Controlling *Clostridium diffcile* Outbreaks: Going Beyond the Guidelines

Dr. Michael Gardam, University Health Network, Toronto

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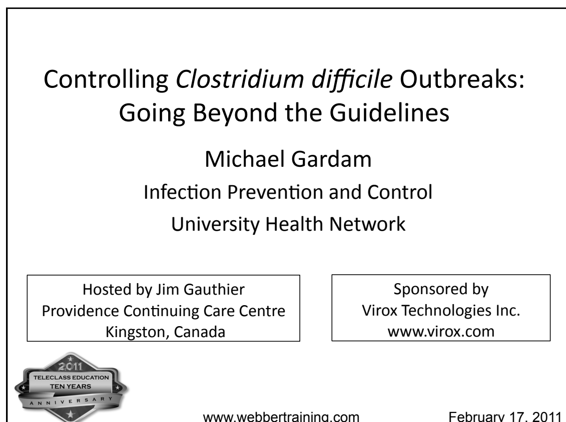
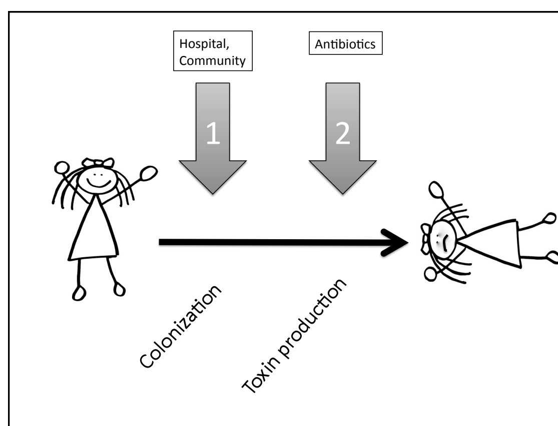


Objectives

- To discuss recommend measures for controlling *C. difficile*
- To discuss experience in controlling outbreaks in Ontario

Outline

- *C. difficile* 101
- A brief review of guidelines and controversies
  - SHEA
  - PIDAC
- Experience with *C. difficile*
  - *Infection Control Resource Teams*
  - *What we've found and what needs to be done*



C. difficile acquisition

- Majority healthcare associated
  - 1-13% inpatients become colonized within 1 week
  - ≥50% inpatients colonized after 4 weeks
  - Recent estimate: 75% of cases acquired it in hospital
- Recent Irish study
  - 10% of nursing home residents were asymptomatically colonized with C. difficile
    - 70% of these were toxin producing strains

Ryan et. al. IJMS 2010

Role of antibiotics

- 85% of hospital cases had received antibiotics within 4 weeks of disease
- More drugs, more doses, longer treatment duration all associated with *C. difficile*
- More evidence supporting antibiotic restrictions than other control measures
  - Replace high risk drugs with lower risk
  - Decrease prescriptions

SHEA guidelines 2010 (summary)

- Do surveillance
- Testing
  - Only test those with symptoms
  - EIA doesn't work very well, PCR holds promise
- IPAC measures
  - Gloves, gowns, single rooms recommended
  - Cohort if necessary, provide commodes
  - Emphasize hand hygiene (soap and water)

ICHE May 2010

SHEA continued

- IPAC measures (continued)
  - Continue contact precautions until diarrhea abates
  - Routine surveillance for colonized individuals not recommended
- Cleaning and disinfection
  - Consider changing multiuse to dedicated
  - Use sporocidal agents if rates increased
  - Environmental screening not recommended

SHEA continued

- Antibiotics
  - Restrict duration and frequency of antibiotics
  - Implement antimicrobial stewardship
- Probiotics
  - not recommended
- Treatment
  - Initiate empiric therapy
  - Stop antibiotics
  - Flagyl (500 po TID), vancomycin (125 or 500 po QID)

SHEA continued

- Treatment (continued)
  - Consider colectomy for severe disease (toxic megacolon)
  - First recurrence can be treated with flagyl
  - Additional recurrences treated with vancomycin

PIDAC guidelines

- No significant differences compared to SHEA document
- Refers to detailed environmental cleaning/ disinfection guidelines
- Outlines reporting requirements for Ontario

Some History

- Created in conjunction with mandatory public reporting in September 2008
- Teams of front line infection control experts:
  - Senior infection control professionals
  - Infection control physician(s)
  - Epidemiologist(s)
- Currently two teams
  - Ottawa Hospital
  - University Health Network
- Respond to outbreaks

The Process

- Can be activated by either the hospital or Public Health
- Pre-visit questionnaire
- Visit for 1+ days
- Written report within 20 business days
- Follow up questionnaire

Where have ICRTs been?

Our approach

- Every hospital is different
- Benchmark hospital practices with best practice documents

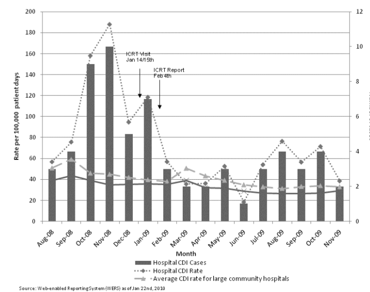
AND

- Provide detailed practice advice, especially in grey areas…
- Identify and address cultural issues, relationships

Do they work?

- pre-post intervention study comparing hospitals (7) with ICRT visits to a randomly selected control group (28)
- Matched on hospital type and bed size 4:1
- Nosocomial CDI rates were calculated three months before and after the ICRT visit or a comparable period for control hospitals
- WERS CDI data from Aug 2008 to Nov 2009

Nosocomial CDI rates at a hospital visited by an ICRT



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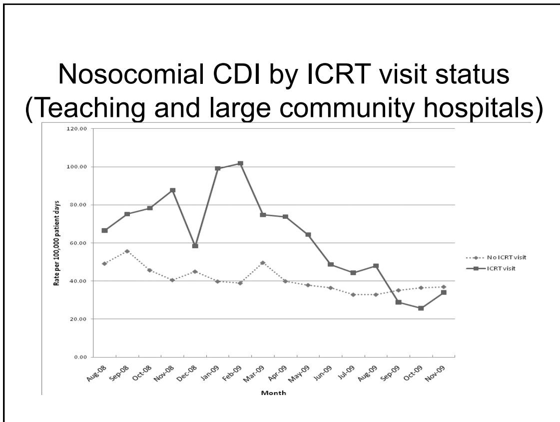
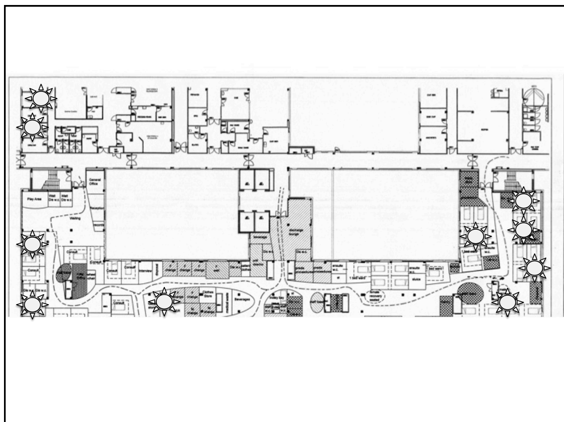


Is there a recipe for successful *C. difficile* control?

- Each facility is different; however common themes
- Typically IPAC had been trying for 1 or more months to control *C. difficile* without success
- Little if any antimicrobial stewardship
- Frequent questioning whether there is an outbreak because cases are widely dispersed
  - Outbreak versus high baseline rate?

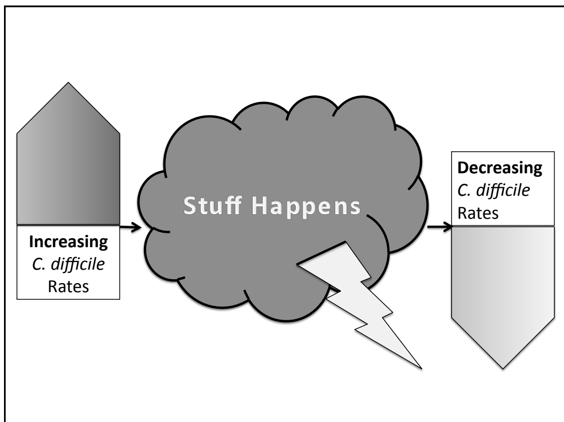
Epidemiologic links are rarely as obvious with *C. difficile* as they are with MRSA

If you have widely dispersed cases, don't assume they are not linked in some way



Culture

- Rates begin to improve once the outbreak has the clear, undivided attention of senior administration
- Controlling a facility-wide outbreak cannot be "phoned in"
- IPAC moves to more of an advisory role
- Physicians not engaged to the degree we would like



Surveillance and testing

- Early on saw inadequate case finding
  - Assumptions that symptoms were due to other causes
- Wide variation in testing
  - Early on saw major delays in testing and reporting
- Now rarely an issue; however EIA still the most common test used

IPAC practices

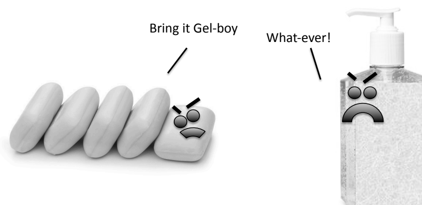
- Limited evidence supporting the use of any one practice
  - i.e., gowns, gloves, single rooms, patient cohorting
- Frequently this leads to push back

Is this surprising?

Contact precautions

- Gowns, gloves standard
- Single rooms where possible
- Cohort if necessary
- Avoided creating "*C. difficile* wards"
  - Case will occur outside of these wards
  - Role of asymptomatically colonized

Soap and water *versus* Alcohol-based hand rub



Ellingston and McDonald

- For soap and water to be better than ABHR for *C. difficile*, then:
  - You must be able to reliably identify who is shedding *C. difficile*
  - Using soap and water must not decrease hand hygiene compliance
  - *In vitro* studies must be meaningful in the real world

ICHE 2010

Hand hygiene

- Focused almost exclusively on ABHR
- Few Ontario hospitals have adequate sinks
- Multiple examples of success despite the theoretical spore/ABHR issue

MISSING

DISPARU

Environmental contamination

Factors that aid environmental transmission

- Pathogen able to survive for prolonged periods of time on environmental surfaces
- Ability to remain virulent after environmental exposure
- Ability to contaminate the hospital environment
- Ability to colonize patients
- Ability to colonize healthcare worker hands
- Transmission via the hands of healthcare workers
- Small inoculating dose
- Relative resistance to disinfectants

Adapted from Weber et. al., AJIC 2010

Cleaning and disinfection

- Almost all sites visited have not been aggressive with sporicidal agents
  - Lack of clear guidance in existing best practices
  - Concerns about equipment damage
  - Safety concerns
- Universal confusion over who cleans multiuse equipment
- Frequently lack enough commodes, bedpans, dedicated equipment

Environmental recommendations

- Widespread use of sporicidal agents
  - Several are now available—pick one
  - Twice daily clean/disinfection of washrooms and rooms of *C. difficile* patients
  - All patient rooms and washrooms on high incidence floors
  - Multiuse equipment
- Determine who cleans what
- Dedicate equipment
- Eliminate “uncleanable” items

Antibiotic stewardship

- Very hard/impossible to implement quickly
  - Physician behavioural change
  - Human resources
  - Financial investment
- The right thing to do for many reasons
  - *C. difficile* control
  - Costs
  - Resistance
  - Opportunistic infections

Probiotics

- No recommendation
- Some hospitals have used them extensively

Patient Treatment

- Occasional reluctance to start empiric treatment
- Frequent dose confusion
- Reluctance to use vancomycin with serious cases
- Reluctance to obtain surgical consultation for severe cases, and to perform colectomies

Treatment continued

- Considerable interest in fecal transplantation
- Widespread differences in availability, approach
  - Hospital-based
  - Home/hotel based
- Partially prompted UHN randomized controlled trial

Summary

- Single common focus on the problem
  - Details
- Cultural shift: owned by everybody
- Enhanced environmental cleaning
  - Liberal, organized use of sporicidal agents
- Improved hand hygiene compliance
- Antibiotic stewardship

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COMING SOON …

18 Feb. 11	*(Free Teleclass, Broadcast from the Infection Control Association of Singapore)* **The Future of Infection Control: Challenges and Opportunities** Speaker: Dr. Ling Moi Lin, Infection Control Association of Singapore Sponsored by: Diversey Ltd. (www.diversey.com)
22 Feb. 11	*(British Teleclass)* **Writing for Publication and Conference Presentation – First Steps to Disseminating Your Research and Improvement Projects** Speaker: Heather Loveday, Journal of Infection Prevention
23 Feb. 11	(South Pacific Teleclass) **Public Health Lessons Learnt From the 2010 Canterbury (New Zealand) Earthquake** Speaker: Dr. Ramon Pink, University of Otago, New Zealand
03 Mar. 11	**What to Ask For and Look for When Evaluating Cleaning/ Disinfecting Products (in 5 Easy Steps)** Speaker: Jason Tetro, University of Ottawa Sponsored by: Virox Technologies Inv. (www.virox.com)
10 Mar. 11	**Introduction to Mould Remediation for Buildings, Including Basic Infection Prevention Strategies for Mould Control** Speaker: Dr. Lynne Sehulster, CDC Atlanta

www.webbertraining.com/schedulep1.php