# IPRO NQIIC

## *Clostridioides difficile*- Update on diagnosis and treatment in the acute and post acute care settings

## Reflections from a *Clostridioides difficile* infection survivor

**September 7, 2022**

**1:00 – 2:00 PM ET | 2:00 – 3:00 PM CT**

*Please note - this event is being recorded.*

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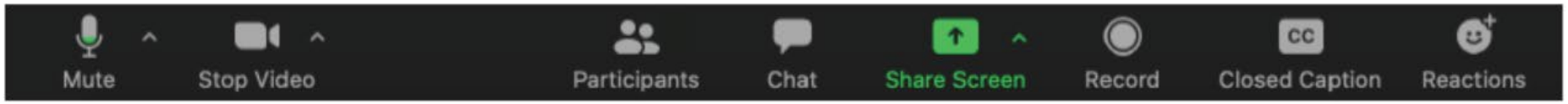
# Use Chat to introduce yourself & ask questions

## How to use Zoom

At the bottom of your screen, you will see a black bar with icons:




Chat **Everyone** for general comments or questions

# Welcome and Introduction of Today's Speakers

**Ghinwa Khalid Dumyati, MD**
Infectious Disease Physician and Professor of Medicine at the University of Rochester Medical Center

**Mary E. Curtin Pierce, MSN, BSN, RN**
Infection Preventionist
Reflections from a *C.difficile* Survivor

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# Today's Learning Objectives

1. List the most recent treatment guidelines for ***C. difficile*** infection.
2. Identify the role of diagnostic stewardship in optimizing ***C. difficile*** testing.
3. Describe the importance of communication across care transitions in improving the management of patients with ***C. difficile*** infection.
4. Recognize the key communication points of ***C. difficile*** infection from the perspective of a survivor.

# Mary E. Curtin Pierce, MSN, BSN, RN

## Watch the survival story video

Mary Pierce is a registered nurse who nearly lost her life to *C. difficile*. Watch this video, where she shares her dramatic survival story and describes her yearlong hospitalization, the impact of antibiotic therapy, prevention of *C. difficile* and the long-term effects of this devastating adverse antibiotic event.

https://www.youtube.com/watch?v=XwFIv4UlF8g

# *Clostridioides difficile*- Update on Diagnosis and Treatment in Acute and Post-Acute Care Settings

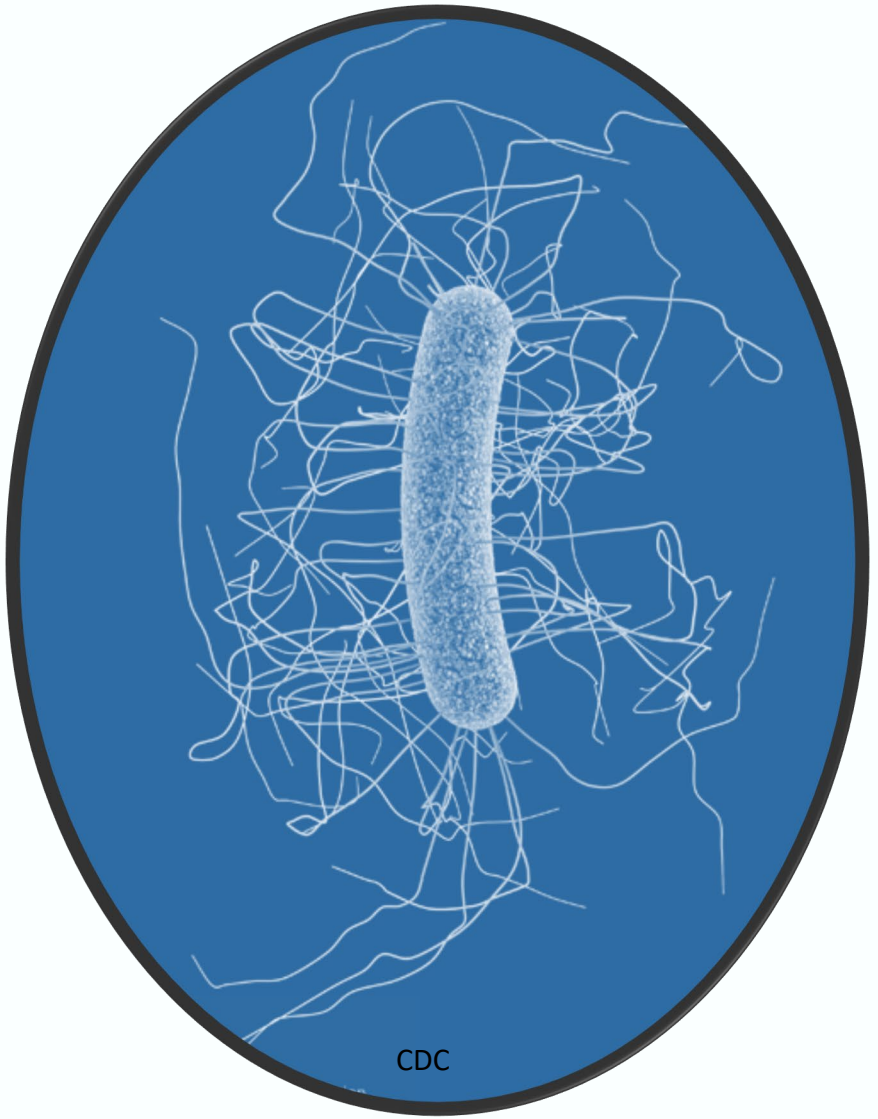
**Ghinwa Dumyati, MD**

Professor of Medicine

Center for Community Health

University of Rochester Medical Center

September 7, 2022



CDC

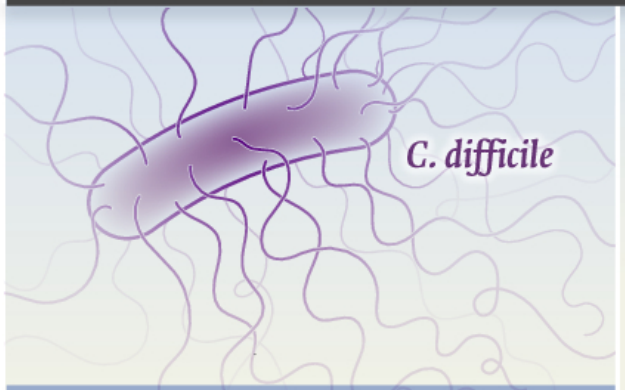
# Objectives

- List the most recent treatment guidelines for *C. difficile* infection
- Identify the role of diagnostic stewardship in optimizing *C. difficile* testing
- Describe the importance of communication across care transitions in improving the management of patients with *C. difficile* infection

The NEW ENGLAND JOURNAL of MEDICINE

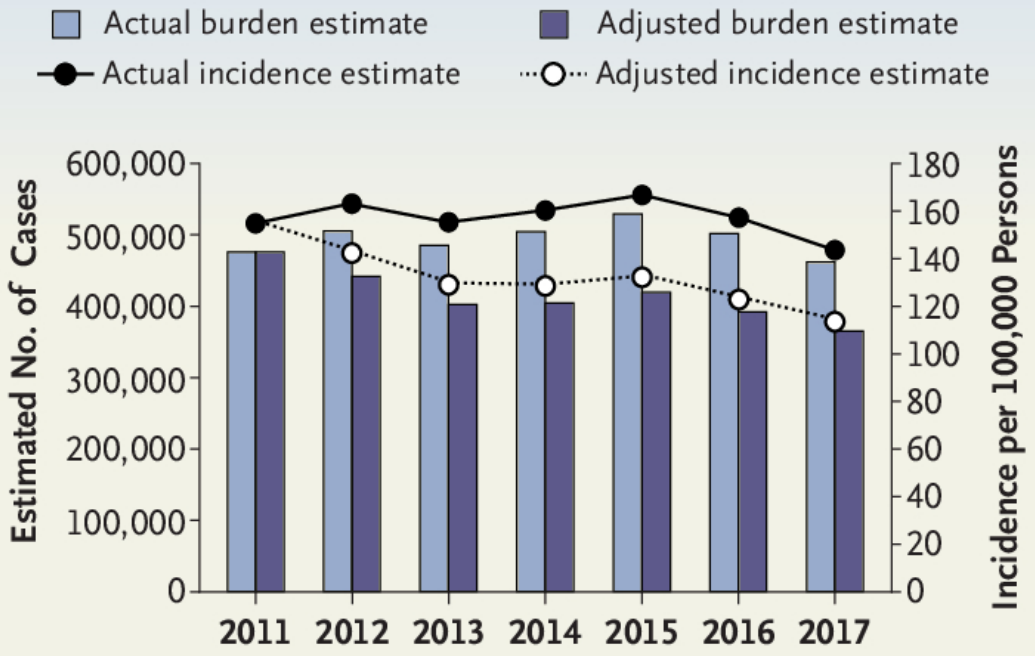
# Trends in U.S. Burden of *Clostridioides difficile* Infection

## ESTIMATES BASED ON SURVEILLANCE IN 10 U.S. SITES, 2011–2017




Estimates are based on nucleic acid amplification test use adjusted for age, sex, and race.

Adjusted estimates are further adjusted to 2011 nucleic acid amplification test use.




**Decreased U.S. infection burden reflected a decline in health care–associated infections**

A.Y. Guh et al. 10.1056/NEJMoa1910215

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**Number of CDI cases:**
**462,100**
**(CI: 428,600-495,600)**

**Number of CDI first recurrence:**
**69,800**

**Number of in-hospital Deaths:**
**20,000**

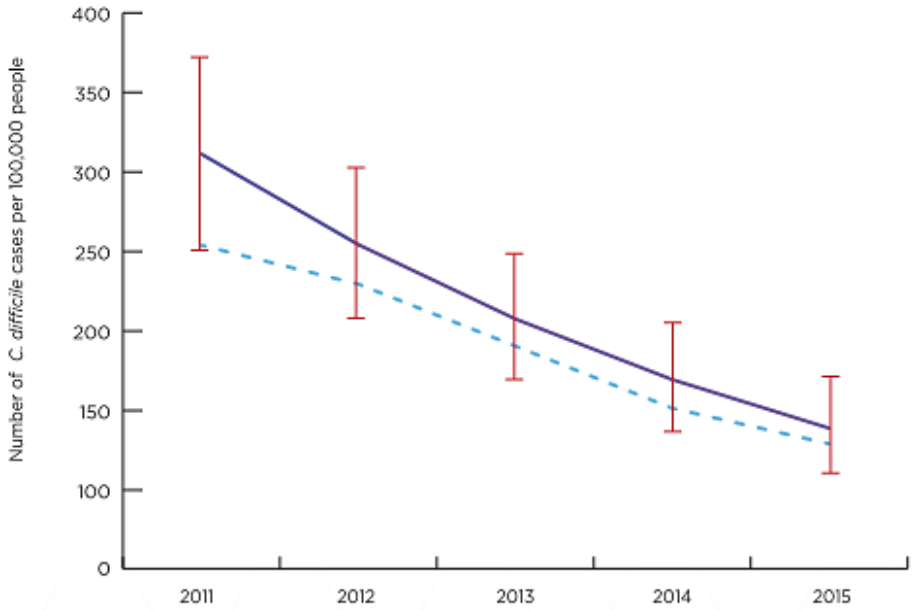
# CDI Estimates in Hospitalized Patients-2017


https://www.cdc.gov/drugresistance/pdf/threats-report/clostridioides-difficile-508.pdf

# Trend in CDI In Long-Term Care Facilities

## *C. DIFFICILE* CASES

Improving antibiotic use may have contributed to the decrease in long-term care facility-onset *C. difficile* cases in 10 U.S. sites.




Adjusted cases for sex, race, and the percent of cases diagnosed by nucleic acid amplification test.

https://www.cdc.gov/drugresistance/pdf/threats-report/clostridioides-difficile-508.pdf

- AS is an 88 year old female with history of diabetes mellitus, chronic renal insufficiency, congestive heart failure. She was recently discharged from the hospital post treatment of pneumonia with levofloxacin
- She developed abdominal pain and diarrhea (5 loose bowel movements in the last 24 hours)
- She has no history of prior CDI
- Stool *C. difficile test*: positive GDH/positive toxin EIA

➢**What is the best treatment for her initial *C. difficile* infection?**

# Clinical Practice Guidelines

Clinical Infectious Diseases

IDSA GUIDELINE

**2017**

Clinical Practice Guidelines for *Clostridium difficile* Infection in Adults and Children: 2017 Update by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA)

L. Clifford McDonald,[1] Dale N. Gerding,[2] Stuart Johnson,[2,3] Johan S. Bakken,[4] Karen C. Carroll,[5] Susan E. Coffin,[6] Erik R. Dubberke,[7] Kevin W. Garey,[8] Carolyn V. Gould,[1] Ciaran Kelly,[9] Vivian Loo,[10] Julia Shaklee Sammons,[6] Thomas J. Sandora,[11] and Mark H. Wilcox[12]

https://doi.org/10.1093/cid/cix1085

Clinical Infectious Diseases

IDSA GUIDELINES

**2021**

Clinical Practice Guideline by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA): 2021 Focused Update Guidelines on Management of *Clostridioides difficile* Infection in Adults

Stuart Johnson,[1,2] Valéry Lavergne,[3,4] Andrew M. Skinner,[1,2] Anne J. Gonzales-Luna,[5] Kevin W. Garey,[5] Ciaran P. Kelly,[6] and Mark H. Wilcox[7]

https://doi.org/10.1093/cid/ciab549

CME

**2021**

ACG Clinical Guidelines: Prevention, Diagnosis, and Treatment of *Clostridioides difficile* Infections

Colleen R. Kelly, MD, AGAF, FACG[1], Monika Fischer, MD, MSc, AGAF, FACG[2], Jessica R. Allegretti, MD, MPH, FACG[3], Kerry LaPlante, PharmD, FCCP, FIDSA[4], David B. Stewart, MD, FACS, FASCRS[5], Berkeley N. Limketkai, MD, PhD, FACG (GRADE Methodologist)[6] and Neil H. Stollman, MD, FACG[7]

https: doi: 10.14309/ajg.0000000000001278

**2021**

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

ELSEVIER

CMI CLINICAL MICROBIOLOGY AND INFECTION

ESCMID

Guidelines

European Society of Clinical Microbiology and Infectious Diseases: 2021 update on the treatment guidance document for *Clostridioides difficile* infection in adults

Joffrey van Prehn [1], Elena Reigadas [2], Erik H. Vogelzang [3], Emilio Bouza [2], Adriana Hristea [4], Benoit Guery [5], Marcela Krutova [6], Torbjorn Norén [7]

https://doi.org/10.1016/j.cmi.2021.09.038

# Treatment of Initial CDI

| Initial CDI | | Recommended and alternative treatment | Comments |
|---|---|---|---|
| | **Preferred** | **Fidaxomicin** 200 mg twice a day for 10 days | Implementation depends upon available resources |
| | **Alternative** | **Vancomycin** 125 mg 4 x/day by mouth for 10 days | Vancomycin remains an acceptable alternative |
| Non- severe CDI | Alternative, if above agents are unavailable | **Metronidazole** 500 mg 3X/day per day by month for 10 days | Non-severe definition: WBC < 15,000 cell/µL or creatinine <1.5 mg/dL |

This is a Conditional recommendation, Moderate Certainty of Evidence

*This recommendation places a high value in the beneficial effects and safety of fidaxomicin, but its implementation depends upon available resources*

Johnson S, et al. Clinical Infectious Diseases 2021;73: e1029–e1044 https://doi.org/10.1093/cid/ciab549

# Fidaxomicin Vs. Vancomycin

| | Clinical Cure fidaxomicin vs. vanco | Recurrence at 4 weeks fidaxomicin vs. vanco |
|---|---|---|
| Louie (2011)[1] | 82.2% vs. 87.8% | 15.4% vs. 25.3% |
| Cornely (2012)[2] | 87.7% vs. 86.8% | 12.7% vs. 26.9% |
| Guery (2018)[3] | 78% vs 82% | 2% vs. 17%* |
| Mikano (2018)[4] | 83.7% vs 88% | 19.5% vs. 25.3% |

*at 40 days

[1]Louie TJ. NEJM 2011; 364:422-431 [2] Cornely OA. Lancet 2121; 12:281-289
[3]Guery B. Lancet 2018; 18: 396-3-7 [4] Mikano H. J Infect Chemother 2018;24: 744-752

# Possible Reasons for the Reduced Recurrence with Fidaxomicin

| **Fidaxomicin compared to Vancomycin** | |
|---|---|
| Narrow Spectrum agent | Less alteration to the bowel microbiota compared to Vancomycin |
| Persists on *C. difficile* spores | Prevents subsequent growth and toxin production in vitro |
| Longer post antibiotic effect | Can be given less frequently |
| Higher concentration in stool compared to vancomycin | Highly active against *C. difficile* |

Tannock. Microbiology 2010; 156: 3354–3359
Chilton. J Antimicrob Chemother 2015; 70:2598–607
Babkhani. Antimicrob Agents Chemother 2011; 55(9): 4427–4429

# Cost

| | Treatment Course | GoodRx |
|---|---|---|
| Fixacomicin* | 100 mg twice a day for 10 days | $4,401 |
| Vancomycin (Vancocin brand) | 125 mg every 6 hours for 10 days | $4,742 |
| Vancomycin (generic) | 125 mg every 6 hours for 10 days | $105-$430 |
| Vancomycin (oral solution) | 125 mg every 6 hours for 10 days | $65-$97 |

***Fidaxomicin coupon: https://www.dificid.com/savings-coupon/**

# Considerations for Fidaxomicin Use When Access is Limited

## IDSA/SHEA[1]

- Age >65 years
- Immune-compromised
- Severe CDI
- Ribotype 027/078/244 infection
- History of CDI recurrence

## ESCMID[2]

- Age >65 years

**AND one or more risk factors**

- Healthcare-associated CDI
- Prior hospitalization (<3 months)
- Previous recurrence of CDI (<3 months)
- Use of concomitant antibiotics
- Proton pump inhibitors started during/after CDI diagnosis

1. Johnson S, et al. Clin Infect Dis 2021; 73:e1029–e1044
2. Prehm JV, et al. Clin Micro Infect 2021;27:S1-S21

- AS was treated with oral vancomycin and her diarrhea resolved
- 2 weeks after stopping her treatment she has a recurrence of her diarrhea and she falls at home.
- She is admitted to the hospital and stool test positive for *C. difficile*

➢ **What is the best treatment for the first recurrence of CDI?**

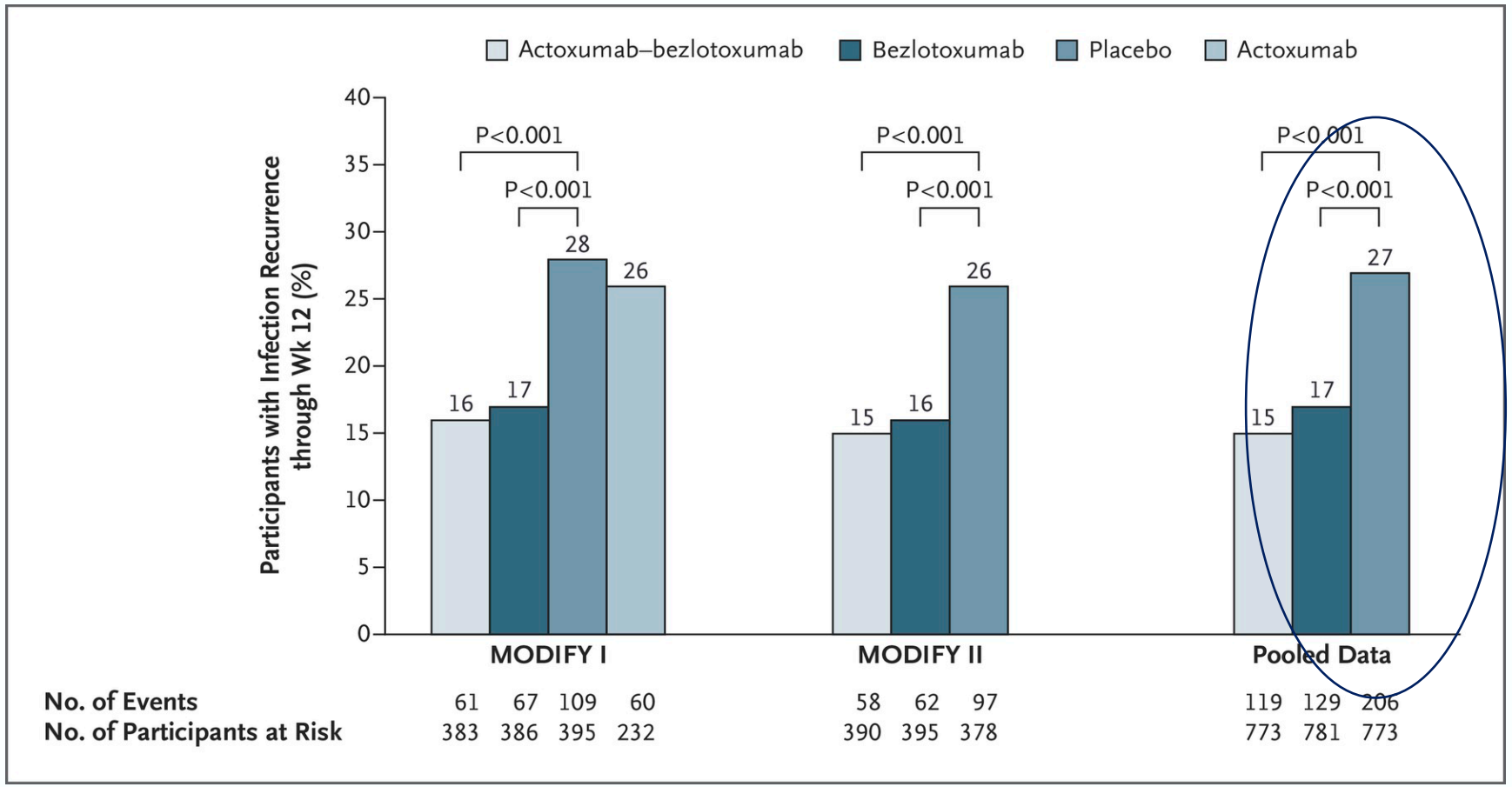
➢ **Should fidaxomicin be used rather than vancomycin?**

# First CDI recurrence

| First CDI recurrence | Recommended and Alternative Treatment | Comments |
|---|---|---|
| Preferred | Fidaxomicin 200 mg twice a day for 10 days or twice daily for 5 days followed by 200 mg every other day for 20 days | Conditional recommendation, low certainty evidence |
| **Alternative** | Vancomycin in a tapered or pulse regimen | 125 mg 4x/day for 10-14 days<br>2x daily for 7 days<br>Once daily for 7 days<br>Every 2-3 days for 2-8 weeks |
| **Alternative** | Vancomycin 125 mg 4x/day for 10 days | Consider standard dose if metronidazole was used for 1st CDI episode |
| **Adjunctive** | Bezlotoxumab 10mg/kg IV during treatment with standard antibiotic | Data when combined with fidaxomicin are limited. Caution in patient with CHF |

Johnson S, et al. Clinical Infectious Diseases 2021;73: e1029–e1044 https://doi.org/10.1093/cid/ciab549

# Recurrent CDI at 12 weeks follow up Bezlotoxumab vs. placebo

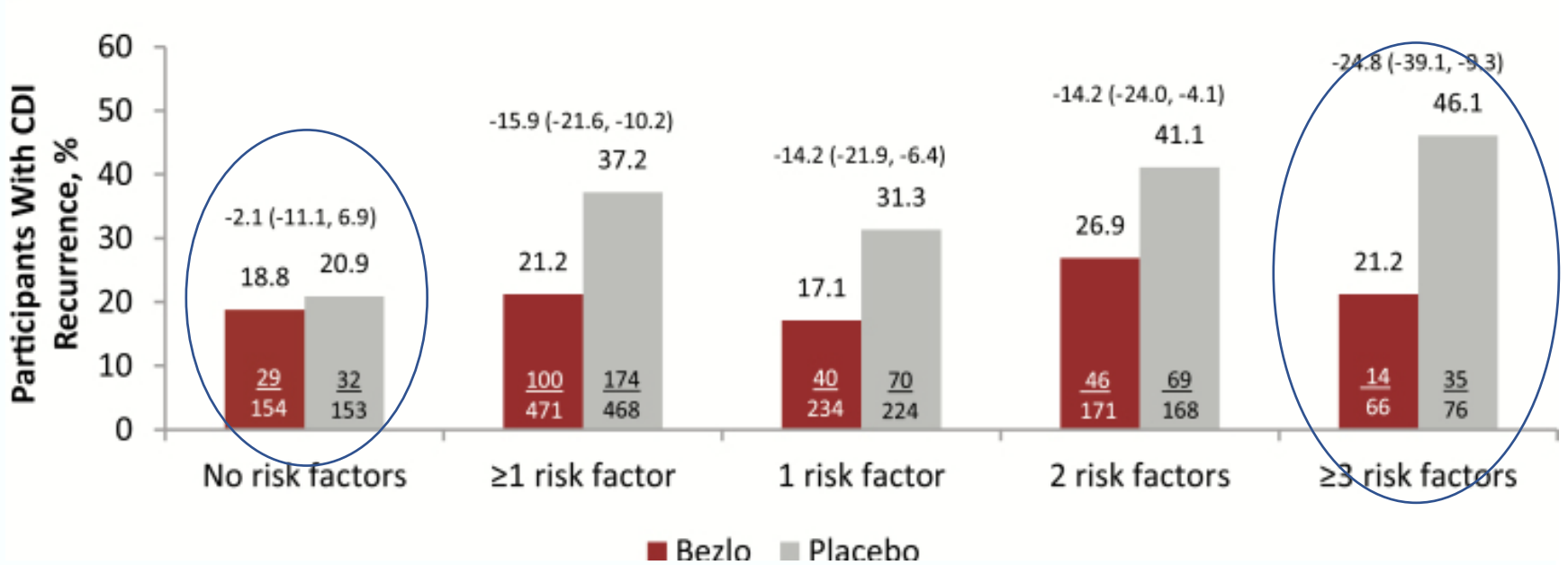



Wilcox MH, et al N Engl J Med 2017; 376:305-317

# Recurrence Rate by Number of Risk Factors For Recurrence

**High risk factors for recurrent CDI:**

- Age ≥ 65 years
- History of CDI in previous 6 months
- Compromised immunity
- Severe CDI
- Ribotype 01/078/244




Gerding DN, et al. Clin Infect Dis 2018; 67(5): 649–656

- AS was treated with fidaxomicin taper with resolution of her diarrhea. She is too weak to go home and sent to the nursing home for rehabilitation
- A month after her recovery, she developed a UTI and was given ciprofloxacin
- Few days later, she had 6 loose bowel movements
- *C. difficile* GDH +, Toxin EIA -, reflex PCR +

➢ **What is the best treatment option for her 2nd episode of CDI?**

# CDI Second or Subsequent Recurrence

| **2nd and subsequent CDI recurrence** | |
|---|---|
| **Fidaxomicin** | 200 mg twice a day for 10 days<br>or<br>twice daily for 5 days followed by 200 mg every other day for 20 days |
| **Vancomycin** | tapered or pulse regimen |
| **Vancomycin with rifaximin** | 125 mg 4x/day for 10 days followed by rifaximin 400 mg 4x/day for 20 days |
| **Fecal Microbiota Transplant (FMT)** | *The opinion of the panel is that standard treatment for 3 episodes should be tried before offering FMT* |
| **Bezlotoxumab** | 10mg/kg IV during treatment with standard antibiotic.<br>D*ata when combined with fidaxomicin are limited.*<br>*Caution in patient with CHF* |

Johnson S, et al. Clinical Infectious Diseases 2021;73: e1029–e1044 https://doi.org/10.1093/cid/ciab549

# Treatment of Fulminant CDI

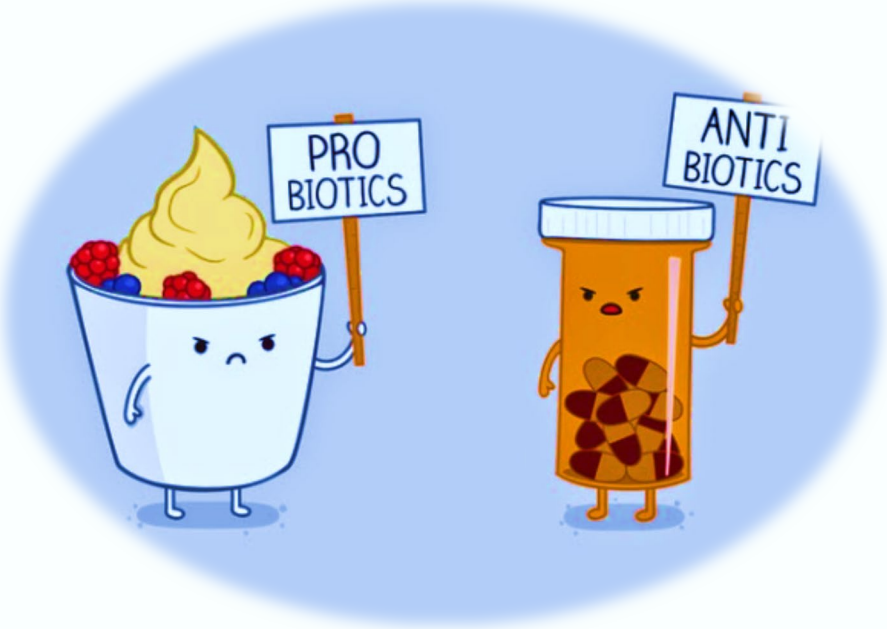
| **Fulminant CDI** | |
|---|---|
| **Vancomycin** 500 mg 4 times daily by mouth or by nasogastric tube. If ileus, consider adding rectal instillation of vancomycin.<br><br>**Intravenously** administered **metronidazole** (500 mg every 8 hours) should be administered together with oral or rectal vancomycin, particularly if ileus is present | Definition of fulminant CDI is supported by: Hypotension or shock, ileus, megacolon |

Johnson S, et al. Clinical Infectious Diseases 2021;73: e1029–e1044 https://doi.org/10.1093/cid/ciab549

| | IDSA/SHEA[1] | ACG[2] | ESCMID[3] |
|---|---|---|---|
| **First Episode** | **Preferred:** Fidaxomicin<br>Alternative: Vanco | Fidaxomicin<br>Vanco | **Preferred:** Fidaxomicin<br>Alternative: Vanco |
| **Severe** | **Preferred:** Fidaxomicin<br>Alternative: Vanco | Vanco<br>Fidaxomicin | Vanco or Fidaxomicin |
| **1st recurrence** | **Preferred**: Fidaxomicin<br>Alternative: Vanco | Fidaxomicin<br>Vanco | Vanco or fidaxomicin **+ bezlotoxumab** (if treated with fidaxomicin)<br>Fidaxomicin (if treated with vanco) |
| **2nd or subsequent recurrence** | Fidaxomicin<br>Vanco taper or pulse<br>Vanco/rifaximin<br>**FMT (after 3rd episode)**<br>**Bezlotoxumab** | **FMT**<br><br>**Bezlotoxumab** for patient with high recurrence risk | **FMT**<br><br>Vanco or fidaxomicin + **bezlotoxumab** |
| **Fulminant** | Vanco + IV metronidazole | Vanco +/-IV metronidazole<br>**FMT** | Vanco or fidaxomicin |

1.Johnson S. *Clin Infect Dis* 2021; 73:e1029–e1044 2.Kelly CR. *Am J Gastroenterol* 2021;116:1124-1147 3.van Prehn *Clin Microbiol Infect* 2021;27:S1-S21

# Probiotics




- Insufficient data to recommend administration of probiotics for primary prevention (i.e. patients on antibiotics)
- Varying probiotic formulation and duration of administration problematic
- Recommend against the use of probiotic for secondary prevention

Mc Donald LC. Clinical Infectious Diseases, 2018; 66;:e1–e48
Kelly CR. *Am J Gastroenterol* 2021;116:1124-1147

# Diagnostic Stewardship for CDI

*Correct test is ordered on the right patient at the right time to inform optimal clinical care*

| C. Difficile Tests | Sensitivity | Specificity | Positive Predicative Value | Negative Predictive value | Weakness |
|---|---|---|---|---|---|
| Toxigenic culture | High | Low* | - | - | Poor turn around time |
| Cell culture cytotoxicity neutralizing assay | High | High | - | - | Poor turnaround time |
| Nucleic acid amplification test (NAAT, PCR) | High | Low, moderate | 46% | 100 % | Overdiagnois/detecting colonization |
| Glutamate dehydrogenase (GDH) | High | Low* | 34-38% | 100 % | Produced by toxigenic and non toxigenic strains |
| Toxin A and B enzyme immunoassay (Toxin EIA) | Low | Moderate | 69-81% | 99 % | Variable sensitivity |

*Must be combined with a toxin assay

Johnson S. CID 2018; 66, 7:e1–e48.
Boley FJ. Curr Infect Dis Rep. 2020; 22(3):7
Kelly CR. *Am J Gastroenterol* 2021;116:1124-1147

# *C. difficile* Testing Algorithms

| GDH and Toxin EIA<br>Reflex to NAAT if GDH+ toxin - | NAAT* | NAAT<br>Reflex to Toxin EIA if NAAT + |
|---|---|---|

* Not recommended if no lab rejection policy for formed stool

# **CDI** is a **Clinical Diagnosis** Supported by Lab Testing

"Treat the Patient NOT the Test"

Dubberke ER. JAMA Intern. Med, 2015: 1–2

# Over Diagnosis of CDI

Leads to:

More patients on isolation

Increase hospital CDI rates

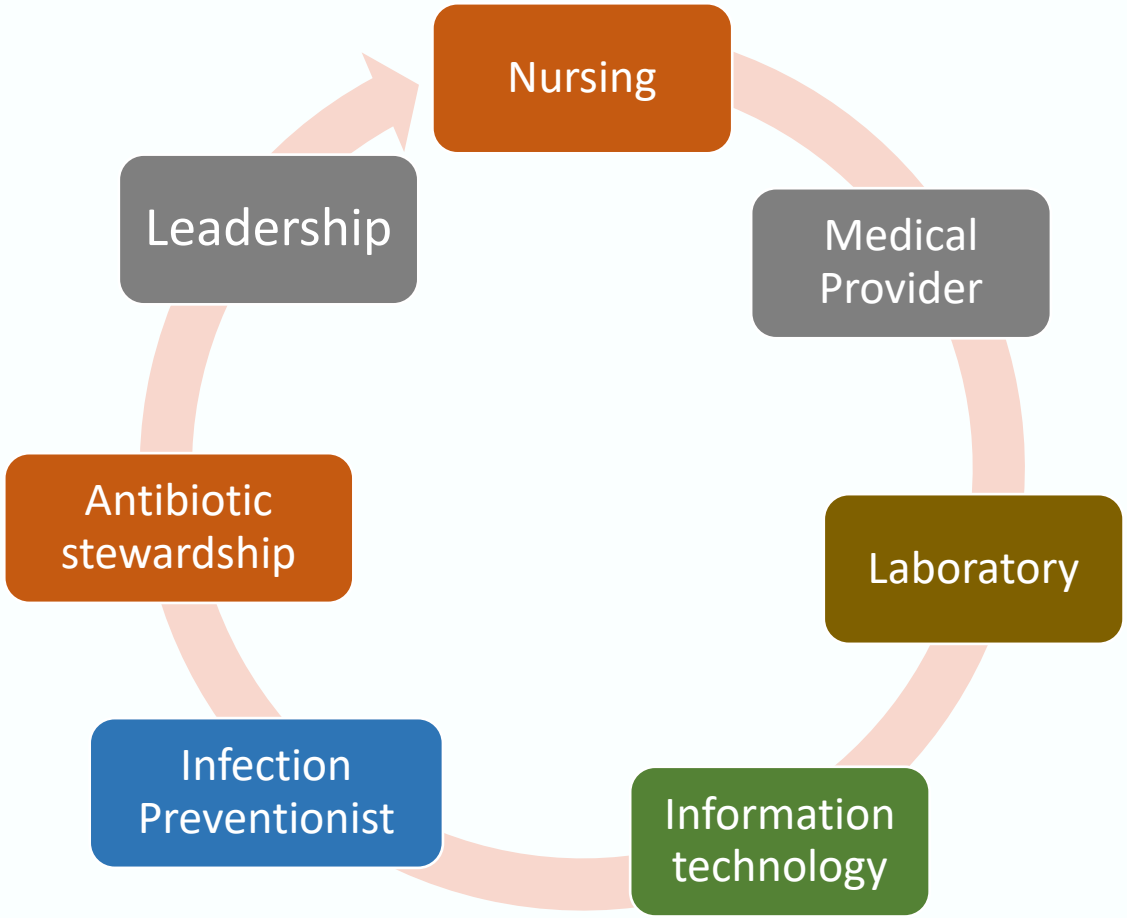
- Data available to public through CMS Hospital Compare
- Data used for value base purchasing decisions/penalties

Treatment of colonized patients with vancomycin results in

- Microbiome disturbance
- In higher risk of CDI once treatment stopped
- Does not clear *C. difficile* colonization
- Higher shedding of VRE

Dubberke ER JAMA Intern. Med, 2015: 1–2
Fishbein SR. https://doi.org/10.1128/mSphere.00936-20

# Key Stakeholders for CDI Diagnostic Stewardship



# Who should be tested for *C. difficile?*

- Diarrhea; ≥3 unformed stool per day with/without abdominal pain, fever, leukocytosis
  - No laxative for the past 48 hours
  - No other reasons for diarrhea
- Avoid test of cure

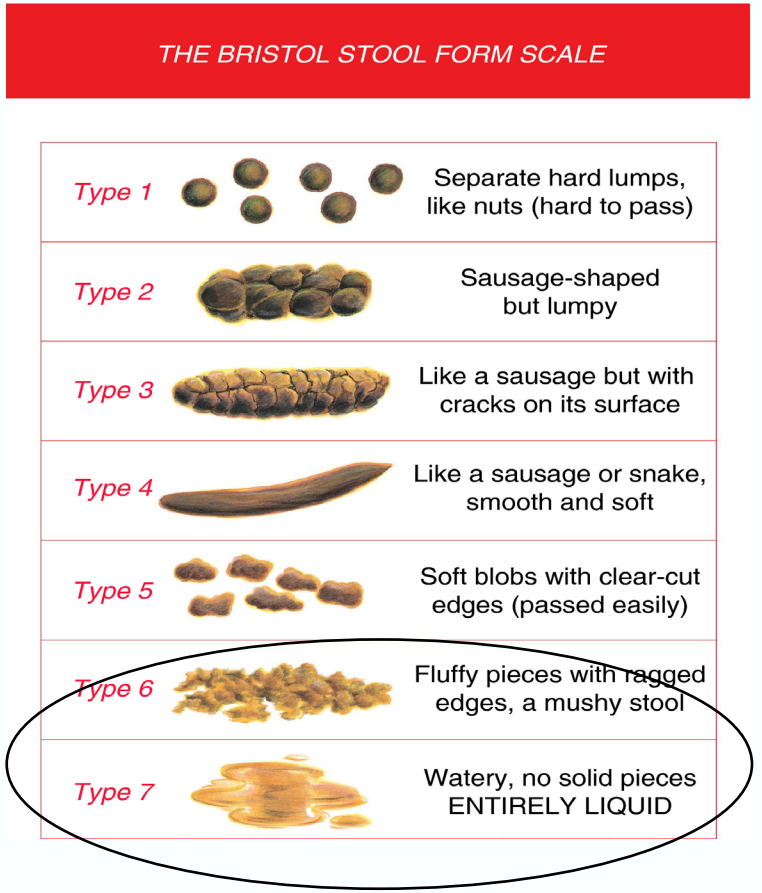


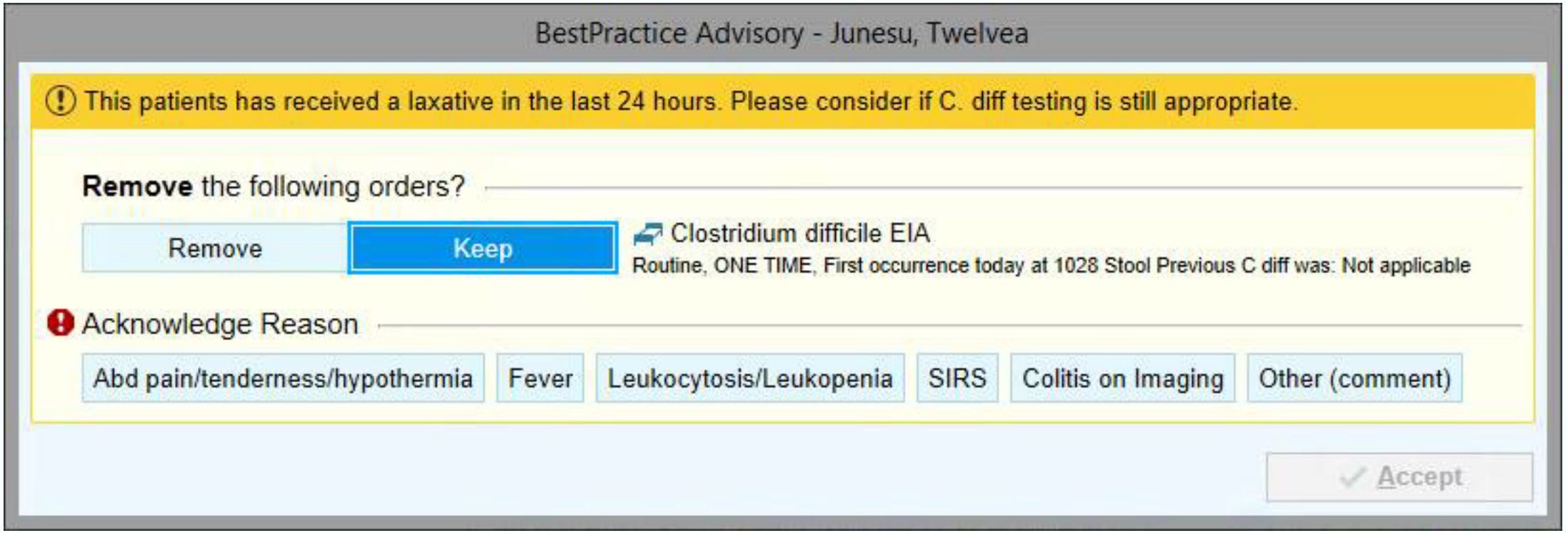

Figure: Aliment Pharmacol Ther,2016: 44, I7: 693-703,

# Interventions to Improve CDI Testing

| Improve documentation in Electronic Medical Record | Lab Testing | Use of Computerized Clinical Decision Support Tools | Review of Test Appropriateness with feedback |
|---|---|---|---|
| • Education of nursing staff<br>• Information available at the time of test ordering | • Rejection policy for formed stool<br>• Rejection policy for test send 24 hrs. post order<br>• Rejection if test positive test in prior 7 days | • Soft Stops<br>• Hard Stops (requires a call for approval) | • Approval of testing (labor intensive)<br>• Feedback (face to face better) |

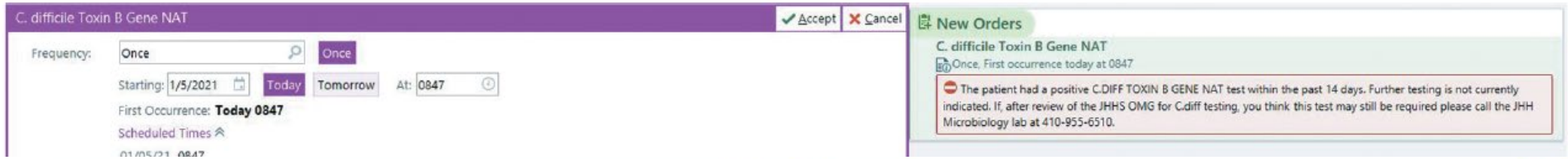
Boly FJ. Curr Infect Dis Rep. 2020;22(3):7

# Best Practice Alert-Soft stop

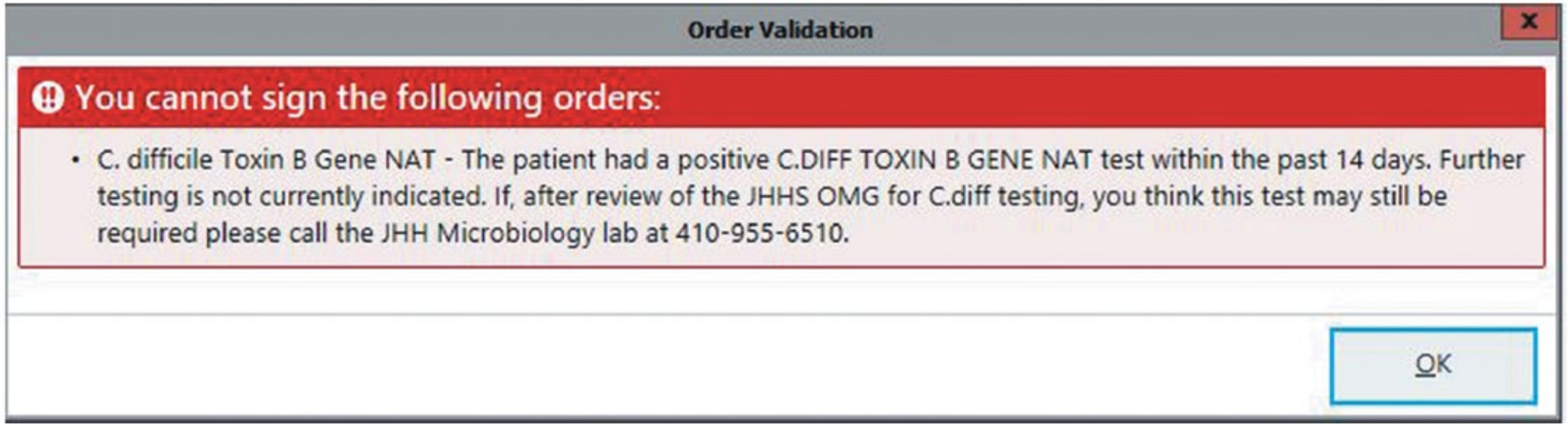


# Best Practice Alert-Hard Stop

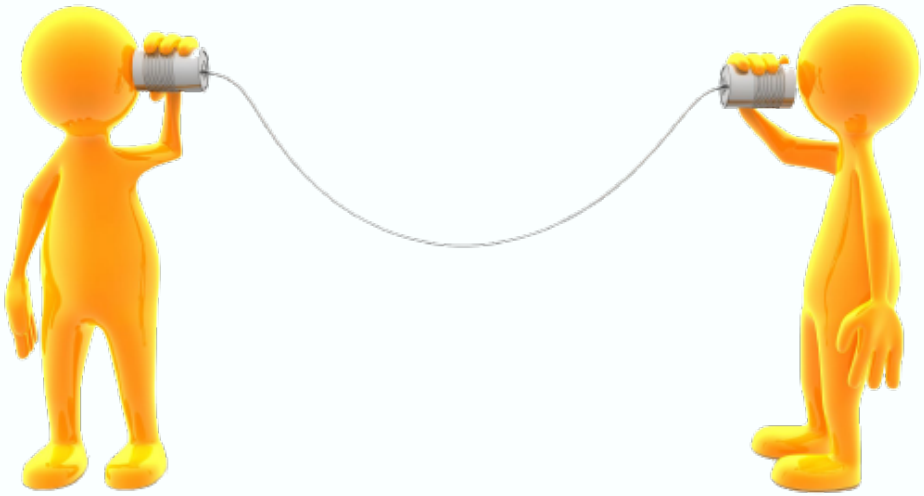
a




b




Mizusawa M. Expert Review of Molecular Diagnostics. 2021; 21 (3): 311–321



# Communication at Care Transitions to Optimize the Care of CDI patients

# Why Is Communication Important?

Patient with CDI will continue treatment in a variety of settings including acute care facilities, long-term care facilities, primary care, and home health

CDI patients are at risk for

- Recurrence (20%-65%)
- Re-hospitalization

**What is needed upon transfer?**

- Ensuring that patient has access to CDI treatment
- Information about infection control practices
- Education about recurrence of symptoms
- Awareness of risk for recurrence

## Inter-facility Infection Control Transfer Form

This form must be filled out for transfer to accepting facility with information communicated prior to or with transfer.
**Please attach copies of latest culture reports with susceptibilities if available.**

**Sending Healthcare Facility:**

| Patient/Resident Last Name | First Name | Date of Birth | Medical Record Number |
|---|---|---|---|
| | | | |

| Name/Address of Sending Facility | Sending Unit | Sending Facility Phone |
|---|---|---|
| | | |

| Sending Facility Contacts | Contact Name | Phone | E-mail |
|---|---|---|---|
| Transferring RN/Unit | | | |
| Transferring physician | | | |
| Case Manager/Admin/SW | | | |
| Infection Preventionist | | | |

| Does the person* currently have an infection, colonization OR a history of positive culture of a multidrug-resistant organism (MDRO) or other potentially transmissible infectious organism? | Colonization or history *(Check if YES)* | Active infection on Treatment *(Check if YES)* |
|---|---|---|
| Methicillin-resistant *Staphylococcus aureus* (MRSA) | Yes | Yes |
| Vancomycin-resistant *Enterococcus* (VRE) | Yes | Yes |
| *Clostridioides difficile* | Yes | Yes |
| *Acinetobacter*, multidrug-resistant | Yes | Yes |
| Enterobacteriaceae (e.g., *E. coli, Klebsiella, Proteus*) producing-Extended Spectrum Beta-Lactamase (ESBL) | Yes | Yes |
| Carbapenem-resistant Enterobacteriaceae (CRE) | Yes | Yes |
| *Pseudomonas aeruginosa*, multidrug-resistant | Yes | Yes |
| *Candida auris* | Yes | Yes |
| Other, specify (e.g., lice, scabies, norovirus, influenza): | Yes | Yes |

**Does the person* currently have any of the following?** (Check here if none apply)

- Cough or requires suctioning
- Diarrhea
- Vomiting
- Incontinent of urine or stool
- Open wounds or wounds requiring dressing change
- Drainage (source):
- Central line/PICC (Approx. date inserted )
- Hemodialysis catheter
- Urinary catheter (Approx. date inserted )
- Suprapubic catheter
- Percutaneous gastrostomy tube
- Tracheostomy

## Inter-facility Infection Control Transfer Form

**Is the person* currently in Transmission-Based Precautions?** NO YES

Type of Precautions (check all that apply) Contact Droplet Airborne

Other:

Reason for Precautions:

**Is the person* currently on antibiotics?** NO YES (current use)

| Antibiotic, dose, route, freq. | Treatment for: | Start date | Anticipated stop date | Date/time last dose |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

| Vaccine | Date administered (If known) | Lot and Brand (If known) | Year administered (If exact date not known) | Does the person* self-report receiving vaccine? |
|---|---|---|---|---|
| Influenza (seasonal) | | | | Yes No |
| Pneumococcal (PPSV23) | | | | Yes No |
| Pneumococcal (PCV13) | | | | Yes No |
| Other: | | | | Yes No |

*Refers to patient or resident depending on transferring facility

**Name of staff completing form (print):**

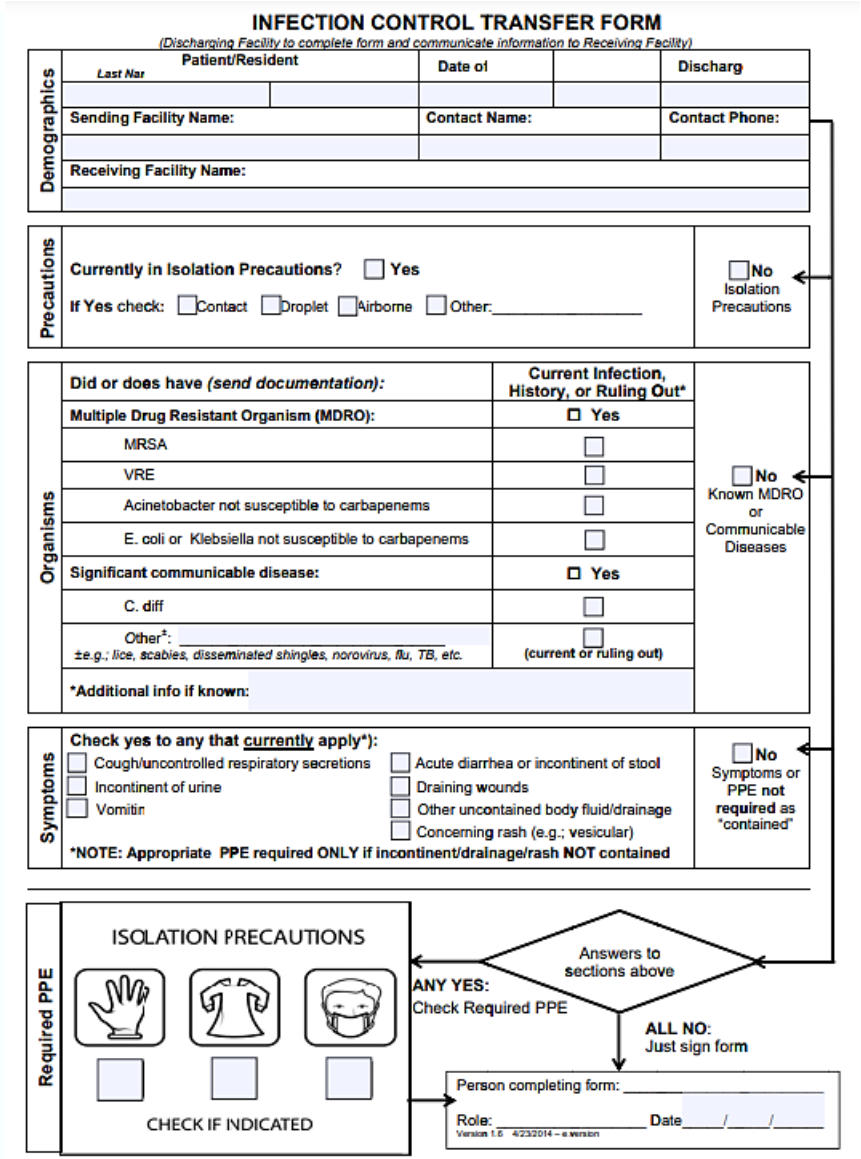
**Signature:** **Date :**

*If information communicated prior to transfer:*

**Name of individual at receiving facility:**

**Phone of individual at receiving facility:**

https://www.cdc.gov/hai/pdfs/toolkits/Interfacility-IC-Transfer-Form-508.pdf



# INFECTION CONTROL TRANSFER FORM

*(Discharging Facility to complete form and communicate information to Receiving Facility)*

**Demographics**

| Patient/Resident (Last Nar | | Date of | | Discharg |
|---|---|---|---|---|
| | | | | |
| **Sending Facility Name:** | | **Contact Name:** | | **Contact Phone:** |
| | | | | |
| **Receiving Facility Name:** | | | | |
| | | | | |

**Precautions**

**Currently in Isolation Precautions?** ☐ **Yes**

**If Yes check:** ☐ Contact ☐ Droplet ☐ Airborne ☐ Other:_____

☐ **No** Isolation Precautions

**Organisms**

| **Did or does have *(send documentation):*** | **Current Infection, History, or Ruling Out*** |
|---|---|
| **Multiple Drug Resistant Organism (MDRO):** | ☐ **Yes** |
| MRSA | ☐ |
| VRE | ☐ |
| Acinetobacter not susceptible to carbapenems | ☐ |
| E. coli or Klebsiella not susceptible to carbapenems | ☐ |
| **Significant communicable disease:** | ☐ **Yes** |
| C. diff | ☐ |
| Other*: _____ *e.g.; lice, scabies, disseminated shingles, norovirus, flu, TB, etc.* | ☐ **(current or ruling out)** |
| ***Additional info if known:** | |

☐ **No** Known MDRO or Communicable Diseases

**Symptoms**

**Check yes to any that currently apply*):**

☐ Cough/uncontrolled respiratory secretions
☐ Incontinent of urine
☐ Vomitin
☐ Acute diarrhea or incontinent of stool
☐ Draining wounds
☐ Other uncontained body fluid/drainage
☐ Concerning rash (e.g.; vesicular)

***NOTE: Appropriate PPE required ONLY if incontinent/drainage/rash NOT contained**

☐ **No** Symptoms or PPE **not required** as "contained"

**Required PPE**

ISOLATION PRECAUTIONS



CHECK IF INDICATED

Answers to sections above

**ANY YES:** Check Required PPE

**ALL NO:** Just sign form

Person completing form: _____

Role: _____ Date____/____/_____

Version 1.0 4/23/2014 – a version

https://www.cdc.gov/infectioncontrol/pdf/toolkits/infectioncontroltransferformexample2_1.pdf

# Preventing the spread of *C. diff* at home

*Take these precautions to prevent getting it or spreading it!*

- *C. diff* is a germ carried in poop and can cause severe diarrhea.
- Most cases of *C. diff* infection occur while you're taking antibiotics or not long after you've finished taking antibiotics.
- Make sure you understand why the antibiotics you have been prescribed are necessary.

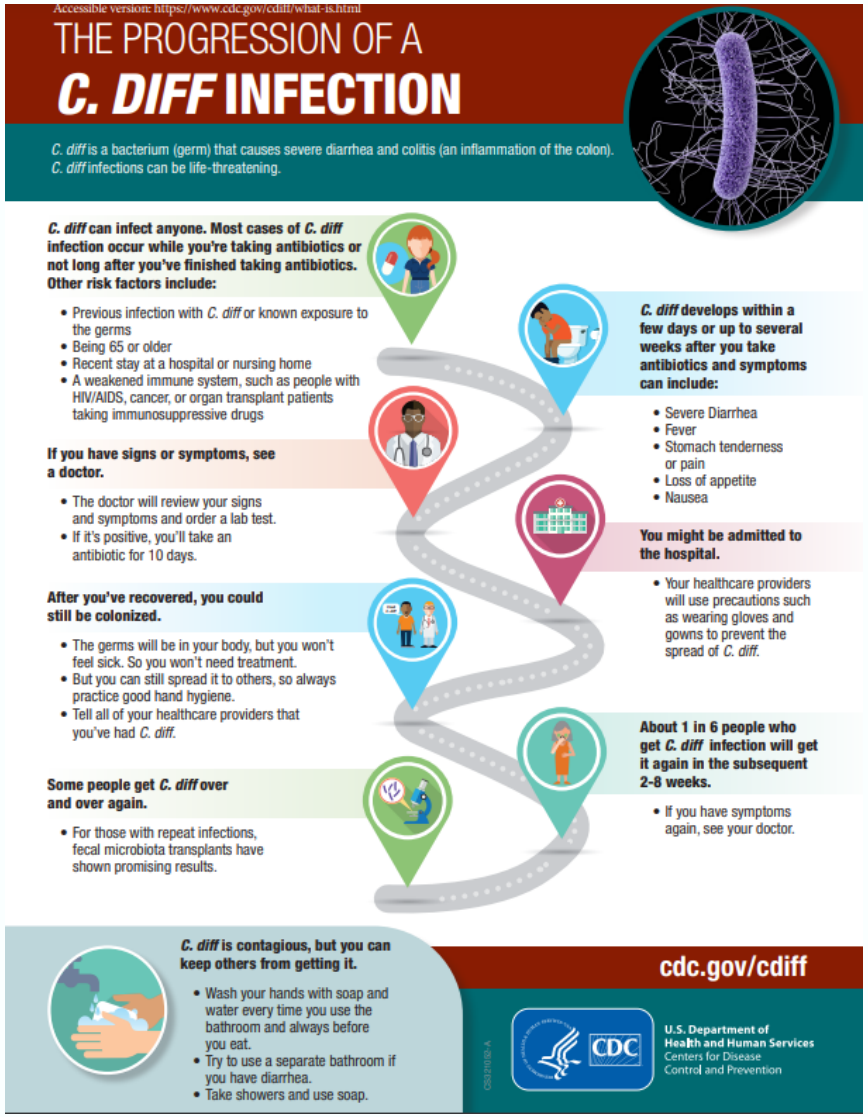
- Try to use a separate bathroom if you have diarrhea.
- If you have to share a bathroom, be sure the area has been cleaned well with bleach products before others use it.
- When cleaning, pay special attention to areas like toilet flushers, lids and seats, sink handles, and doorknobs.


- Washing hands with soap and water for at least 15 seconds is the best way to prevent the spread from person to person.
- Wash hands with soap and water every time you use the bathroom and always before you eat. Remind relatives and friends taking care of you to do the same.

- Take showers, if able, and wash with soap to remove any *C. diff* germs you could be carrying on your body.
- It's better to shower than to sit in a tub or take a sponge bath because showering washes *C. diff* down the drain as you clean.
- Wash your skin in a circular motion and use a fresh washcloth.

- Use bleach products to clean. If you're mixing your own bleach cleaner, follow the instructions on the bottle for use.
- Focus on items that are touched by hands like doorknobs, electronics, refrigerator handles, and any shared items.
- Wash all linens on the hottest setting safe for those items.

www.cdc.gov/cdiff




https://www.cdc.gov/cdiff/pdf/Cdiff-progression-H.pdf

# Barriers For Effective Care Transition

## Systems Barriers

- Suboptimal transition process
- Inadequate information transfer (different Electronic Medical Records)
- Suboptimal medication management

## Clinician Knowledge and Training

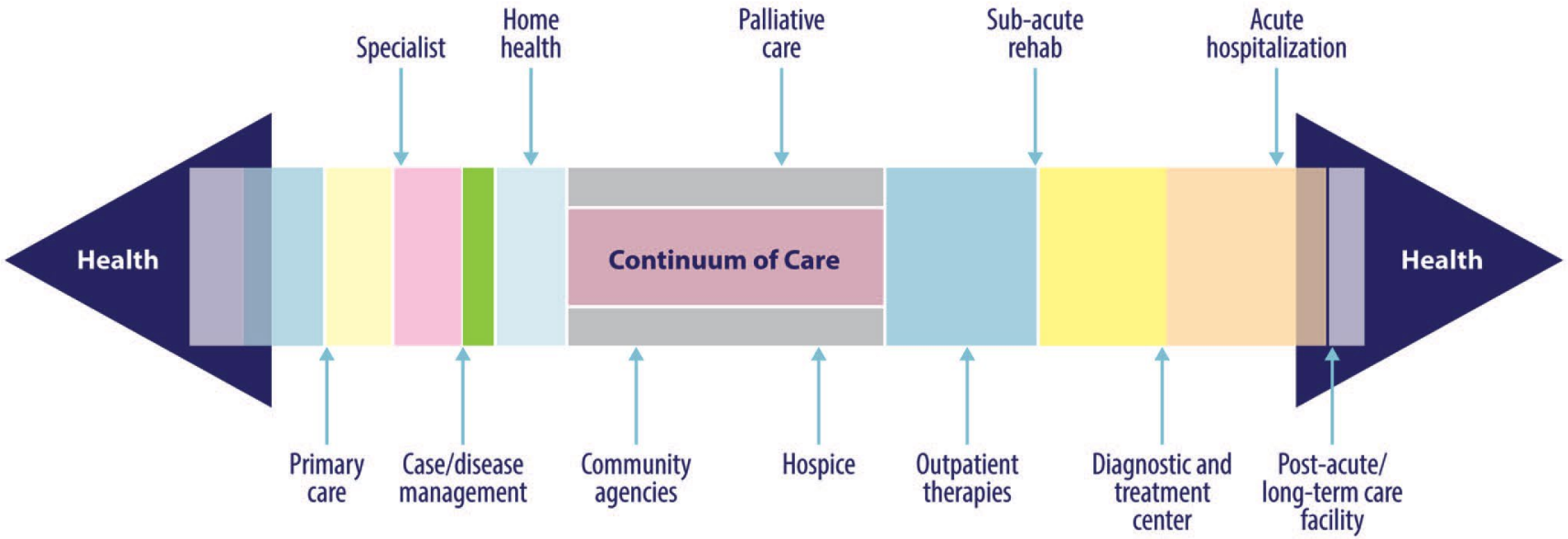
- Communication to prevent the use of broad spectrum antibiotics, proton pump inhibitors
- Not all healthcare providers are aware of the increased risk for recurrence of CDI

## Patient Level Barriers

- Patients might have difficulty understanding discharge instructions
- Communication with healthcare provider in the community or Long term care might not be optimal
- Insurance issues, prior authorization

Khanna S Ther Adv Gastroenterol 2022; 15: 1–14

| Share Accountability Across Providers and Organizations | Patient and Family Engagement/Education | Medication Management | Transition Planning |
|---|---|---|---|
| Ensuring that a healthcare provider is responsible for the care of the patient at all times, with clear and timely communication of the patient's plan of care | Assessment – including social determinants of health – conducted by a social worker or case manager. Develop an educational plan and share with the care team | Collaborative assessment and medication plan completed by a physician, pharmacist, advance practice nurse, physician assistant, nurse, social worker, or case manager | Collaborative team care planning and implementing patient shared decision-making. Use patient assessment, including social determinants of health |




| Healthcare Provider Engagement | Follow-up Care | Information Transfer |
|---|---|---|
| Information sharing between the collaborative care teams: physician, pharmacist, advanced practice nurse, physician assistant, nurse, social worker, case manager, allied health professional, community health workers, community agencies | Ensuring timely access to medications and key healthcare providers, and communicating importance to patients and their family caregiver(s) | Bi-directional communication (provider to provider) at the next level of care. Provide communication to patient and family caregiver(s) |

Khanna S Ther Adv Gastroenterol 2022; 15: 1–14

# Addressing Care Transitions Barriers

**Use of a discharge management protocol** that is integrated in the electronic medical record and shared with other providers

**Provide patient education tools:**

infection control, symptoms recognition, awareness of risk of recurrence with subsequent antibiotics

**Multidisciplinary care transition team** involves infection preventionists and pharmacists

# Conclusion

- CDI remains a significant healthcare and community associated infection
- Fidaxomicin if the preferred agent for treatment of CDI but access may be limited due to cost. Vancomycin remains an acceptable alternative
- FMT and Bezlotoxumab are adjunctive treatment options for patients with recurrent CDI
- Multidisciplinary team approach for the reduction of *C. difficile* over testing and better communication at care transitions will improve patients' outcome

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# Cost Effectiveness of CDI Treatment

- **Initial CDI:** Cost-effectiveness analysis probably favors the use of fidaxomicin over vancomycin in patients with an initial episode of CDI due to its greater effectiveness with respect to sustained clinical response
- **Recurrent CDI:**
  - Cost-effectiveness analysis probably favors the use of extended-pulsed fidaxomicin over vancomycin in patients with recurrent CDI
  - Cost-effectiveness analysis favors the addition of bezlotoxumab to standard antibiotic antibiotics in patients with a recurrent CDI episode within the last 6  months
  - FMT is cost effective in patients with multiple recurrences of CDI

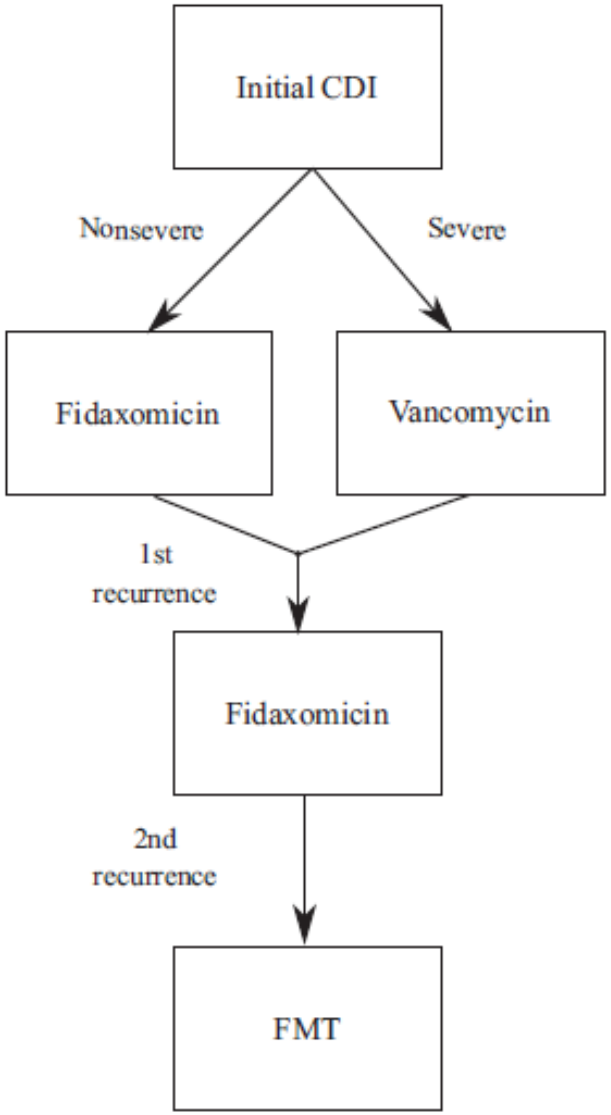
Johnson S, et al. Clinical Infectious Diseases 2021;73: e1029–e1044 https://doi.org/10.1093/cid/ciab549
Le P. Infect Control Hosp Epidemiol 2018;39:412–424

*Clinical Infectious Diseases*

MAJOR ARTICLE

# Cost-effectiveness of Treatment Regimens for *Clostridioides difficile* Infection: An Evaluation of the 2018 Infectious Diseases Society of America Guidelines

Radha Rajasingham,[1,a] Eva A. Enns,[2,a] Alexander Khoruts,[3] and Byron P. Vaughn[3]




Rajasingham R. CID 2020;70(5):754–62

# Medicare Coverage for CDI Drugs

| Variable | No. of Enrollees/Total No. in Plan (%) | | *P* Value |
|---|---|---|---|
| | Vancomycin Coverage | Fidaxomicin Coverage | |
| Enrolled in plan with formulary that includes medication | 42 314 676/42 314 676 (100) | 35 598 385/42 314 676 (84.1) | <.001 |
| If medication is in enrollee's formulary, either prior authorization or step therapy is required | 10 344 270/42 314 676 (24.4) | 2 870 781/35 598 385 (8.1) | <.001 |
| Enrolled in plan with medication in the formulary and unrestricted[a] | 31 970 406/42 314 676 (75.6) | 32 727 604/42 314 676 (77.3) | <.001 |
| Enrolled in plan with medication in the formulary by tier | | | |
| Tier 1 | 783 423/42 314 676 (1.9) | 309 260/35 598 385 (0.9) | <.001 |
| Tier 2 | 5 784 608/42 314 676 (13.7) | 265 664/35 598 385 (0.7) | <.001 |
| Tier 3 | 1 060 197/42 314 676 (2.5) | 87 580/35 598 385 (0.2) | <.001 |
| Tier 4 | 34 564 758/42 314 676 (81.7) | 203 143/35 598 385 (0.6) | <.001 |
| Tier 5 | 121 690/42 314 676 (0.3) | 34 732 738/35 598 385 (97.6) | <.001 |
| Enrolled in plan with medication in formulary, unrestricted,[a] and in tier 1 | 699 678/42 314 676 (1.7) | 258 358/42 314 676 (0.6) | <.001 |
| Enrolled in plan under which medication is broadly accessible[b] | 6 104 348/42 314 676 (14.4) | 483 004/42 314 676 (1.1) | <.001 |

Differences were considered statistically significant at $P < .05$.

[a]Drug was a formulary agent and did not require prior authorization or step therapy.

[b]Drug was a formulary agent, did not require prior authorization or step therapy, and was in tier 1 or 2.

of 440), and vancomycin oral solution and generic oral vancomycin 250-mg capsules were the least restricted and lowest-tier of enrollees, respectively ($P < .001$). The respective drugs were in the formulary, unrestricted, and available as tier 1 agents for

Buehrle D, et al. Clinical Infectious Diseases:2021;ciab898 https://doi.org/10.1093/cid/ciab898

# Interfacility Infection Control Transfer Protocol

Survey of 54 hospitals

- 74% had a protocol in place to communicate information on MDRO and *C. difficile* infection/colonization
- Hospitals with a protocol in place had fewer barriers to communication with other facilities
- Only 36% used a standardized form
- 30% reported not knowing who or what department at the receiving facility would be receiving the information
- Only 13% reported infection preventionist as responsible for communicating this information

Ellington KD. ICHE 2022, 43, 448–453