

**** Materials for this course will release 09/22/2021 ****

Pediatric Pharmacy Specialty Review Course for Recertification, Core Therapeutic Modules + RECERT EXAMS Package (Cert # L219214)

Teaser: This online course will help you earn BCPPS recertification credit. With this course, get comprehensive, practical guidance, with a variety of complex cases, including references for further study.

Tag: Certifications; Pediatrics



ACPE Numbers: Various – see listing below

Pre-Sale Date: 09/01/2021

Content Release Date: 09/22/2021

Expiration Date: 09/20/2022

Activity Type: Application-based

CE Credits: 22 (BPS and ACPE) contact hours

Activity Fee: \$475 (ASHP member); \$675 (non-member)

Accreditation for Pharmacists



The American Society of Health-System Pharmacists is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Target Audience

These recertification activities are intended for board certified pharmacists seeking to update their knowledge and skills in pediatric pharmacy.

Activity Overview

This course is intended for BCPPS in need of recertification credit and is designed based on the content outline developed by the Board of Pharmacy Specialties (BPS) to provide an overview of recent standards and guidelines that specialists should be familiar with in practice. The course uses a case-based approach to discuss patient care issues. In this series, faculty will:

- Review pertinent clinical topics and practice skills
- List valuable resources for further self-study

This online course consists of 14 activities (see tables below) and provides up to 22 contact hours of continuing pharmacy education credit and/or recertification credit.

Recertification Credit*

Board certified pharmacists are eligible to receive up to 22 contact hours of recertification credit for completing this course. To earn recertification credit, learners must review the course content and successfully complete the online assessments by the deadline. Only completed assessments will be eligible for credit; no partial or incomplete assessments will be processed. You are allowed only one attempt to successfully complete this assessment.

This course is not intended for those preparing to take the BPS Pediatric Pharmacy Specialty Examination for Certification. To prepare for the examination, please see courses here: <http://elearning.ashp.org/catalog/pediatric-review>

These activities are part of the ASHP professional development program for BCPPS recertification approved by the BPS.

**** Materials for this course will release 09/22/2021 ****

** Please note: Review Course for Recertification may only be completed for recertification credit up to two times, in nonconsecutive years, during the 7-year recertification cycle.*

REVIEW COURSE:

The review course for recertification consists of 11 activities (see table below). In each activity, faculty review clinical topics and practice skills using a case-based approach. This package is intended for board certified pharmacists in need of recertification credit; the activities were designed based on the content outline developed by the Board of Pharmacy Specialties (BPS).

Learning Activity	ACPE Number	Contact Hours	*Assessment Pass Point
Complex Case: Deep Vein Thrombosis and Metabolic Syndrome	0204-0000-21-997-H01-P	1.50	75%
Complex Case: Diabetic Ketoacidosis	0204-0000-21-998-H01-P	1.50	
Complex Case: Acute Asthma	0204-0000-21-999-H01-P	1.50	
Complex Case: Pneumonia and Septic Shock	0204-0000-21-600-H01-P	1.50	
Group 1 Assessment		6.0	
Complex Case: Acute Lymphoblastic Leukemia and Supportive Care	0204-0000-21-601-H01-P	1.50	76%
Regulatory and IRB Considerations	0204-0000-21-602-H03-P	0.50	
Complex Case: Sickle Cell Disease with Vaso-Occlusive Crisis	0204-0000-21-603-H01-P	1.50	
Medication Error and Practice Management	0204-0000-21-604-H05-P	1.50	
Group 2 Assessment		5.0	
Complex Case: Neonatal Sepsis	0204-0000-21-605-H01-P	1.50	78%
Statistics, Evidence-Based Medicine, and Clinical Trial Design	0204-0000-21-985-H04-P	2.00	
Complex Case: Status Epilepticus and Cardiopulmonary Resuscitation	0204-0000-21-606-H01-P	1.50	
Group 3 Assessment		5.0	

Learning Objectives

At the end of the presentations, the pharmacist should be able to:

Complex Case: Deep Vein Thrombosis and Metabolic Syndrome

ACPE #: 0204-0000-21-997-H01-P

- Develop appropriate treatment and monitoring plans for a complex pediatric patient with multiple conditions, including deep vein thrombosis, type 2 diabetes mellitus, dyslipidemia, and hypertension.
- Identify resources and treatment options for sexually transmitted infections.
- Select appropriate monitoring considerations of anticoagulation medications.
- Recognize the impact of pharmacogenomic differences on warfarin therapy.

Complex Case: Diabetic Ketoacidosis

ACPE #: 0204-0000-21-998-H01-P

- Develop appropriate treatment and monitoring plans for a complex pediatric patient with multiple conditions, including diabetic ketoacidosis, type 1 diabetes mellitus, and urinary tract infection.
- Calculate maintenance and replacement fluid requirements and urine output.

**** Materials for this course will release 09/22/2021 ****

- Identify factors affecting medication adherence.
- Recommend appropriate dosing of insulin based on patient age and weight.
- Select an effective method of delivery for insulin.

Complex Case: Acute Asthma

ACPE #: 0204-0000-21-999-H01-P

- Develop appropriate treatment and monitoring plans for a complex pediatric patient with multiple conditions, including acute and chronic asthma, ADHD, acne and GERD.
- Evaluate essential components of social history, including smoke exposure and home environment.
- Formulate a plan to address barriers to patient education and adherence, including age, language, cultural considerations, and inhaler technique.
- Describe the impact of age on classification and management of asthma.
- Assess available resources to improve access to medications, including patient assistance programs.

Complex Case: Pneumonia and Septic Shock

ACPE #: 0204-0000-21-600-H01-P

- Develop appropriate treatment and monitoring plans for a complex pediatric patient with multiple conditions, including pneumonia, septic shock, and acute kidney injury.
- Calculate creatinine clearance, fluid requirements, and urine output in pediatric patients.
- Apply scoring systems to assess pediatric patients.
- Select appropriate dosing for medications based on renal dysfunction and/or replacement modalities.
- Differentiate vital signs between stable and critically-ill pediatric patients.

Complex Case: Acute Lymphoblastic Leukemia and Supportive Care

ACPE #: 0204-0000-21-601-H01-P

- Develop appropriate treatment and monitoring plans for a complex pediatric patient with multiple conditions, including acute lymphoblastic leukemia (ALL), tumor lysis syndrome, febrile neutropenia, invasive aspergillosis infection, and Clostridium difficile infection.
- Select appropriate medication dose modifications related to hepatic impairment.

Regulatory and IRB Considerations

ACPE #: 0204-0000-21-602-H03-P

- Identify appropriate off-label use of medications in the pediatric population.
- Recognize IRB requirements for documentation of clinical studies
- List characteristics of patients who require informed assent/consent.
- Recognize federal legislation relevant to the use of medications in pediatric patients.

Complex Case: Sickle Cell Disease with Vaso-Occlusive Crisis

ACPE #: 0204-0000-21-603-H01-P

- Develop appropriate treatment and monitoring plans for a complex pediatric patient with multiple conditions, including a vaso-occlusive crisis, cellulitis, constipation, and need for immunizations.
- Select most appropriate patient controlled analgesia regimen based on vaso-occlusive crisis severity.
- Apply pharmacodynamic principles when selecting appropriate antibiotic regimens.
- Identify required immunizations for adolescents, including patients with risk factors for vaccine-preventable diseases.

**** Materials for this course will release 09/22/2021 ****

Medication Error and Practice Management

ACPE #: 0204-0000-21-604-H05-P

- Incorporate position statements, white papers, national guidelines from recognized regulatory organizations into institutional policies and procedures related to:
- Medication reconciliation
- Appropriate drug preparation and delivery (e.g., extemporaneous compounding and standardized concentrations)
- Selection of appropriate equipment/technology and decision support.
- Adverse drug event monitoring and reporting, or
- Metrics for evaluating quality of pediatric pharmacy services.

Complex Case: Neonatal Sepsis

ACPE #: 0204-0000-21-605-H01-P

- Develop appropriate treatment and monitoring plans for a complex neonatal patient with multiple conditions, including patent ductus arteriosus, apnea of prematurity, early and late onset sepsis, and necrotizing enterocolitis.
- Evaluate the clinical and therapeutic implications of placental transfer of medications.
- Identify age-specific pharmacokinetic differences among neonates, infants, children, and adolescents.
- Apply FDA alerts for adverse drug events and drug-drug interactions into clinical practice.
- Identify characteristics that facilitate transfer of medications into the breast milk.

Statistics, Evidence-Based Medicine, and Clinical Trial Design

ACPE #: 0204-0000-21-985-H04-P

- Interpret biomedical literature with regard to study design, methodology, statistical analysis, and significance and applicability of reported data and conclusions.
- Explain the use of evidence-based treatment guidelines and protocols.
- Summarize key points from the most current pharmacy practice literature.

Complex Case: Status Epilepticus and Cardiopulmonary Resuscitation

ACPE #: 0204-0000-21-606-H01-P

- Develop appropriate treatment and monitoring plans for a complex pediatric patient with multiple conditions and needs, including status epilepticus, cardiopulmonary resuscitation, and sedation/analgesia.
- Differentiate treatment options in cardiopulmonary arrest based upon patient presentation.
- Select the appropriate dose and route of administration for medications.
- Assess the need and processes for reporting adverse drug events.
- Identify cultural considerations related to treatment and counseling of the pediatric population.
- Distinguish between the four preceptor roles.

**** Materials for this course will release 09/22/2021 ****

CORE THERAPEUTIC MODULES:

The Core Therapeutic Modules for Recertification Package consists of 3 activities (see table below). In each activity, faculty review clinical topics and practice skills using a case-based approach. This package is intended for board certified pharmacists in need of recertification credit; the activities were designed based on the content outline developed by the Board of Pharmacy Specialties (BPS).

Learning Activity	ACPE Number	Contact Hours	*Assessment Pass Point
Select Topics in Pediatric Critical and Emergency Care	0204-0000-21-607-H01-P	1.00	77%
Select Topics in Pediatric Hematology and Oncology	0204-0000-21-608-H01-P	1.00	
Select Topics in Pediatric Neurology and Psychiatry Part 1	0204-0000-21-609-H01-P	1.00	

Learning Objectives

After participating in these CPE activities, learners should be able to:

Select Topics in Pediatric Critical and Emergency Care

ACPE #: 0204-0000-21-607-H01-P

- Interpret diagnostic and/or laboratory tests, vital signs, and clinical presentation of a pediatric patient with traumatic brain injury or select toxicological emergencies (e.g., acetaminophen, ethylene glycol).
- Develop the most appropriate therapy and monitoring plans based on patient-specific information and the most current guidelines.
- Develop appropriate medication dosing plans for a pediatric patient on ECMO.
- Develop plans to manage underlying disorders.

Select Topics in Pediatric Hematology and Oncology

ACPE #: 0204-0000-21-608-H01-P

- Interpret signs, symptoms and diagnostic tests for chemotherapy-induced nausea and vomiting, mucositis, immune thrombocytopenia, infantile hemangioma, and palliative care in pediatric cancer patients
- Evaluate patient information to identify drug-related problems and response to therapy.
- Identify appropriate modifications and supportive care plans based on patient-specific follow up assessment.

Select Topics in Pediatric Neurology and Psychiatry Part 1

ACPE #: 0204-0000-21-609-H01-P

- Develop treatment and monitoring plans based on patient-specific information and the most current guidelines for a pediatric patient with migraines, autism, cerebral palsy, depression or anxiety.
- Evaluate patients for drug-related problems and response to therapy.
- Identify appropriate modifications of patient-specific treatment plans based on follow up assessment.

REVIEW COURSE:

Faculty (<http://elearning.ashp.org/catalog/pediatric-recert>)

Emily Benefield, Pharm.D., BCPPS, BCPS

Advanced Clinical Pharmacist

Primary Children's Hospital

Salt Lake City, Utah

**** Materials for this course will release 09/22/2021 ****

Peter N. Johnson, Pharm.D., BCPPS, BCPS, FCCM, FPPAG*
Associate Professor of Pharmacy Practice
University of Oklahoma College of Pharmacy
Clinical Pharmacy Specialist--Pediatric Critical Care
The Children's Hospital at OU Medical Center
Oklahoma City, Oklahoma

Kevin Patrick Lonabaugh, Pharm.D., BCACP, AAHIVP, AE-C
Clinical Pharmacist - Pediatric Ambulatory Care
University of Virginia Children's Hospital
Charlottesville, Virginia

Rachel S. Meyers, Pharm.D., BCPPS, BCPS
Clinical Associate Professor
Ernest Mario School of Pharmacy, Rutgers
The State University of New Jersey
Piscataway, New Jersey
Pediatric Pharmacist
Saint Barnabas Medical Center
Livingston, New Jersey

Jamie L. Miller, Pharm.D., BCPPS, BCPS, FPPAG*
Associate Professor
University of Oklahoma College of Pharmacy
Oklahoma City, Oklahoma

Jill A. Morgan, Pharm.D., BCPPS, BCPS
Professor and Chair
University of Maryland School of Pharmacy
Baltimore, Maryland

Mya Merrow, Pharm.D., BCOP
Oncology Clinical Pharmacist
Children's Hospital Colorado
Aurora, Colorado

Jennifer L. Thackray, Pharm.D., BCPPS, BCPS*
Pediatric Oncology Clinical Pharmacy Specialist
Memorial Sloan Kettering Cancer Center
New York, New York

Lisa T. Thames, Pharm.D., BCPS
Assistant Director, Pharmacy Services
UF Health Shands Hospital
Gainesville, Florida

***Content Matter Experts**

**** Materials for this course will release 09/22/2021 ****

Reviewers

Michelle Abalos, Pharm.D.
Kristi Hofer, Pharm.D.

Field Testers

Nerissa Alday, Pharm.D., BCPS, BCPPS
Lawrence Alejandro, Pharm.D., BCPPS
Amy Alonzo, Pharm.D., BCPPS
Meghan Baldo, Pharm.D., BCPPS
Michelle Barrie, Pharm.D., BCPPS
Vaibhavi Bhavsar, Pharm.D., BCPPS
Monica Bogenschutz, Pharm.D., BCPS, BCPPS
Karen Brodbeck, R.Ph., BCPPS
Samantha Brokenshire, Pharm.D., BCPPS
Alyson Browning, Pharm.D., BCPS, BCPPS
Bonny Brownstein, Pharm.D., BCPS, BCPPS
Sharon Camperchioli, Pharm.D., BCPPS
Samantha Chang, Pharm.D., BCPPS
Rou-Yee Chenhsu, Pharm.D., BCPS, BCPPS
Allison Chung, Pharm.D., BCPPS
Alexandria David, Pharm.D., BCPPS
Andrew Decker, Pharm.D., BCPPS
Darrin Dillingham, Pharm.D., BCPPS
Karen Gradischer, Pharm.D., BCPPS
Sarah Hale, Pharm.D., BCPPS
Aaron Harthan, Pharm.D., BCPPS
Andrew Hatt, Pharm.D., BCPPS
Margaret Heger, Pharm.D., BCPS, BCPPS
Melissa Johnson, Pharm.D., BCPPS
Eok Jun, Pharm.D., BCPPS
Katelin Kimler, Pharm.D., BCPPS
Todd Kociancic, Pharm.D., BCPPS

Ekaterina Kurdyukova, Pharm.D., BCPPS
Nicole Loudon, Pharm.D., BCPPS
Kristin Luckerth, Pharm.D., BCPPS
Linda Marshall, Pharm.D., BCPPS
Erin Munsel, Pharm.D., BCPPS
Kati Munson, Pharm.D., BCPPS
Julie Musarra, Pharm.D., BCPPS
Raymond Ngo, Pharm.D., BCPS, BCPPS
Lane Nguyen, Pharm.D., BCPPS
Enyioma Nwankwo, Pharm.D., BCPPS
Colleen O'Connell, Pharm.D., BCPS, BCPPS
Lucas Orth, Pharm.D., BCPPS
Seema Patel, Pharm.D., BCPPS
Nicole Phillips, Pharm.D., BCPPS
Stephanie Pizzino, Pharm.D., BCPPS
Michael Raschka, Pharm.D., BCPPS
Katelyn Rasmussen, Pharm.D., BCPPS
Olga Rodriguez, Pharm.D., BCPPS
Patrick Rose, Pharm.D., BCPS, BCPPS
Emily Rowe, Pharm.D., M.S., BCPS, BCPPS
Elizabeth Shober, Pharm.D., BCPPS
Justin Simpkins, Pharm.D., BCPPS, CPPS
Tara Smith, Pharm.D., BCPPS
Shannon Song, Pharm.D., BCPPS
Sarah Todd, Pharm.D., BCPPS
Carol Vollmer-Johnson, Pharm.D., BCPPS
Rebecca Wytiaz, Pharm.D., BCPPS

CORE THERAPEUTIC MODULES:

Faculty (<http://elearning.ashp.org/catalog/pediatric-recert>)

Lea Eiland, Pharm.D., BCPS, BCPPS, FASHP, FPPAG
Clinical Professor and Associate Department Head
Auburn University Harrison School of Pharmacy
Auburn, Alabama

Katie Hughes, Pharm.D., BCPPS
Clinical Pharmacist Pediatric Critical Care
Riley Hospital for Children at IU Health
Indianapolis, Indiana

**** Materials for this course will release 09/22/2021 ****

Kate Reichert, Pharm.D., BCPPS
Pediatric Oncology Clinical Pharmacy Specialist
Department of Pharmacy
Memorial Sloan Kettering Cancer Center
New York, New York

Content Matter Experts

Peter N. Johnson, Pharm.D., BCPPS, BCPS, FCCM, FPPAG
Associate Professor of Pharmacy Practice
University of Oklahoma College of Pharmacy
Clinical Pharmacy Specialist--Pediatric Critical Care
The Children's Hospital at OU Medical Center
Oklahoma City, Oklahoma

Jennifer L. Thackray, Pharm.D., BCPPS, BCPS
Pediatric Oncology Clinical Pharmacy Specialist
Memorial Sloan Kettering Cancer Center
New York, New York

Reviewers

Michelle Abalos, Pharm.D.
Kristi Hofer, Pharm.D.

Field Testers

Amy Alonzo, Pharm.D., BCPPS
Michelle Barrie, Pharm.D., BCPPS
Vaibhavi Bhavsar, Pharm.D., BCPPS
Jacklyn Bradley, Pharm.D., BCPPS
Octavio Casanova, Pharm.D., BCPPS
Kimberly Cheng, Pharm.D., BCPPS
Melissa Cook, Pharm.D., BCPPS
Nozomi Giese Kim, Pharm.D., BCPS, BCPPS
Eok Jun, Pharm.D., BCPPS
Ekaterina Kurdyukova, Pharm.D., BCPPS

Erin Munsel, Pharm.D., BCPPS
Lane Nguyen, Pharm.D., BCPPS
Leslie Patatanian, B.S., Pharm.D., BCPPS
Stephanie Pennington, Pharm.D., BCPPS
Elizabeth Shober, Pharm.D., BCPPS
Anna Simmont, Pharm.D., BCPS, BCPPS
Sadie Stone, Pharm.D., BCPPS
Leslie Thompson, Pharm.D., BCPS, BCPPS
Susan Villegas, Pharm.D., BCPPS
Carol Vollmer-Johnson, Pharm.D., BCPPS

Disclosures

In accordance with the Accreditation Council for Continuing Medical Education's Standards for Commercial Support and the Accreditation Council for Pharmacy Education's Standards for Commercial Support, ASHP requires that all individuals involved in the development of activity content disclose their relevant financial relationships. A person has a relevant financial relationship if the individual or his or her spouse/partner has a financial relationship (e.g. employee, consultant, research grant recipient, speakers bureau, or stockholder) in any amount occurring in the last 12 months with a commercial interest whose products or services may be discussed in the educational activity content over which the individual has control. The existence of these relationships is provided for the information of participants and should not be assumed to have an adverse impact on the content.

All faculty and planners for ASHP education activities are qualified and selected by ASHP and required to disclose any relevant financial relationships with commercial interests. ASHP identifies and resolves conflicts of interest prior to an individual's participation in development of content for an educational activity. Anyone who refuses to disclose relevant financial relationships must be disqualified from any involvement with a continuing pharmacy education activity.

**** Materials for this course will release 09/22/2021 ****

All other planners, presenters, reviewers, ASHP staff and others with an opportunity to control content report no financial relationships relevant to this activity.

Methods and CE Requirements

Activities can be completed in any order. Each activity consists of audio, video, and/or PDFs and evaluations. Learners must review all content and complete the evaluations to receive continuing pharmacy education credit for each activity.

Follow the prompts to claim, view, or print the statement of credit within 60 days after completing the activity.

System Technical Requirements

Courses and learning activities are delivered via your Web browser and Acrobat PDF. For all activities, you should have a basic comfort level using a computer and navigating web sites.

View the [minimum technical and system requirements](#) for learning activities.

Development

These activities were developed by ASHP.