



<p style="text-align: center;">STANDING ORDERS FOR THE TREATMENT OF OUTPATIENT PERITONITIS</p>

1. Definition of Peritonitis:

- A. Cloudy effluent.
- B. WBC > 100 cells/mm³ with >50% polymorphonuclear (PMN) cells.
- C. Abdominal pain, tenderness, nausea, diarrhea or vomiting may be present.
- D. Bacteria or other microorganism on gram stain.

2. Nurse will instruct patient to:

- A. Save the cloudy bag (refrigerated or on ice if delayed).
- B. Record temperature, note any other symptoms.
- C. Notify physician's office.
- D. Notify NKC Peritoneal staff for further instructions.
- E. Patient may be directed to come into unit or go to ER.

3. Lab Sampling and Requisitions:

- A. Cell Count and Differential: ICD-9 code 567.9.
 - 1. Send 3 ml lavender topped tube filled with effluent.
- B. Bacterial Culture and Sensitivity with Gram Stain: ICD-9 code 567.9.
 - 1. Send 50 ml of cloudy effluent in a 100 ml sterile specimen container.
 - 2. Send 10 ml sterile red-topped tube filled with effluent.
- C. Fungal Culture: ICD-9 code 567.9.
 - 1. Send 50ml effluent in 100 ml sterile specimen container for culture.

4. Antibiotic Therapy:

- A. **Antibiotics should have a minimum dwell time of six hours.**
- B. CAPD patients will add the antibiotics to the overnight exchange.
- C. APD patients will add the antibiotics to the day exchange. If a day exchange is not usually done, one will be added for the duration of the antibiotic therapy.

Initial Treatment – Empiric Antibiotics:

1. Check for antibiotic allergies.
2. Look for evidence of exit site or tunnel infection.
3. Drug dose depends on the presence of residual kidney function (RKF).
If urine output > 100 ml/day = RKF is present.
If urine output is < 100 ml/day = no RKF.
4. Antibiotics are administered by the intraperitoneal (IP) route as a single daily dose with the exception of Vancomycin, which is administered every 5 days. Empiric antibiotics will be given until culture results become available.

Give combination of Vancomycin and either Ceftazidime or Tobramycin

- (1) Vancomycin given IP q 5 days for 3 weeks.
 - (a) Standard dose: 30 mg/kg.
 - (b) STAT Vancomycin trough before second and all subsequent doses (target less than 15 mcg/ml).
 - (c) Adjust dose and subsequent dosing interval per specific MD order based on trough.

AND

- (2) Ceftazidime 20 mg/kg/day IP with **RKF present**.
Ceftazidime 15 mg/kg/day IP with **no RKF**.

OR

Tobramycin 0.75 mg/kg/day IP with **RKF present**.
Tobramycin 0.6 mg/kg/day IP with **no RKF**.

- (a) Prolonged aminoglycoside use should be avoided if possible if alternative is available.

5. Refer to Appendix A to adjust antibiotics based on culture and sensitivities. Cefazolin should not be used unless sensitivities known.
6. Refer to Appendix B tables for antibiotic doses rounded to nearest 0.5g or 5 mg, depending on medication.
7. Consider adding Heparin 500 units IP to each bag per protocol.
8. Consider fungal prophylaxis: Nystatin swish and swallow 5 ml PO TID and also add Clotrimazole 1% intravaginal cream qHS for females.
9. Notify physician if patient develops diarrhea during antibiotic therapy due to risk of Clostridium Difficile colitis.

Technique Break

1. To prevent a peritonitis following a break in sterile technique, **a single dose Vancomycin 1 gm IP should be administered as soon as possible after the incident.** If unable to receive antibiotics at PD unit, the patient should be directed to the Emergency Room for management.
2. Each patient must come to PD clinic following a technique break to review aseptic technique and infection-related education topics. Retraining and home visit as needed per nursing evaluation.

Retraining and Prevention of Future Infections

1. All patients who develop peritonitis must be evaluated in clinic for technique problems and scheduled for retraining and a home visit as needed per nursing evaluation.
2. Review of aseptic technique and infection-related education topics is mandatory for all patients who develop peritonitis.
3. Staff should ensure that Gentamicin 0.1% cream is being used to prevent exit site infections in all patients.
4. Patients with suspected relapsing or recurrent peritonitis should be evaluated as per standing orders.

References

1. Piraino B, et al. ISPD Guidelines/Recommendations. Peritoneal Dialysis-Related Infections Recommendations: 2005 Update. Perit Dial Int 2005;25: 107-131.
2. NKC Peritonitis CQI Working Group First Annual Report: August 12, 2008.
3. Up To Date 2008.

Physician Signature: _____ DATE: _____

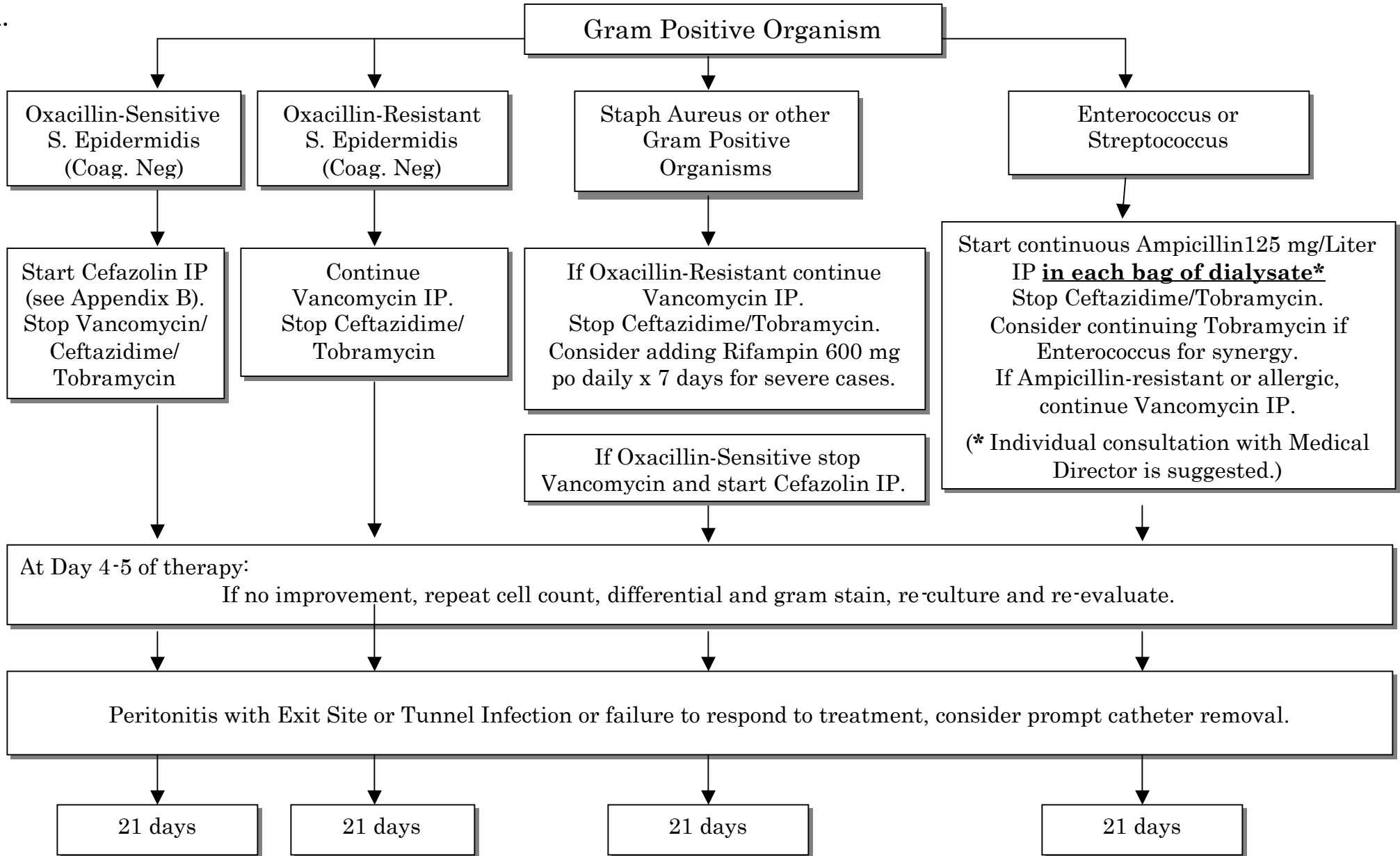
R.N. Signature: _____ DATE: _____

Patient Name _____
Revised 9/7/08

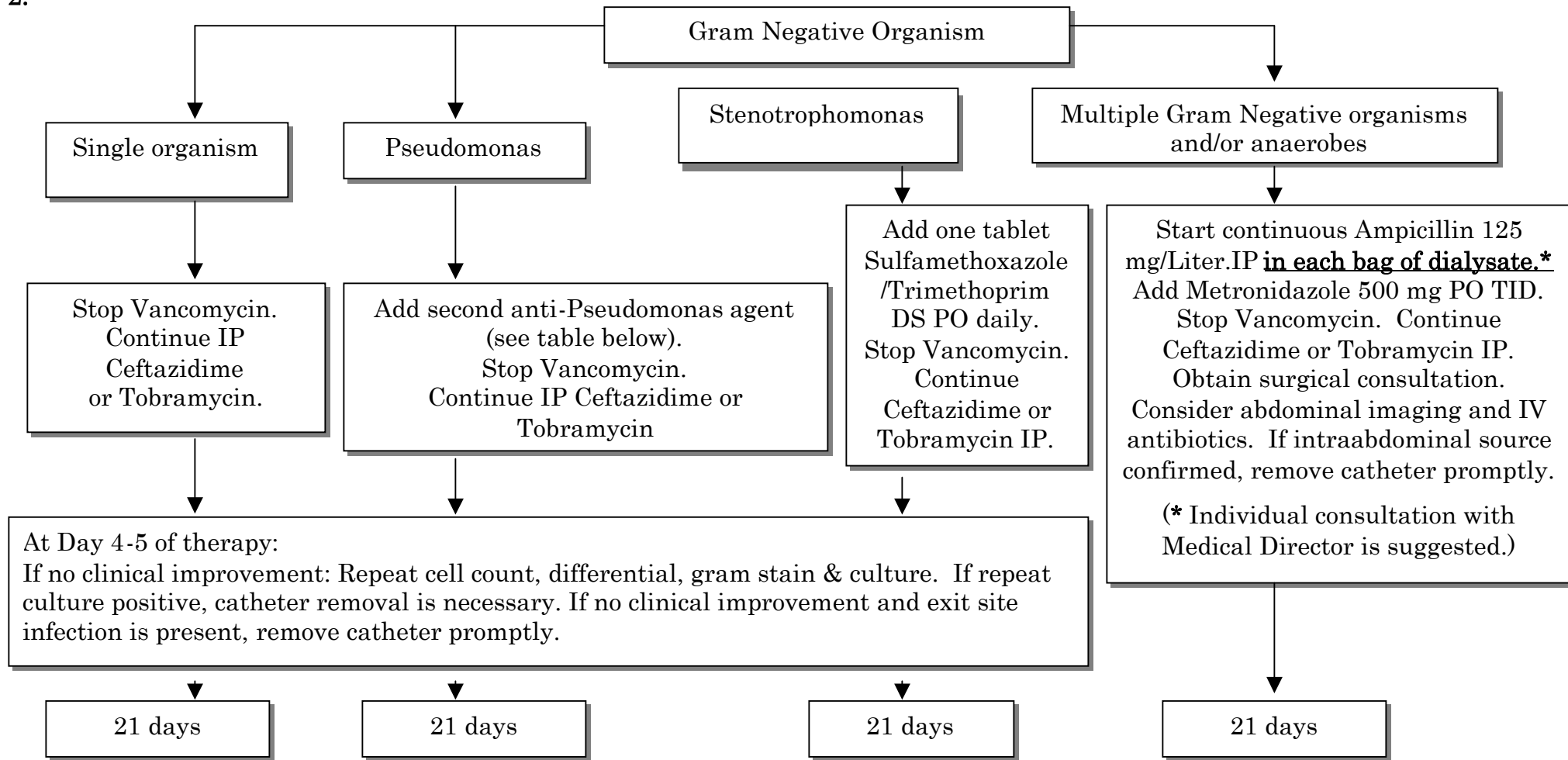
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APPENDIX A: ANTIBIOTIC ADJUSTMENT ALGORITHMS

1.

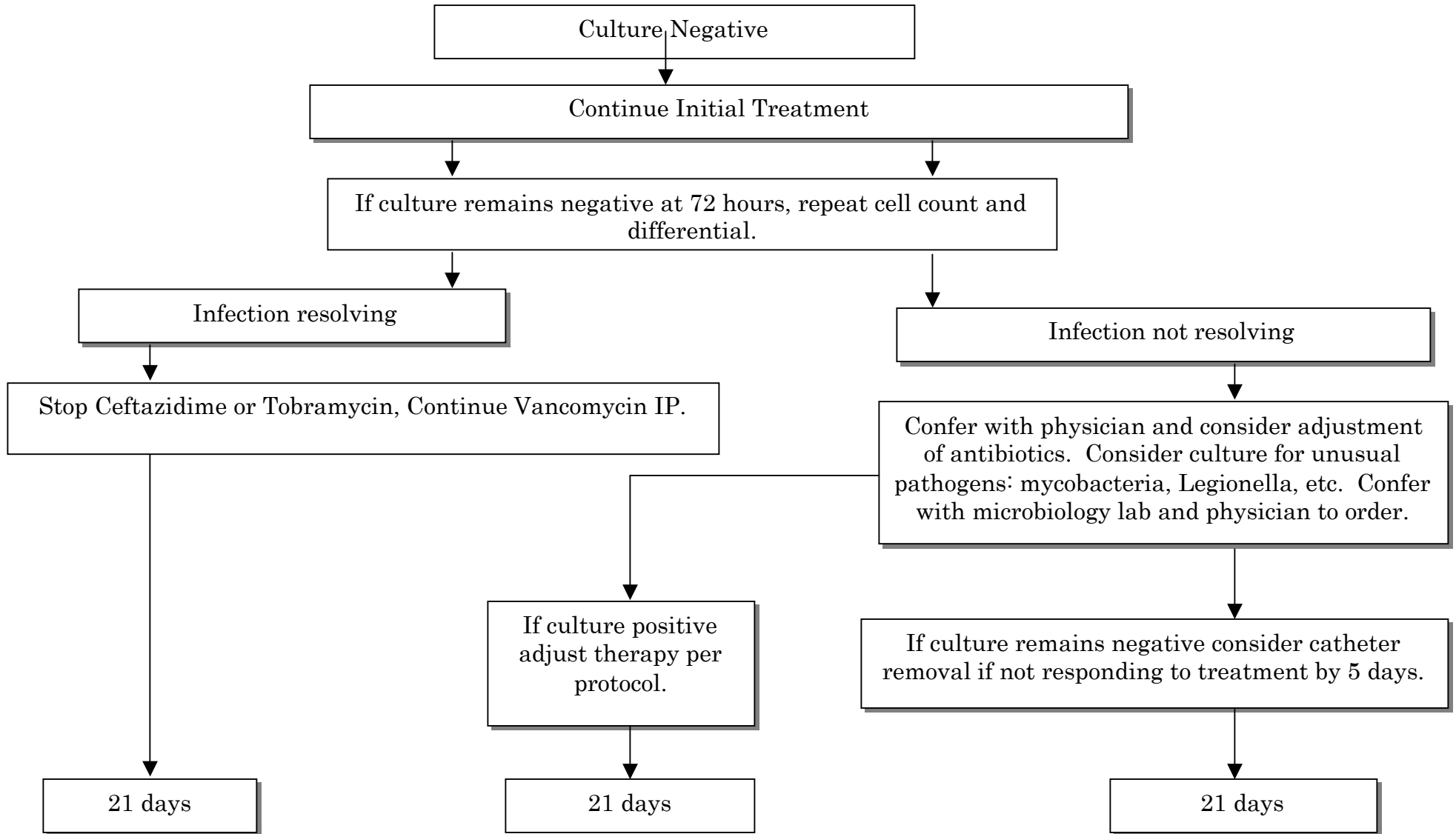


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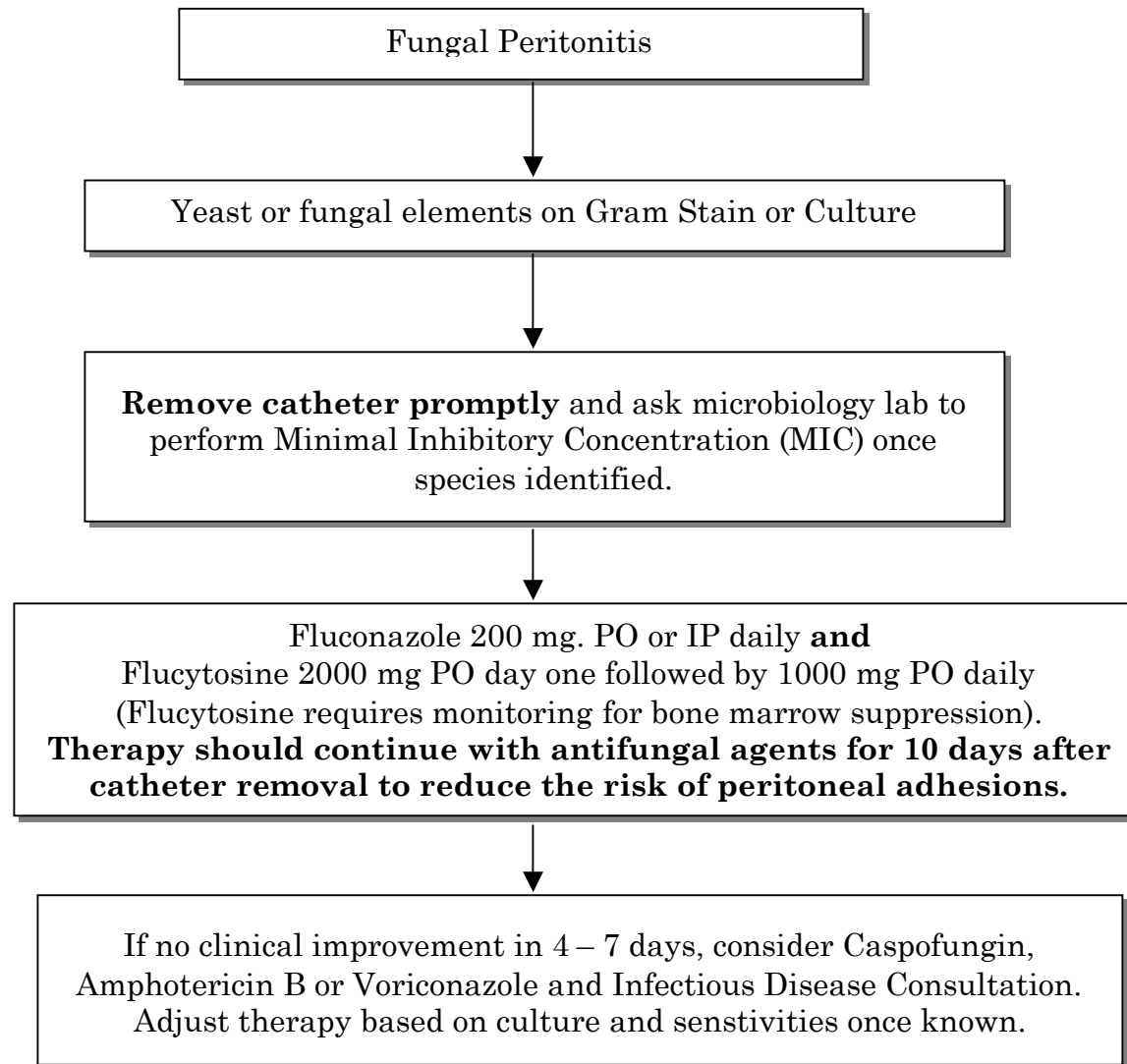


<u>Agents with anti-Pseudomonas Activity:</u>	
Tobramycin 0.6 mg/kg/day IP without RKF; 0.75 mg/kg/day with RKF.	Aztreonam 750 mg every 12 hours IV*.
Levofloxacin 500 mg PO day 1, followed by 250 mg every 48 hours.	Imipenem 500 mg every 12 hours IV*.
Cefepime 1 gm IP in one exchange daily (do not combine with Ceftazidime).	
Ciprofloxacin 250 mg PO BID.	
Piperacillin/Tazobactam 2.25 g every 8 hours IV*.	*IV medications must be given inpatient only

3.



4.



5.

Relapsing Peritonitis

Defined as peritonitis with the same organism within 4 weeks of termination of previous antibiotic therapy. Probable causes to consider:
>**Inadequate treatment of peritonitis, tunnel infection or exit site infection.**
>**Intraabdominal abscesses.**
>**Bacterial colonization of catheter.**

Relapsing S. Aureus or S. Epidermidis:
Stop Ceftazidime/Tobramycin.
Continue Vancomycin IP x 28 days. Start Rifampin 600 mg PO daily x 7 days.

Relapsing Pseudomonas or Stenotrophomonas:

Relapsing Gram Negative:
Stop Vancomycin.
Continue Ceftazidime IP or Tobramycin IP x 21 days.

Relapsing Enterococcus:
Start Ampicillin 125 mg/Liter IP each bag.*
Continue Tobramycin or add if not using.
Stop Vancomycin and Ceftazidime.
If Ampicillin-resistant or allergic, continue Vancomycin IP.
(* Individual consultation with Medical Director is suggested.)

Other relapsing Gram Positive:
Stop Cefazolin/Ceftazidime/Tobramycin
Continue Vancomycin IP x 21 days.

Assess for occult tunnel infection.

Assess for intra-abdominal pathology.

Remove catheter.

Access for intra-abdominal pathology.

If there is no clinical response after 5 days, consider catheter removal. If clinical improvement is followed by additional relapse, catheter removal and replacement is recommended.

APPENDIX B: DOSING ALGORITHM FOR COMMONLY USED IP ANTIBIOTICS

A. Vancomycin Dosing

Dose is the same for both RKF present and no RKF

Actual weight	Vancomycin dose IP
Less than 42 kg	1000 mg
42 - 58.9 kg	1500 mg
59 - 74.9 kg	2000 mg
75 - 91.9 kg	2500 mg
Above 91.9 kg	3000 mg

- Vancomycin dose and interval will be affected by presence or absence of RKF.
- Shorter dosing intervals should be anticipated with RKF present, while longer dosing intervals should be anticipated with no RKF.
- Consult with physician for individual dosing parameters based on trough levels (target less than 15 mcg/ml).

B. Cephalosporin Dosing

RKF present (>100 ml UOP/day)

Actual weight	RKF present Ceftazidime dose IP	RKF present Cefazolin dose IP
Less than 63 kg	1000 mg	1000 mg
63 - 87.9 kg	1500 mg	1500 mg
88 - 112.9 kg	2000 mg	2000 mg
Above 112.9 kg	2500 mg	2500 mg

No RKF (<100 ml UOP/day)

Actual weight	No RKF Ceftazidime dose IP	No RKF Cefazolin dose IP
Less than 50 kg	500 mg	500 mg
50 - 83.9 kg	1000 mg	1000 mg
84 - 116.9 kg	1500 mg	1500 mg
Above 116.9 kg	2000 mg	2000 mg

APPENDIX B: DOSING ALGORITHM FOR COMMONLY USED IP ANTIBIOTICS

C. Tobramycin Dosing

Actual Weight	RKF Present Tobramycin dose IP	Actual Weight	No RKF Tobramycin dose IP
Less than 36 kg	25 mg	Less than 38 kg	20 mg
36 - 49.9 kg	30 mg	38 - 45.9 kg	25 mg
50 - 56.9 kg	40 mg	46 - 54.9 kg	30 mg
57 - 63.9 kg	45 mg	55 - 62.9 kg	35 mg
64 - 69.9 kg	50 mg	63 - 70.9 kg	40 mg
70 - 76.9 kg	55 mg	71 - 79.9 kg	45 mg
77 - 83.9 kg	60 mg	80 - 87.9 kg	50 mg
84 - 89.9 kg	65 mg	88 - 95.9 kg	55 mg
90 - 96.9 kg	70 mg	96 - 104.9 kg	60 mg
97 - 103.9 kg	75 mg	105 - 112.9 kg	65 mg
104 - 109.9 kg	80 mg	113 - 120.9 kg	70 mg
110 - 116.9 kg	85 mg	121 - 129.9 kg	75 mg
117 - 123.9 kg	90 mg	Above 129.9 kg	80 mg
124 - 129.9 kg	95 mg		
Above 129.9 kg	100 mg		

- Tobramycin dose and interval will be affected by presence or absence of RKF.
- Shorter dosing intervals should be anticipated with RKF present, while longer dosing intervals should be anticipated with no RKF.
- Consult with physician for individual dosing parameters based on trough levels (target less than 1mcg/L).