategy to overcome this barrier is to do small tests of change such as the quality improvement PDSA cycle. In order to prevent inappropriate specimens, some hospitals have involved the entire multidisciplinary team in developing clinical guidelines or electronic alerts regarding criteria for optimal specimen collection. Be sure to use the tools provided by the CDC. These provide valuable information. Finally, don't forget to celebrate your successes. According to an old proverb, nothing succeeds like success.



Speaker Notes: Slide 25

No notes.

