Environmental Cleaning and Disinfection
Environmental Cleaning and Disinfection
The Harrington Way

- Two Step Cleaning Process
  - Bleach Wipes on High Touch Surfaces
  - Routine Disinfectant

- Two Step Always
  - Patient Room Bathrooms – Daily
  - Commode
Harrington Hospital
Environmental Services Strategies

- Antimicrobial Cubicle Curtains
  - Contact Kill
  - Fabric Treated (guaranteed 25 – 30 washings)
  - Permanent (Silver)

- Microfiber Mops
  - Clean mop used in each room
  - Reduced chemical and water used and disposed of
  - Washing lifetime of 500+ uses
  - Light weight (lbs. less than used wet mop)
  - Ergonomic
  - Labor Saving
Reinforcement through Education and Measurement

- Training by Infection Preventionist
- Daily Rounding
- Discharge Monitoring with Glow Germ
- Room Inspection with HP iPAQ
- Patient Satisfaction – HCAHP & Press Ganey
High Touch Areas for Cleaning

**Patient Room**
- Bed Rails
- Over Bed Tray
- IV Pole
- Call Button
- Telephone
- Handles-Side Table & Chair
- Room Sink
- Room Light Switch
- Room Door Knob

**Patient Bathroom**
- Bathroom Light Switch & Door
- Bathroom Light Switch & Door
- Bathroom Handrails
- Bathroom Sink
- Toilet Seat
- Toilet Flush Handle
- Toilet Bed Pan Cleaner
Harrington Hospital: Cleaning & disinfection policies in action
### Cape Cod Hospital C. Difficile Contamination of the Environment

<table>
<thead>
<tr>
<th>Environmental Sites Positive</th>
<th>Staff Hand Cultures Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-25%</td>
<td>0%</td>
</tr>
<tr>
<td>26-49%</td>
<td>8%</td>
</tr>
<tr>
<td>&gt; 50%</td>
<td>36%</td>
</tr>
</tbody>
</table>

The presence of C. difficile on the hands correlated with the density of environmental contamination. Samore et al. Am J Med 1996;100:32

Maintain Isolation for the Duration of Hospitalization
# CCHC Combination Cleaning & Disinfectant Products

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Type of Disinfectant</th>
<th>Contact Time Required</th>
<th>Examples of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virex 256 - liquid</td>
<td>660 ppm Quaternary Ammonium Compound</td>
<td>Surface must remain wet for <strong>10 minutes</strong></td>
<td>Floors, room surfaces, bathrooms, spills blood/body fluids</td>
</tr>
<tr>
<td>PDI Super Sani-Wipes</td>
<td>5000 ppm Quaternary Ammonium Chlorides and 55% alcohol</td>
<td>Surface must remain wet for <strong>2 minutes</strong></td>
<td>Wheelchairs, stretchers, desks, computer keyboard, over-bed tables, portable x-ray machines</td>
</tr>
<tr>
<td>Dispatch Wipes and Liquid</td>
<td>.525% sodium hypochlorite (bleach) = 5,500 ppm or 1:10 dilution</td>
<td>Surface must remain wet for <strong>1 minute</strong></td>
<td>Enteric Contact Precautions – all surfaces and reusable equipment in contact with patient / patient environment Glucometers</td>
</tr>
<tr>
<td>Gluco Chlor Wipes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CCH Hospital Associated C. difficile Infection Incidence 2010 versus 2011

<table>
<thead>
<tr>
<th>CCH Year</th>
<th>Rate /10,000 Pt Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>13.6 (90/66138)</td>
</tr>
<tr>
<td>2011</td>
<td>5.7 (30/52,079)</td>
</tr>
</tbody>
</table>
Environmental Services Staff take the initiate at Fairview Hospital
Evidence Based Quality Improvement at Fairview Hospital
## Marlborough Hospital
### Improved Terminal Cleaning

<table>
<thead>
<tr>
<th>Sample Month</th>
<th># of Sample days</th>
<th>% Patient Rooms Failing Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2011</td>
<td>22</td>
<td>17%</td>
</tr>
<tr>
<td>Sep-Oct 2011</td>
<td>41</td>
<td>6%</td>
</tr>
</tbody>
</table>
Noble Hospital: Environmental Services
SWAT team!
Environmental Services
Cooley Dickinson Health Care
UV Disinfection System

Cooley Dickinson Hospital started using 2 devices January, 2011 with a goal to reduce C-diff spores when cleaning all patient discharge rooms and eliminate HA-CDI.

PX-UV Light
**Pre Collaborative:** Comprehensive Environmental Services overhaul including additional FTE, mapping whole hospital for cleaning, changing shift hours; Changed isolation policy (in place until discharge); Switch to microfiber mops and Cloths

A. Added PCR testing option
B. Cleaning ED stretchers and **all** bathrooms with bleach
C. Rapid communication to ES with patients’ positive CDI status so they could begin daily cleaning with bleach solution
D. Leased 2 ultraviolet light cleaning machines for terminal room cleaning
E. Increased use of ultraviolet light cleaning in discharge rooms to 90% of daytime discharges and 45% of evening discharges
Cooley Dickinson Environmental Services staff - recognized for *C. diff* rate reduction
Operation Wipe out at Tewksbury Hospital

http://youtube.com/watch?v=psa9wNYMl4Q
Engaging Staff in CDI Prevention
Marlborough Hospital uses humor to make a point!
Three Women of Harrington Hospital
Harrington in the press!

Southbridge Evening News

Hospital's war on infection goes viral

Harrington seeks votes to turn video into grant

by Ryan Grannan-Doll

October 05, 2010

SOUTHBRIDGE — YouTube has been used to promote music, television and funny video clips, but Harrington Memorial Hospital has taken a different tack with it.

As part of a contest, the hospital has created a three-minute YouTube video to educate the public on preventing the spread of several infectious diseases, according to Harrington's infection prevention director, Sue Valentine.

The video is part of 3M's "Innovation Award YouTube Video Contest" competition in which entrants produced similar videos on disease prevention. Voting to determine the finalists ends tomorrow, Friday, Oct. 8. A panel of 3M judges will evaluate whichever videos are voted as finalists, and the winner will be announced, Monday, Oct. 18, the beginning of International Infection Prevention Week, according to a 3M press release.

"The contest will identify innovative approaches to address a wide variety of challenges and also serve as an educational tool for those facilities in the fight against rising infection rates," said 3M's president and general manager of its Infection Prevention Division, Debra Rechtenwald.

The hospital is hoping the video provides viewers with the tools to avoid several different viruses, including clostridium difficile, which has recently resurfaced in this country, according to Valentine. If the hospital is voted at least as one of the runners up, Harrington would receive a $1,000 grant to visit local health care facilities to spread the educational message, Valentine said. Should they win, they would receive $5,000 and an all-expenses-paid trip to tour 3M's Infection Prevention Division.
Harrington staff step up the fight against hospital acquired infections

Harrington Hospital - Kill the Bugs - YouTube
Northeast / Beverly takes a page from the Harrington Playbook

*Share the risk.....*

*Personalize the message*
Contact Precautions
Contact Precautions at MetroWest Medical Center

One size does NOT fit all
Precautions at MWMC Framingham
How it works at MWMC Leonard Morse Hospital
Noble Hospital: magnets on the door frame
Noble Hospital Precautions Setup
A picture is worth 1000 Words

How to Remove PPE
Sequence for removing personal protective equipment (PPE)

► First remember the outside and front of the gowns, gloves, and masks are contaminated.
► Start with the gloves, remembering not to touch the outside of the gloves.
► Remove goggles or face shield by the head band or ear pieces.
► Next remove the gown, keeping in mind that the front of the gown is contaminated. Roll the gown inside out into a bundle and discard.
► Finally remembering the front of the mask is contaminated, untie the bottom then the top ties and discard.
CDC Guidance: How to remove PPE

Remove PPE at doorway before leaving patient room or in anteroom

GLOVES
- Outside of gloves are contaminated!
- Grasp outside of glove with opposite gloved hand; peel off
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist

GOGGLES/FACE SHIELD
- Outside of goggles or face shield are contaminated!
- To remove, handle by “clean” head band or ear pieces
- Place in designated receptacle for reprocessing or in waste container

GOWN
- Gown front and sleeves are contaminated!
- Unfasten neck, then waist ties
- Remove gown using a peeling motion; pull gown from each shoulder toward the same hand
- Gown will turn inside out
- Hold removed gown away from body, roll into a bundle and discard into waste or linen receptacle

MASK OR RESPIRATOR
- Front of mask/respirator is contaminated – DO NOT TOUCH!
- Grasp ONLY bottom then top ties/elastics and remove
- Discard in waste container
NE Baptist: combining the power of pictures and words
Great ideas: coming from the frontline up!

Jasper Palmer - YouTube

Jasper Palmer
Transport services
Einstein Hospital, Philadelphia PA
Laboratory Testing

WITH THANKS TO
Alfred DeMaria, Jr., M.D.
Medical Director
Bureau of Infectious Disease
Prevention, Response and Services
State Epidemiologist
C. difficile Testing Recommendations

- Culture and toxin neutralization not practical in most laboratories (but gold standard)
- EIA for toxins A and/or B is easy to do, but not very sensitive (giving false negatives)
- GDH tells you C. difficile is present, but doesn’t tell you if it is toxin-producing
- GDH+ plus EIA+ = toxigenic C. difficile, but still have sensitivity problem related to EIA
- PCR more sensitive and as specific, and it identifies A&B toxin gene
C. *Difficile Test “Rules”*

- Only test unformed diarrheal stools
- Do not do repeat testing
- Do not test for “cure”
Baystate Medical Center
Began using PCR July 2011

Baystate Medical Center
HA-CDI / 10,000 Patient days
Exploring the cause

CDI testing methods Q3/2011

HCW ordering CDI stool testing Q3/2011
Southcoast Hospitals Decision Support Tool

C DIFF ALGORITHM

Patient is suspect for C diff (has loose stool)

PLACE PATIENT ON C diff CONTACT PRECAUTIONS

- SEND ONE LIQUID STOOL SPECIMEN FOR C DIFF
- SOAP & WATER hand hygiene per policy, followed by alcohol based hand rub
- Clean patient care equipment and environment WITH BLEACH per policy

Patient has had ≥ 3 liquid stools within 24 hours, not related to bowel prep or laxatives

YES

NO ISOLATION OR PRECAUTIONS NECESSARY

- Continue to monitor stools
- Practice good hand hygiene per policy
- Manage and clean patient care equipment and environment per policy

CALL INFECTION PREVENTION WITH ANY QUESTIONS:
- TOH: 61-1607
- CHB: 67-7671
- SLH: 68-8807

C DIFF test positive

C DIFF test negative

- Continue C diff CONTACT PRECAUTIONS.
- DO NOT RETEST. DO NOT SEND MORE STOOLS FOR TESTING
- WHEN DIARRhea STOPS COMPLETELY, CALL IP TO CONSIDER B C ISOLATION
C. diff Testing and Patient Management

- All patients with suspected C. diff are placed on C. diff precautions until C. diff is ruled out with a negative test.
- Maintain isolation until all final testing completed.
- Follow C. diff algorithm for testing stool.
- Every specimen is tested for both C. diff antigen and C. diff toxin.
- Possible test results:

<table>
<thead>
<tr>
<th>INTERPRETATION &amp; TYPE OF ISOLATION REQUIRED</th>
<th>C. diff antigen positive/toxin negative</th>
<th>C. diff antigen negative/toxin negative</th>
<th>C. diff negative by Nucleic Acid Test</th>
<th>C. diff antigen positive/toxin positive</th>
<th>C. diff positive by Nucleic Acid Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. diff not detected; isolation not necessary (see algorithm)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient is C. diff positive; patient requires C. diff precautions and isolation</td>
<td>Maintain isolation pending confirmation by Nucleic Acid Test</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

If C. diff is not detected and patient does not have diarrhea, C. diff contact precautions and isolation are NOT necessary (see algorithm).

If patient is C. diff positive and has diarrhea, patient requires C. diff precautions and isolation. Please CONTINUE ISOLATION!!

- Call Infection Prevention (X 65-5497 or 67-7624) with any questions
Communication within and between organizations
Communicating Isolation Status

- Enter/update isolation precaution status in “Precaution” field in Administrative Data Screen
  - Populates electronic order and diet requests
  - Creates an electronic isolation list
  - Populates Ticket to Ride

- Ticket to Ride

- Verbally notify receiving department (including surgery) prior to transporting patient on Precautions

- Discuss specific Precautions requirements with patient and visitors

- Know reason for Precautions and communicate same to attending MD and consultants
CAPE COD HOSPITAL

RADIOLOGY REQUISITION

NAME: TEST PATIENT
MEDREC #: 0004449
ACCT#: 000000025916
DOB: 08/26/1907
AGE: 102
SEX: F
HT: 5'1
WT: 102/

EXAM DATE: 10/19/2009
PREV EXAM: RAD/CERVICAL SPINE 2 OR 3 VIEW 09/21/2009 1450
LOCATION: MB4
ROOM/BED: MB4.410 A
INSURANCE: BLUE CROSS MASS

ALLERGIES and PRECAUTIONS

Latex Allergy? N
Food Allergies: PEANUTS
Other Allergies: PENICILLIN

Drug Allergies: Penicillins
PRECAUTIONS: Enteric Contact
RESISTANT ORGANISMS: MRSA? Y VRE? Y

ATTENDING: PROVIDER, ATTEND MD
ORDERING: PROVIDER, ORDERING MD

EXAM TYPE: RADIOLOGY

HOW TRANSPORTED: A - AMBULATORY
REASON FOR EXAM: TESTING CO-SIGNER ON RAD REPORT
STGES & SX: SG/SX
ORDERING FACILITY: OCH

Exam: 000003355 LEFT KNEE 3 VIEWS

Comment:
BAR MODIFIER 1?
BAR MODIFIER 2?
BAR MODIFIER 3?

PREGNANCY STATEMENT (Radiology)

My last period began ___ days ago.

☐ There is NO possibility I could be pregnant.
☐ There is a possibility I could be pregnant.

Date ______________________ Signature ______________________
Merrimack Valley Hospital: Sends information with CDI Patients being transferred to other facilities

FAQs about “Clostridium Difficile”

What is Clostridium difficile infection?

*Clostridium difficile* [pronomounced Klo-STRID-ee-um dif-uh-SEEL], also known as “C. diff” [See-dif], is a germ that can cause diarrhea. Most cases of *C. diff* infection occur in patients taking antibiotics. The most common symptoms of a *C. diff* infection include:

- Watery diarrhea
- Fever
- Loss of appetite
- Nausea
- Belly pain and tenderness

Who is most likely to get *C. diff* infection?

The elderly and people with certain medical problems have the greatest chance of getting *C. diff*. *C. diff* spores can live outside the human body for a very long time and may be found on things in the environment such as bed linens, bed rails, bathroom fixtures, and medical equipment. *C. diff* infection can spread from person-to-person on contaminated equipment and on the hands of doctors, nurses, other healthcare providers and visitors.

Can *C. diff* infection be treated?

Patients on Contact Precautions are asked to stay in their hospital rooms as much as possible. They should not go to common areas, such as the gift shop or cafeteria. They can go to other areas of the hospital for treatments and tests.

- Only give patients antibiotics when it is necessary.

What can I do to help prevent *C. diff* infections?

- Make sure that all doctors, nurses, and other healthcare providers clean their hands with soap and water or an alcohol-based hand rub before and after caring for you.

If you do not see your providers clean their hands, please ask them to do so.

- Only take antibiotics as prescribed by your doctor.
- Be sure to clean your own hands often, especially after using the bathroom and before eating.

Can my friends and family get *C. diff* when they visit me?

Communication with referring facilities at Tewksbury Hospital

- History of CDIFF, MRSA, VRE, ESBL, Multi drug resistant gram-negative bacilli?
- Patient on precautions during current hospitalization?
  - Type, reason
- Is the patient on antibiotics?
  - What, why?
- Any surveillance cultures from admission?
  - Ask for one when referral is made – get a baseline
- Culture reports from current hospitalization?
Collaboration Across the Continuum of Care
Acute Care / Long Term Care Collaboration at Fairview Hospital

- We share the same patients
- Increase the standard of care across the continuum
- Consistency of care across the continuum
- Improved relationships lead to improved communication at all points of service
- Walking a mile in each other shoes, it’s not always easy

Doreen Hutchinson RN, BSN, MBA, CNAA
Vice President of Operations and Acute Care Services, Chief Nurse Executive

Fairview Hospital
Great Barrington, Massachusetts
“We can’t do this alone, it takes a village”
Harrington Hospital pays it forward

Who Should attend:

Anyone who is involved in patient care should be aware of the threat of C. difficile infections and the emerging new super strains.

- Directors of Nursing
- Infection Preventonists
- Educators
- Unit Managers
- Environmental Services

Our Partners

Mass Coalition for the Prevention of Medical Errors and the CDI collaborative that includes 27 Massachusetts hospitals.

Funding provided by 3M Healthcare. Harrington’s award winning YouTube Video on C. diff was the recipient of a 3M educational grant.

JOIN OUR TEAM!

FREE - C. diff Tool Kit!

Includes:
- Sample policies
- PowerPoint Presentation
- Educational Video
- Mass DPH Guidelines
- Signs
- Checklists

Harrington Hospital
Total Local Care

Please register by September 7th.

Phone: 308-763-3010
Email: content@harringtonhospital.org

Clostridium difficile
It Takes a Village

Learn new strategies for prevention and early identification of C. diff
Three Women of Harrington Hospital

Ann Beaudry, RN
Unit Manager

Sue Valentine, RN
Infection Control Coordinator

Heather Briere, ANP-BC
Leadership engagement and Support

- Northeast Hospitals / Beverly
- Southcoast Hospitals
- NE Sinai
Antibiotic Stewardship at Milford Regional Medical Center

- Zosyn Doses per 1000 Patient Days
- Levaquin Doses per 1000 Patient Days
Antibiotic Stewardship at New England Sinai
The program

• 2 ID physicians, off-site
• M-F review electronic medical record of patients on antibiotics more than 6 days
• Recommendations made by email
• End date and indication required by pharmacy for all antimicrobials
• Clinical pathways
John Doe

Pip-Tazo 2.25g IV Q6 ordered 10/20-11/4
Fluconazole 150mg Po Qd ordered 10/20-11/11
Empyema, fungal rash

**Recommendations:** the fluconazole was to continue through 11/4 per the H&P but is ordered through the 11th. In fact, the duration of therapy should be until the rash resolves. If it has resolved, would d/c. It would help to know the organism that grew from the empyema fluid. If a narrower agent could be used it would cause less collateral damage in terms of the promotion of resistance.

James Doe

Vanco 1g IV Q24 ordered 8/13-8/19
Doripenem 500mg IV Q8 ordered 8/10-8/20
Sputum cx 8/10: moderate MRSA, moderate Group B Strep
Hospital-acquired Pnuemonia

**Recommendations:** D/c doripenem as patient has grown staph and strep, both of which are covered by vanco
Types of Recommendations
April - August, 2011

- Agree with management: 35%
- Stop antibiotics: 27%
- More information needed: 21%
- Change antibiotic dose: 8%
- Change antibiotics: 3%
- Extend therapy: 1%
- Shorten therapy: 1%
- ID consult: 4%
- Other: 5%
Percentage of Recommendations Followed by Clinicians
April-August, 2011

- Yes: 63%
- No: 28%
- N/A: 9%
Antibiotic Stewardship
MetroWest Medical Center

Vibha Sharma, M.D.
Infectious disease consultant and Medical director, infection control,
Marlborough hospital

Zsusun Timothy Yang, Rph
Pharmacy director
Marlborough hospital
MetroWest Medical Center Antibiotic Stewardship Committee

- Components of MWMC AS program
  - Development of guidelines, clinical pathways, standard order forms
  - Formulary restriction recommendations
  - Parenteral to oral therapy conversions
  - Clinical interventions (i.e., de-escalation)
  - Staff education
  - Monitor outcomes (i.e., C. difficile rate)
Antibiotic Stewardship Focus on C.diff Infections

• Fluoroquinolone Restriction
  • Recommendations for alternative treatment
    • In Colalborative Toolkit
  • Education for physicians
• Tracking fluoroquinolone use
  • 2010 vs 2009
    • Levofloxacin tablet usage decreased by 18%
    • Levofloxacin IV usage decreased by 27%
Antibiotic Stewardship Focus on C.Diff Infections

- Clostridium difficile surveillance letter to physicians
  - Developed as a means to educate about appropriate antibiotic use
- Reinforce use of bleach disinfectant in environmental cleaning and bedside curtain change at discharge of C. diff patients
- Reinforce hand hygiene with soap and water in addition to the hand sanitizer
Memo

To: 
From: Chinhak Chun MD., Karin Hjalmarson MD.
Co-Chairs, Infection Control Committee
Date: 
Re: Clostridium difficile Surveillance

We are alerting you that your patient, MRN: ___________ was diagnosed with C. difficile associated disease on ____________.

The Infection Control Department has determined that it was most likely associated with the antibiotic(s) treatment / prophylaxis administered on ____________.

This information is being shared in hopes of providing a learning experience in prescribing antibiotics as well as an opportunity to improve our practices. Using antibiotics only when indicated and choosing narrow spectrum agents in as short a course as possible can minimize the risk of C. difficile associated disease.

Please do not hesitate to contact us for any question or suggestions.
Antibiotic Stewardship at Marlborough Hospital

Vibha Sharma, M.D.
Infectious disease consultant and Medical director, infection control,
Marlborough hospital

Zsusun Timothy Yang, Rph
Pharmacy director
Marlborough hospital
As of 12/1/10 FQ restriction to ID.
24 hour supply allowed.
Pharmacy contacts via communication sheet/paging MD.
ID contacted via email.
Further supply restricted to ID approval.
Flouroquinolone restriction

Dear doctor

A flouroquinolone has been ordered for this patient. Due to the increasing rate of resistant bacteria and C. diff colitis, flouroquinolones are now restricted (exception-CAP with PCN allergy). This antibiotic will be discontinued in 24 hours from the time of the order. Continuation of flouroquinolones requires ID approval. (Dr. Sharma) Restricted antibiotic ordered:

Pharmacist Signature:
Response:Message: MD Signature:
Actual patients receiving > 24 hr Quinolone therapy

[Graph showing the number of actual patients receiving >24 hour therapy from August 10 to March 1-16, with a decline in the number over time.]
• Decline of patients on quinolones since December 2010.
• Does not take account if patient switches antibiotic or has multiple drug therapy.
Next Steps

If you are *not* continuing in the Partnership Collaborative:
- Rolling over the listserve
- Continue measurement and reporting through March 2011
- Keep in touch!

If you *are* joining the CDI PreventionPartnership Collaborative:
- Make sure you have given team list to Susanne or Sharon
- Enjoy lunch, next session starts at 12:15