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Purpose of this Guideline

Patients in the ICU often develop signs and symptoms concerning for new infection (or worsening of an existing infection). They also may have numerous risk factors for infection, including vascular access devices, airway devices, wounds, immunocompromised status, etc.

The goal of this guideline is to provide a standardized approach to evaluating patients when there is a new concern for infection. It is designed to apply to most patient situations, but exceptions will occur. This guideline should never replace clinical judgment.

When to Use This Guideline

This guideline should be used for patients who are currently in the PICU or PCICU and have been admitted to the hospital for at least 48 hours and have not been evaluated for a new infection in the past 48 hours. It applies to all patients who meet those criteria.

Fever

Defining fever: Fever (or hypothermia) is defined differently by patient population. For neonates and immunocompromised hosts, lower thresholds are used than in non-neonate immunocompetent patients.

Fever is not always possible. Patients on ECMO, continuous renal replacement therapy (CRRT), or temperature control devices do not manifest fever as expected. Other signs must be considered, such as vital signs, physical exam findings, and laboratory values.

Fever is not always caused by infection. Fever in the ICU has a broad differential diagnosis that includes many noninfectious conditions, such as recent surgery, thrombus, drug fever, and withdrawal from sedating medications.

Obtaining Cultures

Blood cultures: In general, two blood culture sets are recommended, with at least one drawn from peripheral stick. CVC cultures are indicated for long-term CVCs (i.e., implanted ports or tunneled CVCs) for which salvage may be attempted. Obtaining a second blood culture should not delay necessary care such as antibiotic administration in a patient with signs of sepsis.

Urine Cultures: Best practice is to obtain urinalysis *before* urine culture. Simultaneous UA and culture is acceptable if necessary. If urine culture is obtained from indwelling urinary catheter, it is very difficult to determine if bacterial growth represents infection. Fresh catheterization may be necessary to obtain a useful specimen.

Lower Respiratory Cultures: In most cases, an endotracheal tube or tracheostomy aspirate is used. These do have poor specificity. Bronchoscopy/BAL is occasionally warranted but is not the standard approach for a new concern. Please refer to “Hospital-Acquired and Ventilator-Associated Pneumonia (HAP and VAP) in Pediatric Patients” on CCCP for more detail.

Evaluation of New Fever or Instability in UNC Children's PICU/PCICU

New Fever or Instability

- Fever or Hypothermia (see box)
- Any of the following without alternative explanation: rigors, hypotension, tachycardia, AMS, poor perfusion, glucose instability, leukocytosis, apnea, bradycardia, worsening organ dysfunction (elevated lactate, AKI, metabolic acidosis)
- concern for NEC/SIP in neonates

Inclusion Criteria

- Currently admitted to PICU
- Admitted to the hospital \geq 48 hours
- No prior infection evaluation in last 48 hours

Fever and Hypothermia Definitions ($^{\circ}\text{C}$). If two measurements, they should be 1 hour apart.

Neonates (<2 months)	≥ 38.0 OR ≤ 36.0
Immunocompetent	$\geq 38.3 \times 2$ OR $\leq 36.0 \times 2$
Immunocompromised	$\geq 38.0 \times 2$ OR $\geq 38.3 \times 1$ OR $\leq 36.0 \times 2$

