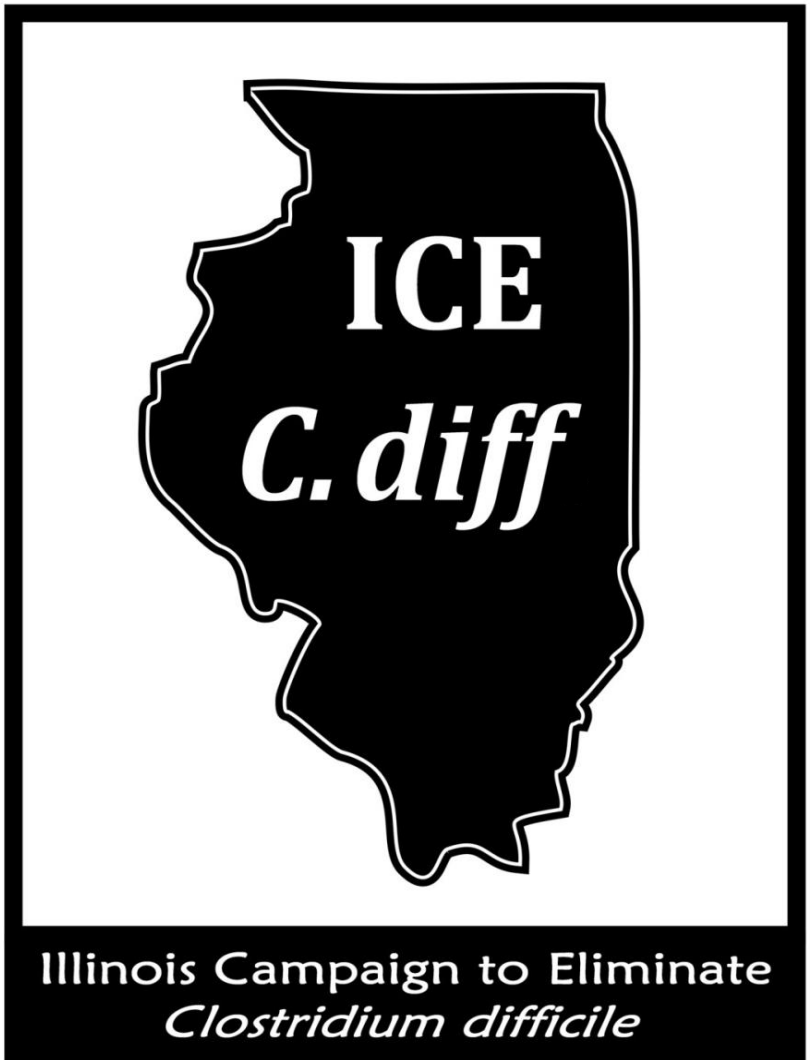
Towards Reducing *Clostridium difficile* Infections in Illinois: a Collaborative Effort



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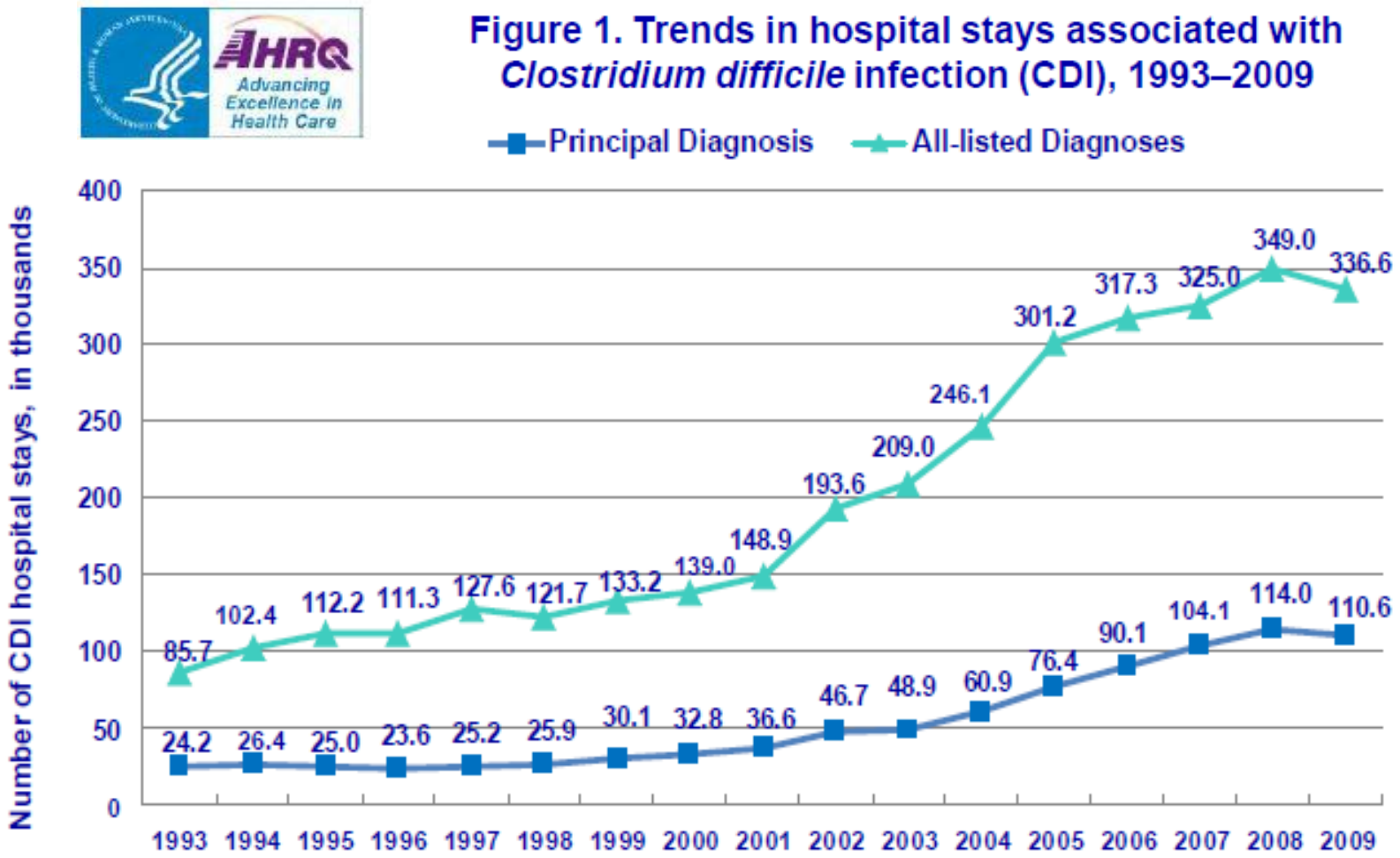
Illinois Department of PUBLIC HEALTH

Quality Improvement Organizations
Sharing Knowledge. Improving Health Care.
CENTERS FOR MEDICARE & MEDICAID SERVICES

IFMC-IL

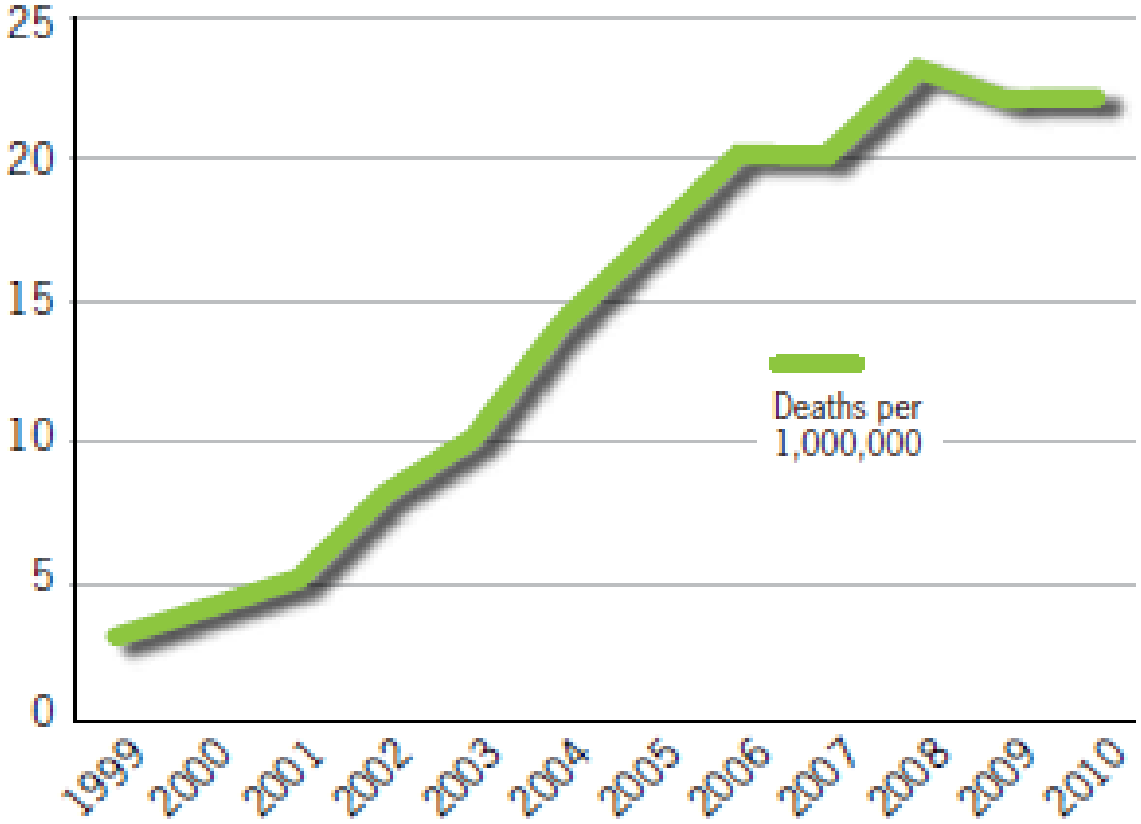
National Impact of *C. diff*



Lucado J, Gould C, Elixhauser A, Clostiridum difficile infections (CDI) in hospital stays, 2009. HCUP statistical brief no. 124. Rockville, MD: US Department of Health and Human Services, Agency for Healthcare Research and Quality; 2011. Available at http://www.hcup-us.ahrq.gov/reports/statbriefs/sb124.pdf

National Impact of *C. diff*

Deaths caused by C. difficile infections*



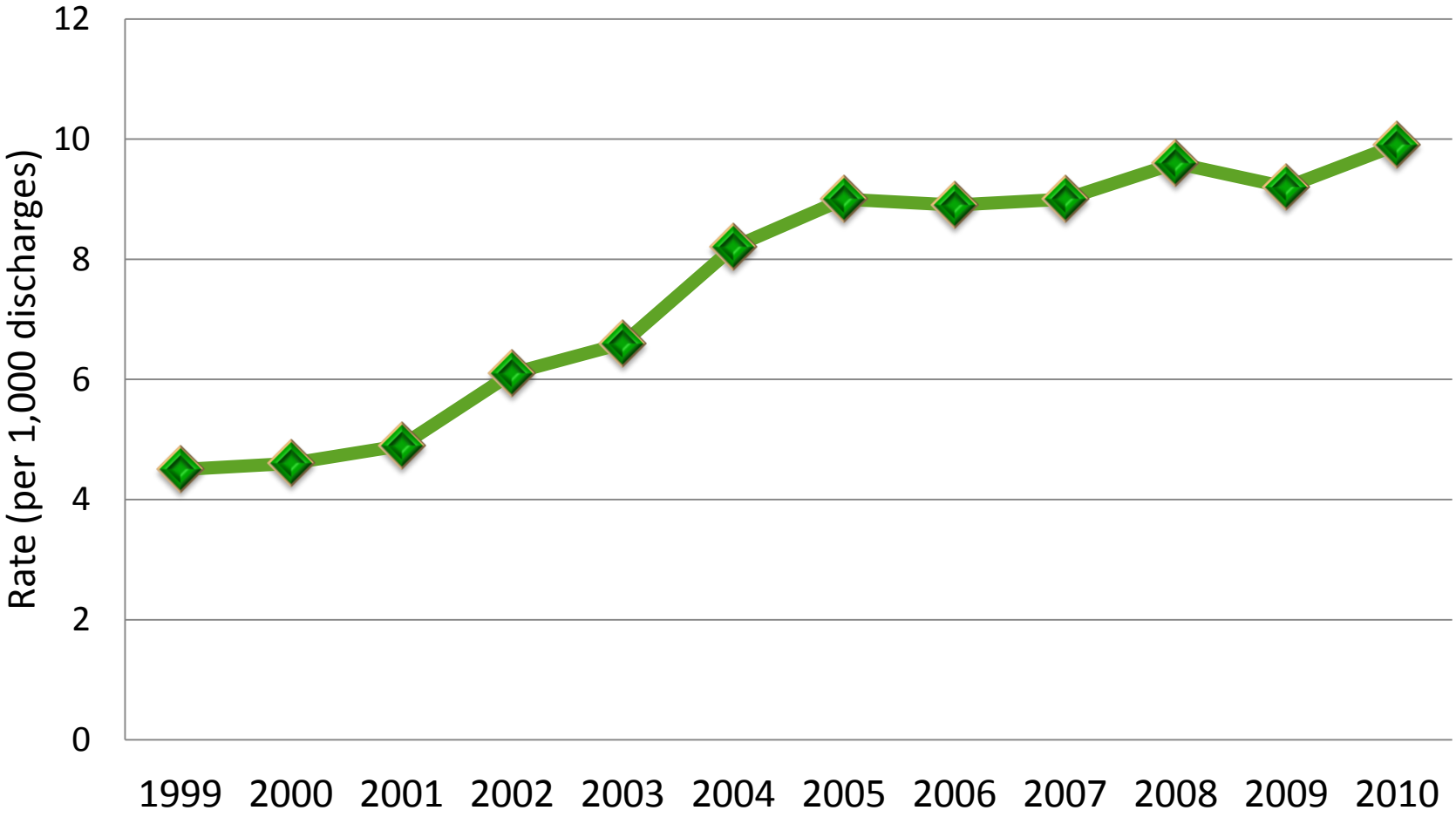
* Age –adjusted rate of *C. difficile* as the primary (underlying) cause of death. SOURCE: CDC National Center for Health Statistics, 2012

CDC. (March 2012) Stopping *C. difficile* infections. Vital Signs. http://www.cdc.gov/VitalSigns/pdf/2012-03-vitalsigns.pdf

- **Deaths related to *C. diff* increased 400% between 2000 and 2007, partly due to a more virulent strain**
- **14,000 deaths are attributed to *C. diff* each year in the US**
- **> 90% of deaths related to CDI are in persons ≥ 65 years of age**

http://www.hcup-us.ahrq.gov/reports/statbriefs/sb124.pdf

Number of *C. diff* Infections per 1,000 Hospital Discharges in Illinois, 1999-2010



Clostridium difficile in Illinois Hospitals, 2010
Available at http://www.healthcarereportcard.illinois.gov/files/pdf/cdiff2010.pdf

The Illinois Response to Rising *C. diff* Infection Rates

- Illinois Department of Public Health (IDPH) partnered with IFMC-IL, the Illinois Quality Improvement Organization to implement a C. *diff* Prevention Collaborative with 20 hospitals

- The Illinois Campaign to Eliminate C. *diff* (**ICE C. *diff***) is our effort to bring the prevention strategies and lessons learned from the C. *diff* Prevention Collaborative statewide

Objectives

- List 5 components of the C. *diff* infection (CDI) prevention bundle
- Discuss lessons learned from the Illinois C. *diff* Prevention Collaborative
- Describe resources that will be provided through the Illinois Campaign to Eliminate C. *diff* (**ICE C. *diff***)

What is *C. diff*?

- Anaerobic gram-positive bacillus bacterium

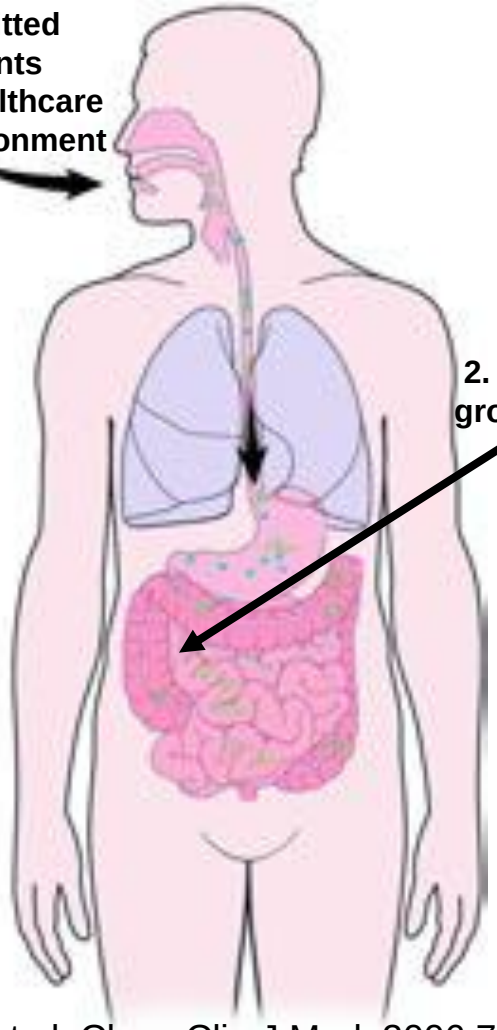
- Can live for months on environmental surfaces as a spore
- *C. diff* spores are not killed by alcohol hand rub or by cleaning products that kill most other bacteria & viruses

- Transmitted through fecal-oral route

http://naspghan.org/wmspage.cfm?parm1=581

Pathogenesis of *C. diff* Infection

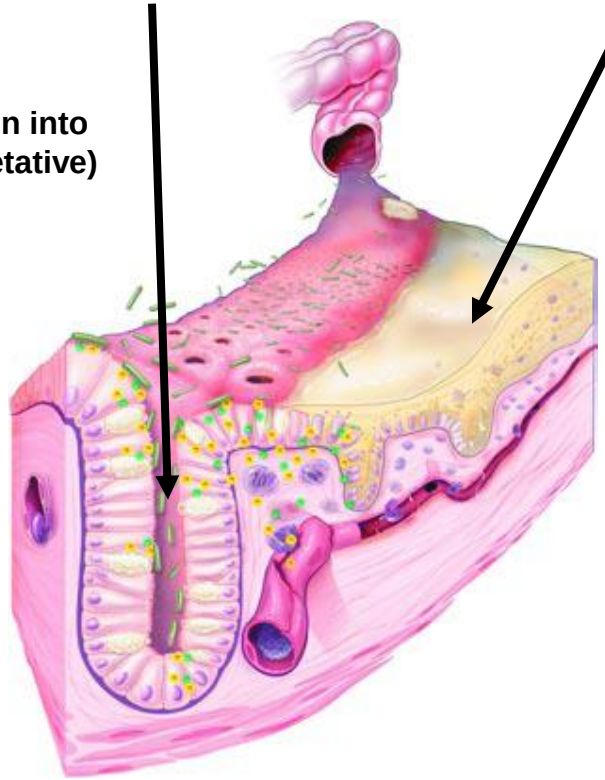
1. Ingestion of spores transmitted from other patients via the hands of healthcare personnel and environment



2. Germination into growing (vegetative) form

3. Altered lower intestine flora (due to antimicrobial use) allows proliferation of *C. difficile* in colon

4. Toxin A & B Production leads to colon damage +/- pseudomembrane



Sunenshine et al. Cleve Clin J Med. 2006;73:187-97.

Epi Triad of *C. diff* Infection

Disruption of normal gut microbiota

- Antimicrobials
- Gastric acid suppression

CDI Prevention Bundle

- Contact Precautions
- Hand Hygiene
- Environmental Cleaning
- Lab alerts
- Education

Contact Precautions

Place C. *diff* confirmed patients on contact precautions for the duration of diarrhea

- Presumptive contact precautions
- Extend beyond cessation of diarrhea

Benefits

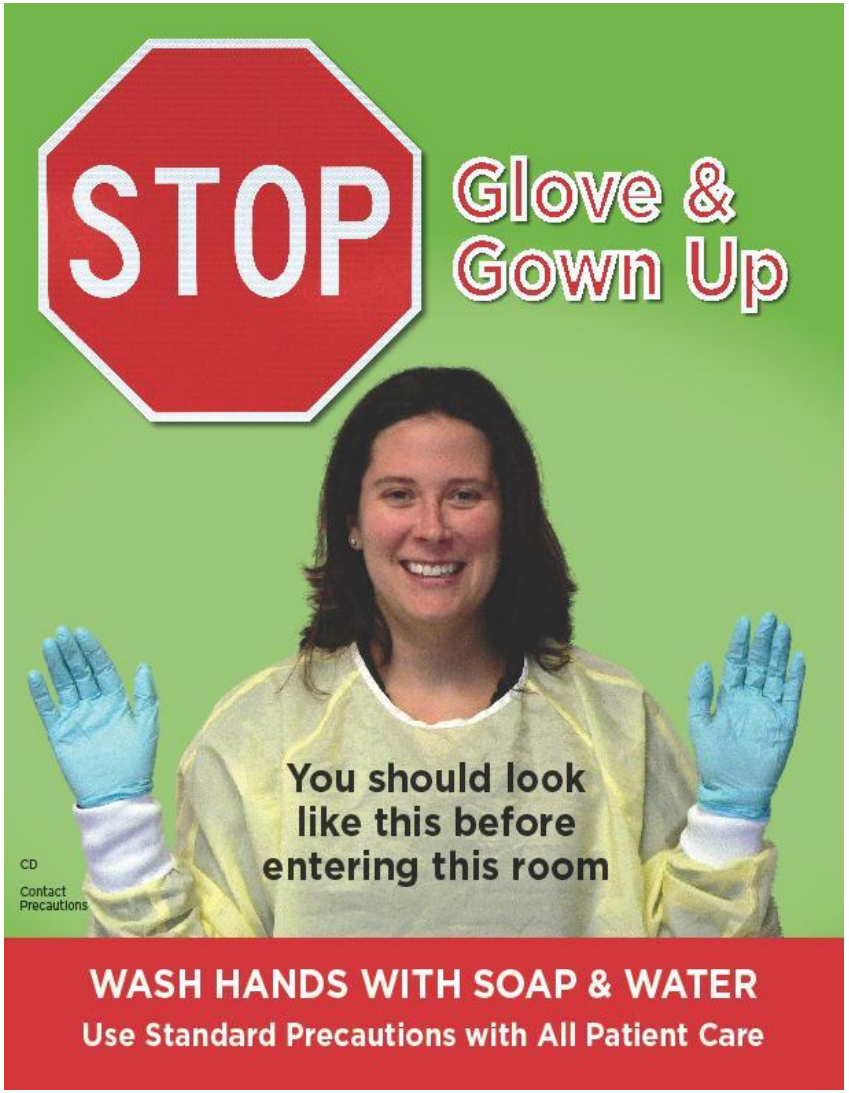
- Staff, physicians, visitors, and family alerted to the precautions needed
- Isolate patients during period of time they are most infectious

Challenges

- Low or inconsistent adherence
- Applying PPE is time consuming
- Signs may not be readily noticeable
- Isolate the organism without making the patient feel isolated

Contact Precautions SIGN

Models desired behavior



Colorful and eye catching

Uses a friendly & familiar face

Courtesy of St. Anthony's Memorial Hospital

Hand Hygiene

Implement hand hygiene in compliance with CDC/WHO

- Soap and water for hand hygiene before exiting room of a patient with C. *diff*

<u>Benefits</u>

- Reduce bacteria on healthcare worker hands
- Plethora of hand hygiene resources available

<u>Challenges</u>

- To wash or to rub?
- Adherence may be low or inconsistent

WHO 2009 http://whqlibdoc.who.int/publications/2009/9789241597906_eng.pdf
CDC 2002 http://www.cdc.gov/mmwr/PDF/rr/rr5116.pdf

Hand Hygiene
WASH or RUB?

- Wash hands with soap & water
  - When they are visibly dirty
  - After contact with blood or other body fluids
  - After using the toilet (personally or assisting someone else)
  - During outbreaks of C. diff
  - CMS F-441: after contact with a patient with infectious diarrhea
  - New statement by SHEA – emphasizes GLOVING
- Alcohol based hand rub is still gold standard for most other hand hygiene situations

CMS F-441 https://www.cms.gov/transmittals/downloads/R51SOMA.pdf
SHEA http://www.shea-online.org/Portals/0/CDI%20hand%20hygiene%20Update.pdf

Environmental Cleaning

Use 1/10 sodium hypochlorite (bleach) or sporicidal solution to disinfect C. *diff* patient rooms

Benefits

- Disinfect room with a product that will kill C. *diff* spores
- Opportunity to engage Environment Service workers as part of infection control team

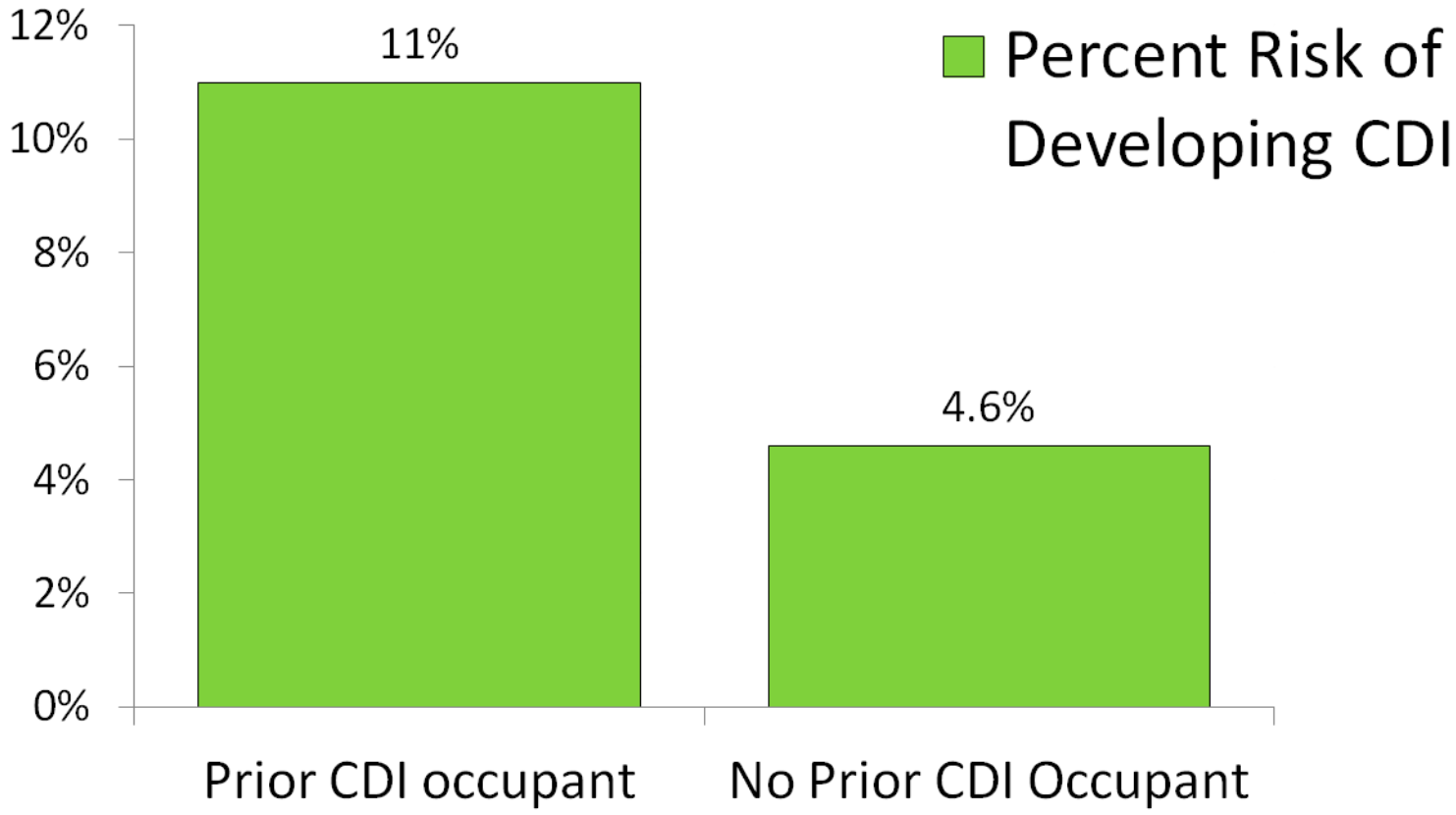
Challenges

- Roles and responsibilities for equipment cleaning may be unclear
- Unsure the best monitoring method (objective vs. subjective)
- Odor of bleach and sporicidal solution

Environmental Cleaning
ENGAGE ENVIRONMENTAL SERVICES

- Film - Role of Environmental Service Workers (15 minutes)
- Distributed to ALL hospitals in Illinois and many long-term care facilities
- Available at www.notjustamaidservice.com

Environmental Cleaning
HOSPITAL ROOM ASSIGNMENT & *C. diff*



Shaughnessy, MK et al. ICHE. 2011; 32(3)

Environmental Cleaning
HOW CLEAN IS IT?

Assess adequacy of cleaning before changing to new cleaning product such as bleach

- Are high-touch surfaces being overlooked?
  - Call box
  - Telephone
  - Bedside table handle
  - Chair
  - IV pole grab area
  - Room & bathroom inner door knobs
  - Bathroom light switch
  - Bathroom handrails

http://www.cdc.gov/HAI/toolkits/Evaluating-Environmental-Cleaning.html

Lab Alerts

Implement laboratory-based alert system for immediate notification of positive test results

Benefits

- Timely identification → timely decisions regarding isolation
- Timely treatment & discontinuation of inciting antimicrobial agent → better prognosis
- PCR testing has higher sensitivity and specificity

Challenges

- Appropriate indications for testing: 3 watery stools
- Laboratory capacity (batching, once a day testing, etc.)
- Work flow issues (message recipients are not available)
- Lack of confidence in the EIA Toxin A/B enzyme testing

April webinar on lab testing for *C. diff*: Dr. George Parada

Education

- Educate & Engage
  - Healthcare Workers
  - Environmental Services
  - Administration
  - Patients
  - Families
  - Other Support Staff and Volunteers

Positive Impact of Stakeholder Collaboration in Reducing C. *diff* Infections

Illinois *C. Diff* Prevention Collaborative

- Rates of CDI doubled in Illinois hospitals from 4.5 to 9.2 cases per 1,000 discharges between 1999 and 2009
- ARRA-funded collaborative between IFMC-IL and the Illinois Department of Public Health
- Goal was to draw upon the resources and expertise of the two sponsoring agencies to maximize the effectiveness of the collaborative work

Collaborative Goals

- Decrease hospital onset C. *diff* incidence rate from baseline in participating facilities
  - By 20% in the metro Chicago hospitals
  - By 15% in the central/southern Illinois hospitals

- Maintain high adherence rates to prevention practices
  - Hand hygiene and gown and glove : achieve 90% adherence rate average during participation period
  - Environmental cleaning: achieve 85% adherence rate average during participation period

Collaborative Strategies

- Engage active leadership support
- Create and engage multi-disciplinary teams
- Build on existing initiatives
- Use teamwork training and tools
- Set targets to achieve results
- Assess, measure, and report
- Standardize practice through use of checklists and bundles

Collaborative Methodology

- Two-phased approach:
  - Initial phase: Chicago and collar counties (February 2010)
  - Second phase: central and southern Illinois (November 2010)

- Potential participants identified based on *C diff* rates (claims data) and hospital's demonstrated interest in implementing change

- "All teach, all learn" approach
  - Face-to-face meetings
  - Webinars
  - Sharing calls
  - On-site visits/support calls

Collaborative Methodology

- Learning activities for Central/Southern Illinois group paralleled those of Chicago but most activities held separately
  - Groups at different stages of development/progress
  - Cultural differences

- Encouraged multidisciplinary team approach to enhance effectiveness of implementing best practice
  - Inclusion of Environmental Services was key change factor in several hospitals - engaged them in learning, demonstrated respect for the value of their services

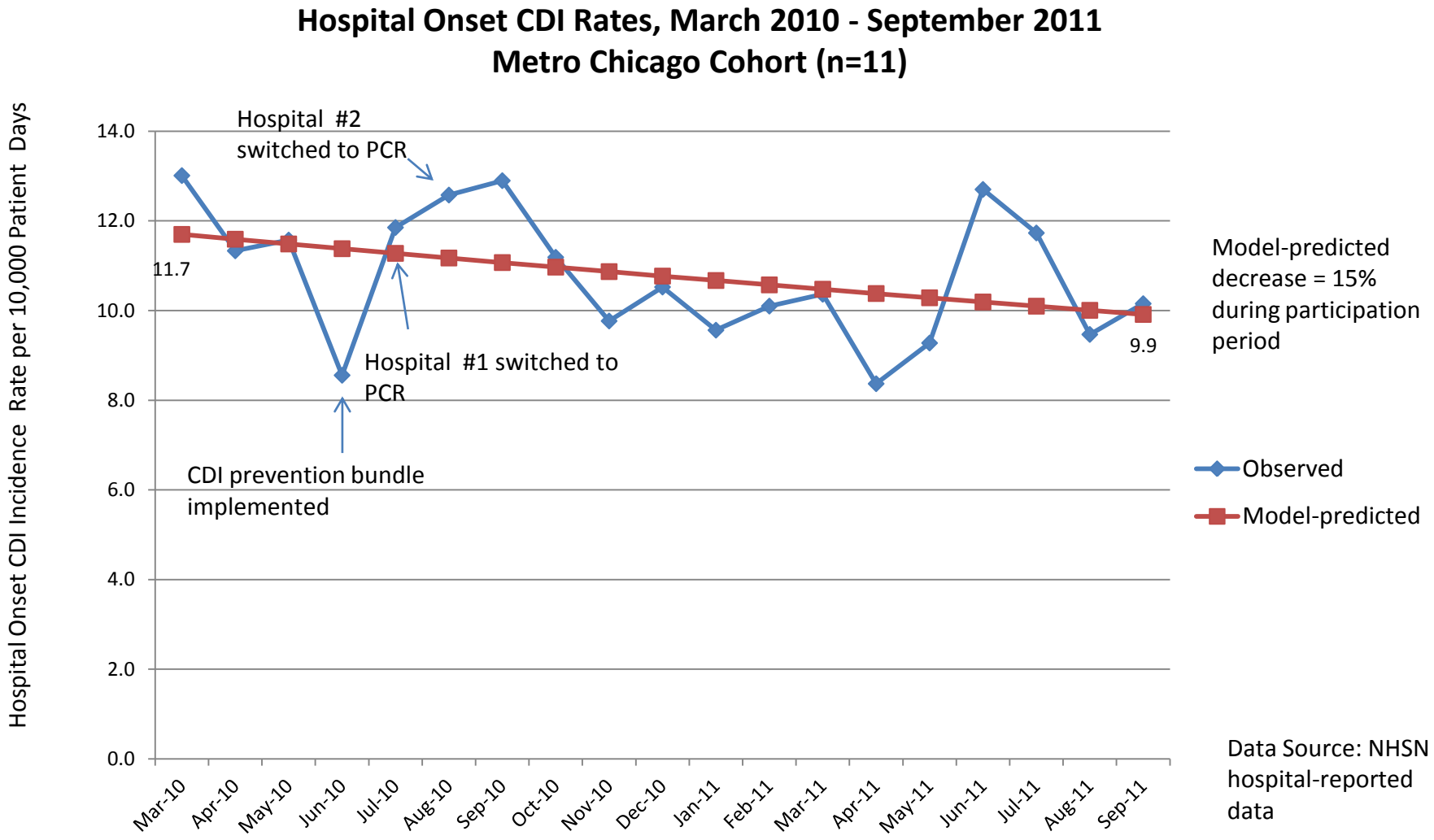
Reporting and Evaluation

- CDC's National Healthcare Safety Network (NHSN)
  - Monthly C. *diff* laboratory-identified events
  - Monthly adherence rates for hand hygiene and gown and glove use
- Environmental cleaning surveillance
- Pre/Post Collaborative Assessment
  - C. *diff* Prevention Practices Assessment Tool
- Participant Evaluation (post-Collaborative)

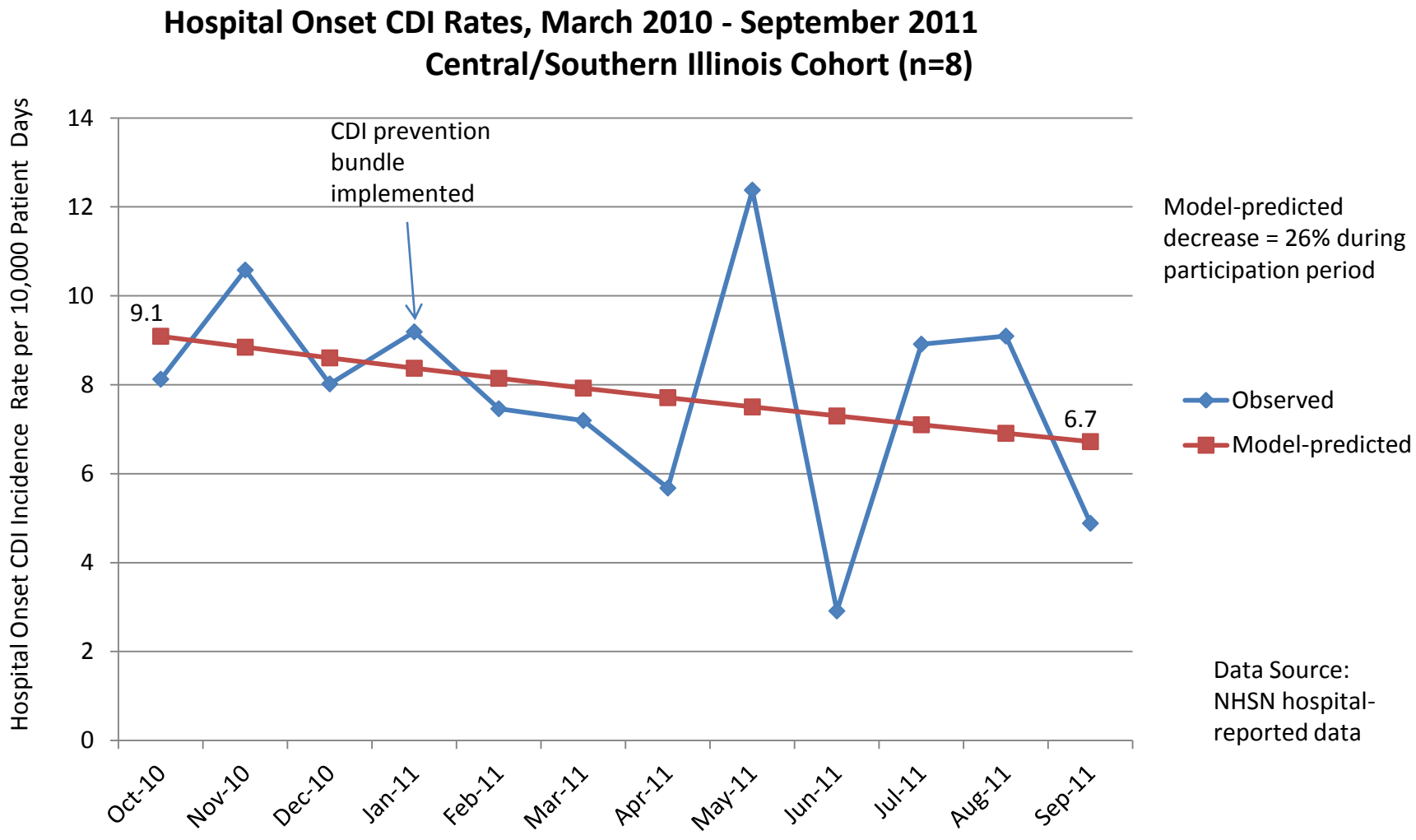
Pre/Post Collaborative Assessment

- Areas where improvement was noted
  - Implementation of contact precautions for patients suspected of having C. *diff*
  - Identification of soap and water as preferred method of hand hygiene for staff caring for C. *diff* patients
  - Implementation of staff education and training program on reducing C. *diff* transmission
  - Dissemination of C. *diff* rate information to hospital/unit leadership
  - Use of bleach for environmental disinfection of C. *diff* patient rooms
  - Implementation of new policies related to C. *diff* testing

Results


Hospital Onset CDI Rates, March 2010 - September 2011
Metro Chicago Cohort (n=11)
Hospital Onset CDI Incidence Rate per 10,000 Patient Days
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Hospital #2 switched to PCR
Hospital #1 switched to PCR
CDI prevention bundle implemented
11.7
9.9
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Observed
Model-predicted
Model-predicted decrease = 15% during participation period
Data Source: NHSN hospital-reported data

Results


Hospital Onset CDI Rates, March 2010 - September 2011
Central/Southern Illinois Cohort (n=8)
Hospital Onset CDI Incidence Rate per 10,000 Patient Days
14
12
10
8
6
4
2
0
CDI prevention bundle implemented
9.1
6.7
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Observed
Model-predicted
Model-predicted decrease = 26% during participation period
Data Source: NHSN hospital-reported data

C. diff Cost "Savings"

- Comparing total number of nosocomial C. *diff* cases for metro Chicago cohort, quarter 1 to quarter 5 of collaborative work (2010-2011)
  - 69 fewer cases of C. *diff*
- Cost of a primary diagnosis of C. *diff* ~**$2454**
- Possible aggregate savings **$169,326!**

Dubberke, E R et al. Clin Infect Dis. 2008 Feb 15; 46(4). Available at http://cid.oxfordjournals.org/content/46/4/497.long

Lessons Learned

- Culture change takes time; leadership buy-in and support is essential for sustainable culture change
- Effective communication, mutual respect, and data sharing across departments helped ensure change implementation
- Need to recognize and address the financial impact of improvement initiatives

This material was prepared by IFMC-IL, the Medicare Quality Improvement Organization for Illinois, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy.
10SoW-IL-HAI-03/12-101

Illinois Campaign to Eliminate *C. diff* AUDIENCE & GOALS

Target audience

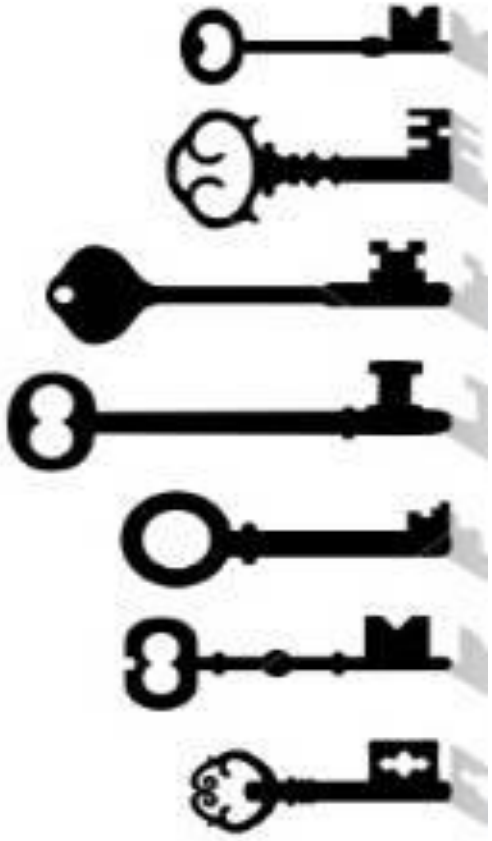
- Acute care hospitals, long term acute care hospitals (LTACHs), long term care (LTC) facilities

Goals

- Disseminate evidence-based practices for C. *diff* prevention
- Share lessons learned from the C. *diff* Prevention Collaborative
- Strengthen ability of target audience to prevent C. *diff*

Collaborate with key partners/sponsors

- IFMC-IL
- APIC Chapters
- CDC Chicago Prevention and Intervention Epicenter
- Local Health Departments
- LTC associations
- IL Department on Aging
- Other stakeholders



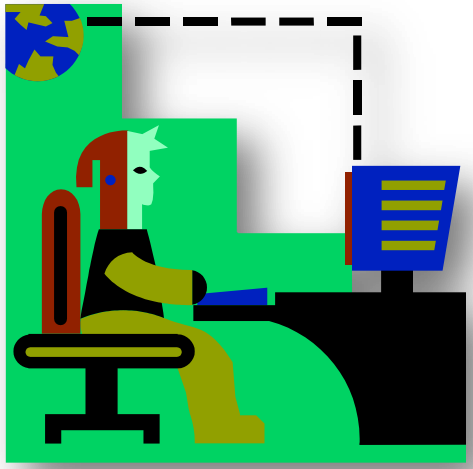
ICE *C. diff* ACTIVITIES

Webinars

- Patient care and cost implications of more accurate testing
  - Tuesday, April 17, 2012. 2:00pm to 3:00pm, CST
  - Wednesday, April 25, 2012. 3:00pm to 4:00 pm, CST

Website

- Currently under construction



Workshops

- Working with IFMC-IL to make these an experience that will
  - Foster teamwork, bringing together key people from each facility
  - Be very interactive
  - Provide foundation to "kickoff" rapid cycle improvement
- June: Southern Illinois and Central Illinois
- July: Metro Chicago

ICE *C. diff* FACILITY PARTICIPATION

Signing up as **ICE C. *diff*** participant, indicates that your facility commits to:

- Attend campaign webinars
- Send a multidisciplinary team to regional workshop
- Set 1 specific goal for reducing C. *diff* in your facility
- Share successes, barriers, and tools with other participating facilities

ICE *C. diff*

For more information on **ICE C. *diff*** contact

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chinyere.alu@illinois.gov

312-814-2565

Resources

SHEA/IDSA Clinical Practice Guidelines for Clostridium difficile Infection in Adults: 2010 Update

http://www.journals.uchicago.edu/doi/full/10.1086/651706

Association for Professionals in Infection Control and Epidemiology (APIC) Guide to Elimination of Clostridium difficile in Healthcare Settings

http://www.apic.org/Content/NavigationMenu/PracticeGuidance/APICEliminationGuides/C_diff_guide.htm

CDI toolkit from the CDC

http://www.cdc.gov/HAI/recoveryact/stateResources/toolkits.html

Questions?