

**** Materials for this course will release 07/14/2021****

Solid Organ Transplantation Pharmacy Specialty Review Course and Practice Exam (No Recert Credit (Cert # L219316))

Teaser: This online Specialty Review Course and Practice Exam package will help you prepare for the Board of Pharmacy Specialty (BPS) examination. With this course, get comprehensive, practical guidance, with a variety of complex cases, including references for further study.

Tag: Certifications; Solid Organ Transplantation



ACPE Numbers: Various – see listing below

Pre-Sale Date: 06/16/2021

Content Release Date: 07/14/2021

Expiration Date: 06/14/2022

Activity Type: Application-based

CE Credits: 22.75 (BPS and ACPE)

Activity Fee: \$425 (ASHP member); \$625 (non-member)

Accreditation for Pharmacists



The American College of Clinical Pharmacy and 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 activities are intended for pharmacists who are seeking to update their knowledge and skills commensurate with a board certification examination in the areas listed below.

Activity Overview

This online course provides a robust preparatory curriculum for the pharmacy professional preparing for the Board of Pharmacy Specialties (BPS) Solid Organ Transplantation Pharmacy Specialty Certification Examination. Designed based on the domains, tasks, and knowledge statements developed by the BPS for the certification examination, this course will help you prepare for the exam by identifying areas needed for in-depth review of solid organ transplantation issues by:

- Reviewing pertinent clinical topics and practice skills
- Providing exam practice questions
- Listing valuable references for further study

This course is **NOT** intended for those obtaining recertification credit.

These activities are part of the ACCP and ASHP professional development program.

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REVIEW COURSE

This course consists of 17 activities (see table below) and provides up to 22.75 hours of continuing pharmacy education credit. The Review Course includes case-based presentations for application to real-life scenarios, a practice exam along with correct answers, and links to the reference sources, and domains, tasks, and knowledge statements.

Learning Module	ACPE Number	Credit Hours	ACPE Expiration Date
Transplant Immunology	0217-9999-21-161-H01-P	1.25	07/14/2024
Induction and Management of Acute Cellular Rejection	0217-9999-21-162-H01-P	1.00	07/14/2024
Maintenance of Immunosuppression Part One	0217-9999-21-163-H01-P	1.50	07/14/2024
Kidney Transplantation	0217-9999-21-165-H01-P	1.00	07/14/2024
Liver Transplantation	0217-9999-21-166-H01-P	1.00	07/14/2024
Pancreas and Islet Cell Transplantation, Intestinal Transplantation	0217-9999-21-167-H01-P	1.25	07/14/2024
Heart Transplantation	0217-9999-21-168-H01-P	1.00	07/14/2024
Lung Transplantation	0217-9999-21-169-H01-P	1.25	07/14/2024
Maintenance of Immunosuppression Part Two	0217-9999-21-170-H01-P	2.25	07/14/2024
Infection Prevention and Management in Solid Organ Transplant Patients	0217-9999-21-171-H01-P	1.25	07/14/2024
Prevention and Management of Malignancy in Solid Organ Transplant Patients	0217-9999-21-172-H01-P	1.00	07/14/2024
Primary Care of the Solid Organ Transplant Patient	0217-9999-21-173-H01-P	0.75	07/14/2024
Special Considerations in Pediatric and Geriatric Transplant Populations	0217-9999-21-174-H01-P	2.00	07/14/2024
Trial Design and Biostatistics	0217-9999-21-050-H04-P	2.50	07/14/2024
Continuity of Care and Managing Transitions of Care in the Transplant Patient	0217-9999-21-175-H04-P	1.50	07/14/2024
Transplant Regulations and Performance Improvement	0217-9999-21-176-H04-P	1.25	07/14/2024
Transplant Resources, Patient Education, and Transplant Study Endpoints	0217-9999-21-177-H04-P	1.00	07/14/2024

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Learning Objectives

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

Transplant Immunology

ACPE #: 0217-9999-21-161-H01-P

- Differentiate between components of innate and adaptive immunity.
- Review lymphocyte activation, differentiation and effect mechanisms.
- Discuss pathways of all recognition and transplant rejection and injury.
- Assess immunologic risk of rejection.
- Describe pathways to immunologic tolerance of allograft.

Induction and Management of Acute Cellular Rejection

ACPE #: 0217-9999-21-162-H01-P

- Outline the principles of induction immunosuppression and how these agents can be used for different organs.
- Compare and contrast the available induction agents; specifically focusing on mechanism of action, ease of administration, adverse events and economic impact.
- Evaluate the efficacy of induction therapy among the different organs.
- Design an induction regimen based on the type of transplant and the patient's clinical presentation.
- Compare and contrast the agents available for the treatment of acute cellular rejection.
- Assess the optimal therapeutic options for management of acute cellular rejection.

Maintenance of Immunosuppression Part One

ACPE #: 0217-9999-21-163-H01-P

- Differentiate between the pharmacokinetic profiles of immunosuppressive medication formulations utilized in solid organ transplantation.
- Select the appropriate method for therapeutic drug monitoring of immunosuppressive medications.
- Design an initial immunosuppression regimen for a solid organ transplant recipient utilizing a patient's pharmacogenomics data.
- Revise an immunosuppression regimen for a solid organ transplant recipient based on the presence of pertinent drug-drug interactions.
- Assess patient-specific data to identify immunosuppression-related adverse effects.
- Design an appropriate monitoring plan for immunosuppressive medications.

Kidney Transplantation

ACPE #: 0217-9999-21-165-H01-P

- Evaluate effects of nonadherence on long-term allograft survival.
- Assess non-pharmacologic and pharmacologic risks of patients undergoing kidney transplant evaluation.
- Distinguish between absolute and relative contraindications to kidney transplant.
- Differentiate pathophysiology of and design management strategies for allograft specific complications.
- Design modifications to therapy that account for patient-specific factors, immunologic risk, and complications after kidney transplant.
- Assess barriers after kidney transplant and implement strategies to improve adherence.

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Liver Transplantation

ACPE #: 0217-9999-21-166-H01-P

- Distinguish acceptable indications for liver transplantation.
- Assess liver transplant and living donor candidates for pharmacologic and non-pharmacologic risks using appropriate assessment tools.
- Evaluate a liver transplant candidate's immunologic risks and propose immunosuppressive regimens.
- Interpret pertinent patient care related information to manage immunosuppression and comorbid conditions.
- Differentiate between immunologic and non-immunologic complications after liver transplant. Evaluate potential causes of medication non-adherence after liver transplantation.

Pancreas and Islet Cell Transplantation, Intestinal Transplantation

ACPE #: 0217-9999-21-167-H01-P

- Pancreas and Islet Cell Transplantation
 - Demonstrate an understanding for common complications of pancreas transplantation and develop strategies to prevent or treat these complications.
 - Devise a monitoring strategy to evaluate exocrine and endocrine function after pancreas transplantation.
 - Compare and contrast the advantages and disadvantages of pancreas and islet cell transplantation.
- Intestinal Transplant
 - Describe the etiologies of small bowel transplantation.
 - List the current trends in immunosuppression for small bowel transplantation. Discuss the common complications observed after small bowel transplantation.

Heart Transplant

ACPE #: 0217-9999-21-168-H01-P

- Describe common indications that may lead to cardiac transplantation.
- Identify pre-transplant risk factors that may impact outcomes after cardiac transplantation. Describe cardiac specific techniques for rejection surveillance.
- Understand cardiac specific pathologic findings.
- List and discuss cardiac specific post-transplant complications and strategies for management.

Lung Transplant

ACPE #: 0217-9999-21-169-H01-P

- Describe diagnoses that may lead to end-stage lung disease and referral for lung transplantation.
- Identify indications, absolute contraindications, and relative contraindications for lung transplantation.
- Formulate a medication regimen for a lung transplant recipient, taking into account immunologic risks and needs, preventative needs, and comorbid diseases.
- Explain the objective testing used to evaluate lung allograft function.
- Summarize the presentation and management of common immunologic complications after lung transplantation.
- Summarize the presentation and management of common non-immunologic complications after lung transplantation.

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Maintenance of Immunosuppression Part Two

ACPE #: 0217-9999-21-170-H01-P

- Kidney
 - Create an evidence-based maintenance regimen for a kidney transplant recipient that accounts for patient-specific factors.
 - Evaluate the role of extended-release tacrolimus formulations and novel immunosuppression regimens.
- Liver
 - Compare and contrast maintenance immunosuppression regimens for liver transplant recipients. Design evidence based maintenance immunosuppression regimens for liver transplant recipients.
- Pancreas
 - Design a maintenance immunosuppression regimen for the prevention of rejection after pancreas transplant.
 - Design a maintenance immunosuppression regimen for the prevention of rejection after islet cell transplant.
- Heart
 - Describe common immunosuppression approaches in cardiac transplantation. Discuss alternate approaches to immunosuppression.
- Lung
 - Compare and contrast the benefit, risk, and role of each maintenance immunosuppressant medication in lung transplantation.
 - Design evidence-based maintenance immunosuppression regimens for lung transplant recipients.

Infection Prevention and Management in Solid Organ Transplant Patients

ACPE #: 0217-9999-21-171-H01-P

- Develop appropriate pre-transplant serologic testing recommendations and interpretation of these results.
- Identify risk factors associated with post-transplant infections and the epidemiology and timing of these infections.
- Design strategies to prevent post-transplant opportunistic infections, including prophylaxis regimens and monitoring parameters.
- Formulate treatment plans for bacterial, viral, and fungal infections in solid-organ transplant recipients.
- Develop monitoring plans for patients receiving antimicrobials, complete with management of adverse effects and intolerances.

Prevention and Management of Malignancy in Solid Organ Transplant Patients

ACPE #: 0217-9999-21-172-H01-P

- Demonstrate the common pathogenesis of and risk factors for types of malignancy after solid organ transplant.
- Distinguish between the types of malignancy that are of increased risk before and after solid organ transplant.
- Assess preventative strategies for malignancy after transplantation.
- Diagram an overview of immunosuppression management in the setting of malignancy.
- Compare common treatment approaches to common malignancies after transplantation, including non-melanoma skin cancer, post-transplant lymphoproliferative disorder, and Kaposi's sarcoma.

Primary Care of the Solid Organ Transplant Patient

ACPE #: 0217-9999-21-173-H01-P

- Apply general principles and practices of disease prevention to solid organ transplant recipients. Outline unique patient populations that require additional disease screening.
- Create an immunization plan for a solid organ transplant recipient in both the pre and post-transplant setting.
- Identify reputable resources for public education and awareness on organ transplantation including organ donation.

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Special Considerations in Pediatric and Geriatric Transplant Populations

ACPE #: 0217-9999-21-174-H01-P

- Pediatrics
 - Discuss practical differences of medication use in children with emphasis on pharmacokinetics, formulations, and monitoring of commonly used immunosuppressants.
 - Describe the etiologic differences for end stage organ disease and discuss associated complications after solid organ transplant in children.
 - Design a pharmacotherapeutic treatment plan for pediatric patients undergoing intended ABO incompatible organ transplantation.
 - Formulate an immunization plan for a pediatric organ transplant candidate.
- Geriatrics
 - Compare outcomes of transplant recipients by age group.
 - Evaluate geriatric candidates for transplant based on guideline recommendations.
 - Distinguish pharmacokinetic differences among geriatric transplant recipients.
 - Design an immunosuppression regimen for a geriatric transplant recipient.

Trial Design and Biostatistics

ACPE #: 0217-9999-21-050-H04-P

- Describe hypothesis testing and state the meaning of and distinguish between p values and confidence intervals and measures of central tendency and data spread.
- Define, compare, and contrast the concepts of internal and external validity, causation, association, bias, and confounding in trial design. Select strategies to eliminate or control for bias and improve internal and external validity.
- Compare and contrast the advantages and disadvantages of various study designs (e.g., prospective, retrospective, case-control, cohort, cross-sectional, randomized controlled clinical trials, systematic review, meta-analysis).
- Determine why a statistical test is appropriate or not appropriate, given the sample distribution, data type, and study design. Interpret statistical and clinical significance for results from commonly used statistical tests.
- Define and evaluate odds ratio, risk/incidence rate, relative risk, number needed to treat, number needed to harm, and other risk estimates.

Continuity of Care and Managing Transitions of Care in the Transplant Patient

ACPE #: 0217-9999-21-175-H04-P

- Describe the importance of accurate medication, allergy and immunization histories and medication reconciliation in solid organ transplant recipients.
- Compare the incidence of index length of stay and hospital readmissions among various solid organ transplant recipients.
- Evaluate the unique role of a pharmacist in the transition of solid organ transplant recipients between healthcare settings as it relates to medication error reduction and cost avoidance.
- Propose a matrix for roles and responsibilities of the healthcare team in management of transitions and co-management.
- Differentiate between various medication access resources in solid organ transplant recipients.
- Illustrate the strategies available for overcoming patient-specific barriers to care following solid organ transplantation.

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Transplant Regulations and Performance Improvement

ACPE #: 0217-9999-21-176-H04-P

- Review regulations for solid organ transplantation (SOT).
- Compose policies and procedures for SOT pharmacists that are consistent with transplant regulatory requirements.
- Identify opportunities for SOT pharmacists to participate in QAPI activities to enhance the safety and effectiveness of medication-use process in SOT.
- Evaluate compliance with institutional guidelines in order to identify areas failing to meet expectations and implement performance improvement initiatives.
- Implement processes for cost effective care focusing on continuous quality improvement, patient safety and outcomes in order to justify modifications in transplantation pharmacy services.
- Diagram involvement of SOT pharmacists in collaborative relationships with interdisciplinary transplant team to promote quality patient care across continuum.

Transplant Resources, Patient Education, and Transplant Study Endpoints

ACPE #: 0217-9999-21-177-H04-P

- List key government organizations and transplant societies that influence the practice of solid organ transplantation.
- Compare practice-defining guidelines within the field of solid organ transplantation.
- Assess patients' barriers to understanding their medication regimen and adapt education strategy to foster patient competency.
- Describe appropriate monitoring strategies for transplant medications requiring REMS participation.
- Formulate an appropriate contraceptive regimen for a female transplant recipient of childbearing age.
- Evaluate patient risk factors for non-adherence and implement a plan to improve compliance.
- Review transplant study end points used in the literature to establish efficacy of clinical intervention.

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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 ACCP and ASHP.

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