

# The University of Arizona Pediatric Residency Program

## Primary Goals for Rotation

### Inpatient Pediatrics

1. **GOAL:** Evaluate and manage common signs and symptoms associated with acute illness and hospitalization.
2. **GOAL:** Recognize and manage common childhood conditions presenting to the Inpatient Unit.
3. **GOAL:** Utilize common diagnostic tests and imaging studies appropriately in the inpatient setting.
4. **GOAL:** Understand how to use physiologic monitoring and special technology in the general inpatient setting, including issues specific to care of the chronically ill child.
5. **GOAL:** Demonstrate high standards of professional competence while working with patients on the Inpatient Service.

**1. GOAL: Evaluate and manage common signs and symptoms associated with acute illness and hospitalization.**

A. Evaluate and manage, with consultation of indicated, patients with signs and symptoms that commonly present to the Inpatient Unit.

1. General: acute life-threatening event (ALTE), constitutional symptoms, hypothermia, excessive crying, failure to thrive, fatigue, fever without localizing signs, hypothermia, weight loss
2. Cardiorespiratory: apnea, chest pain, cough, cyanosis, dyspnea, heart murmur, hemoptysis, hypertension, hypotension, inadequate respiratory effort, rhythm disturbance, shock, shortness of breath, stridor, syncope, tachypnea, respiratory failure, wheezing
3. Dermatologic: ecchymoses, edema, petechiae, purpura, rashes, urticaria
4. EENT: acute visual changes, conjunctival injection, edema, epistaxis, hoarseness, nasal discharge, stridor, trauma
5. Endocrine: heat/cold intolerance, polydipsia, polyuria
6. GI/Nutrition/Fluids: abdominal masses or distention, abdominal pain, ascites, dehydration, diarrhea, dysphagia, hematemesis, inadequate intake, jaundice, melena, rectal bleeding, regurgitation, vomiting
7. Genitourinary/Renal: change in urine color, dysuria, edema, hematuria, oliguria, scrotal mass or edema
8. GYN: abnormal vaginal bleeding, pelvic pain, vaginal discharge
9. Hematologic/Oncologic: abnormal bleeding, bruising, hepatosplenomegaly, lymphadenopathy, masses, pallor
10. Musculoskeletal: arthritis/arthralgia, bone and soft tissue trauma, limb pain, limp
11. Neurologic: ataxia, coma, delirium, diplopia, headache, hypotonia, head trauma, lethargy, seizure, vertigo, weakness
12. Psychiatric/Psychosocial: acute psychosis, child abuse or neglect, conversion symptoms, depression, suicide attempt

**2. GOAL: Recognize and manage common childhood conditions presenting to the Inpatient Unit.**

A. Evaluate and manage, with consultation as indicated, patients with conditions that commonly present to the Inpatient Unit.

1. General: failure to thrive, fever of unknown origin
2. Allergy/Immunology: acute drug allergies/reactions, anaphylaxis, immunodeficiencies, including graft vs. host disease, recurrent pneumonia, serum sickness, severe angioedema
3. Cardiovascular: bacterial endocarditis, cardiomyopathy, congenital heart disease, congestive heart failure, Kawasaki disease, myocarditis, rheumatic fever
4. Endocrine: diabetes (including diabetic ketoacidosis), electrolyte disturbances secondary to underlying endocrine disease
5. GI/Nutrition: appendicitis, bleeding, cholangitis, complications of inflammatory bowel disease, complications of liver transplantation, cystic fibrosis, gastroenteritis (with/without dehydration), gastroesophageal reflux, hepatic dysfunction (including alpha-1-antitrypsin disease), bowel obstruction, pancreatitis, severe malnutrition

6. GU/Renal: electrolyte and acid-base disturbances, glomerulonephritis, hemolytic-uremic syndrome, nephrotic syndrome, urinary tract infection/pyelonephritis
7. Gynecologic: genital trauma, pelvic inflammatory disease, sexual assault
8. Hematologic/Oncologic: abdominal and mediastinal mass, common malignancies, fever and neutropenia, thrombocytopenia, severe anemia, tumor lysis syndrome, vaso-occlusive crises and other complications of sickle cell disease
9. Infectious Disease: cellulitis (including periorbital and orbital), cervical adenitis, dental abscess with complications, encephalitis, HIV, infections in immunocompromised hosts, laryngotracheobronchitis, late presentation of congenital infections (CMV, syphilis, tuberculosis, abscesses), line infection, meningitis (bacterial or viral), osteomyelitis, pneumonia (viral or bacterial), sepsis/bacteremia (including newborns), septic arthritis, tuberculosis
10. Pharmacology/Toxicology: common drug poisoning or overdose, dose adjustment for special conditions or serum drug levels
11. Neurology: acute neurologic conditions (acute cerebellar ataxia, Guillain Barre syndrome, movement disorders), developmental delay with acute medical conditions, seizures, shunt infections
12. Respiratory: airway obstruction, asthma exacerbation, bacterial tracheitis, bronchiolitis, croup, cystic fibrosis, epiglottitis
13. Rheumatologic: Henoch Schonlein purpura (HSP), juvenile rheumatoid arthritis (JRA), systemic lupus erythematosus (SLE)
14. Surgery: pre- and post-op consultation and evaluation of surgical patients (general, ENT, orthopedics, urology, neurosurgical, etc.), special needs of technology-dependent children (blocked trachea, gastric tube dysfunction)

**3. GOAL: Utilize common diagnostic tests and imaging studies appropriately in the inpatient setting.**

A. Demonstrate an understanding of the common diagnostic tests and imaging studies used in the inpatient setting, by being able to:

1. Explain the indications for and limitations of each study.
2. Know or be able to locate age-appropriate normal ranges (lab studies).
3. Apply knowledge of diagnostic test properties, including the use of sensitivity, specificity, positive predictive value, negative predictive value, false-positive and negative results, likelihood ratios, and receiver operating characteristic curves, to assess the utility of tests in various clinical settings.
4. Recognize cost and utilization issues.
5. Interpret test results in the context of the specific patient.
6. Discuss therapeutic options for correction of abnormalities.

B. Use common laboratory studies when indicated for patients in the inpatient setting.

1. CBC with differential, platelet count, RBC indices
2. Blood chemistries: electrolytes, glucose, calcium, magnesium, phosphate
3. Renal function tests
4. Tests of hepatic function (PT, albumin) and damage (liver enzymes, bilirubin)
5. Serologic tests for infection (e.g., hepatitis, HIV)

6. C-reactive protein, erythrocyte sedimentation rate
7. Therapeutic drug concentrations
8. Coagulation studies
9. Arterial, capillary, and venous blood gases
10. Detection of bacterial, viral, and fungal pathogens
11. Urinalysis
12. Cerebrospinal fluid analysis
13. Gram stain
14. Stool studies
15. Other fluid studies (e.g. pleural fluid, joint fluid)
16. Electrocardiogram

C. Use common imaging or radiographic studies when indicated for patients on the inpatient unit.

1. Plain radiographs of the chest, extremities, abdomen, skull, sinuses
2. Other imaging techniques such as CT, MRI, angiography, ultrasound, nuclear scans, contrast studies (interpretation not expected)
3. Echocardiogram

**4. GOAL: Understand how to use physiologic monitoring and special technology in the general inpatient setting, including issues specific to care of the chronically ill child.**

A. Demonstrate understanding of the monitoring techniques and special treatments commonly used in the inpatient setting, by being able to:

1. Discuss indications, contraindications and complications.
2. Demonstrate proper use of technique for children of varying ages.
3. Determine which patients need continuous monitoring or special monitoring (e.g., neurological checks).
4. Interpret and respond appropriately to results of monitoring based on method used, age and clinical situation.

B. Use appropriate monitoring techniques in the inpatient setting.

1. Monitoring of temperature, blood pressure, heart rate, respirations
2. Cardiac monitoring
3. Pulse oximetry

C. Use appropriately the treatments and techniques used in the inpatient setting.

1. Universal precautions
2. Nasogastric tube placement
3. Administration of nebulized medication
4. Injury, wound and burn care
5. Oxygen delivery systems
6. I.V. fluids
7. I.V. pharmacotherapy (antibiotics, antiepileptics, etc.)
8. Transfusion therapy

D. Describe key issues in the inpatient and home management of the technology-dependent child with the following care needs:

1. Tracheostomy

2. Chronic mechanical ventilation
3. Chronic parenteral nutrition (HAL)
4. Gastrostomy tube for feedings
5. Permanent central venous catheter

E. Recognize normal and abnormal findings at tracheostomy, gastrostomy, or central venous catheter sites, and demonstrate appropriate intervention or referral for problems encountered.

F. Demonstrate the skills for assessing and managing pain.

1. Use age-appropriate pain scales in assessment.
2. Describe indications for use and side effects of common narcotic and non-narcotic analgesics.
3. Administer medications to control pain in appropriate dose, frequency and route.
4. Describe indications for and use of behavioral techniques and supportive care, and other non-pharmacologic methods of pain control.

**5. GOAL: Demonstrate high standards of professional competence while working with patients on the Inpatient Service.**

A. **Competency 1: Patient Care.** Provide family-centered patient care that is development- and age-appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.

1. Use a logical and appropriate clinical approach to the care of hospitalized patients, applying principles of evidence-based decision-making and problem-solving, demonstrating:
  - a) Careful data collection and synthesis
  - b) Appropriate orders for vital signs, I & Os, medications, nutrition, activity
  - c) Well thought-out daily care plans
  - d) Good clinical judgment and decision-making
  - e) Careful discharge plans (orders, patient education, followup)
2. Provide sensitive support to patients with acute and chronic illnesses and to their families, and arrange for ongoing support and preventive services at discharge.

B. **Competency 2: Medical Knowledge.** Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.

1. Demonstrate a commitment to acquiring the base of knowledge needed to care for children in the inpatient setting.
2. Know and/or access medical information efficiently, evaluate it critically, and apply it to inpatient care appropriately.

C. **Competency 3: Interpersonal Skills and Communication.** Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.

1. Provide effective patient education, including reassurance, for condition(s) commonly seen on the inpatient service.

2. Participate and communicate effectively as part of an interdisciplinary team, as both the primary provider and the consulting pediatrician (e.g., patient presentations, sign-out rounds, communication with consultants and primary care physicians of hospitalized patients).
3. Develop effective strategies for teaching students, colleagues, other professionals and laypersons.
4. Maintain accurate, legible, timely and legally appropriate medical records.
<b>D. Competency 4: Practice-based Learning and Improvement.</b> Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate and improve one's patient care practice.
1. Use scientific methods and evidence to investigate, evaluate and improve one's patient care practice in the inpatient setting.
2. Identify personal learning needs, systematically organize relevant information resources for future reference, and plan for continuing acquisition of knowledge and skills.
<b>E. Competency 5: Professionalism.</b> Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.
1. Demonstrate personal accountability to the well being of patients (e.g., following-up on lab results, writing comprehensive notes, and seeking answers to patient care questions).
2. Demonstrate a commitment to professional behavior in interactions with staff and professional colleagues.
3. Adhere to ethical and legal principles, and sensitivity to diversity while providing care in the inpatient setting.
<b>F. Competency 6: Systems-Based Practice.</b> Understand how to practice high-quality health care and advocate for patients within the context of the health care system.
1. Identify key aspects of health care systems, cost control, billing and reimbursement in the hospital inpatient setting.
2. When providing care in the inpatient setting, consider cost and resource allocation without compromising quality of care.
3. Take steps to avoid medical errors by recognizing the limits of one's knowledge and expertise; work with the health care team to recognize and address systems errors.

## Procedures

**A. GOAL: Technical and therapeutic procedures.** Describe the following procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.

1. Anesthesia/analgesia: pain management
2. Arterial puncture
3. Bladder: catheterization
4. Central line: use/care
5. Chest physiotherapy
6. Gastric tube placement (OG/NG)

7. Gastrostomy tube replacement
8. Intravenous line placement
9. Lumbar puncture
10. Medication delivery: IM/SC/ID
11. Medication delivery: inhaled
12. Medication delivery: IV
13. Medication delivery: rectal
14. PPD: placement
15. Pulmonary function tests: peak flow meter
16. Pulmonary function tests: spirometry
17. Pulse oximeter: placement
18. Rectal swab
19. Sterile technique
20. Suctioning: nares
21. Suctioning: oral pharynx
22. Suctioning: tracheostomy
23. Tracheostomy tube: replacement
24. Venipuncture

**B. GOAL: Diagnostic and screening procedures.** Describe the following tests or procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.

1. ECG: emergency interpretation
2. ECG: perform
3. Electroencephalogram (EEG)
4. pH probe (Tuttle test)
5. PPD: interpretation
6. Monitoring interpretation: cardiac
7. Monitoring interpretation: Holter
8. Monitoring interpretation: pulse oximetry
9. Monitoring interpretation: respiratory
10. Pulmonary function tests: interpretation
11. Radiologic interpretation: abdominal ultrasound
12. Radiologic interpretation: abdominal X-ray
13. Radiologic interpretation: chest X-ray
14. Radiologic interpretation: CT of head
15. Radiologic interpretation: extremity X-ray
16. Radiologic interpretation: GI contrast study
17. Radiologic interpretation: MRI of head
18. Radiologic interpretation: nuclear medicine GI scanning
19. Radiologic interpretation: renal ultrasound
20. Radiologic interpretation: skeletal X-ray (incl. abuse)
21. Radiologic interpretation: skull film for fracture
22. Radiologic interpretation: sinus films
23. Radiologic interpretation: voiding cystourethrogram

**Adapted From**

Kittredge, D., Baldwin, C. D., Bar-on, M. E., Beach, P. S., Trimm, R. F. (Eds.). (2004). APA Educational Guidelines for Pediatric Residency. Ambulatory Pediatric Association Website. Available online: [www.ambpeds.org/egweb](http://www.ambpeds.org/egweb).