# *Pediatric Hospital Medicine*
## Content Outline

In-Training, Initial Certification, and
Maintenance of Certification Exams

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## Overview

This content outline was developed to serve as the blueprint for the ABP's pediatric hospital medicine examinations. This outline identifies for all important stakeholders (eg, prospective candidates, diplomates, the public, training programs, professional associations, employers) the knowledge areas being measured by these exams. All pediatric hospital medicine in-training, initial certification, and maintenance of certification (MOC) examinations adhere to the specifications within this outline.

### DEVELOPMENT OF THE PEDIATRIC HOSPITAL MEDICINE CONTENT OUTLINE

The initial draft of this content outline was developed by a diverse, representative panel of 11 practicing pediatric hospitalists. The panel identified the knowledge required of pediatric hospitalists in clinical practice and categorized that knowledge into content domains and subdomains. Subsequently, all pediatric hospital medicine fellowship program directors (N = 47) were invited to review the draft outline and provide comment. Responses were received from 15 program directors, and the panel used that feedback to update the draft content outline.

Next, the ABP conducted a large-scale survey of practicing pediatric hospitalists to validate the draft content outline. Survey responses were obtained from 800 full-time, clinically active pediatric hospitalists. The survey asked participants to rate the frequency and criticality of the content domains and subdomains. The survey also collected open-ended comments from respondents in order to identify any important content areas that had not been included in the draft outline.

The survey results were used to make final revisions to the outline and to establish the exam weights (ie, the percentage of exam questions associated with each content domain). The content domains that were rated as highly critical and frequently required in practice have been weighted more heavily than the domains rated as less critical and/or less frequently required. Establishing the exam weights in this manner helps to ensure that ABP's pediatric hospital medicine exams are measuring the full breadth of knowledge required for clinical practice, while also placing an appropriate amount of emphasis on the content domains that were identified by the field of practicing pediatric hospitalists as being critically important.

### CONTENT DOMAINS

The knowledge for safe and effective practice as a pediatric hospitalist has been categorized into 13 content domains, presented in the table below. A more detailed breakdown of the knowledge subdomains within each domain is provided in the detailed content outline, beginning on page 4. Each exam question (also referred to as an *item*) included on a pediatric hospital medicine exam is classified according to the content domain and subdomain to which it is most closely aligned. If an item does not align with a content domain and subdomain, it is removed from the item pool and is not included on an exam.

| Pediatric Hospital Medicine Content Domains |
| --- |
| 1.   Medical Conditions * |
| 2.   Behavioral and Mental Health Conditions * |
| 3.   Newborn Care * |
| 4.   Children with Medical Complexity |
| 5.   Medical Procedures |
| 6.   Patient- and Family-Centered Care |
| 7.   Transitions of Care |
| 8.   Quality Improvement, Patient Safety, and Systems-Based Improvement |
| 9.   Evidenced-Based High-Value Care |
| 10.   Advocacy and Leadership |
| 11.   Ethics, Legal Issues, and Human Rights |
| 12.   Teaching and Education |
| 13.   Core Knowledge in Scholarly Activities |

\* Items that fall within domains 1-3 are also classified to a universal task (see below).

### UNIVERSAL TASKS

To help ensure the clinical relevance of the pediatric hospital medicine exams, the practice analysis panel identified a set of four *universal tasks* that reflect the primary ways in which medical knowledge can be applied in clinical practice: (1) core science and pathophysiology, (2) epidemiology and risk assessment, (3) diagnosis and evaluation, and (4) management and treatment. Each item that falls within content domains 1, 2, or 3 (medical conditions, behavioral and mental health conditions, or newborn care, respectively) is classified according to the universal task to which it is most closely aligned. If an item within those domains does not align with one of the universal tasks, it is removed from the item pool and is not included on an exam. The universal tasks are described more fully below:

1. **Core science and pathophysiology:** Apply foundational and evidence-based knowledge of diseases and conditions commonly seen in hospitalized children, including normal and abnormal functions of the body and mind in an age-specific developmental context
2. **Epidemiology and Risk Assessment:** Recognize patterns of health and disease and understand the variables that influence those patterns and the impact that those patterns may have on patient management principles
3. **Diagnosis and Evaluation:** Use available information (eg, patient history, physical exam) to formulate differential diagnoses, choose appropriate tests, and interpret test results to reach a likely diagnosis
4. **Management and Treatment:** Formulate a comprehensive management and/or treatment plan, including appropriate consultation and co-management, reevaluation, discharge planning, and long-term follow-up

* Universal task classifications are assigned to items that fall within content domains 1-3.

## DEVELOPMENT AND CLASSIFICATION OF EXAM QUESTIONS

Although the field of pediatric hospital medicine is continually evolving, the content domains and subdomains within this outline should be viewed as broad categories of knowledge that are likely to remain relatively stable over time. The detailed knowledge within the content domains and subdomains, however, is likely to change as the field continues to advance. Because items may assess a pediatric hospitalist's knowledge of a specific element within a content domain/subdomain, it is important to note that it is the responsibility of the test taker to ensure that his or her knowledge within each knowledge area is current and up to date.

In order to ensure all pediatric hospital medicine exam questions are current and up to date, the ABP follows a rigorous item development and approval process. Each item is written by a board-certified practitioner or academician who has received training on how to write high-quality exam questions. Each item is classified according to the content domain/subdomain to which it is most closely aligned. Items that fall within content domains 1–3 (medical conditions, behavioral and mental health conditions, and newborn care) are also classified according to the universal task to which they are most closely aligned.

Once an item has been written, it is then reviewed and revised, if necessary, by the Pediatric Hospital Medicine Subboard, a large, diverse panel of practicing pediatric hospitalists. During the revision process, each item is also reviewed by a medical editor to ensure accuracy and by ABP staff editors who standardize question style, format, and terminology; correct grammar; and eliminate ambiguity and technical flaws, such as cues to the answer.

Once the subboard has approved an item, it is included in the item pool and is made available for future exams. All approved items in the pool, including items that have been used previously on an exam, are reviewed periodically for accuracy, currency, and relevance.

## SAMPLE QUESTION

To illustrate how items are classified, consider the following sample question:

*A 6-month-old infant has just been hospitalized with bronchiolitis. The nurse calls with concern for increased work of breathing. Evaluation of the infant reveals moderate intercostal retractions, nasal congestion, and coarse breath sounds equal bilaterally. The patient's temperature is 37.5°C, respiratory rate is 52, heart rate is 168/min, blood pressure is 90/58 mmHg, and oxygen saturation is 93% in room air.*

*What is the most appropriate next step in the management of this patient?*

A. *Administer albuterol and reassess*
B. *Initiate oxygen therapy and place on continuous pulse oximetry*
C. *Obtain rapid viral PCR panel test and radiograph of the chest*
D. *Suction the nasopharynx and reposition the infant*

*Correct answer = D. Suction the nasopharynx and reposition the infant*

The item above would most likely be classified as shown in the table below.

| Item Classification | |
| --- | --- |
| Content Domain/ Subdomain* | 1. Medical conditions<br> C. Pulmonary<br>  1. Bronchiolitis |
| Universal Task | 4. Management and treatment |

*Content domain/subdomain 1.C.1 can be found on page 4 of this document (within the detailed content outline section).

# Exam Weights

The tables below indicate the exam weights (ie, the percentage of exam questions associated with each content domain and with each universal task) for the ABP's pediatric hospital medicine in-training, initial certification, and maintenance of certification exams. Please note that the weights reflect the content of a *typical* exam and are approximate; actual content may vary.

| Content Domains | | Weights |
|---|---:|---:|
| 1.  Medical Conditions* | | 55% |
|     A.  Neurology | 4.0% | |
|     B.  Head and Neck | 4.0% | |
|     C.  Pulmonary | 5.0% | |
|     D.  Cardiovascular | 4.0% | |
|     E.  Gastrointestinal | 5.0% | |
|     F.  Renal/genitourinary/gynecology | 4.0% | |
|     G.  Orthopedics | 1.0% | |
|     H.  Rheumatologic/vasculitis | 3.0% | |
|     I.  Endocrine/metabolic | 4.0% | |
|     J.  Child maltreatment | 2.0% | |
|     K.  Dermatologic | 3.0% | |
|     L.  Hematologic/oncologic | 3.0% | |
|     M.  Allergy and immunology | 2.0% | |
|     N.  Injuries and exposures | 5.0% | |
|     O.  Other conditions | 6.0% | |
| 2.  Behavioral and Mental Health Conditions* | | 6% |
| 3.  Newborn Care* | | 8% |
| 4.  Children with Medical Complexity | | 6% |
| 5.  Medical Procedures | | 3% |
| 6.  Patient- and Family-Centered Care | | 2% |
| 7.  Transitions of Care | | 2% |
| 8.  Quality Improvement, Patient Safety, and Systems-Based Improvement | | 4% |
| 9.  Evidence-Based High-Value Care | | 5% |
| 10. Advocacy and Leadership | | 2% |
| 11. Ethics, Legal Issues, and Human Rights | | 2% |
| 12. Teaching and Education | | 2% |
| 13. Core Knowledge in Scholarly Activities | | 3% |
| * Items that fall within content domains 1-3 are also classified to a universal task (see below). | | 100% |

| Universal Tasks | Weights |
|---|---:|
| 1.  Core Science and Pathophysiology | 20% |
| 2.  Epidemiology and Risk Assessment | 10% |
| 3.  Diagnosis and Evaluation | 35% |
| 4.  Management and Treatment | 35% |
| * Universal task classifications and exam weights only apply to items within content domains 1-3. | 100% |

# Detailed Content Outline

## Domain 1: Medical Conditions (55%)
*Items within this domain are also classified to a universal task.*

A. Neurology (4%)
   1. Altered mental status
   2. Seizures
   3. Meningitis
   4. Abscesses
   5. Encephalitis
   6. Headaches
   7. Hypotonia
   8. Inflammatory neuropathies
   9. Neuromuscular disorders
   10. Cerebrovascular accident
   11. Other (eg, brain tumors, central nervous system vascular disorders, cranial nerve palsies, movement disorders)
B. Head and neck (4%)
   1. Upper airway infections and conditions (eg, croup, epiglottitis)
   2. Neck masses and infections (including cervical lymphadenopathy)
   3. Oropharyngeal infections (eg, dental infections, peritonsillar abscess, retro- and parapharyngeal abscess)
   4. Ear, eye, and sinus infections and complications (eg, periorbital and orbital infections, sinusitis, mastoiditis, conjunctivitis)
   5. Parotitis
C. Pulmonary (5%)
   1. Bronchiolitis
   2. Asthma
   3. Pneumonia
   4. Acute respiratory distress and failure
   5. Chronic respiratory conditions
   6. Foreign body aspiration
   7. Bacterial tracheitis
D. Cardiovascular (4%)
   1. Cardiomyopathies
   2. Congenital heart disease
   3. Heart failure
   4. Dysrhythmias
   5. Endocarditis, myocarditis, and pericarditis
   6. Syncope
   7. Hypertension and hypertensive emergencies
   8. Cardiac arrest
   9. Shock (including septic, cardiogenic, hypovolemic)
E. Gastrointestinal (5%)
   1. Appendicitis
   2. Cholecystitis and cholangitis
   3. Constipation
   4. Gastroenteritis
   5. Gastroesophageal reflux

6. Gastrointestinal bleeding
7. Hepatitis
8. Obstruction (eg, intussusception, pyloric stenosis, malrotation and midgut volvulus)
9. Hyperbilirubinemia
10. Pancreatitis
11. Peritonitis
12. Inflammatory Bowel Disease
F. Renal/genitourinary/gynecology (4%)
   1. Hemolytic-uremic syndrome
   2. Acute kidney injury
   3. Glomerulonephritis
   4. Nephrolithiasis
   5. Nephrotic syndrome
   6. Pelvic inflammatory disease
   7. Dysfunctional uterine bleeding
   8. Ovarian cysts and torsion
   9. Testicular mass and torsion
   10. Pyelonephritis/urinary tract infections
G. Orthopedics (1%)
   1. Fractures
   2. Bone and joint infections
H. Rheumatologic/vasculitis (3%)
   1. Henoch-Schönlein purpura
   2. Kawasaki disease
   3. Inflammatory arthritis
   4. Systemic lupus erythematous
I. Endocrine/metabolic (4%)
   1. Diabetes insipidus
   2. Syndrome of inappropriate antidiuretic hormone secretion
   3. Hypo and hyperthyroidism
   4. Hypo and hypercalcemia
   5. Adrenal disorders
   6. Diabetes mellitus
   7. Hypoglycemia
   8. Inborn errors of metabolism (IEM)
J. Child maltreatment (2%)
   1. Physical abuse and child neglect
   2. Sexual abuse
   3. Medical child abuse
K. Dermatologic (3%)
   1. Skin and soft tissue infections
   2. Dermatologic manifestations of systemic illnesses
   3. Erythema multiforme and Stevens-Johnson syndrome
   4. Complicated eczema
L. Hematologic/oncologic (3%)
   1. Anemias
   2. Deep venous thrombosis/pulmonary embolism/hypercoagulable states
   3. Bleeding disorders
   4. Sickle cell disease

5. Isolated thrombocytopenia
6. Fever and neutropenia

M. Allergy and immunology (2%)
1. Anaphylaxis (including anaphylactic shock)
2. Immunodeficiencies
3. Drug reactions (eg, serum sickness)

N. Injuries and Exposures (5%)
1. Ingestions (intentional and unintentional)
2. Insect and animal bites
3. Drowning
4. Hypo- and hyperthermia
5. Trauma (including head trauma)
6. Burns

O. Other conditions (6%)
1. Brief resolved unexplained events (BRUE)
2. Failure to thrive
3. Bloodstream infection (bacteremia)
4. Fever in infants less than 60 days
5. Fever of unknown origin (prolonged/recurrent)
6. Electrolyte abnormalities
7. Acid/base disorders
8. Pain (acute and chronic)

## Domain 2: Behavioral and Mental Health Conditions (6%)
*Items within this domain are also classified to a universal task.*

A. Self-harm/suicidality
B. Acute aggression and psychosis
C. Delirium
D. Psychosomatic disorders
E. Behavioral and developmental disorders (in the hospital setting)
F. Eating disorders

## Domain 3: Newborn Care (8%)
*Items within this domain are also classified to a universal task.*

A. Delivery room care, including resuscitation and stabilization
B. Common conditions in the immediate newborn period
1. Hypoglycemia
2. Neonatal hyperbilirubinemia
3. Respiratory distress
4. Neonatal infections, including exposure
5. Late preterm infant
6. Drug exposure/neonatal abstinence syndrome (NAS)
7. Birth trauma
8. Congenital anomalies
9. Newborn feeding (including breastfeeding and formula feeding)

## Domain 4: Children with Medical Complexity (6%)

A. Symptom management (eg, bowel and bladder, spasticity, dysautonomia, wound care, secretions/salivation, agitation, and pain)

B. Feeding and nutrition (eg, caloric needs assessment, methods of feeding)
C. Device and technology management, including complications (eg, tracheostomy, feeding tubes, oxygen, continuous positive airway pressure (CPAP)/bilevel airway pressure (BiPAP), ventilator, ventriculoperitoneal shunt
D. Medication management (eg, interactions, side effects, formulation considerations)
E. Care coordination (eg, transitions/safe discharge, goals of care, managing multiple consultants/specialists, home health, ancillary services like therapies, placement)
F. Palliative and end-of-life care

## Domain 5: Medical Procedures (3%)
*For the medical procedures listed below, the test questions may assess any of the following knowledge areas: (1) indications, contraindications, and alternatives, (2) risks and benefits, (3) potential complications, (4) preparation steps and recovery, or (5) patient comfort and anxiety.*

A. Lumbar puncture
B. Intraosseous access placement
C. Incision and drainage
D. Nasogastric tube placement
E. Gastric tube replacement/change
F. Tracheostomy tube change
G. Bag mask ventilation
H. Endotracheal intubation and LMA placement
I. Needle thoracentesis
J. Umbilical artery catheter/umbilical vein catheter placement
K. Peripheral intravenous placement
L. Arterial puncture
M. Bladder catheterization
N. Procedural sedation
O. Circumcision

## Domain 6: Patient- and Family-Centered Care (2%)
A. Shared decision-making and conflict resolution
B. Patient/family-centered rounds
C. Cultural competency (language, cultural factors)
D. Health literacy
E. Patient/family education
F. Patient and caregiver resiliency and well-being

## Domain 7: Transitions of Care (2%)
A. Handoffs across the continuum of care
B. Triage within the healthcare system
C. Transport facilitation and risk-mitigation
D. Discharge coordination and communication

## Domain 8: Quality Improvement, Patient Safety, and Systems-Based Improvement (4%)
A. Model for improvement (eg, Plan-Do-Study-Act)
B. Quality improvement (QI) tools (eg, run charts, statistical process control, fishbone)
C. Waste and variation reduction (eg, Lean, Six Sigma)
D. Principles of patient safety and high reliability organizations (HROs)

E. Safety processes and tools (eg, root cause analysis [RCA], Just Culture, trigger tools, failure mode and effects analysis [FMEA])
F. Patient safety regulations (eg, mandatory reporting, disclosure, never events)
G. Hospital-acquired conditions
H. Role of regulatory, accrediting, licensing, and other legal agencies impacting the practice of pediatric hospital medicine

## Domain 9: Evidence-Based High-Value Care (5%)

A. Principles of value in healthcare for individuals and populations (eg, reducing unwarranted variation, overuse, overtreatment, overdiagnosis)
B. Commonly used terms and metrics (eg, length of stay, readmissions, costs and charges)
C. Identifying and addressing unmet healthcare needs (eg, preventive care)
D. Principles of clinical guideline development and evaluation
E. Principles of evidence evaluation (eg, source and strength)

## Domain 10: Advocacy and Leadership (2%)

A. Principles of team leadership
B. Principles of change management
C. Health equity and health disparities
    1. Health care access
    2. Social determinants of health
    3. Implicit bias
    4. Culturally effective healthcare and cultural humility

## Domain 11: Ethics, Legal Issues, and Human Rights (2%)

A. Ethical frameworks (eg, biomedical, human rights, public health)
B. Consent and assent
    1. Capacity to consent
    2. Shared decision-making
C. Confidentiality (eg, individual and system-level considerations, mandated reporting)
D. Professional integrity (eg, disclosure of medical errors, deception, and truth-telling)

## Domain 12: Teaching and Education (2%)

A. Principles of adult learning theory
B. Teaching strategies for multiple types and levels of learners, including patients and caregivers
C. Principles of effective assessment and feedback
D. Principles of mentorship

## Domain 13: Core Knowledge in Scholarly Activities (3%)

A. Principles of Biostatistics in Research
    1. Types of variables (eg, continuous, ordinal, nominal)
    2. Distribution of data (eg, mean, standard deviation, skewness)
    3. Hypothesis testing (eg, Type I and Type II errors, p-values, statistical power)
    4. Common statistical tests (eg, analysis of variance [ANOVA], chi-square, nonparametric tests)
    5. Measurement of association and effect (eg, correlation, relative risk, odds ratio)
    6. Regression (eg, linear, logistic, survival analysis)
    7. Diagnostic tests (eg, sensitivity and specificity, predictive values, disease prevalence, receiver operating characteristic [ROC] curves)

      8. Systematic review and meta-analysis
B. Principles of Epidemiology and Clinical Research Design
      1. Study design, performance, and analysis (internal validity)
      2. Generalizability (external validity)
      3. Bias and confounding
      4. Causation
      5. Incidence and prevalence
      6. Screening
      7. Cost benefit, cost effectiveness, and outcomes
      8. Measurement (eg, validity, reliability)
C. Ethics in Research
      1. Professionalism and misconduct in research (eg, conflicts of interest, falsification)
      2. Principles of research involving human subjects
      3. Principles of consent and assent