

# (PBL) Clostridioides difficile (Pseudomembranous Colitis)

CPT Megan Mahowald, MD



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The content of my material/presentation in this CME activity will include discussion of unapproved or investigational uses of products or devices as indicated: In discussing the future treatment of c. diff, I briefly mention the development of a vaccine that is currently in Phase 1 trial. I also touch on two novel antimicrobials. One is in Phase 1 and the other is in preclinical development. It is on slide 53 of the presentation. Summarized below:

The logo for FMX, consisting of the letters 'FMX' in a bold, white, sans-serif font, set against a dark orange background with diagonal white stripes.

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## Learning Objectives

1. Practice applying new knowledge and skills gained from Clostridium Difficile (Pseudomembranous Colitis) sessions, through collaborative learning with peers and expert faculty.
2. Identify strategies that foster optimal management of Clostridium Difficile (Pseudomembranous Colitis) within the context of professional practice.
3. Formulate an action plan to implement practice changes, aimed at improving patient care.

**FMX**

## Associated Sessions

- Clostridioides difficile  
(Pseudomembranous Colitis)

**FMX**

## Case One:

You are called to evaluate 66 year-old female in the ER.  
She is a cheese monger at the local grocery store.

She is complaining of 24 hours of profuse diarrhea,  
subjective fevers, cramping abdominal pain and malaise.

## Case One:

### *History of Present Illness:*

- She was recently discharged from the hospital after a three day admission for community-acquire pneumonia
- She has two days left of levofloxacin left

# Review of Systems

- (+) nausea; diffuse, crampy abdominal pain; fevers; chills; malaise; weakness; watery, 8-10 episodes of non- bloody diarrhea
- (-) vomiting; headache, urinary symptoms; change in diet or new foods; recent travel

## Case One:

### *Past Medical History*

- Hypertension
- Obesity (BMI 35)
- Chronic kidney disease Stage III
- Diabetes Mellitus Type II
- Chronic constipation

### *Past Surgical History*

- None

## Case One:

### *Medications*

- lisinopril
- metformin
- polyethylene glycol 3350

### *Social History*

- Rare alcohol
- No tobacco

## Case One:

- Any other questions for the patient?

## Case One:

During her hospitalization, she was moved into a new room when her roommate started having diarrhea.

## Case One:

### *Exam:*

- 39° c, HR 110, RR 20, BP 110/88, 100% on RA
- Fatigued, ill-appearing, minimally conversant
- Lungs clear to auscultation bilaterally
- Abdomen is diffusely tender to palpation, no peritoneal signs
- Foley in place draining scant, dark urine

## Case One:

The ER administered 2L of lactated ringer, ordered an EKG, and called you for evaluation.

What other testing would you like to order at this time?

## Case One:

- Labs are drawn and pending.

What are her risk factors for *C. diff* colitis?

## *Clostridioides Difficile*: Risk Factors

- **Antibiotics**
- **Age >65**
- **Hospitalization**
- **Chronic or End-Stage Kidney Disease**
- **Obesity**
- Chemotherapy
- Stem cell transplant (9x) and solid organ transplant (5x)
- Inflammatory bowel disease
- Cirrhosis
- HIV
- Tube Feeding

## ANTIBIOTICS

### Very Common

- Clindamycin
- Cephalosporins  
(3<sup>rd</sup> & 4<sup>th</sup> generation)
- Fluroquinolones
- Carbapenems
- Ampicillin
- Amoxicillin

### Common

- Other penicillins
- Sulfonamides
- Trimethoprim
- Trimethoprim-sulfamethoxazole
- Macrolides

### Uncommon

- Aminoglycosides
- Bacitracin
- Metronidazole
- Rifampin
- Chloramphenicol
- Tetracyclines
- Daptomycin

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## Case One: *Labs*

**WBC: 17,000**

Hgb/HCT: 10/30

Plts: 310,000

Na: 137

K: 4.1

Cl: 95

**HCO<sub>3</sub>: 16**

BUN: 40

**Cr: 2.1 (baseline 1.5)**

LFTs: WNL

Coags: WNL

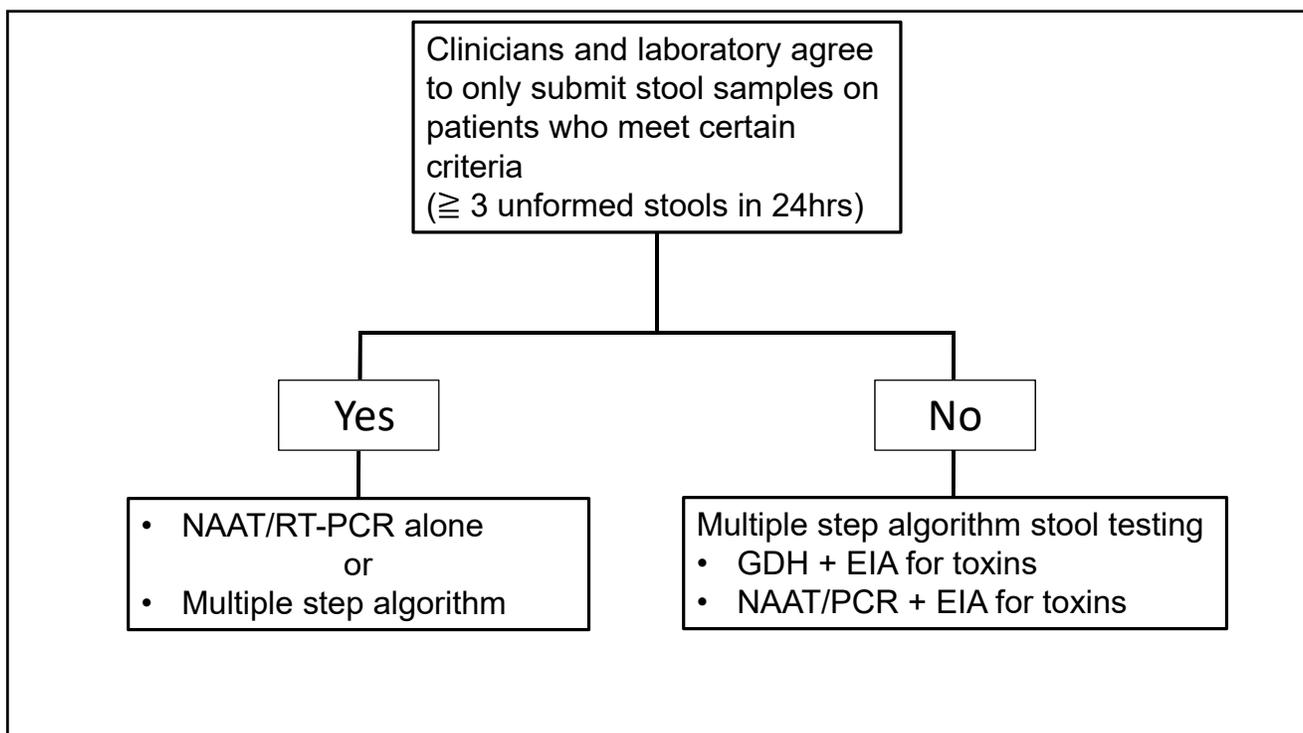
**Lactate: 2.4**

EKG: sinus tach, otherwise normal

CXR: resolving left lower lobe infiltrate

## Case One:

- Should she be tested for *C. diff*?
- If so, what test would you order?



## Case One:

She is admitted to the hospital. **Her *C. diff* testing is positive.**

- What would your initial management include?

Vitals: 39°C	HR 110	RR 20	BP 110/88	100% on RA
WBC 17,000	HCO <sub>3</sub> 16	Cr 2.1	Lactate 2.4	

## Treatment of *C. Diff Colitis*

### 2017 IDSA Guideline Update:

#### Non-Severe

- Leukocytosis
- WBC <15,000  
and
- Serum Cr <1.5 mg/dL

#### Severe

- Leukocytosis
- WBC ≥15,000  
and/or
- Serum Cr ≥ 1.5 mg/dL

#### Fulminant

- Hypotension or shock
- Ileus or megacolon

# Treatment of *C. Diff Colitis*

## 2017 IDSA Guideline Update:

VS: 39° c , HR 110, RR 20, BP 110/88

**WBC 17,000**

HCO<sub>3</sub> 16

**Cr 2.1**

Lactate 2.4

### Severe

- Leukocytosis
- WBC  $\geq$ 15,000  
and/or
- Serum Cr  $\geq$  1.5 mg/dL

# Treatment of *C. Diff Colitis*

## 2017 IDSA Guideline Update:

VS: 39° c , HR 110, RR 20, BP 110/88

**WBC 17,000**

HCO<sub>3</sub> 16

**Cr 2.1**

Lactate 2.4

### Severe

- Vancomycin 125mg  
q6h PO for 10 days
- Fidaxomicin 200mg  
q12h PO for 10 days

## Treatment of *C. Diff Colitis*

- Stop offending antibiotics (if possible) or consider changing antibiotics if they are absolutely still indicated
- Contact precautions until diarrhea has resolved for >48 hours
- Educate patient on her risk of recurrent *c. difficile* infections in the future.
- Consider bezlotoxumab for secondary prevention if patient is at high risk for recurrence

### Case One (continued):

You started oral vancomycin 125mg every 6 hours on admission and appropriately fluid resuscitated her. Her levofloxacin was discontinued. Since she completed 5 days, no further antibiotic treatment was initiated.

The night team informs you that she has had no further stools overnight, but continues to be tachycardic to the 130s and her MAPs are now in the low 60s.

## Case One (continued):

**Vitals:** 39° c, HR 134, BP 90/45 (M 60), RR 22, SpO2 98% on RA

### **Physical:**

Gen: ill-appearing, complains of worsening nausea and abdominal pain

Abd: diffusely tender to light palpation. Involuntary guarding.  
Absent bowel sounds

### **Notable AM Labs:**

WBC: 25 (17) Plts: 490 (310) Cr: 2.4 (2.1)

## Case One (continued):

What do you think is going on?

## 2017 IDSA Guideline Update:

### Non-Severe

- Leukocytosis
- WBC <15,000  
and
- Serum Cr <1.5 mg/dL

### Severe

- Leukocytosis
- WBC  $\geq$ 15,000  
and/or
- Serum Cr  $\geq$  1.5 mg/dL

### Fulminant

- Hypotension or shock
- Ileus or megacolon

## Case One (continued):

Do you want to change her antibiotic regimen?

If so, what would you order?

## Case One (continued):

**VS: 39° c , HR 130, RR 22, M 60**

Clinically worse with absent bowel sounds

**WBC 25,000**

**Plts: 490**

**Cr 2.4**

### **Fulminant**

- Vancomycin  
500mg PO/NG q6h
  - and**
  - Metronidazole  
500mg IV Q8H
- If ileus is present, add:*
- Rectal vancomycin

## Case One (continued):

You order an NG tube and increase her dose of vancomycin to 500mg q6h. You also order IV metronidazole to start immediately.

You transfer her to the ICU given her persistent hypotension.

Are there any other labs, images, or consults you would like to order at this time?

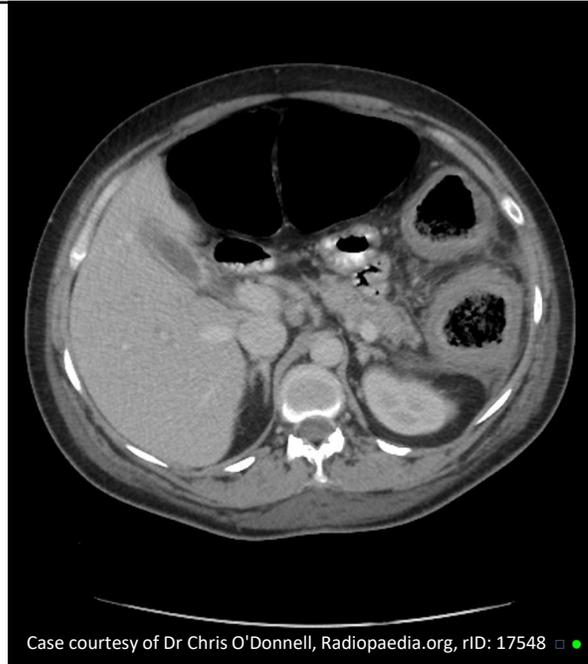
## Case One (continued):

**Lactate:** 4.2

### **CT Abd/Pelvis:**

“Gross edema of the colonic wall with marked proximal colonic distension. Clinically correlate for toxic megacolon. Consider surgical consultation”

You add rectal vancomycin to abx regimen



## Case One (continued):

### **Surgical consult:**

- WBC  $\geq$  25,000
- Rising lactate  $\geq$  5 mmol/L
- Associated organ failure
- Megacolon on imaging
- Perforated bowel

## Case One (continued):

General surgery takes her to the OR several hours later and completes a loop ileostomy with antegrade vancomycin lavage.

She returns to the ICU and continues to improve over the next few days. Once her vasopressors are weaned off and her gut function returns, her oral vancomycin dose is decreased to 125mg NG q6h.

She eventually discharges from the hospital to rehab. After a full recovery, her loop ileostomy is reversed and she returns to her job as a cheese monger.

## Case One (returns):

Now 67 years-old and with the same medical conditions, your patient comes to see you for an acute visit in clinic.

She had a routine hip replacement last week, and recently started to have frequent, watery diarrhea with increasing abdominal cramping.

She received 1 dose of pre-operative cefazolin, but no other antibiotics.

## Case One (returns):

Her vital signs are within normal limits. She is non-toxic appearing and states she has been able to tolerate PO without nausea or vomiting.

Her labs are only notable for a mildly elevated WBC 12,000. Her Cr is 1.5 (baseline).

**Her *c. diff* testing is positive.**

How would you like to treat her?

## Case One (returns):

Since **vancomycin** was used for her initial episode, you talk to the patient about fidaxomicin 200mg twice a day for 10 days or a prolonged taper and pulse vancomycin regimen.

She remembers significant nausea with the vancomycin and opts to try fidaxomicin instead.

She goes home with antibiotics and strict return precautions.

## Case One (strikes back):

Now 68 years-old and (still) with the same medical conditions, your patient comes to see you for an routine visit in clinic.

She had a **third** episode of *c. diff* colitis after a course of antibiotics for cellulitis. She was hospitalized for several days. She is currently on a vancomycin taper.

## Case One (strikes back):

She is very tired of having recurrent episodes of *c. diff* colitis, and is finding it increasingly difficult to recover from each one. She has lost 15 lbs over the last 2 years because of these infections.

She wants to know if there are any other treatment options?

## Case One (strikes back):

### Fecal Microbiota Transplant (FMT)

- Recommended after the second or subsequent recurrence of *c. diff*

You refer her to the local gastroenterologist for evaluation. She undergoes FMT with freeze-dried fecal microbiota capsules.

## Case One (new hope):

She does not have any side effects after the fecal microbiota transplant and has no further recurrences of *c. diff*. She is able to regain the weight she lost, and is happily on a cheese seeking adventure in France.

## Contact Information

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