Attacking *C. difficile* Infections: Align the Team

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D25 Wednesday Dec. 9, 2015 9:30am-10:45am
E25 Wednesday Dec.9, 2015 11:15am-12:30pm

About Us

• 713 total beds; 2 hospital system with free-standing ED.

• Alliance of 650 physicians & medical facilities throughout SW Florida.

• Extensive inpatient and outpatient services.

• Member of the Mayo Clinic Network

• 36,386 admissions; 93,634 emergency room visits; 3,418 births; 453 open heart surgeries; 11,668 surgical procedures

• 3,952 employees.
Industry Recognition

Joint Commission Certification:
- Primary Stroke Centers, 2014
- Hip and Knee Program, 2015

Pathway to Excellence:
- Third Hospital in Florida and Only Hospital in Region, 2013

“A” Rating for both Hospitals:

Named a Great Community Hospital, 2013

Recognized as Top 50 Cardiovascular program, 2014

Regionally Recognized as #9 in Florida

NCH Cardiac Surgery Services rated 3-Stars and top 10% in the nation 2012, 2013

Session Objectives

- Identify and engage stakeholders by helping them understand the impact of CDI on their area of responsibility
- Identify elements of an effective plan (metrics, behaviors, and communication)
- Understand how to apply this plan to address other key performance issues
Epidemiology of *C. difficile* Infections (CDI)

- Nearly **500,000** CDI infections in the US annually
- **$4.8 billion** in excess cost for acute care facilities
- **29,000** patients die within 30 days of diagnosis – nearly half thought directly attributable to CDI
- **80%** of CDI deaths occur in those 65 years or older
- 1 of every 5 patients with a healthcare-associated CDI infection experience a recurrence

*CDC  [http://www.cdc.gov/media/releases/2015/p0225-clostridium-difficile.html eb 2015]*
Current State

The Hierarchy of Business Needs
How most organizations allocate priorities.

Creating Alignment

What’s in it for me?

Why Should I care?

Identify Stakeholders

Specific to Each Stakeholder

Create A “Line of Sight"

**CMS Reimbursement / Penalties**

- **Value-Based Purchasing**
  - CMS Ms:
    - Select Core Measures
    - C-Diff
    - MRSA
    - CAUTI
    - CLABSI
    - Surgical Site Infections
    - Mortality
    - PSI-90
    - Patient Satisfaction
  - All VBIP Measures
    - Required OP & IP Ms.
    - Mortality
    - Readmits
    - Medicare Spending
    - Hospital Acq Conditions
    - Patient Safety Indicators
    - Vaccination Rates

- **Readmission Penalty**
  - CMS Ms:
    - Falls
    - C-Diff
    - MRSA
    - Surgical Site Infections
    - Pressure Ulcers
    - Post-op DVT / PE
    - Accidental Puncture / Laceration
    - Foreign Object Surgery
    - Post-op Respiratory Failure
  - Penalties Programs:
    - Excess Days Program
    - See Bundled Payment

- **Hospital-Acquired Conditions**
  - Hospital Acq Conditions:
    - Readmits
    - Excess Days Program
    - See Bundled Payment
  - Bundled Payment Programs:
    - Hip and Knee
    - Other Episodes
  - Regulatory Compliance:
    - Joint Commission
    - AHCA (State)
    - CMS
    - CDC
  - Reputation:
    - Hospital Compare
    - Leapfrog
    - US News World Report
    - Consumer Reports

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- [https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html](https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Readmissions-Reduction-Program.html)
- [https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/HAC-Reduction-Program.html](https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/HAC-Reduction-Program.html)

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**Alignment in Quality and Outcomes**

- **CMS Ms**
  - Falls
  - C-Diff
  - MRSA
  - Surgical Site Infections
  - Pressure Ulcers
  - Post-op DVT / PE
  - Accidental Puncture / Laceration
  - Foreign Object Surgery
  - Post-op Respiratory Failure

- **Penalty Programs**
  - Excess Days Program
  - See Bundled Payment

- **Bundled Payment Programs**
  - Hip and Knee
  - Other Episodes

- **Regulatory Compliance**
  - Joint Commission
  - AHCA (State)
  - CMS
  - CDC

- **Reputation**
  - Hospital Compare
  - Leapfrog
  - US News World Report
  - Consumer Reports

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**Value-Based Purchasing**

- 2%: $2.4 Million
- 3%: $3.66 Million
- 1%: $1.2 Million

**Total:** $7.32 Million

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**Alignment in Quality and Outcomes**

- **CMS Ms**
  - Falls
  - C-Diff
  - MRSA
  - Surgical Site Infections
  - Pressure Ulcers
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  - Foreign Object Surgery
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- **Penalty Programs**
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- **Bundled Payment Programs**
  - Hip and Knee
  - Other Episodes

- **Regulatory Compliance**
  - Joint Commission
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  - CMS
  - CDC

- **Reputation**
  - Hospital Compare
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  - US News World Report
  - Consumer Reports
**Clostridium difficile Infection (CDI)**

**What is Clostridium difficile?**
- A spore forming, Gram positive anaerobic bacillus that produces two exotoxins: Toxin A and B. Detected in 1935 and considered pathogenic in 1978. A more virulent strain (BI/NAP1/027), has been identified (2004).

**How is Clostridium difficile spread?**
- Ingestion of spores (fecal-oral) via patient environment, shared equipment or hands of healthcare workers (HCW).

**Tests for CDI?**
- Antigen A and B (less sensitive), or nucleic acid amplification (PCR) is highly sensitive, Cytoxin has 2 day TAT

**Pathogenesis of CDI?**
- Ingested spores survive stomach acidity, germinate in intestines. Toxins are released and cause inflammation and mucosal damage.

**Symptoms of CDI?**
- Watery diarrhea, fever, loss of appetite nausea, abdominal pain and tenderness. Severe CDI can result in sepsis, toxic megacolon and death.

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**Public Health and CDI Trending in the Community?**

- Is there a sending facility with a CDI outbreak / surveillance?
- Do you have a relationship with the Health Department?
- Do you have seasonal patients (or staff)?
- Are all staff and patients educated on risks and strategies to prevent re-infection when returning to community?
Categorizing CDI Lab ID Events – Based on Date Admitted to Facility and Date Specimen Collected:

- **Healthcare Facility-Onset (HO):** Lab ID Event collected >3 days after admission to the facility (i.e., on or after day 4).

- **Community-Onset (CO):** Lab ID Event collected in an outpatient location or an inpatient location ≤3 days after admission to the facility (i.e., days 1, 2, or 3 of admission).

- **Community-Onset Healthcare Facility-Associated (CO-HCFA):** CO Lab ID Event collected from a patient who was discharged from the facility ≤4 weeks prior to current date of stool specimen collection. Data from outpatient locations (e.g., outpatient encounters) are not included in this definition.

\[
\text{# of } C.\text{DIFFICILE INFECTIONS} \times 10,000 = \text{CDI RATE PER 10,000 PATIENT DAYS}
\]

http://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf
NHSN SIR Data
Creating Visual Reports for Stakeholders

\[
SIR = \frac{\text{Observed (O) HAIs}}{\text{Expected (E) HAIs}}
\]

NHSN Expected Facility HAI based on:

- Hospital size
- CDI testing methodology
- Teaching facility
- Admissions

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NHSN SIR Data
Creating Visual Reports for Stakeholders

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NHSN SIR Data
Creating Visual Reports for Stakeholders
12/1/2015

HO-CDI Facility Rate
2013 = 8.46    2014 = 5.42    2015 = 5.82 to Date

NCH Rate
Benchmark
Linear (NCH Rate)

Percentage of Total CDI Lab Samples Positive for NAP1 Hypervirulent Strain
2013 to 10/2015

Measures of PPE Compliance

<table>
<thead>
<tr>
<th></th>
<th>HH in</th>
<th>HH out</th>
<th>Gloves</th>
<th>Gowns</th>
<th>Mask</th>
<th>Total compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>42%</td>
<td>62%</td>
<td>76%</td>
<td>71%</td>
<td>84%</td>
<td>64%</td>
</tr>
<tr>
<td>2015</td>
<td>65%</td>
<td>65%</td>
<td>75%</td>
<td>79%</td>
<td>86%</td>
<td>75%</td>
</tr>
</tbody>
</table>
Harnessing Information Technology

Infection Prevention
- Automated Isolation order
- Face-up patient “banner”
- Automated isolation list

Nursing
- Automated task list

Lab
- Automated alert to Infection Prevention work list / email
- One CDI stool sample per encounter

Providers
- CPOE
- CDI Power Plan

Pharmacy
- Antibiotic stewardship
- Alerts
**DAILY**

- **Surveillance**
  - Microbiology reports
  - ER visit list
  - Isolation list

- **Targeted Education**
  - Nursing
  - EVS

- **Review of Hospital onset cases**
  - Recurrence
  - Transmission
  - Missed opportunities

- **EMR CDI tab**
  - Add new cases
  - Remove discharged patients
  - Intra-facility transfer review

- **Bed list email with highlighted interventions**

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**DAILY ROOM LIST**

<table>
<thead>
<tr>
<th>Location</th>
<th>Floor / Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCH</td>
<td>4S - 468*</td>
</tr>
<tr>
<td>NCH</td>
<td>5N - 518</td>
</tr>
<tr>
<td>NCH</td>
<td>5N - 524</td>
</tr>
<tr>
<td>NCH</td>
<td>ICU - 4</td>
</tr>
<tr>
<td>NCOL</td>
<td>NN4 - 67</td>
</tr>
<tr>
<td>NCOL</td>
<td>NN4 - 82</td>
</tr>
<tr>
<td>NCOL</td>
<td>NN4 - 93</td>
</tr>
</tbody>
</table>

*hypervirulent strain*

Units with 2 CDI rooms: bleach to clean all discharge rooms and ancillary areas once daily
Units with 3 or more CDI rooms: bleach to call all rooms daily with ancillary areas twice daily
• EVS and Nursing- meeting or conference call
  - Rate summary
  - Bioburden
  - Cleaning interventions

• Bioburden assessment
  - CDI line list
  - Community onset vs hospital onset
  - Transmission

• Rate summary
  - HO incidence rate
  - NAP-1 rate

• PPE observations
  - Patterns of noncompliance

• Administrative update

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Administrative Update: Sample Email

From: Lee, Donna
Sent: Friday, October 16, 2015 1:06 PM
To: Nurse Manager
Cc: CNO; COO; Directors; EVS Directors; Infection Prevention
Subject: CDI weekly summary

CDI Rate Summary
Example: October- 10 cases reviewed with 1 HO. Rate 1.84 based upon current census.

Current CDI Interventions for week of 10/16-10/23
EVS Measures:
  Unit specific actions identified in weekly meeting.

Nursing Measures:
  Interventions utilized to apprise nursing staff of bioburden and EVS measures.
### BI-Monthly CDI Collaborative

<table>
<thead>
<tr>
<th>Infection Prevention</th>
<th>Microbiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Data</td>
<td>• NAP-1</td>
</tr>
<tr>
<td>• PPE/Hand hygiene compliance</td>
<td>• Testing technology</td>
</tr>
<tr>
<td>• Fecal Microbial Transplant</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EVS</th>
<th>Nursing</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Quality inspection data</td>
<td>• CDI patient education</td>
<td>• PPE education all staff</td>
</tr>
<tr>
<td>• Cleaning interventions</td>
<td>• Discharge education</td>
<td>• Special projects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pharmacy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• HO case review</td>
<td></td>
</tr>
<tr>
<td>• Use of CDI Power Plan (CPOE)</td>
<td></td>
</tr>
<tr>
<td>• Antibiotic stewardship</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PPE education all staff</td>
</tr>
<tr>
<td>• Special projects</td>
</tr>
</tbody>
</table>

### EVS Quality Pillars

- Infection Prevention (collaboration)
- Bed Flow Coordinator (turnaround times)
- EVS Participation (System initiatives)
- Quality / Transparency (inspections)
EVS CDI Cleaning Principles

• Reservoirs of transmission:
  – CDI spores can persist for months in the environment
  – Infected humans and inanimate objects

• Likely mode of transmission:
  – Surfaces / medical equipment contamination
  – Healthcare worker hands
  – Via patient care activity (administration of feedings, temperature, oral suctioning, intubation)

• Invest in EVS worker training

• Principles:
  – Determine surface type (high touch) or special care area
  – Manufacturer instructions for use
  – Proper cleaning product partnership
  – Correct application/wet times
  – Proper handling of cleaning cloths, mops

EVS Employee Training

What’s your training process?

• Video and area specific training for all employees
• Daily and discharge routine cleaning of patient room
• Ancillary (radiology, offices, waiting area, pharmacy)
• Cleaning product specific training
• Hardwired cleaning processes across the system
## Equipment Cleaning Grid

Collaborative effort between EVS, Infection Prevention, and Nursing

<table>
<thead>
<tr>
<th>Item</th>
<th>EVS Daily Routine</th>
<th>EVS Discharge</th>
<th>Nursing Daily Routine</th>
<th>Nursing &amp; Discharge</th>
<th>Recommended Cleaning Solution</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey Commode Bucket</td>
<td>Clean</td>
<td>Clean</td>
<td>Remove Bulk</td>
<td>Remove Bulk</td>
<td>DO NOT THROW AWAY!</td>
<td></td>
</tr>
<tr>
<td>Commode ‘Hat’, bedpan, urinal, pink basin</td>
<td>Throw Away</td>
<td>Clean as Needed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove / Dispose of Med Gas Tubing</td>
<td>Throw Away</td>
<td>Throw Away</td>
<td>Throw Away</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV Poles - cleaning</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infusion Pumps</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>Braun/Outlook 400 ES/ Bleach Wipe or 95% Isopropyl Alcohol or soapy water</td>
<td>Per Biomed</td>
</tr>
<tr>
<td>Tele Boxes</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>APEX Pro CH/Bleach Wipe</td>
<td></td>
</tr>
<tr>
<td>Isolettes</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incubators</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitors in ED &amp; CC rooms</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>TramRac 4A/Bleach Wipe</td>
<td>See computer section</td>
</tr>
</tbody>
</table>

## Quality Inspections-Quarterly Report

<table>
<thead>
<tr>
<th>Room Type (ID)</th>
<th># Rooms</th>
<th># Steps</th>
<th># Pass</th>
<th># Fail</th>
<th>% Pass</th>
<th>Avg. Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Ancillary Procedure Rm</td>
<td>75</td>
<td>656</td>
<td>582</td>
<td>74</td>
<td>88.72</td>
<td>2.83</td>
</tr>
<tr>
<td>(11) Linen Holding</td>
<td>6</td>
<td>28</td>
<td>15</td>
<td>13</td>
<td>53.57</td>
<td>2.36</td>
</tr>
<tr>
<td>(16) Medication Rm</td>
<td>22</td>
<td>157</td>
<td>139</td>
<td>18</td>
<td>88.54</td>
<td>2.85</td>
</tr>
<tr>
<td>(19) Office High</td>
<td>3</td>
<td>24</td>
<td>20</td>
<td>4</td>
<td>83.33</td>
<td>2.83</td>
</tr>
<tr>
<td>(2) Break Rm/Lounge</td>
<td>32</td>
<td>288</td>
<td>249</td>
<td>39</td>
<td>86.46</td>
<td>2.84</td>
</tr>
<tr>
<td>(20) Patient Rm - Private</td>
<td>971</td>
<td>9,703</td>
<td>8,497</td>
<td>1206</td>
<td>87.57</td>
<td>2.87</td>
</tr>
<tr>
<td>(21) Patient Rm Semi-Prt</td>
<td>161</td>
<td>2,076</td>
<td>1,818</td>
<td>258</td>
<td>87.57</td>
<td>2.87</td>
</tr>
<tr>
<td>(22) Patient Rm Ward</td>
<td>5</td>
<td>45</td>
<td>43</td>
<td>2</td>
<td>95.56</td>
<td>2.96</td>
</tr>
<tr>
<td>(24) Radiology Rm</td>
<td>11</td>
<td>95</td>
<td>88</td>
<td>7</td>
<td>92.63</td>
<td>2.88</td>
</tr>
</tbody>
</table>
Black Light Touch Points

Location List - Patient/Resident Rooms

<table>
<thead>
<tr>
<th>Question</th>
<th>Survey Points</th>
<th>Percentage</th>
<th>PTD</th>
<th>PTD Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDC - Bathroom Door Knob</td>
<td>13</td>
<td>100.00 %</td>
<td>220</td>
<td>90.00%</td>
</tr>
<tr>
<td>CDC - Bathroom Handrails</td>
<td>9</td>
<td>88.89 %</td>
<td>178</td>
<td>91.57%</td>
</tr>
<tr>
<td>CDC - Bathroom Light Switch</td>
<td>13</td>
<td>84.62 %</td>
<td>210</td>
<td>89.05%</td>
</tr>
<tr>
<td>CDC - Bed Rails</td>
<td>16</td>
<td>100.00 %</td>
<td>624</td>
<td>93.11%</td>
</tr>
<tr>
<td>CDC - Bedpan Flush Lever</td>
<td>0</td>
<td>0.00 %</td>
<td>76</td>
<td>94.74%</td>
</tr>
<tr>
<td>CDC - Bedside Table</td>
<td>16</td>
<td>100.00 %</td>
<td>631</td>
<td>94.93%</td>
</tr>
<tr>
<td>CDC - Cables</td>
<td>0</td>
<td>0.00 %</td>
<td>3</td>
<td>66.67%</td>
</tr>
<tr>
<td>CDC - Call Button</td>
<td>16</td>
<td>75.00 %</td>
<td>629</td>
<td>85.21%</td>
</tr>
<tr>
<td>CDC - Chair Arms &amp; Seat</td>
<td>14</td>
<td>100.00 %</td>
<td>441</td>
<td>93.65%</td>
</tr>
<tr>
<td>CDC - Faucet &amp; Sink</td>
<td>13</td>
<td>92.31 %</td>
<td>229</td>
<td>73.80%</td>
</tr>
</tbody>
</table>

Blacklight Data-High Touch Surfaces Report

Most Current Month Survey Points/Passing Percentage
Decrease Bioburden / Heightened Measures

<table>
<thead>
<tr>
<th>Standard Isolation Clean</th>
<th>Heightened Measures/Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard germicidal solution application</td>
<td>Public areas-nursing station, break room daily bleach clean</td>
</tr>
<tr>
<td>Additional Bleach Wipe down</td>
<td>Three rooms adjacent to index CDI patient? Suspected transmission</td>
</tr>
<tr>
<td>Curtain change at discharge</td>
<td>Entire unit bleach clean with 3&gt; CDI patients</td>
</tr>
<tr>
<td>Shower curtain wipe with bleach at discharge</td>
<td>Twice a day cleaning in CDI patient rooms * was not effective in our facility</td>
</tr>
<tr>
<td>Public Areas cleaned daily with standard germicidal</td>
<td>Clean all discharge rooms as ‘Isolation Clean’ even if not housing isolation patient on unit</td>
</tr>
<tr>
<td></td>
<td>ER ‘front door’ for CDI-use bleach for room turnover and all equipment</td>
</tr>
<tr>
<td></td>
<td>House wide/unit specific Bleach Crush</td>
</tr>
</tbody>
</table>

Let’s decrease the C.difficile BIOBURDEN

Summary

*Improved patient care outcomes can be accomplished by identifying key stakeholders and engaging the team in a meaningful, measurable, comprehensive program for success.*

Coming together is a beginning; Keeping together is progress; Working together is success.

---

*Henry Ford*

https://pearlsandprofoundity.wordpress.com/2014/07/13/readers-forum-politically-correct/
References


