

## ‘Explosive’ growth in PICUs prompts updated policy on levels, practice of critical care

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Over the past 15 years, there have been dramatic advancements in pediatric critical care medicine as well as associated subspecialties such as cardiology, transplantation, neurology, trauma and oncology. Moreover, the pediatric intensive care unit (PICU) landscape has changed with an explosive growth in specialized PICUs, such as those targeted to cardiovascular or neurocritical care.

An updated policy statement from the AAP and Society of Critical Care Medicine (SCCM) addresses those changes and establishes a revised set of guidelines that can aid hospitals and institutions in developing new PICUs or aligning existing units to established standards. The statement organizes PICUs into three distinct levels, outlining the services provided and personnel required for each level.

A summary of the policy statement, *Executive Summary: Criteria for Critical Care Infants and Children: PICU Admission, Discharge, and Triage Practice Statement and Levels of Care Guidance*, from the AAP Section on Critical Care, Section on Surgery and Committee on Hospital Care, is available at <https://doi.org/10.1542/peds.2019-2433> and will be published in the October issue of *Pediatrics*. The full statement is available at [https://journals.lww.com/pccmjournals/Fulltext/2019/09000/Criteria\\_for\\_Critical\\_Care\\_Infants\\_and\\_Children\\_.7.aspx](https://journals.lww.com/pccmjournals/Fulltext/2019/09000/Criteria_for_Critical_Care_Infants_and_Children_.7.aspx).

The policy, updated from 2004, addresses the evolution of PICUs. The 2004 version was an update of the original guidance published in 1993 and described level I and level II PICUs. In general, less severe but critically ill pediatric patients could be managed in level II PICUs, and those at the highest severity and with the most intensive needs would require level I PICUs.

### Summary of PICU levels

The 2019 policy establishes three levels of PICUs based on the results of a Delphi survey and expert panel consensus: community-based PICU, tertiary PICU and quaternary or specialized PICU.

Community-based PICUs play an important role in health care systems that provide care to infants and children. In the 2004 guidance, these centers were identified as level II PICUs. In general, these centers are mostly located in hospitals that offer medical-surgical care and a range of services targeted at the most fundamental level of pediatric intensive care services.

Tertiary PICUs have enhanced ability to care for critical care pediatric patients compared to community-based PICUs. In the 2004 guidance, these centers were identified as level I PICUs. Tertiary PICUs can provide advanced respiratory support such as high frequency oscillatory ventilation. However, they would not be expected to provide extracorporeal membrane oxygenation support or transplantation services. In

tertiary PICUs, the majority of pediatric medical and surgical services should be available, although in-house coverage would not be expected.

Lastly, a quaternary or specialized PICU facility serves as a regional center and possesses a large catchment area likely to encompass tertiary and community-based PICUs. These centers provide comprehensive services to all pediatric critically ill patients, including cardiovascular surgical services and transplantation services. Of note, specialized PICUs such as pediatric cardiovascular and neurocritical intensive care units are included in this level. This highest level of PICU would be capable of supporting an American College of Surgeons-verified level I or level II children's surgical center or level I or level II pediatric trauma center.

### **Practical approach**

The executive summary provides a high-level view, while the statement explores the specific requirements for PICU levels. These requirements include the services offered within each level as well as the personnel needed to provide these services.

Hospitals and health systems can use the recommendations to align existing PICUs to the level of services provided or to establish a new PICU to meet their communities' needs.

The statement can help pediatricians and other providers of pediatric care understand the services and capabilities of PICUs in their communities as well as the availability of tertiary, quaternary or specialized PICUs in their regions. Pediatricians can serve their patients better by identifying qualified local and regional PICUs available during times of critical illness.

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