

Pediatric Antimicrobial Stewardship Rotation Needs Assessment

As you may know, pediatric residents at Washington University/St. Louis Children's Hospital have the opportunity to participate in an elective rotation in pediatric antimicrobial stewardship. We are in the process of strengthening the rotation to ensure that it meets the educational needs of the residents. Prior to implementing any curricular changes, we are conducting a needs assessment in order to ensure that the content that is developed is appropriate and well received. There are two parts to this needs assessment: a survey of current pediatric residents, and this survey of you and your peers.

You are receiving this survey because you are a member of the Division of Infectious diseases within the Department of Pediatrics at Washington University in St. Louis School of Medicine. We value both your content expertise and your experience with the institution. We believe that your incorporating your input will strengthen the curriculum of the rotation we develop for the residents.

The purpose of this survey is to identify which topics within the realm of antibiotic stewardship should be emphasized by the curriculum. The survey is broken up into several broad categories of content, including general principles of antimicrobial stewardship, antimicrobial resistance, antibiotic spectrum of activity, antibiotic toxicities, empiric antibiotic therapy, duration of antibiotic therapy, and microbiologic testing/diagnostic stewardship. Most questions in this survey will ask you how important you believe it is that specific topics within these broad categories be included within the curriculum. You may consider some topics to be too basic for resident learners (i.e., better suited for medical students), whereas you may consider other topics too advanced (i.e., better suited for fellows).

As you answer the questions in this survey, it may be helpful to consider the following question: "Would I expect a pediatric resident graduating from residency training to be knowledgeable on this topic?"

Your participation in this survey is completely voluntary. Some questions will ask for information about your background. No attempt will be made to associate a response with a particular individual. By completing and submitting this survey, you consent to have your responses analyzed and potentially shared with others in aggregate form.

Please feel free to contact Matthew Sattler at sattler@wustl.edu with any questions or concerns about this study.

The following questions are related to general principles of antimicrobial stewardship.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on the following topics related to general principles of antimicrobial stewardship?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Interpretation of a hospital antibiogram	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interpretation of an antibiotic susceptibility report	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interpretation of primary scientific literature related to antibiotic use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Components of an antimicrobial stewardship program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On what other topics related to general principles of antimicrobial stewardship do you believe graduates of a pediatric residency program should be knowledgeable?

The following questions relate to antimicrobial spectrum of activity.

How important do you believe it is that graduates of a a pediatric residency program are knowledgeable on the spectrum of activity of the following classes of antibiotics?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Penicillins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cephalosporins	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carbapenems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traditional beta-lactam / beta-lactamase inhibitor combinations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Novel beta-lactam / beta-lactamase inhibitor combinations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vancomycin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Daptomycin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Linezolid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trimethoprim/sulfamethoxazole	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Macrolides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clindamycin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Metronidazole	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tetracyclines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aminoglycosides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antifungals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antivirals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antiparasitics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions are related to toxicities of antimicrobial therapy.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on toxicities of the following classes of antibiotics?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Beta-lactams	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beta-lactamase inhibitors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vancomycin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Daptomycin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Linezolid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trimethoprim/sulfamethoxazole	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Macrolides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clindamycin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Metronidazole	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tetracyclines	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aminoglycosides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antifungals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antivirals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antiparasitics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions are related to antibiotic allergies.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on the following topics related to antibiotic allergies?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Categories of allergies (e.g., type I, II, III, or IV hypersensitivity reactions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Epidemiology of antibiotic allergies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cross-reactivity in beta-lactam allergies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alternate antibiotic therapies for patients with allergies to first-line therapy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allergy delabeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Antibiotic desensitization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On what other topics related to antibiotic allergies do you believe graduates of a pediatric residency program should be knowledgeable?

The following questions are related to antimicrobial resistance.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on the following topics related to antimicrobial resistance?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Penicillin-binding protein (PBP) mutations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ribosomal mutations (e.g., erm)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Traditional beta-lactamases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extended-spectrum beta-lactamases (ESBLs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ampC beta-lactamases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carbapenemases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-carbapenemase-producing carbapenem-resistant enterobacterales (CRE)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance in Stenotrophomonas maltophilia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance in Acinetobacter baumannii	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance in Pseudomonas aeruginosa	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance in Staphylococcus aureus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance in streptococci	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance in enterococci	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Porin mutations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specific resistance genes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mechanisms by which bacteria transmit/acquire resistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance among fungi	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resistance among viruses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On what other topics related to antimicrobial resistance do you believe graduates of a pediatric residency program should be knowledgeable?

The following questions relate to antimicrobial prophylaxis.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on the following topics related to antimicrobial prophylaxis?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Opportunistic infection prophylaxis after hematopoietic stem cell transplant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opportunistic infection prophylaxis after solid organ transplant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opportunistic infection prophylaxis in patients with asplenia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-exposure prophylaxis after animal or human bites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post-exposure prophylaxis after needlestick injuries or unprotected sexual intercourse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prophylaxis following open fractures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prophylaxis in patients with cystic fibrosis or other pulmonary conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prophylaxis in patients with vesicoureteral reflux (VUR)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surgical prophylaxis related to abdominal procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surgical prophylaxis related to orthopedic procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Surgical prophylaxis related to neurosurgical procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On what other topics related to antimicrobial prophylaxis do you believe graduates of a pediatric residency program should be knowledgeable?

The following questions relate to tests commonly used to diagnose or manage infectious diseases.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on the following topics on tests commonly used to diagnose or manage infectious diseases?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
General principles of diagnostic stewardship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methods by which antimicrobial susceptibility testing is performed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commonly used serologic assays	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Distinguishing colonization from infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inflammatory markers (e.g., CRP, ESR, procalcitonin)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assays for fungal disease (e.g., galactomannan, beta-D-glucan, fungal cultures, fungal PCRs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multiplex PCR panels (e.g., respiratory pathogen panel, meningoen­cephalitis panel, pneumonia panel)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Next-generation technologies (e.g., cell-free DNA assays, broad-ranged PCR testing, metagenomic sequencing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methods by which blood cultures are processed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Methods by which cultures other than blood cultures are processed (e.g., urine, wound, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rapid molecular diagnostics performed on blood cultures (e.g., Verigene)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rapid strep testing and throat cultures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interpretation of urinalysis and urine cultures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Imaging modalities used to diagnose infection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

On what other topics related to tests commonly used to diagnose or manage infectious diseases do you believe graduates of a pediatric residency program should be knowledgeable?

The following questions relate to empiric antibiotic therapy.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on the following topics related to empiric antibiotic therapy?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Head and neck infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respiratory tract infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skin and soft tissue infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bone and joint infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Central nervous system infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gastrointestinal/abdominal Infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Urinary tract infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexually transmitted infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fever and neutropenia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fever in patients with sickle cell disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fever in a neonate/infant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Toxic shock syndrome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suspected vector-borne infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What other topics related to empiric antibiotic therapy do you think should be included on a curriculum on antimicrobial stewardship for pediatric residents?

The following questions relate to duration of antimicrobial therapy.

How important do you believe it is that graduates of a pediatric residency program are knowledgeable on the following topics related to duration of antibiotic therapy?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
HEENT infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respiratory tract infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skin and soft tissue infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CNS infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bone and joint infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gastrointestinal/abdominal infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Urinary tract infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexually transmitted infections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What other topics related to duration of therapy do you think should be included in a curriculum on antimicrobial stewardship for pediatric residents?

Rotation Logistics

The following questions relate to logistics of the pediatric antimicrobial stewardship rotation.

Do you think there should be any prerequisites for participation in the pediatric antimicrobial stewardship rotation?

- Yes
 No

If you think there should be prerequisites for participating in the pediatric antimicrobial stewardship rotation, what do you think they should be?

- Only open to senior residents (i.e., PGY-2 or above)
 Only open to those who have completed a pediatric infectious diseases rotation
 Other (please describe)

What other prerequisites do you think should be met before participating in the pediatric antimicrobial stewardship rotation?

What, if any, is the minimum amount of time that residents on the pediatric antimicrobial stewardship rotation should be able to dedicate to the rotation?

- No minimum amount of time
 1 week
 2 weeks
 3 weeks
 4 weeks or more

Do you have any additional comments or thoughts that you think will be helpful as we develop a formal curriculum on antimicrobial stewardship for pediatric residents?

Demographic Information**The following questions are regarding your background.**

Which of the following best describes your current role?

- Pediatric infectious diseases faculty
- Pediatric infectious diseases fellow
- Pediatric antimicrobial stewardship pharmacist
- Advanced practice provider within the division of pediatric infectious diseases

How long have you been practicing as pediatric infectious diseases faculty?

- Fewer than 3 years
- Between 3-5 years
- Between 5-10 years
- Between 10-15 years
- Between 15-20 years
- More than 20 years

What degrees do you hold? Select all that apply.

- MD
- DO
- PhD
- PharmD
- MSN
- MSCI
- Masters of Education
- MBA
- Other (please describe)

What additional degrees do you have?
