Community Medical Center | RWJBarnabas HEALTH

Adult Inpatient Antibiogram
Antimicrobial Dosing Reference Guide

Antimicrobial Susceptibilities of Frequently Recovered Clinical Isolates
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Intravenous Antimicrobials Dosing Recommendations
Automatic renal dose adjustment per P&T

Antibiotic	CrCL > 50 mL/min	CrCL 30-50 mL/min	CrCL 10-30 mL/min	CrCL < 10 mL/min	HD	CVVH
Amp/Sulb	1.5-3 g q6h	1.5-3 g q8h	1.5-3 g q12h	1.5-3 g q24h		3g q8-12h
Aztreonam**	1-2 g q8h		1-2 q12h	1-2g q24h		1-2 g q12h
Cefazolin	1-2g q 8h	1-2g q 8h	1-2 g q 12h	1-2 g q 24h	2g, 2g, 3 g^ post HD	
Cefepime**	1-2 g q8h-q12h	1-2 g q12h	0.5- 1g q24h		1 g q24h	1-2 g q12h
Ciprofloxacin	400 mg q12h Consider 400 mg q8h for Pseudomonas		400 mg q24h			400 mg q12-24h
Ertapenem**	1 g q24h		500 mg q24h			500-1000 mg q24h
Levofloxacin	500-750 mg q24h	750 mg x1, then 500-750 mg q48h (CrCL 20-49) OR 250-500 mg q24h		750mg x1, 500mg q48h (CrCl <19, HD)		500-750 mg q48h OR 250 mg q24h
Meropenem **	1-2 g q8h	1-2g q12h	500mg -1g q12h	500mg -1g q24h		1g q12h
Pip/tazo	3.375 q6 OR 4.5g q8 [4.5 g q6h for select patients*]	2.25g q6h	2.25 g q6h	2.25 g q8h		2.25g-3.375-4.5 g q6h

^ 3g cefazolin post HD if next dialysis is expected in 72 hrs
***4.5gr Q6 should be reserved for patients with known risk factors for infection with Pseudomonas, or history of healthcare associated infections or neutropenic fever or complicated intraabdominal infections, or broad spectrum empiric management of septic shock or any uncategorized severe infection**
**** Auto-renal dose adjustment policy is not valid for ID restricted antimicrobials**
Prepared by: Gargi Patel, Pharm D (12047), ASP Committee Co-Chair, March 2018

Duration of Therapy: Shorter=Better

Diagnosis	Short (days)	Long (days)	Result (Outcomes)
CAP	5	7-10	Equal
HAP/VAP	7	10-14	Equal
Uncomplicated UTI	3-5	7	Equal
Complicated UTI	5-7	7-10	Equal
Pyelonephritis	7	10-14	Equal
Cellulitis	5-7	10	Equal

CMC UTI Treatment Guidelines-2018

Patient Category	Empiric Treatment[1]	Stepdown/ De-escalation
Asymptomatic Bacteriuria	Do NOT treat except in pregnancy or prior to urological procedures in which mucosal bleeding is anticipated	
Uncomplicated Lower UTI **(Female, pre-menopausal, non-pregnant, no urologic abnormalities, no foley catheter)**	• TMP/SMX 1DS PO q12 x 3 days • Nitrofurantoin monohyd/macrocrystals 100mg PO q12h x 5 days. **NOT** to be used in patients with CrCl <30 mL/min If sulfa allergy • Cefuroxime 250 mg PO q12h x 5 days [1]	
Complicated Lower UTI **(Male, urinary catheter present or removal within last 48hrs, GU instrumentation, anatomic abnormality or obstruction, immunosuppression)**	• Ceftriaxone 1g IV q24h Severe PCN allergy • Aztreonam 1g IV q8h[1] Duration: 7 days	• Oral step-down upon signs of clinical improvement and if organism is susceptible o Nitrofurantoin monohyd/macro 100mg PO q12h o TMP/SMX 1DS PO q12h[2] o Cefpodoxime 100 mg PO q12h[1] o Cefuroxime 250 mg PO q12h days[1] o Ciprofloxacin 500mg PO q12h[2]
Pyelonephritis	• Ceftriaxone 1g IV q24h Risk factors for MDR organism[3] • Cefepime 1g IV q8h[1] • Piperacillin/tazobactam 3.375 IV q6h[1] • Meropenem 1 g iv q 8 h(history of ESBL)[1] Severe PCN allergy • Aztreonam 1g IV q8h[1] With or Without Vancomycin IV Duration: 7 days[4]	• Oral step-down when stable and if organism is susceptible o TMP/SMX 1DS PO q12h o Cefpodoxime 100 mg PO q12h[1] o Cefuroxime 250 mg PO q12h[1] • Duration of empiric IV therapy should be counted towards total duration

[1]Dosing recommendations are based on patients with normal renal function. For patients with renal dysfunction, antibiotic dosages may need to be adjusted

[2]Better prostate penetration if concern for prostatitis

[3]Risk factors for MDR organisms may include recent use of IV broad spectrum antibiotics, recent hospitalization, prior history of MD R organism

[4]Duration depends on clinical severity and response to treatment. In some cases, 10-14 days may be required

***This is meant to serve as a guideline, not a substitute for clinical judgment**

CAP Guidelines

Preferred IV Regimen:

- Ceftriaxone 1g IV Q24

+

- Azithromycin 500mg IV/PO (day 1) then 250mg IV/PO (days 2-5)

Preferred Oral regimen:

- Amoxicillin 500mg PO TID or 875mg PO BID (1g PO TID if concern for resistant *S. pneumo**)

+

- Azithromycin 500mg PO (day 1) then 250mg PO (days 2-5)

If severe beta-lactam allergy:

- Levofloxacin 500-750 mg IV/PO daily

Duration: 5 days

HAP/VAP Guidelines

Early (stay <5d) or **Non-Severe** Pneumonia

- **Ceftriaxone 2g IV Q24 (***or if allergic:* **Levofloxacin 750mg IV/PO Q24)**
  + / - *If any MRSA history:* **Vancomycin 15 mg/kg IV Q12**
  +/- *If ED admit w/ healthcare exposure:* **Azithromycin 500mg IV Q24**
- **Duration: 5 days**

Severe PNA or **High-Risk** Patient*

- **Cefepime 2g IV Q12†** **+** **Vancomycin 15 mg/kg IV Q12**
  +/- Azithromycin 500mg IV Q24 (*If ED admit w/ healthcare exposure***)**
- **Duration: 5-7 days**

**poor functional status and recent LTACH / SNF / hospital stay*
*Elderly, on antibiotics in past 3-6 months, immuno- suppressed, comorbidities, around a child in daycare
† Change to Q8 if high risk for *Pseudomonas*, and substitute Meropenem 1-2 g iv q 8 if history of ESBL.

Exceptions to Pneumonia Guidelines

- Alternative pathogen-specific recs (e.g. MRSA / *S. aureus*, *Legionella*, *Pseudomonas,* other uncommons)
- Extra-pulmonary infections, necrotizing pneumonias,
- Empyemas, or lung abscesses
- Specific guidance for witnessed aspiration events

Notes:

- Total course = inpatient + outpatient treatment
- Narrow antibiotics based on cultures if and when possible
- Consider ID consult for critically ill or immuno- compromised patients, MRSA, or if no improvement
- Adjust dosing appropriately for pts with reduced CrCl

References:
IDSA/ATS Guidelines for CAP (*Clin Infect Dis*, 2007) and HAP/VAP (*Clin Infect Dis,* 2016); CMC-RWJBH Antimicrobial Stewardship Program- Internal guidelines

COMMUNITY MEDICAL CENTER ANTIBIOTIC SUSCEPTIBILITY REPORT 2018

Except for Isolate Total all numbers represent the % of isolates sensitive to an antibiotic	Isolate Total	A mikacin ***	Ampicillin	Ampicillin/ Sulbactam	Aztreonam*	Cefazolin	Cefepime*	Ceftazidime *	Ceftriaxone	Ertapenem*	Gentamicin	Levofloxacin	Meropenem *	Nitrofurantoin	Piperacillin/ Tazobactam	Trimethoprim/ Sulfamethoxazole (IV*/PO)	Tobramycin	%ESBL-R	%CRE
Acinetobacter baumann/calcoaceticus/lwoffi	24	67%(2/3)	0%	88%	0%	0%	43%	59%	29%		82%	71%	82%	0%	63%	76%	82%		
Citrobacte freundii	52				85%	0%	100%	85%	**85%**	100%	98%	**96%**	100%	94%	87%	**98%**	100%		
Citrobacter koseri/braakii	29				100%	100%	100%	100%	100%	100%	100%	100%	100%	90%	100%	100%	100%		
Enterobacter aerogenes	27				85%	0%	100%	81%	**81%**	100%	100%	100%	100%	11%	**81%**	100%	100%		
Enterobacter cloacae	129				76%	0%	93%	76%	76%	91%	95%	95%	97%	47%	79%	85%	93%		
Escherichia coli	2026	100% (7/7)	49%	57%	93%	85%	98%	94%	88%	100%	91%	69%	100%	96%	96%	74%	91%	11%	
Escherichia coli ESBL	217		0%	29%	41%	0%	84%	54%	0%	99%	66%	12%	100%	91%	90%	38%	60%		
Escherichia coli Not ESBL	1809		55%	61%	99%	96%	100%	99%	99%	100%	94%	75%	100%	96%	97%	79%	95%		
Klebsiella oxytoca	69		0%	43%	88%	67%	99%	94%	87%	99%	97%	99%	100%	71%	90%	97%	97%		
Klebsiella pneumoniae	412		0%	84%	96%	95%	99%	97%	96%	99%	98%	95%	99%	30%	96%	91%	97%		1%
Klebsiella pneumoniae ESBL	15		0%	0%	14%	0%	79%	21%	0%	100%	50%	29%	100%	7%	64%	14%	43%	4%	
Klebsiella pneumoniae Not ESBL	398		0%	87%	99%	99%	100%	99%	99%	99%	100%	97%	99%	30%	97%	94%	99%		
Morganella morganii	49		2%	12%	93%	2%	95%	74%	**72%**	100%	86%	**70%**	100%	0%	93%	65%	91%		
Proteus mirabilis	329		78%	88%	98%	91%	98%	99%	94%	100%	92%	61%	100%	0%	100%	80%	94%		
Providentia stuartii/rettgeri	24		0%	23%	100%	0%	100%	92%	92%	100%	0%	8%	100%	0%	100%	77%	0%		
Pseudomonas aeruginosa	354	92% (11/12)	0%	1%		0%	95%	94%	0%		96%	**82%**	97%	0%	97%	0%	99%		
Salmonella group	17		75%	75%	100%	0%	100%	100%	100%	100%	0%	100%	100%	63%	100%	100%	0%		
Serratia marcescens	91				96%	0%	99%	96%	95%	99%	99%	**91%**	100%	0%		99%	99%		
Stenotrophomonas maltophilia	30												83%				83%		

Except for Isolate Total all numbers represent the % of isolates sensitive to an antibiotic	Isolate Total	Ampicillin	Cefotaxime **	Ceftriaxone **	Clindamycin	Daptomycin	Doxycycline	Gentamicin	Levofloxacin	Linezolid *	Moxifloxacin	Nitrofurantoin	Oxacillin	Trimethoprim/ Sulfamethoxazole (IV*/PO)	Vancomycin (IV)	MRSA	VRE		
Enterococcus faecalis	477	98%				100%	18%		68%	**91%**		99%			97%				
Enterococcus faecalis (VRE)	14	93%					100%			7%	14%	7%		93%	0%				
Enterococcus faecalis (not VRE)	466	98%					100%			6%	68%	19%		99%	100%		3%		
Enterococcus faecium	91	23%					38%		13%	97%		18%			**50%**				
Enterococcus faecium (VRE)	45	4%								0%	0%	38%		9%	0%		50%		
Enterococcus faecium (not VRE)	46	41%								7%	26%	41%		26%	100%				
Staphylococcus aureus	750				**71%**	100%	96%	96%	**57%**	100%	**73%**	100%	57%	93%	100%				
Staph aureus (MRSA)	322				63%	100%	94%	94%	25%	100%	52%	100%	0%	87%	100%	43%			
Staphylococcus aureus (not MRSA)	428				77%	100%	97%	98%	80%	100%	89%	100%	100%	97%	100%				
Staphylococcus epidermidis	175				58%	100%	**85%**	**92%**	46%	100%	68%	100%	34%	**64%**	99%				
Staphylococcus haemolyticus	21				62%	100%	**95%**	**57%**	**38%**	100%	52%	100%	33%	**57%**	100%				
Staphylococcus saprophyticus	15				60%	100%	100%	100%	93%	100%	100%	100%	47%	100%	100%				
Staphylococcus simulans	21				24%	100%	95%	100%	48%	100%	52%	100%	57%	100%	100%				
Streptococcus agalactiae	20	100%	100%	100%	33%				**95%**	100%	**95%**				100%				
Streptococcus anginosus	19	100%	100%	100%	84%				100%	100%	100%				100%				
Streptococcus intermedius	13	100%	100%	100%	77%				100%	100%	100%				100%				
Streptococcus mitis/oralis	16	86%	86%	86%	100%				71%	100%	86%				100%				
Streptococcus pneumoniae	11		100%	**100%**	**91%**				100%	100%	100%			**100%**	100%				
Streptococcus pyogenes	10	100%	100%	100%	80%			80%		90%	100%	100%			100%	100%			

*** Drug restricted to Infectious Diseases**

****: Streptococcus pneumoniae sensitivity to Cefotaxime and Ceftriaxone (oral and meningitis) 82%**

~ 5- 10% increase in susceptibility from 2017

~ 5-10% decrease in susceptibility from 2017

Users of the Antibiogram should keep in mind that isolate categories having less than a 30 isolate count in number are more prone to statistical bias, which increases as the category isolate number count nears one.

These statistics should be used as empirical guidelines only until specific antimicrobial susceptibility testing results are available

If additional or more specific information is required, contact the microbiology lab at 732-923-7283

COMMUNITY MEDICAL CENTER ED ANTIBIOTIC SUSCEPTIBILITY REPORT 2018

Except for Isolate Total all numbers represent the % of isolates sensitive to an antibiotic	Isolate Total	Ampicillin	Ampicillin/Sulbactam	Piperacillin/Tazobactam	Cefazolin	Ceftazidime *	Ceftriaxone	Cefepime*	Aztreonam*	Ertapenem *	Meropenem *	Gentamicin	Tobramycin	Levofloxacin	Nitrofurantoin	Trimethoprim/ Sulfamethoxazole	%ESBL-R	
Escherichia coli	57	39%	44%	95%	84%	95%	89%	96%	95%	100%	100%	91%	93%	79%	96%	67%		
Escherichia coli ESBL	3	0%	33%	100%	0%	33%	0%	67%	33%	100%	100%	33%	33%	0%	67%	0%	5%	
Escherichia coli Not ESBL	54	41%	44%	94%	89%	98%	94%	98%	98%	100%	100%	94%	96%	83%	98%	70%		

Except for Isolate Total all numbers represent the % of isolates sensitive to an antibiotic	Isolate Total	Oxacillin	Gentamicin	Levofloxacin	Moxifloxacin	Clindamycin	Linezolid *	Daptomycin*	Vancomycin	Doxycycline	Tetracycline	Nitrofurantoin	Trimethoprim/ Sulfamethoxazole	MRSA				
Staphylococcus aureus	19	63%	100%	58%	100%	89%	100%	100%	100%	100%	95%	100%	100%					
Staphylococcus aureus MRSA	7	0%	100%	71%	100%	100%	100%	100%	100%	100%	100%	100%	100%	37%				
Staphylococcus aureus Not MRSA	12	100%	100%	50%	100%	83%	100%	100%	100%	100%	92%	100%	100%					

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COMMUNITY MEDICAL CENTER ICU ANTIBIOTIC SUSCEPTIBILITY REPORT 2018

Except for Isolate Total all numbers represent the % of isolates sensitive to an antibiotic	Isolate Total	Ampicillin	Ampicillin/Sulbactam	Piperacillin/ Tazobactam	Cefazolin	Ceftazidime *	Ceftriaxone	Cefepime*	Aztreonam*	Ertapenem *	Meropenem *	Gentamicin	Tobramycin	Levofloxacin	Nitrofurantoin	Trimethoprim/ Sulfamethoxazole	%ESBL-R	
Escherichia coli	131	37%	44%	93%	79%	89%	82%	97%	88%	99%	99%	82%	81%	57%	96%	69%		
Escherichia coli ESBL	8	0%	25%	75%	0%	63%	0%	63%	38%	100%	100%	63%	63%	25%	100%	38%	6%	
Escherichia coli Not ESBL	69	45%	51%	95%	88%	97%	97%	100%	97%	100%	100%	93%	94%	70%	96%	81%		
Klebsiella pneumoniae	41	0%	88%	93%	95%	95%	95%	100%	95%	98%	98%	98%	98%	98%	24%	88%		
Proteus mirabilis	35	74%	94%	100%	94%	100%	97%	100%	100%	100%	100%	100%	100%	63%	0%	89%		
Pseudomonas aeruginosa	20	0%	0%	93%	0%	89%	0%	93%			100%	96%	100%	82%	0%	0%		
Seratia marcescens	12				0%	100%	100%	100%	100%	100%	100%	100%	100%	83%	0%	100%		

Except for Isolate Total all numbers represent the % of isolates sensitive to an antibiotic	Isolate Total	Ampicillin	Oxacillin	Gentamicin	Levofloxacin	Moxifloxacin	Erythromycin	Clindamycin	Linezolid *	Daptomycin*	Vancomycin	Doxycycline	Tetracycline	Nitrofurantoin	Trimethoprim/ Sulfamethoxazole	MRSA	VRE	
Enterococcus faecalis	47	100%			57%		6%		89%	100%	98%	9%	9%	98%				
Enterococcus faecium	9	22%			11%		0%		89%		67%	22%	22%	22%				
Enterococcus faecium VRE	3	0%			0%		0%		67%		0%	100%	100%	0%			33%	
Enterococcus faecium Not VRE	6	0%			0%		0%		100%		100%	0%	0%	0%				
Staphylococcus aureus	90		59%	98%	42%	56%	22%	59%	100%	100%	100%	96%	91%	100%	90%			
Staphylococcus aureus MRSA	37		0%	100%	7%	40%	7%	73%	100%	100%	100%	87%	80%	100%	73%	41%		
Staphylococcus aureus Not MRSA	53		100%	100%	59%	64%	45%	59%	100%	100%	100%	100%	100%	100%	100%			
Staphylococcus epidermidis	17		29%	100%	35%	59%	18%	35%	100%	100%	94%	76%	71%	100%	59%			

Except for Isolate Total all numbers represent the % of isolates sensitive to an antibiotic	Isolate Total	Cefotaxime (Meningitis)	Cefotaxime (Other)	Ceftriaxone (Meningitis)	Ceftriaxone (Other)	Levofloxacin	Moxifloxacin	Clindamycin	Linezolid*	Vancomycin	Tetracycline	Trimethoprim/ Sulfamethoxazole						
Streptococcus pneumoniae	6	83%	100%	83%	100%	100%	100%	83%	100%	100%	67%	83%						

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Drug	IV Dose	Oral/Tube Dose
Azithromycin	Same Dose	Same Dose
Ciprofloxacin^	200 mg 400 mg	250 mg 500 mg
Clindamycin	300 mg 600 mg	300 mg 450 mg
Doxycycline	Same dose	Same dose
Fluconazole	Same dose	Same dose
Levofloxacin^	Same dose	Same dose
Linezolid	Same dose	Same dose
Metronidazole	Same dose	Same dose
Moxifloxacin^	Same dose	Same dose
TMP/SMX (Bactrim)	Sulfamethoxazole/Trimethoprim 1600 mg/320 mg IV q 12 h	Sulfamethoxazole/Trimethoprim DS 2 tabs PO q 12 h
Rifampin	Same dose	Same dose
Voriconazole	Same dose	Same dose

^oral/tube administration of fluoroquinolones requires temporal separation from administration of oral magnesium calcium and aluminium containing antacids, sucralfate, calcium supplements and iron products. Separate from these products and tube feeds by atleast 2 hours.

1. https://www.shea-online.org/images/priority-topics/Intermountain-IV-PO-Quick-Guide.pdf 2. Considerations for PO to IV dose conversions. Pharmacist's Letter/Prescriber's Letter 2010;26(9):260912

FORMULARY ANTIMICROBIAL AGENTS <u>REQUIRING</u> APPROVAL FROM ID in 24 hours (Tier 1 Antibiotics)

- Acyclovir IV
- Ceftazidime
- Amphotericin B
- Daptomycin
- Amikacin
- Ertapenem*
- Aztreonam
- Fluconazole IV/PO
- Caspofungin
- Fidaxomicin**
- Ceftaroline
- Fosfomycin PO
- Ciprofloxacin IV
- Linezolid IV/PO
- Ceftazidime-avibactam
- Meropenem
- Cefepime
- Sulfamethoxazole/Trimethoprim IV
- Ceftalozone-tazobactam
- Tigecycline
- Voriconazole IV/PO

***Approved upto 72 hrs for Surgery**
****Approval by GI or ID is required**

ID consult should be ordered when restricted agent is prescribed

Guidelines for Calculation of Creatinine Clearance for Vancomycin and Aminoglycosides

- Cockcroft-Gault Equation- Use IBW unless:
  - Patient is obese (BMI $\geq$ 30) or Actual Body Weight (ABW) is 20% greater than IBW
    - **Use Adjusted Body Weight (AdjBW)**
  - If ABW < IBW
    - **Use ABW**
- Calculations:
  - IBW:
    - Males = 50 kg + 2.3 kg for each inch over 5 feet.
    - Females = 45.5 kg + 2.3 kg for each inch over 5 feet
  - AdjBW = IBW + 0.4(ABW - IBW)

Vancomycin Dosing Algorithm

		35 – 49 kg	50 – 59.9 kg	60 – 74.9 kg	75 – 99.9 kg	100 – 110 kg	111-129 kg	≥ 130 kg
CrCl - Renal Function	CrCl ≥50 mL/min	500 mg every 12 hours	750 mg every 12 hours	1000 mg every 12 hours	1250 mg every 12 hours	1500 mg every 12 hours	1750 mg every 12 hours	2000 mg every 12 hours
	CrCl 49 –20 mL/min	500 mg every 24 hours	750 mg every 24 hours	1000 mg every 24 hours	1250mg every 24 hours	1500 mg every 24 hours	1750 mg every 24 hours	2000 mg every 24 hours
	CrCl < 20 mL/min*	500 mg Once*	750 mg Once*	1000 mg Once*	1250 mg Once*	1500 mg Once*	1750 mg Once*	2000 mg once

Vancomycin Algorithm Dosing Recommendations: **(Max dose is 2000 mg per dose)**

**For patients with CrCl <20mL/minute make recommendation to MD for dose per level and recommend Infectious Disease consultation for management.*

If on IHD , Administer **15-20 mg/kg (loading dose), then **5-10 mg/kg (approximately 500-1000 mg) post-HD only** (assuming IHD 3 times/week

*** **Some patients may require a loading dose:** Loading doses of **25 mg/kg x 1 dose** (Maximum of 2000 mg): Meningitis, septic shock, bacteremia and endocarditis

Effective July 1st 2019: **DosemeRx** (AUC based dosing and monitoring of Vancomycin) per Pharmacy will be utilized to provide recommendations if patients meet the following exclusion criteria:

- One-time doses
- Surgical prophylaxis
- Pediatric patients (age<18 years)
- Peritoneal Dialysis
- Continuous renal replacement therapy (CRRT)
- Intermittent hemodialysis
- Acutely fluctuating serum creatinine (SCR) (defined as change in SCr of ≥0.3 mg/dL or ≥50%)
- Age > 100
- Height < 150 cm or > 220 cm
- Weight < 40kg or > 200 kg
- Indication
    - Urinary Tract infection (UTI)
    - Skin/Soft Tissue Infection (SSTI)
- Initial Dosing
- Obese patients (TBW>=120% IBW)
- ID consults followed patients

Any patient who is not enrolled in DosemeRx -AUC based dosing and monitoring will still be evaluated by pharmacy for appropriate initial dosing and initial trough ordering as per "Vancomycin Initial Dosing and Trough Ordering" policy per P&T.

Treatment for initial CDI episode:

Metronidazole is no longer recommended for initial mild, moderate or severe C.difficile infection

STOP ALL ANTIBIOTICS WHEN POSSIBLE

Severity of Illness	Clinical Manifestation	Treatment
Asymptomatic/colonization (DO NOT TEST)	Positive C.difficile test without diarrhea, ileus or colitis	No treatment necessary
Initial episode, non-severe	Positive C.difficile test with • WBC < 15,0000cells/mL AND • serum creatinine < 1.5 mg/dL	Vancomycin 125mg PO/NGT QID x 10 days
Initial episode, severe	Positive C.difficile test with diarrhea and one of the following: • WBC ≥ 15,000 cells/mL OR • serum creatinine > 1.5 mg/dL	Vancomycin 125mg PO/NGT QID x 10 days OR Fidaxomicin 200mg PO/NGT BID x 10 days Consider GI consult for Fecal Microbiota Transplantation (FMT) in patients without improvement within 5 days
Initial episode, fulminant	Positive C.difficile test with diarrhea and: • hypotension or shock, or • ileus, or • megacolon	Vancomycin 500mg PO/NGT QID. AND Metronidazole 500mg IV every 8 hours If ileus is present, consider Vancomycin retention enema (500mg in 100mL Normal Saline every 6 hours)

! All randomized control trials have compared a 10 day treatment course. But some patients who received metronidazole for initial management showed delayed response which might require prolonging the treatment to 14 days.

* **There is no evidence for increased doses with oral vancomycin for CDI**. Higher doses may be considered in the setting of severe complicated CDI and require ID approval.

** Appropriate coverage of fidaxomicin through patient's insurance should be verified in 48 hours of starting fidaxomicin for continuation of treatment on discharge. There are two types of patient assistant program for eligible patients (Merck and RWJBH Walgreen's Outpatient Pharmacy association with independent foundations).

Avoid use of anti-motility agents in patients with CDI.

Avoid use of binding agents (e.g. cholestyramine) as they can bind oral vancomycin.

Routine prophylactic use of metronidazole or oral vancomycin is not recommended. There may be specific situations where this is warranted and this should be discussed with ID.

Recurrent CDI

NO resistance has ever been reported with Vancomycin

Recurrence occurs in approximately 25% of patients and can be due to failure to eradicate spores or acquisition of a new strain. The risk for recurrence increases with every bout of CDI.

Episode	Treatment
First recurrence	Vancomycin 125mg PO/NGT QID x 10 days if metronidazole was used for the initial episode, OR Tapered and pulsed PO/NGT Vancomycin regimen (if a standard regimen of vancomycin was used for the initial episode): 125mg QID x 10 -14 days, then, 125 mg BID X 7 days, then 125 mg Daily x 7 days, and then 125 mg every 2 or 3 days for 2 – 8 weeks. OR Fidaxomicin 200mg PO every 12 hours x 10 days (if Vancomycin PO was used for the initial episode)
Second recurrence OR subsequent recurrence	Tapered PO/NGT Vancomycin: 125mg QID x 10-14 days, then, 125 mg BID X 7 days, then 125 mg Daily x 7 days, and then 125 mg every 2 or 3 days for 2 – 8 weeks. OR Vancomycin 125 mg PO/NGT QID x 10 days, followed by Rifaximin PO/NGT 400mg TID x 20 days OR Fidaxomicin 200mg PO/NGT BID x 10 days OR Fecal Microbiota Transplantation (FMT)

Avoiding use of anti-motility agents in patients with CDI
Avoiding use of binding agents (e.g. cholestyramine) as they can bind oral vancomycin
Routine prophylactic use of metronidazole or oral vancomycin is not recommended

Treatment For Influenza

MEDICATION	Treatment (5 days)	Chemoprophylaxis (within 48 hours after last known exposure)
Oseltamivir (Tamiflu®)		
ADULTS		
Creatinine Clearance > 60	75 mg twice a day for 5 days	**75 mg once daily for 7 days**
Creatinine Clearance >30 – 60	30 mg twice a day for 5 days	**30 mg once daily for 7 days**
Creatinine Clearance 10 – 30	30 mg once a day for 5 days	**30 mg every other day for 7 days**
Creatinine Clearance <10*, NOT on hemodialysis	30 mg every other day for 5 days	**Insufficient data for dosing recommendation***
Hemodialysis (2)	30mg x1, then 30 mg after every hemodialysis cycle for 5 days	**30mg x1, then 30 mg after alternate hemodialysis cycles for 7 days**
Peritoneal Dialysis (3)	30 mg x1 (1 dose total)	**30 mg x1 (1 dose total)** **If needs > 7 days, then 30 mg once weekly immediately after dialysis exchange for the recommended duration of prophylaxis**
CVVH (4)	75 mg twice daily for 5 days	**75mg once daily for 7 days**
CHILDREN† ≥ 12 months		
≤ 15 kg	30 mg twice a day for 5 days	**30 mg once daily for 10 days**
16-23 kg	45 mg twice a day for 5 days	**45 mg once daily for 10 days**
24-40 kg	60 mg twice a day for 5 days	**60 mg once daily for 10 days**
> 40 kg	75 mg twice a day for 5 days	**75 mg once daily for 10 days**
INFANTS < 12 months		
9-11 months	3.5 mg/kg/dose twice a day for 5 days	**3.5 mg/kg/dose once a day for 10 days**
Term infants aged 0-8 months	3 mg/kg/dose twice a day for 5 days	**≥ 3-8 months: 3 mg/kg/dose once a day for 10 days** **< 3 months: not recommended**
Preterm infants	See footnote‡	

***Currently there are no treatment and/or prophylaxis data available for patients who are not on renal replacement therapy with a creatinine clearance ≤10. Please monitor for potential side effects.**

† Renal dosing of oseltamivir is not published for pediatric patients.

‡ Current weight-based dosing recommendations are not appropriate for premature infants. Limited data from National Institute of Allergy and Infectious Diseases Collaborative Antiviral Study group provides the basis for dosing preterm infants using postmenstrual age (gestational age + chronological age) (3,6):

- **< 38 weeks postmenstrual age: 1 mg/kg per dose orally twice daily**
- **38 through 40 weeks post menstrual age: 1.5 mg/kg per dose orally twice daily**
- **> 40 weeks post menstrual age: 3 mg/kg per dose orally twice daily**
- **Extremely preterm infants (< 28 weeks), consult a pediatric infectious diseases physician**
- **Oseltamivir can be given via gastric tube; however gastric stasis or bleeding can reduce its absorption.**
- **Oseltamivir is available as 30 mg, 45 mg and 75 mg capsules and liquid for oral administration and is usually recommended to take with food to minimize nausea/vomiting.**

- **Zanamivir- Restricted to ID.**

Recommendations for Prevention and Control of Influenza in Children, 2016-2017. American Academy of Pediatrics. Pediatrics. September 2017-2018