



Entrustable Professional Activities

EPA 5 for Pediatric Infectious Diseases

EPA 5: Prevention and Containment of Infection

Supervision Scale for This EPA

1. Trusted to observe only
2. Trusted to contribute to advocacy and educational activities for the subspecialty profession with direct supervision and coaching at the institutional level
3. Trusted to contribute to advocacy and educational activities for the subspecialty profession with indirect supervision at the institutional level
4. Trusted to mentor others and lead advocacy and educational activities for the subspecialty profession at the institutional level
5. Trusted to lead advocacy and educational activities for the subspecialty profession at the regional and/or national level

Description of the Activity

A key role for subspecialists is to provide guidance and to develop policy regarding prevention and containment of infection for individual patients, in health care settings, and for the public's health. This requires fundamental knowledge of the various modes of transmission of infectious agents in different community and health care settings, host susceptibility, and the developmental aspects of immunologic protection from infectious agents across pediatric age groups.

The specific functions which define this EPA include:

1. Creating infection risk mitigation plans for patients spanning from prenatal to adulthood before and after exposure or potential exposure to a communicable disease process
2. Demonstrating understanding of the various modes of transmission of infectious agents in a variety of community and health care settings, and creates a plan to alleviate/mitigate infection risk (e.g., norovirus outbreak in a day care setting) and sequelae
3. Applying knowledge of the epidemiology of infectious agents to plan prevention strategies for individuals and for populations
4. Providing guidance regarding general management and vaccination strategies to prevent common infections in healthy infants, children, and adults
5. Providing guidance regarding prevention of common and opportunistic infections in pediatric patients whose immune function is compromised by an underlying condition (e.g., antimicrobial prophylaxis to prevent pneumocystis or vaccination to prevent meningococcal infection)
6. Using appropriate laboratory testing to investigate or confirm disease transmission
7. Participating in the development of policies to prevent or control acquisition and transmission of infection
8. Applying evidence-based methods to investigate whether transmission of infection has occurred
9. Effectively utilizing the medical information systems for existing research related to the prevention of pediatric infectious diseases
10. Communicates prevention strategies to patients, families, health care providers, health care institutions, advocacy organizations, and the public health community
11. Notifies and collaborates with public health authorities about reportable diseases, outbreaks, and communicable disease exposures



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- Utilizes appropriate infection prevention and control measures for hospital and outpatient encounters including schools, chronic care facilities, and temporary group sites (e.g., group homes, summer camps)

Judicious Mapping to Domains of Competence

- Patient Care
- Medical Knowledge
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills
- Professionalism
- Systems-Based Practice
- Personal and Professional Development

Competencies Within Each Domain Critical to Entrustment Decisions

PC 11 (PBLI 7):	Using information technology
PBLI 9:	Educating others
ICS 1:	Communicating with patients/families
SBP 1:	Working in care delivery settings and systems
SBP 5:	Working in interprofessional teams
SBP 6:	Identifying system errors
SBP 7:	Advocating for the promotion of health

Context for the EPA

Rationale: Pediatric infectious diseases (ID) specialists are consistently relied upon for their expertise in the prevention and containment of infection in individuals and populations. This is a critical EPA for public safety and health maintenance.

Scope of Practice: This document is intended to address the scope of knowledge and essential skills that must be mastered by the pediatric ID physician in order to prevent and/or contain infection in both healthy and immunocompromised patients, in outpatient and inpatient health care settings, and in the population at large. The activities detailed in this EPA range from specific treatment strategies for individual patients to policy recommendations that could affect entire communities. Recognition and investigation of outbreaks is also a core activity. While the pediatric ID physician generally provides clinical care to children (prenatal through adolescence), prevention activities may encompass adults who have contact with children. Communication, another core skill, occurs with a broad constituency: patients, families, other health care providers, public health authorities, policymakers, and the media.

Curricular Components That Support the Functions of the EPA

- Creating infection risk mitigation plans for patients spanning from prenatal to adulthood before and after exposure or potential exposure to a communicable disease process
 - Prescribes prophylaxis when appropriate after exposures to communicable diseases (e.g., meningococcus, pertussis, measles, varicella, Heamophilus Influenzae type b (Hib), Human Immunodeficiency Virus [HIV])



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- Recognizes the relative contamination rate for blood products and the risk of transmitting microbial agents through blood products
 - Prescribes prophylaxis when appropriate after exposure to blood borne pathogens or hazardous body fluids (e.g., needle stick or other HIV exposure; sexual assault including gonorrhea and chlamydia, hepatitis A, hepatitis B; exposure to incorrect breast milk in the hospital)
 - Prescribes wound care, immuno- and chemoprophylaxis in the setting of possible transmission of communicable disease from animal exposure or bite (e.g., rabies, cat and dog bites)
2. Demonstrating understanding of the various modes of transmission of infectious agents in a variety of community and health care settings, and creating a plan to alleviate/mitigate infection risk (e.g., norovirus outbreak in a day care setting) and sequelae
- Knows methods of transmission (contact, droplet, airborne, vector borne, common vehicle) of bacterial and viral pathogens in health care and community environments
 - Recognizes an outbreak situation and understands that in some situations, one case prompts investigation of an outbreak (e.g., a case of Carbapenem-resistant Enterobacteriaceae (CRE) in a hospitalized patient, meningococcal meningitis in a day care)
 - Participates in the planning and execution of a root cause analysis to identify potential causes of a health care or community outbreak
 - Plans intervention in a health care or community setting and appropriate follow up measures after a patient exposure to infectious agents (e.g., pertussis, varicella, hepatitis A)
 - Plans intervention when an excessive number of cases of a particular pathogen (e.g., *C. Difficile* or rotavirus) causes infection in the hospital setting
3. Applying knowledge of the epidemiology of infectious agents to plan prevention strategies for individuals and for populations
- Plans the management of patients who require contact, respiratory droplet, or airborne isolation (e.g., Methicillin resistant staphylococcus aureus [MRSA, meningococcus, Tuberculosis (TB), and measles])
 - Develops infection control recommendations for management of patients with multidrug resistant infections (e.g., multidrug resistant organisms [MDRO] including MRSA, vancomycin resistant enterococci [VRE], extended spectrum beta lactamase [ESBL], carbapenem-resistant enterobacteriaceae [CRE])
 - Participates in developing systems to flag patient records to aid in ensuring the appropriate use of isolation categories
 - Provides guidance on the epidemiology of certain infectious agents in the setting of international travel (e.g., JE virus, malaria) and develops a comprehensive plan for a patient who is traveling internationally including vaccines, prophylactic therapies, and travel-related anticipatory guidance
 - Recommends testing for specific infectious diseases for children who are internationally adopted based on country of origin (e.g., parasites, HIV, TB, hepatitis B)
 - Recommends appropriate immunizations for family members of internationally adopted children (e.g., hepatitis A and B vaccines)
 - Knows the "exclusion policies" for child care attendance and their rationale
 - Knows employee illnesses that preclude work (e.g., conjunctivitis, diarrhea, vesicular rashes)
 - Explains predisposing factors for hospital-acquired infections, including lung, urinary tract, skin, blood, central nervous system, and gastrointestinal tract (e.g., foley catheters, central line use, unsafe injection practices, ventilator associated pneumonia) and optimal ways to prevent them



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4. Providing guidance regarding general management and vaccination strategies to prevent common infections in healthy infants, children, and adults
 - Reviews and utilizes knowledge of the immunization status of a child with an infectious disease to determine the possibility of infection due to a vaccine preventable illness
 - Knows which vaccines employ live micro-organisms, as well as indications and contraindications for use
 - Explains the concept of a routine immunization schedule, the timing of each vaccine, and permissive use vs. recommended use (Mening B vs. MCV4)
 - Explains circumstances in which additional vaccinations may be indicated (e.g., meningococcal vaccine in an outbreak setting)
 - Knows important adverse effects (AE) of routine childhood immunizations and AE's expected onset in relation to vaccine receipt (e.g., thrombocytopenia with MMR vaccine)
 - Knows the important precautions and contraindications of the routine childhood immunizations (e.g., previous anaphylaxis to a vaccine component)
 - Demonstrates ability to find information on vaccine components or excipients for those with allergies (e.g., gelatin, neomycin, latex)
 - Recognizes the utility of Vaccine Adverse Event Reporting System (VAERS) as a passive reporting strategy and acknowledges the strengths and weaknesses (e.g., temporal association does not determine causation)

5. Providing guidance regarding prevention of common and opportunistic infections in pediatric patients whose immune function is compromised by an underlying condition (e.g., antimicrobial prophylaxis to prevent pneumocystis or vaccination to prevent meningococcal infection)
 - Recognizes infections caused by opportunistic pathogens in very-low-birth-weight infants in intensive care units (e.g., coagulase-negative staphylococcus, candida)
 - Explains common antimicrobial prophylactic strategies in immunocompromised patients (e.g., prophylaxis for patients with asplenia or against cytomegalovirus (CMV) in patients with malignancy or transplantation)
 - Provides guidance for when nonroutine vaccination is indicated (e.g., pneumococcal polysaccharide vaccine in patients with asplenia, cerebrospinal fluid leak, or cochlear implant)
 - Describes circumstances when passive immunoprophylaxis is indicated (e.g., IGIV, palivizumab, varizig, rabies immune globulin)

6. Using appropriate laboratory testing to investigate or confirm disease transmission
 - Determines the settings in which it is most appropriate to obtain culture, serology, antigen, and/or nucleic acid testing (e.g., pertussis, varicella)
 - Analyzes test results within the clinical context of the patient to determine the likelihood of transmission in an outbreak situation
 - Demonstrates the ability to prioritize testing based on the most likely diagnosis (e.g., measles, Ebola)
 - Interprets test results based on the natural history of the disease process and/or the expected time course of communicability (e.g., negative pertussis testing late in the illness, prolonged viral shedding in children not acutely infected)
 - Ensures appropriate specimen collection, handling, and processing, and understands test performance characteristics when interpreting test results in an outbreak situation (e.g., sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV))



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- Works in a collaborative manner with the microbiology laboratory to ensure appropriate methods are utilized to track necessary microbiology data
7. Participating in the development of policies to prevent or control acquisition and transmission of infection
 - Utilizes open and ongoing communication strategies within a multidisciplinary and collaborative team to develop infection prevention policies (e.g., participation in infection prevention committee)
 - Knows when to escalate and obtain additional leadership support in the setting of an ongoing outbreak
 - Acts in a collaborative manner to develop new and revise old infection prevention policies in emergent and non-emergent situations (e.g., Ebola policies, revision of sibling visitation policies during an influenza outbreak, employee immunization policies)
 8. Applying evidence-based methods to investigate whether transmission of infection has occurred
 - Evaluates disease clusters of infection or single cases of an unusual infection to determine if an outbreak has occurred
 - Determines the likely source, cause, and mode of acquisition in the setting of a confirmed outbreak in various settings (e.g., in a newborn nursery, child care center, school)
 - Calculates an incidence (attack) rate, secondary attack rate, and case fatality rate in an outbreak
 - Recognizes the epidemiologic characteristics indicative of a common source outbreak (e.g., contaminated vehicle)
 - Differentiates between infection, disease, and colonization for various pathogens (e.g., *C. difficile*)
 - Makes recommendations for control of an epidemic/outbreak in hospital and community settings
 - Explains the principles of surveillance of health care associated infections based on a risk assessment
 9. Effectively utilizing the medical information systems for existing research related to the prevention of pediatric infectious diseases
 - Knows how to perform a literature review to identify best practices for various infection prevention strategies
 - Knows how to evaluate the potential risks and benefits of different evidence-based strategies to prevent infection (e.g., silver impregnated foley catheter)
 - Applies relevant evidence from the literature and extrapolates when necessary to create best practices for infection prevention (e.g., extrapolate outbreak management of *B. cepacia* in the CF population to an outbreak in the NICU population)
 - Participates in utilization of appropriate electronic systems available to Infection Prevention to identify hospital-associated infections
 10. Communicating prevention strategies to patients, families, health care providers, health care institutions, advocacy organizations, and the public health community
 - Communicates the rationale for or against post-exposure prophylaxis recommendations to patients, families, and health care workers in situations in which prophylaxis is/is not indicated (e.g., meningococcal disease)
 - Develops skills to communicate the importance of specific infection prevention strategies (e.g., annual influenza vaccination) with families, health care institutions, and media outlets



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- Provides education regarding the recommended vaccine schedule to vaccine hesitant families; as well as how primary care providers should respond to their vaccine hesitant families
 - Communicates the importance of isolation precautions, visitation restrictions, antimicrobial prophylaxis, and hand hygiene, etc. to health care workers, patients, and families
 - Develops different strategies to communicate with patients, families, and health care team members in outbreak and emergency situations (e.g., influenza outbreak, contamination of surgical devices)
11. Notifying and collaborating with public health authorities about reportable diseases, outbreaks, and communicable disease exposures
- Recognizes the agents most likely to be used in bioterrorism, and ensures notification of public health officials in the setting of suspected infection
 - Makes recommendations for personnel regarding immunization, treatment, and isolation of patients infected with or exposed to a bioterrorism agent (e.g., smallpox, *B. anthracis*, *C. botulinum*, *F. tularensis*, *Y. pestis*)
 - Recognizes which infections should be reported to public health officials in a routine (e.g., TB, HIV, syphilis) or emergent manner (e.g., measles, Ebola)
12. Utilizing appropriate infection prevention and control measures for hospital and outpatient encounters including schools, chronic care facilities, and temporary group sites (e.g., group homes, summer camps)
- Ensures appropriate isolation practices are utilized (e.g., in the placement of a central line or lumbar puncture)
 - Institutes symptom-based or syndrome-based isolation when appropriate (e.g., patient with draining lesion in contact isolation, droplet and contact isolation with respiratory symptoms). Understands the rationale for different isolation and barrier precautions
 - Identifies the indications for sterilization, disinfection, cleaning, and decontamination in hospital infection control procedures
 - Knows when to make special arrangements for evaluation in a patient with a suspected highly communicable disease (e.g., measles)

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