

**CORE SKILLS****INTRAVENOUS ACCESS AND PHLEBOTOMY****INTRODUCTION**

Intravenous (IV) access is the most common procedure performed on a pediatric inpatient unit. IV access may be used for immediate fluid resuscitation, parenteral medication or nutrition delivery, or be placed in anticipation of need for emergent access for medications for patients at risk for acute deterioration such as possible seizure or respiratory compromise. Pediatric hospitalists should be adept at obtaining peripheral IV access in all pediatric patients, and IV or intraosseous (IO) access in critically ill patients. Although not a requirement, many pediatric hospitalists may also obtain skills in the placement of other forms of intravenous access, including central venous catheters and percutaneously inserted central catheters (PICC). Pediatric hospitalists are also often in the best position to obtain venous and arterial blood samples from pediatric patients. Adequate discussion with patients and family/caregiver, and appropriate use of topical anesthesia, anxiolysis, or minimal sedation can create the environment needed for a successful procedure.

**KNOWLEDGE**

*Pediatric hospitalists should be able to:*

- List the indications for intravenous access such as rehydration or resuscitation, parenteral administration of medications and others.
- Describe common complications of both peripheral and central IV access, including infiltration, bleeding, infection, and thrombosis.
- Compare and contrast the risks and benefits of using peripheral versus central sites for IV access as well as line type, attending to indications and complications for each.
- List the indications for arterial blood sampling.
- Review the proper method for obtaining venous and arterial blood samples.
- Discuss how anatomic location of veins and arteries influences the catheterization technique.
- Describe common complications from venous and arterial blood sampling.
- Discuss how factors such as age, disease process, and anatomy influence the choice of IV site.
- Summarize current literature and national best practices regarding avoidance of catheter-related bloodstream infections.
- Review the options for pain and sedation management, attending to medication and non-medication interventions by age and developmental stage.
- Review methods which can help minimize the number of IV attempts and discuss common complications from IV attempts.
- State why use of certain existing and potential venous sites (such as hemodialysis catheters, limb with neurovascular compromise, and others) is contraindicated.
- State the relative contraindications to certain IV access sites such as jugular veins with a neighboring ventriculoperitoneal shunt, fracture in limb and others.
- State the indications and contraindications for IO access.
- Describe the indications, risks, benefits, and alternatives for PICC placement attending to prolonged medication and/or nutrition needs.
- Review the common radiographic modalities used to assess proper line placement and function.
- Review the indications for subspecialty consultation for IV access or blood sampling, and list commonly accessed subspecialty services, attending to local context.

**SKILLS**

*Pediatric hospitalists should be able to:*

- Perform a pre-procedural evaluation to determine risks and benefits of IV placement.
- Correctly assess the need for and order appropriate pain and sedation medication and non-medication interventions.
- Obtain IV access on children of all ages.
- Demonstrate proficiency in performing venous and arterial blood sampling (phlebotomy) with and without IV access.
- Correctly identify the need for and efficiently offer education to healthcare providers on proper techniques for holding and calming patients before, during, and after access attempts.

- Consistently adhere to infection control practices.
- Demonstrate proficiency with intraosseous needle placement during emergency situations, and successfully insert the IO needle into a simulator in mock code situations at least once per year.
- Identify barriers to efficient, effective IV access and engage subspecialists to assist as appropriate.
- Demonstrate proficiency in performing or efficiently accessing appropriate consultants to perform central venous access and PICC lines.
- Identify common complications of IVs and blood sampling and respond with appropriate actions.
- Demonstrate proficiency in performing or efficiently accessing appropriate consultants to perform basic repairs on central venous lines and PICC lines.

## ATTITUDES

*Pediatric hospitalists should be able to:*

- Work collaboratively with hospital staff and subspecialists to ensure coordinated **planning and performance** of IV access.
- Communicate effectively with patients and the family/caregiver regarding the **indications** for, risks, benefits, and steps of the procedure.
- Role model and advocate for strict adherence to infection control practices.

## SYSTEMS ORGANIZATION AND IMPROVEMENT

*In order to improve efficiency and quality within their organizations, pediatric hospitalists should:*

- Lead, coordinate or participate in the development and **implementation** of cost-effective, safe, evidence-based procedures and policies for IV access following **national guidelines** for infection control.
- Work with hospital administration, hospital staff and others to develop and implement standardized documentation tools for venous access procedures.
- Lead, coordinate or participate in the development and implementation of a system for review of the efficacy, efficiency and outcomes of intravenous access procedures.
- Lead, coordinate or participate in the development and implementation of a system for review of family/caregiver and healthcare provider **satisfaction** into procedural strategies.