SIDP
SOCIETY OF INFECTIOUS DISEASES PHARMACISTS

ProCE, LLC
www.ProCE.com

Antimicrobial Stewardship
A Certificate Program for Pharmacists

Certificate Program Description and Audience
The Antimicrobial Stewardship Certificate Program is an innovative and intensive practice-based activity for pharmacists focusing on the pharmacist's role in the area of appropriate use of antimicrobial agents. The program, which emphasizes a health care team approach, seeks to foster the development of a strong knowledgebase in microbiology, pharmacology and disease state management in order to successfully implement an antimicrobial stewardship program that will improve patient care, reduce healthcare expenditures and potentially reduce rates of resistance and prolong the longevity of the limited number of antimicrobial agents available to treat infections. Established in 2010, the SIDP Antimicrobial Stewardship Certificate Program has been a resource for pharmacists world-wide in meeting their educational needs for antimicrobial stewardship.

Antimicrobial Stewardship Certificate Program Development
The Antimicrobial Stewardship Certificate Program was developed by members of The Society of Infectious Diseases Pharmacists (SIDP). All members volunteered their time and knowledge in developing the content of this program. There was no outside financial support for developing this program.

Antimicrobial Stewardship Certificate Program Goals
The certificate program goals/learning objectives are the following:

1. Outline the essentials of clinical microbiology, pharmacology, pharmacokinetics, pharmacodynamics, and infectious disease state management necessary in Antimicrobial Stewardship.
2. Identify the skills needed to establish an antimicrobial stewardship program.
3. Implement interventions to improve patient care, minimize resistance and cost, and prolong the longevity of antimicrobials through a cap-stone project.
4. Explain how to evaluate the effectiveness of an antimicrobial stewardship program through the measurement of outcomes.
5. Define the interaction between pharmacy and infection control.

Antimicrobial Stewardship Certificate Program Structure
The Antimicrobial Stewardship certificate training program is conducted in three parts. Each part must be completed prior to starting the next one.

Phase 1. Self-study learning component available online (approx. 3 months)
Phase 2. Live webinars (approx. 5 months)
Phase 3. Skills component completed in the practice setting (approx. 4 months)

A Certificate of Achievement will be awarded to participants who successfully complete all three program components. Participants who successfully complete the program will be eligible for a 1 year free associate membership in SIDP.

<u>Self-Study Learning Component (Phase 1)</u>
The first component of the certificate training program consists of seven sections of self-study modules available for viewing online. Topics, learning objectives, and length of time to complete each self-study module are noted on the outline below.

Module 1 – Microbiology

1a - *Staphylococcus species* (ACPE UAN: 0221-9999-20-224-H01-P, Knowledge-based, 0.25 contact hour, Release: 7/1/2020, Exp: 7/1/2023)

- Explain the Gram-stain & morphology of various bacteria
- Discuss commensal flora in the body and where select organisms are pathogenic
- List agents with activity or should be considered for use against various organisms
- Discuss resistance issues associated with various organisms

1b-Streptococcus & Enterococcus (ACPE UAN: 0221-9999-19-481-H01-P, Knowledge-based, 0.5 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Explain the Gram-stain & morphology of various bacteria
- Discuss commensal flora in the body and where select organisms are pathogenic
- List agents with activity or should be considered for use against various organisms
- Discuss resistance issues associated with various organisms

1c-Non Fermenters (ACPE UAN: 0221-9999-20-225-H01-P, Knowledge-based, 0.5 contact hour, Release: 7/1/2020, Exp: 7/1/2023)

- Explain the gram-stain and morphology of *Acinetobacter, Pseudomonas, and Stenotrophomonas maltophilia*
- Discuss the epidemiology of *Acinetobacter, Pseudomonas, and Stenotrophomonas maltophilia*
- List agents with activity or should be considered for use against *Acinetobacter, Pseudomonas, and Stenotrophomonas maltophilia*
- Discuss resistance issues associated with *Acinetobacter, Pseudomonas, and Stenotrophomonas maltophilia* and the roll of combination therapy

1d-Enterobacteriaciae (ACPE UAN: 0221-9999-19-482-H01-P, Knowledge-based, 0.5 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Discuss commensal flora in the body and where select organisms are pathogenic
- List agents with activity or should be considered for use against various gram-negative bacilli
- Discuss resistance issues associated with various organisms

1e-Haemophilus, Moraxella, Neisseria, Atypical Organisms (ACPE UAN: 0221-9999-19-483-H01-P, Knowledge-based, 0.5 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Explain the gram-stain and morphology of various bacteria.
- Discuss commensal flora in the body and where select organisms are pathogenic.
- Explain the various types of infections.
- List agents with activity or should be considered for use against various organisms.
- Discuss resistance issues associated with various organisms.

1f-Anaerobes (ACPE UAN: 0221-9999-19-484-H01-P, Knowledge-based, 0.5 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Explain the gram-stain and morphology of various bacteria
- Discuss commensal flora in the body and where select organisms are pathogenic
- Explain the various types of infections
- List agents with activity or should be considered for use against various organisms
- Discuss resistance issues associated with various organisms

1g-Fungi (ACPE UAN: 0221-9999-19-485-H01-P, Knowledge-based, 0.5 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Recognize the differences between yeasts, molds, and dimorphic fungi
- Describe the activity of antifungals against key fungal pathogens
- Discuss challenges that are inherent to antifungal pharmacotherapy

Module 2 – Pharmacology

2a-*Antimicrobial Pharmacology I* (ACPE UAN: 0221-9999-19-486-H01-P, Knowledge-based, 0.75 contact hour)

2b-*Antimicrobial Pharmacology II* (ACPE UAN: 0221-9999-19-487-H01-P, Knowledge-based, 1.0 contact hour)

2c-*Antimicrobial Pharmacology III* (ACPE UAN: 0221-9999-19-488-H01-P, Knowledge-based, 0.25 contact hour)

Antimicrobial Pharmacology (I, II, III) learning objectives (Release: 9/15/2019, Exp: 3/15/2022):

- Explain the principals of anti-infective pharmacology
- Describe the classifications of anti-infectives including mechanisms of action, mechanisms of resistance, spectrum of activity, infections commonly treated, adverse effects (most common, very serious or unique), and drug interactions
- Select and discuss rationale for drugs of choice for various organisms

Module 3 – Pharmacokinetics/Pharmacodynamics

3a-Pharmacokinetics Primer for Clinicians (ACPE UAN: 0221-9999-19-489-H01-P, Knowledge-based, 0.75 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Describe pharmacokinetics (PK) and the clinical application of PK parameters in daily clinical practice.
- Describe physiologic factors and disease states that affect drug disposition throughout the body.

3b-Introduction to Antimicrobial Pharmacodynamics (ACPE UAN: 0221-9999-19-490-H01-P, Knowledge-based, 1.0 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Discuss pharmacodynamics (PD) and the basic laws governing its application into clinical practice.
- Discuss the various *in vitro*, *in vivo*, and clinical testing methodologies used to derive PD breakpoints.

- Demonstrate knowledge of the PD parameters that optimize the efficacy of each antimicrobial agent and the published data used to derive the currently accepted PD breakpoints.
- Describe Monte Carlo Simulation (MCS), the rationale behind performing this analysis, interpretation of the results, and the limitations associated with these analyses.

3c-Applied Antimicrobial Pharmacodynamics (ACPE UAN: 0221-9999-19-491-H01-P, Knowledge-based, 0.75 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Describe Monte Carlo simulation (MCS), the rationale behind performing this analysis, interpretation of the results, and the limitations associated with these analyses.
- Provide examples that correlate data generated from MCS analyses and clinical outcome data generated from real patients.
- Evaluate unconventional dosing strategies used to maximize the pharmacodynamics (PD) of currently available antimicrobials.

3d-Antifungal pharmacodynamics (ACPE UAN: 0221-9999-19-492-H01-P, Knowledge-based, 0.5 contact hour, Release: 9/15/2019, Exp: 3/15/2022)

- Describe pharmacokinetics (PK) and the clinical application of PK parameters in daily clinical practice.
- Describe physiologic factors and disease states that affect drug disposition throughout the body.
- Discuss pharmacodynamics (PD) and the basic laws governing its application into clinical practice.
- Discuss the various *in vitro*, *in vivo*, and clinical testing methodologies used to derive PD breakpoints.
- Demonstrate knowledge of the PD parameters that optimize the efficacy of each antimicrobial agent and the published data used to derive the currently accepted PD breakpoints.
- Evaluate unconventional dosing strategies used to maximize the PD of currently available antimicrobials.
- Examine the rationale supporting therapeutic drug monitoring for available antifungal agents.

Module 4 – Disease States and Treatments

4a-Bone & Joint Infections (ACPE UAN: 0221-9999-20-226-H01-P, Knowledge-based, 1.0 contact hour, Release: 7/1/2020, Exp: 7/1/2023)

- Categorize joint infections - septic arthritis and prosthetic joints
  - Identify patient presenting symptoms.
  - List common causative organisms
  - Describe correlation with osteomyelitis.
  - Define appropriate antimicrobial therapy.
- Differentiate classifications of osteomyelitis - hematogenous and contiguous osteomyelitis
  - List common causative organisms.
  - Suggest appropriate antimicrobial regimens for each category.
  - Identify criteria & appropriate candidates for oral therapy

4bc-Lower Respiratory Tract Infections (ACPE UAN: 0221-9999-20-227-H01-P, Knowledge-based, 3.0 contact hours, Release: 5/15/2020, Exp: 5/15/2023)

- Review the national guideline recommendations for community-acquired (CAP), hospital-acquired (HAP), and ventilator-associated (VAP) pneumonia
- List the most common bacterial pathogens associated with CAP, HAP, and VAP
- Identify the risk factors for multidrug-resistant pathogens
- Discuss selection of empiric therapy and de-escalation for CAP, HAP, and VAP
- Describe the role for antimicrobial stewardship in ensuring optimal management of pneumonia

4d-Skin/Soft Tissue Infections (ACPE UAN0221-9999-20-228-H01-P, Knowledge-based, 1.5 contact hour, Release: 7/7/2020, Exp: 7/1/2023)

- Describe pathophysiology / predisposing factors for skin/soft tissue infections (SSTIs).
- Recognize clinical presentation & monitoring considerations
- List primary pathogens associated with skin and soft tissue infections.
- Discuss appropriate antimicrobial therapy for SSTIs.

4e-*Clostridioides difficile* Infection (ACPE UAN: 0221-9999-19-133-H01-P, Knowledge-based, 0.75 contact hours, Release: 3/29/2019, Exp: 3/15/2022)

- Explain why CDI is a burden in both inpatient and outpatient settings.
- Identify major risk factors for CDI.
- Discuss rational approaches to the management of initial and recurrent symptomatic CDI.
- Compare and contrast strategies for preventing CDI.

4f-Management of Sepsis (ACPE UAN: 0221-9999-21-149-H01-P, Knowledge-based, 0.75 contact hour, Release: 7/1/2021, Exp: 7/1/2024)

- Define Sepsis-3 and criteria
- Describe & sequence the selected management of sepsis and septic shock in regards to: Initial resuscitation, Antimicrobial therapy, Fluid therapy, Vasoactive medications, Corticosteroids, Glucose Control, Venous thromboembolism prophylaxis and Stress ulcer prophylaxis.
- Review recent publication on management of sepsis and septic shock

4g-Management of Invasive Candidiasis (ACPE UAN: 0221-9999-20-229-H01-P, Knowledge-based, 0.5 contact hour, Release: 7/1/2020, Exp: 7/1/2023)

- Recommend an appropriate initial antifungal agent for a patient with suspected invasive candidiasis pending definitive species identification.
- Recommend an appropriate antifungal agent for a patient with invasive candidiasis based on the species of Candida identified.
- Discuss considerations for treatment duration and monitoring for patients with candidemia.
- Describe populations where prophylaxis and empiric treatment for invasive candidiasis should be considered.

4h-Bacterial Endocarditis (ACPE UAN: 0221-9999-20-230-H01-P, Knowledge-based, 1.0 contact hour, Release: 5/15/2020, Exp: 5/15/2023)

- Review the epidemiology and pathophysiology of endocarditis
- Identify endocarditis risk factors and potential complications
- Recommend antibiotic therapy based on culture confirmed microbiology data
- Discuss required antimicrobial prophylaxis for infective endocarditis

4i-Meningitis (ACPE UAN: 0221-9999-19-493-H01-P, Knowledge-based, 0.75 contact hour, Release: 9/15/2019, Exp: 7/1/2024)

- Review the epidemiology and microbiology of meningitis
- Describe the clinical presentation and diagnosis of meningitis
- Select appropriate antibiotic therapy for meningitis based on risk factors and the presumptive or culture confirmed microorganism
- Identify options for the prevention of meningitis

4j- Catheter-Related Blood Stream Infections (ACPE UAN: 0221-9999-19-494-H01-P, Knowledge-based, 1.0 contact hour, Release: 9/15/2019, Exp: 7/1/2024)

- Design an appropriate empiric treatment regimen for a patient with a suspected catheter-related blood stream infection (CRBSI) based on patient-specific risk factors.
- Develop a definitive treatment plan for CRBSIs caused by various common pathogens.
- Determine when catheter removal is an essential element of the treatment plan for a specific CRBSI.

4k-Intra-Abdominal Infections (ACPE UAN: 0221-9999-19-495-H01-P, Knowledge-based, 0.75 contact hour, Release: 9/15/2019, Exp: 7/1/2024)

- List the common pathogens associated with primary, secondary, and tertiary peritonitis
- Design appropriate empiric treatment regimens for common intra-abdominal infections

4l-Urinary Tract Infections (ACPE UAN: 0221-9999-20-231-H01-P, Knowledge-based, 0.75 contact hour, Release: 7/1/2020, Exp: 7/1/2023)

- Describe and define Urinary tract infections associated in the hospital setting
- Describe the epidemiology, microbiology and treatment of acute pyelonephritis, catheter associated UTI and asymptomatic bacteriuria

Module 5 - Interventions

(ACPE UAN: 0221-9999-19-496-H01-P, Knowledge-based, 1.5 contact hours, Release: 9/15/2019, Exp: 7/1/2024)

- Describe the benefits and process of de-escalation interventions.
- Review data suggesting when shorter durations of antimicrobial therapy may be appropriate.
- Introduce the concept of rapid laboratory testing methods as an aid to antimicrobial stewardship interventions

Module 6 – Measuring Outcomes

(ACPE UAN0221-9999-19-497-H01-P, Knowledge-based, 2.25 contact hours, Release: 9/15/2019, Exp: 7/1/2024)

Clinical Outcomes

- Identify the types of adverse drug events associated with indiscriminant antibiotic usage.
- List variables of interest that Stewardship Programs can impact and quantify.
- Categorize the types of studies utilized in measuring outcomes of Antimicrobial Stewardship Programs.
- Identify candidates for IV to PO conversion.

Economical Outcomes

- Compare and contrast different ways to present economical outcomes from a Stewardship Program.
- Determine the most appropriate economical outcomes to evaluate for a Stewardship Program.

Resistance Outcomes

- Describe the utility of measuring resistance for Antimicrobial Stewardship.

Prioritization of program components

- Discuss the common elements of stewardship programs.
- Prioritize program components based on available resources for smaller vs. larger institutions.

Module 7 – Infection Control

(ACPE UAN: 0221-9999-19-160-H01-P, Knowledge-based, 0.25 contact hour, Release: 4/22/2019, Exp: 3/15/2022)

- Describe the goals and characteristics of an infection prevention program.
- Describe organisms of concern to infection prevention programs.
- Characterize healthcare-associated infections and the means to track them.
- Provide data concerning HAI trends in the U.S.
- Characterize unique aspects of infection prevention programs in smaller hospitals.

Module 8 – Research Series

8a-Getting Started with Research (ACPE UAN: 0221-9999-20-511-H04-P, Knowledge-based, 1.0 contact hour, Release: 11/1/2020, Exp: 11/1/2023)

- Compare and contrast the difference between quality improvement and IRB-approved research.
- Discuss how to translate current stewardship efforts into a publishable project.
- Identify potential collaborators to build a successful research team.

8b- Navigating Study Design and Data Capture in Antimicrobial Stewardship Research (ACPE UAN: 0221-9999-20-512-H04-P, Knowledge-based, 1.0 contact hour, Release: 11/1/2020, Exp: 11/1/2023)

- Recognize the optimal study design to answer your research question.
- Identify appropriate and measurable endpoints for your selected study design.
- Describe best practices for designing a data dictionary and case report form.

8c- Interpreting and Analyzing Data (ACPE UAN: 0221-9999-20-513-H04-P, Knowledge-based, 1.0 contact hour, Release: 11/1/2020, Exp: 11/1/2023)

- Demonstrate capacity to apply descriptive statistics to appropriately characterize your study population.
- Identify the appropriate inferential statistics to analyze differences between study groups.
- Interpret results of statistical analyses to draw meaningful conclusions.

8d- Disseminating Research Findings (ACPE UAN: 0221-9999-20-514-H04-P, Knowledge-based, 1.0 contact hour, Release: 11/1/2020, Exp: 11/1/2023)

- Illustrate a systematic approach to composing a manuscript for peer-reviewed publication.
- Outline best practices for sharing research on social media.
- Describe traditional and non-traditional options for dissemination of research.

Live Webinar Sessions (Phase 2)

The second component of the certificate training program consists of completing a minimum of four live webinar sessions (1.5 hours each) listed below. You may also attend all live webinars and receive additional continuing pharmacy education credit for the other three topics. The live webinars will be offered quarterly and times for all sessions will be viewable after all Self-Study content is completed. We reserve the right to cancel a live webinar. In the event of a live webinar cancellation, each participant will be notified via e-mail along with the rescheduled date. Topics and learning objectives for each live webinar session are:

W1. Implementation of an Antimicrobial Stewardship Program: Justification, Cost, and Challenges

(ACPE UAN: 0221-9999-21-156-L04-P Knowledge-based, Release: 9/15/2021, Expiration: 9/15/2024)

- Describe the resources necessary to initiate an antimicrobial stewardship program.
- Identify potential financial and institutional barriers to implementation of an antibiotic stewardship program.
- Describe how to justify the benefits of an antimicrobial stewardship program to administrative and clinical leadership.

W2. Multidrug Resistant Organisms: Detection, Epidemiology, and Management

(ACPE UAN: 0221-9999-21-157-L01-P Knowledge-based, Release: 9/15/2021, Expiration: 9/15/2024)

- Discuss the mechanisms of resistance for common multidrug resistant pathogens.
- Describe the microbiology challenges associated with the identification of multidrug-resistant bacteria.
- Discuss the prevalence and epidemiology of multidrug resistant bacteria.
- Describe the current evidence-based treatment options for management of invasive multidrug resistant bacteria and review changes in the Clinical and Laboratory Standards Institute breakpoints.

W3. Optimizing Infectious Disease Outcomes in an Antimicrobial Stewardship Program

(ACPE UAN: 0221-9999-21-161-L04-P Knowledge-based, Release: 9/15/2021, Expiration: 9/15/2024)

- Discuss the impact of antimicrobial therapy and resistance on clinical outcomes
- Review components of antimicrobial stewardship programs and opportunities to improve patient care
- Recognize dosing strategies to optimize antimicrobial pharmacodynamics
- Describe the development of evidence-based guidelines to implement clinical pathways
- Outline novel concepts of antibiotic heterogeneity to address gram negative resistance

W4. Understanding the Hospital Antibiogram

(ACPE UAN: 0221-9999-21-158-L04-P Application-based, Release: 9/15/2021, Expiration: 9/15/2024)

- List the CLSI M39 guidelines for antibiogram development
- Discuss how to utilize a hospital antibiogram to guide empiric antibiotic selection and to detect bacterial resistance patterns
- Discuss how rates of MRSA, VRE, and other resistant organisms can be calculated using antibiogram data
- Describe how individual and hospital antibiograms may be used to foster prudent antimicrobial prescribing and optimize antimicrobial stewardship

W5. Computer Support Systems and Technology in an Antimicrobial Stewardship Program

(ACPE UAN: 0221-9999-21-160-L04-P Knowledge-based, Release: 9/15/2021, Expiration: 9/15/2024)

- Identify the role of Information Technology Systems in Antimicrobial Stewardship
- Describe essential components of electronic system support in the current environment
- Discuss the future role for EMR/CDSS in Antimicrobial Stewardship

W6. Antimicrobial Stewardship and Microbiology: Focus on Rapid Diagnostic Tests

(ACPE UAN: 0221-9999-21-159-L04-P Knowledge-based, Release: 9/15/2021, Expiration: 9/15/2024)

- Discuss the various rapid diagnostic technologies
- Evaluate the use of rapid diagnostic technologies on patient outcomes
- Determine considerations during the pre-implementation, implementation, and post-implementation phases of rapid diagnostic technologies

W7. Ensuring Compliance in the Age of Antimicrobial Stewardship Regulation

(ACPE UAN: 0221-9999-21-162-L04-P Knowledge-based, Release: 9/15/2021, Expiration: 9/15/2024)

- Describe some of the regulations and actions prompted by the PCAST (President's Council of Advisors on Science and Technology) Report to the President on Combating Antibiotic Resistance.
- Describe the conditions of participation for antimicrobial stewardship programs (ASPs) in acute care settings as delineated by Centers for Medicare & Medicaid Services (CMS).
- Identify the requirements for ASPs in acute care settings as delineated by The Joint Commission (TJC).
- Define the patient safety based requirements for ASPs in acute care settings as delineated by other regulatory/quality entities (i.e. National Healthcare Safety Network (NHSN), Leapfrog survey, etc).
- Review questions related to antimicrobial stewardship that may be posed by a regulatory body during a survey.
- Summarize interventions and processes that can be enacted in order to ensure compliance with regulatory requirements.

Skills Component in the Practice Setting

(ACPE UAN: 0221-9999-21-163-H04-P Application-based; 10 contact hours, Release: 7/1/2021, Exp: 7/1/2024)
After completion of the self-study and live webinars, the participant is required to implement some aspect of antimicrobial stewardship at their facility. The Clinical Skills Component is an activity by which the student demonstrates their individual mastery of the content in the first two phases by applying what they learned to implement or modify some aspect of antimicrobial stewardship at their facility. The Clinical Skills Component may address any facet (structure, policy, or outcome) of Antimicrobial Stewardship at their institution. The participant should notify SIDP, in writing, of the implementation approximately 4 months after completion of the last live webinar. A panel will review the document and evaluate it for appropriateness within antimicrobial stewardship. If modifications are needed, SIDP will return the document with review comments for change and the participant will have 2 months to resubmit a modified document. After approval by the panel of the required documentation, an overall program evaluation must be completed online. A CE statement of completion for 10 hours of CE will be issued online and a certificate of completion of SIDPs accredited Antimicrobial Stewardship Program will be sent to the participant. If a time extension is needed, please submit the request in writing via email to info@proce.com. The request for extension will be reviewed and an email will be returned to you as to whether the extension was granted.

The learning objectives are the following:

- Implement at least one aspect of antimicrobial stewardship within your practice setting.
- Construct a documentation plan for an antimicrobial stewardship project.
- Identify barriers to implementing components of an antimicrobial stewardship project.
- Outline strategies to overcome barriers identified for an antimicrobial stewardship project.

Accreditation Statement and Continuing Education Credit
Practice Activity Number 0221-9999-21-001-B01-P
Initial Date of Release: January 15, 2021 | Date of Expiration: January 15, 2024

This CE activity is jointly provided by ProCE, LLC and SIDP. ProCE is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education. ACPE Practice Activity Number 0221-9999-21-001-B01-P has been assigned to this practice-based CE activity (initial release date 1-15-21). This CE activity is approved for 44.0 contact hours (4.4 CEUs) in states that recognize ACPE providers. The

participant can elect to complete three additional webinars at no additional cost and earn 48.5 contact hours (4.85 CEUs). Statements of completion will be issued online as individual modules are completed with a post-test score of 80% or higher and completion of an online evaluation. UANs for the individual activity modules are listed above.

The self-study component is 28 contact hours or 2.8 CEUs of continuing pharmacy education credits. Statements of completion will be issued online upon completion of the activity evaluations and the post-tests with a score of 80% or higher. It is anticipated the participant will complete this component within 3 months of registration. *Content and CE hours are subject to change: modules are regularly reviewed and updated to reflect current clinical knowledge.*

The live webinar component will result in 6 to 10.5 contact hours of continuing pharmacy education credit (0.6 to 1.05 CEUs). Statements of completion will be issued online upon completion of the activity evaluations and passing the post-tests with a grade of 80% or higher for each of the live webinar sessions. It is anticipated the participant will complete this component within 8 months of registration.

A practice or skills component will be completed at your practice setting after completion of the home study component and at least four live webinars. This portion is worth 10 hours or 1.0 CEUs of continuing pharmacy education credit. This component consists of implementation of some aspect of antimicrobial stewardship at your facility. This could be an IV to PO switch program, development and clinical incorporation of an antibiogram, criteria for use, clinical protocol to treat one or multiple infectious diseases, etc. The project information and documentation of implementation must be submitted either by email to info@proce.com or via upload in the CE Center.

After approval by SIDPs panel of the required documentation, a final program evaluation must be completed online to receive CE credit. It is anticipated the participant will complete this component within 12 months of registration, or 14 months of registration if project modifications are needed.

Participants will have access to the content for one year after purchasing the program, unless an extension is granted.

Antimicrobial Stewardship Certificate of Completion
Upon successful completion of all three components, a Certificate of Achievement will be issued to the participant from The Society of Infectious Diseases Pharmacists. The certificate will be mailed directly to participants 2-4 weeks following completion of the program. Participants who successfully complete the program will also be eligible for a 1 year free associate membership in SIDP.

Program Cost
Participant cost is $750 per pharmacist. This amount includes the self-study section, live webinars, and the skills component at your practice site. For trainees (e.g., residents, fellows, and graduate students) the cost is $550 per individual. For institutions or healthcare facilities providing payment from the same institution, the group discounts listed below are available for participants purchasing the complete program for $750. *Group discounts are not applicable to the trainee rate or participants purchasing Phase 1 only or Phases 1&2 only.*

6-10 healthcare professionals = 5% discount
11-15 healthcare professionals = 10% discount
More than 15 healthcare professionals = 15% discount

If you wish to participate in only a portion of the Program, Phase 1 is available for $500 per participant. Phases 1 and 2 are available for $688 per participant. The above group discounts do not apply to these purchases.

Low-Mid Income Countries (LMIC) Discount: For healthcare professionals in qualifying countries (please refer to the World Bank List of Low-Mid Income Countries) the cost is $375 per individual for the full program. Some material may not be relevant for the participant's country, however, the overarching concepts presented in modules will be applicable. To receive a discount please send proof of residency in a qualifying country to ProCE at info@proce.com.

Cancellations received in writing prior to accessing any of the program content (send request via e-mail to info@proce.com) will receive a full refund minus a $150 cancellation fee.

Hardware/Software Requirement

PC: Microsoft Windows 7 or above
Chrome (recommended), Internet Explorer (v9 or greater) or Firefox
Adobe Acrobat Reader
Sound Card and Speakers
800 x 600 Minimum Monitor Resolution (1024 x 768 Recommended)
Flash Player Plug-in, Current Version
JavaScript, Java 1.6 or higher

MAC: Mac OS X
Chrome or Firefox
Adobe Acrobat Reader
Sound Card and Speakers
Flash Player Plug-in, Current Version
JavaScript

Contact for Technical support or CE questions: ProCE, LLC, e-mail info@proce.com or phone: 888-213-4061.

Conflict of Interest Disclosure

The Conflict of Interest Disclosure Policy of ProCE, LLC requires faculty participating in a continuing pharmacy education activity to disclose any relationship(s) with a pharmaceutical, product or device company. Faculty disclosing relationships proven to create a conflict of interest with regard to their contribution to the activity will not be permitted to present. Faculty are also required to disclose during their presentation when discussing any unlabeled or investigational use of any commercial product or device not yet approved for use in the United States.

Faculty

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No conflict of interest reported

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James R. Beardsley, Pharm.D., BCPS, CPP
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No conflict of interest reported

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No conflict of interest reported

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Clinical Professor
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Consultant/speaker for Merck and Astellas. Consultant for Qpex, scPharmaceuticals, and Shionogi. Received honorarium from MJH Associates as Editor-in-Chief for Contagion, speaker

Alan Gross, Pharm.D., BCPS, BCIDP
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Clinical Associate Professor, University of Illinois at Chicago, College of Pharmacy
Infectious Diseases Pharmacist, University of Illinois Hospital and Health Sciences System, Chicago, IL
No conflict of interest reported

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(Module(s): W1)
Co-director, Antimicrobial Stewardship Program
Director, PGY2 ID Pharmacy Residency; Clinical Pharmacy Manager of ID; Asst. Prof. of Medicine, Albert Einstein College of Medicine; Dept. of Pharmacy/Division of Pharmacotherapy, Montefiore Medical Center, Bronx, NY
Received research support from Merck

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Co-Director: Antimicrobial Stewardship
Clinical Associate Professor, School of Medicine, Division of Allergy and Infectious Diseases
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No conflict of interest reported

Meghan N. Jeffres, Pharm.D., BCIDP
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Associate Professor, Department of Clinical Pharmacy
University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, CO
No conflict of interest reported

Alice M. Jenh Hsu, Pharm.D., BCPS, AQ-ID
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Clinical Pharmacy Specialist, Pediatric Infectious Diseases
Co-Director, Pediatric Antimicrobial Stewardship Prgm.
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No conflict of interest reported

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(Module(s): 2)
Professor and Director of Student Services
LECOM School of Pharmacy, Bradenton, FL
No conflict of interest reported

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(Module(s): 5)
Advanced Practice Pharmacy Specialist - ID
Department of Pharmacy Services
Brigham & Women's Hospital, Boston, MA
Received research grant support and consultant honorarium from Astellas

Joseph L. Kuti, Pharm.D., FIDP
(Module(s): 3B)
Associate Director, Clinical and Economic Studies
Center for Anti-Infective Research & Development
Hartford Hospital, Hartford, CT
Speakers Bureau for Allergan and Paratek; Research funding and honorarium from bioMerieux; Consultant for Cumberland Pharm; Research funding from Merck, Melinta, and Summit; Spouse is employed by Boehringer Ingelheim.

Russell Lewis, Pharm.D., FCCP, BCPS
(Module(s): 3D)
Associate Professor of Medicine, Infectious Diseases, Department of Medical Sciences and Surgery
Clinical Pharmacologist-Infectious Diseases Unit, Policlinico S.Orsola-Malpighi
Alma Mater Studiorum Università di Bologna, Italy
Received research support from Merck and Gilead; Speaker honorarium from Cidara.

Thomas P. Lodise Jr., Pharm.D., Ph.D.
(Module(s): 3C)
Professor, Pharmacy Practice
Albany College of Pharmacy and Health Sciences
Albany, NY
Speaker and/or Consultant for: Paratek, Melinta, Nabriva, Shionogi, Spero and Tetraphase. Consulting and Grant Support from Merck.

Ben M. Lomaestro, Pharm.D.
(Module(s): 5)
Retired from: Albany Medical Center
Department of Pharmacy, Albany, NY
No conflict of interest reported

Conan MacDougall, Pharm.D., M.A.S., BCPS, BCIDP
(Module(s): 4F;4G)
Professor of Clinical Pharmacy, Univ. of California San Francisco School of Pharmacy
Clinical Pharmacist, Infectious Diseases, Univ. of California San Francisco Medical Center , San Francisco, CA
Spouse is an employee of ePocrates, Inc (subsidiary of AthenaHealth)

Karl Madaras-Kelly, Pharm.D., M.P.H.
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No conflict of interest reported

Monica V. Mahoney, PharmD, BCPS, BCIDP
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Clinical Pharmacy Specialist - Infectious Diseases
Beth Israel Deaconess Medical Center, Specialty Pharmacy, Boston, MA
Speaker and Advisory Board for Tetraphase Pharmaceuticals; Advisory Board for Qpex and Spero; Received research funding from Merck.

Craig Martin, Pharm.D., MBA
(Module(s): 2)
Associate Dean/Chief Operating Officer
Professor, Univ. of Kentucky College of Pharmacy
Lexington, KY
Received legal consulting fees from Walgreens.

Dorothy McCoy, Pharm.D., BCPS, BCIDP
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Medical Writer
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No conflict of interest reported

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No conflict of interest reported

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No conflict of interest reported

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No conflict of interest reported

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Employee of Merck

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No conflict of interest reported

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Marc H. Scheetz, Pharm.D., MSc, BCPS AQ-ID
(Module(s): 6)
Professor, Midwestern University, Chicago College of Pharmacy, Dept. of Pharmacy Practice, College of Graduate Studies, Dept. of Pharmacology
Director, Pharmacometrics Center of Excellence
ID Pharmacist, Northwestern Medicine, Chicago, IL
Patent Holder with MWU, Northwestern; Grant support from Cystic Fibrosis Fdn., Merck, Nevakar, Allecra, NIH.

Marisel Segarra-Newnham, PharmD, MPH, FCCP, BCPS-ID, BCIDP
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Clinical Pharmacy Specialist, Infectious Diseases/HIV
Antimicrobial Stewardship Program Pharmacy Director
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No conflict of interest reported

Keith Teelucksingh, Pharm.D., BCPS, BCIDP
(Module(s): W7)
Division Infectious Disease Pharmacist,
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No conflict of interest reported

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(Module(s): 8B)
Clinical Assistant Professor, College of Pharmacy
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Research Principal Investigator for grants received from Cumberland Pharmaceuticals and Paratek Pharmaceuticals; Advisory Board member for Merck and Summit Therapeutics

Frances Wong, PharmD, MEd, MPH, BCPS, BCIDP
(Module(s): 4F)
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No conflict of interest reported

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