

## Appendix 1 (part 1 of 4): Questionnaire for infectious diseases consultant and antimicrobial stewardship pharmacists

1. Would you like to participate in this survey?
  - a. Yes (continues)
  - b. No (exits survey)

### Institution Characteristics

2. In your role as an Infectious Diseases (ID) Consultant or Antimicrobial Stewardship pharmacist, please indicate the type of healthcare institution/organization you provide service to:
  - a. Multiple hospitals/facilities or a region (e.g. health authority or province)
  - b. Single hospital/facility
3. How many patient beds does the healthcare institution/organization you provide service to have? (i.e. If you provide service to a single hospital, the number of beds in the hospital. If you provide service to a health authority, the number of beds in the health authority.)
  - a. 1-100
  - b. 101-300
  - c. 301-500
  - d. Greater than 500
4. Which of the following best describe the patient population of your healthcare institution? (Select all that apply)
  - a. Adults
  - b. Pediatric
  - c. Geriatric
5. How many pharmacists in total, including clinical and distribution pharmacists, are currently employed in full-time equivalents at the healthcare institution where you spend the majority of your time?
  - a. 1-5
  - b. 6-10
  - c. 11-15
  - d. 16-20
  - e. Greater than 20
6. Does your healthcare institution have a pharmacy residency program?
  - a. Yes
  - b. No

### Infectious Diseases Consultant Service Characteristics

7. Does your institution have an inpatient Infectious Diseases Consult service (i.e. a physician-led infectious diseases team)?
  - a. Yes
  - b. No
8. Which health disciplines are involved in the Infectious Diseases Consult service? (Select all that apply)
  - a. Pharmacist
  - b. Physician (non-ID specialist)
  - c. Infectious diseases physician
  - d. Medical microbiologist
  - e. Infection control practitioner
  - f. Nurse
  - g. ID fellow
  - h. Medical resident
  - i. Medical student
  - j. Other\_\_\_\_\_

9. If there are pharmacists formally affiliated with the Infectious Diseases Consult service, how many pharmacists (in full time equivalents) are on this team on average on any given workday? (e.g. from Monday-Friday 8-4)
  - a. 0
  - b. Less than 1 (i.e. part time coverage)
  - c. 1
  - d. 2
  - e. 3
  - f. 4
  - g. Greater than 4
  - h. Other

### Antimicrobial Stewardship Program Characteristics

10. Does your institution have a formally funded, institutional Antimicrobial Stewardship program?
  - a. Yes
  - b. No
11. Which health disciplines are core members of the Antimicrobial Stewardship program? (Select all that apply)
  - a. Pharmacist
  - b. Infectious diseases physician
  - c. Medical microbiologist
  - d. Physician (e.g. non-infectious diseases specialist or medical microbiologist)
  - e. Microbiology laboratory assistant/technician
  - f. Nurse
  - g. Infection control professional
  - h. Hospital epidemiologist
  - i. Information systems analyst
  - j. Project manager
  - k. Hospital administrator
  - l. Other\_\_\_\_\_
12. Who leads or is the director of the Antimicrobial Stewardship program? (Select all that apply)
  - a. Pharmacist
  - b. Physician
  - c. Nurse
  - d. Administrator
  - e. Other\_\_\_\_\_
13. If there are pharmacists formally employed as part of the Antimicrobial Stewardship program, how many pharmacists (in full-time equivalents) are on this team on average on any given workday? (e.g. from Monday-Friday 8-4)
  - a. 0
  - b. Less than 1 (i.e. part time coverage)
  - c. 1
  - d. 2
  - e. 3
  - f. 4
  - g. Greater than 4
  - h. Other

## Appendix 1 (part 2 of 4): Questionnaire for infectious diseases consultant and antimicrobial stewardship pharmacists

### Pharmacist Demographics

14. How many years of hospital pharmacy experience do you have?
- Less than 5
  - 5-9
  - 10-20
  - Greater than 20
15. If your institution has *both* an Infectious Diseases Consultant pharmacist and an Antimicrobial Stewardship pharmacist, are they the same person?
- Yes
  - No
  - Not applicable
16. Which of the following best describes your position at your facility?
- Infectious Diseases Consultant service pharmacist
  - Antimicrobial Stewardship pharmacist
  - Infectious Diseases Consultant service pharmacist & Antimicrobial Stewardship pharmacist
  - Other: \_\_\_\_\_
17. What pharmacy-related education you have received? (Select all that apply)
- Entry to practice Bachelor of Science in Pharmacy degree or entry to practice Doctor of Pharmacy degree
  - Residency training (e.g. ACPR or American PGY1)
  - Infectious diseases residency training (e.g. PGY2)
  - Antimicrobial stewardship residency training (e.g. PGY2)
  - Infectious diseases fellowship (e.g. CSHP fellowship)
  - Infectious diseases fellowship (e.g. university conferred)
  - Antimicrobial stewardship fellowship (e.g. MSH-UHN antimicrobial stewardship program fellowship)
  - Post-graduate Doctor of Pharmacy degree
  - Masters of Science (Clinical Pharmacy)
  - Ph.D.
  - Other: \_\_\_\_\_
18. Please indicate additional specialty Infectious Diseases or Antimicrobial Stewardship training you have completed. (Select all that apply)
- Board Certified Pharmacotherapy Specialist (BCPS) with Infectious Diseases added qualification
  - Stanford Antimicrobial Stewardship: Optimization of Antibiotic Practices Course
  - SIDP Antimicrobial Stewardship Certificate Program for Pharmacists
  - Making a difference in Infectious Diseases (MAD-ID) Antimicrobial Stewardship Basic or Advanced Program
  - None of the above
  - Other: \_\_\_\_\_

### Pharmacist Role

#### Section 1: Patient Care

19. On average, how many patients do you clinically assess in a day?
- None
  - 1-4
  - 5-10
  - 11-15
  - 16-20
  - Greater than 20
20. Do you assess your patients by: (Select all that apply)
- Chart review
  - Discussion with physician, nursing staff, pharmacy staff, or other team members
  - Speaking with the patient in person
21. Do you actively involve patients and/or family members in medication-related decisions?
- Yes
  - No
  - Not applicable
22. Do you attend patient-care rounds led by a physician?
- Yes, I attend patient-care rounds
  - No, I do not attend patient-care rounds with my service
  - No, I do not attend as my service does not have patient-care rounds
23. How are patients identified by your service for rounds or assessment? (Select all that apply)
- Patients followed by the ID service
  - Patients on a specific ward or nursing unit (e.g. ICU)
  - Patients with common characteristics (e.g. pediatric, high-acuity disease states)
  - Patients with a specific diagnosis or indication for antimicrobials
  - Patients with a specific microbiological culture and/or sensitivity results (e.g. invasive blood culture)
  - Pre-specified list of patients on a target antimicrobial (e.g. computer generated list of inpatients on meropenem)
  - Pre-specified list of patients based on an intervention
  - Consult-based pharmacy service
  - I do not know
  - Other: \_\_\_\_\_
24. Please indicate the antimicrobial interventions you perform. (Select all that apply)
- Medication histories
  - Allergy histories and clarification
  - Review antimicrobials for appropriateness in indication, drug choice, dose, route, interval, and duration
  - Provide recommendations to your patient's physician to optimize therapy based on clinical status, indication, allergies, culture and susceptibility results, and potential drug interactions
  - Streamlining or de-escalation of therapy
  - Dose optimization (e.g. renal adjustments)
  - Parenteral to oral conversion
  - Culture follow up
  - Therapeutic drug monitoring (e.g. interpret target serum antimicrobial levels)
  - Patient medication (and disease, if applicable) education
  - None of the above
25. Do you monitor your patients for the following? (Select all that apply)
- Clinical efficacy
  - Drug interactions
  - Adverse effects
  - None of the above
26. How long do you provide patient follow-up and monitoring once you make antimicrobial therapy recommendations?
- While assigned to your service or program
  - Until hospital discharge
  - Do not provide follow-up or monitoring

## Appendix 1 (part 3 of 4): Questionnaire for infectious diseases consultant and antimicrobial stewardship pharmacists

27. Do you facilitate seamless care (e.g. medication reconciliation, pharmacist to pharmacist handover of relevant drug therapy issues, etc.) between points of transfer?
- Yes
  - No

28. Do you facilitate discharge planning? (e.g. coordination of home IV orders and access to medications on discharge)
- Yes
  - No

### Section 2: Teaching Responsibilities

29. Do you offer experiential pharmacy rotations for the following? (Select all that apply)
- Entry to practice Bachelor of Science in Pharmacy degree students or entry to practice Doctor of Pharmacy degree students
  - Post-graduate Doctor of Pharmacy degree students
  - Ph.D. students
  - Fellowship students
  - Pharmacy Residency training
  - Pharmacy ID specialty residency
  - Pharmacy ID fellowship
  - None of the above
  - Other (please specify): \_\_\_\_\_
30. Do you provide didactic pharmacy education or act as an academic half day facilitator for the following? (Select all that apply)
- Entry to practice Bachelor of Science in Pharmacy degree students or entry to practice Doctor of Pharmacy degree students
  - Post-graduate Doctor of Pharmacy degree students
  - Ph.D. students
  - Fellowship students
  - Residency training (ACPR)
  - Pharmacy ID specialty residency
  - Pharmacy ID fellowship
  - Pharmacists
  - Medical students
  - Medical residents/fellows
  - Physicians
  - Nursing students
  - Nurses
  - None of the above
  - Other: \_\_\_\_\_
31. Which infectious diseases or antimicrobial education techniques do you provide at your facility? (Select all that apply)
- Physician education/in-services
  - Pharmacist education/in-services
  - Newsletter
  - Posters or brochures or handbooks
  - Applications for hand-held devices (e.g. iPhone, Android)
  - Email
  - Grand Rounds
  - Conferences
  - None of the above
  - Other \_\_\_\_\_

### Section 3: Administration

32. Are you available for after hours (on-call) questions/consults about antimicrobials?
- Yes
  - No
33. Do you create or maintain any of the following? (Select all that apply)
- Antimicrobial use guidelines (e.g. for use of restricted antimicrobial agents)
  - Clinical pathways/clinical practice guidelines
  - Pre-printed orders
  - Infectious diseases treatment protocols
  - Antibiograms
  - Hospital policy development
  - Clinical or decision support tools (e.g. pocket cards for the use of antimicrobials, or treatment of a particular infectious disease)
  - Therapeutic interchange of antimicrobial agents
  - Pharmacy-based quality improvement projects
  - None of the above
34. Do you maintain a formulary of targeted antimicrobials and approved or restricted indications?
- Yes
  - No
35. Do you participate in the approval process of requests for non-formulary or restricted antimicrobials?
- Yes
  - No
36. Are you a member of any of the following committees for your facility? (Select all that apply)
- Pharmacy and Therapeutics-Antimicrobial Subcommittee
  - Infection Prevention and Control Committee
  - Pandemic Planning Committee
  - Antimicrobial Stewardship Committee
  - None of the above
  - Other (please specify): \_\_\_\_\_
37. Do you formally coordinate, manage, or mentor other pharmacists in the area of infectious diseases or antimicrobial stewardship in the healthcare institution/organization you provide service to?
- Yes
  - No

### Section 4: Research

38. Do you perform research with the intention to disseminate the results? (Select all that apply)
- Internally within your healthcare institution
  - Widely, including poster presentation and/or publishing in a peer-reviewed journal
  - No
39. Do you perform drug use evaluations (DUE) on antimicrobials? (e.g. perform a chart review, assess the use of a particular antimicrobial, then provide feedback to prescribers)
- Yes
  - No

**Appendix 1 (part 4 of 4):** Questionnaire for infectious diseases consultant and antimicrobial stewardship pharmacists

40. If you are responsible for the compilation and/or analysis of antimicrobial consumption or usage metrics, what do you collect? (Select all that apply)
- Antimicrobial defined daily dose (DDD)
  - Antimicrobial days of therapy (DOT)
  - Cost (e.g. antimicrobial agent use based on value dispensed to inpatients)
  - Amount dispensed to inpatients (e.g. vials/ampoules)
  - Do not evaluate usage metrics of antimicrobial agents
41. Do you assess prescriber acceptance rates of your antimicrobial interventions?
- Yes
  - No
  - Not applicable
42. Do you evaluate patient outcomes associated with use of antimicrobial agents? (Select all that apply)
- Patient outcomes associated with activities such as IV to PO stepdown, de-escalation, dose and duration optimization.
  - Patient outcomes associated with antimicrobial misuse such as development of resistance, adverse effects, or development of *Clostridium difficile* infection.
  - Adherence to recommendations or protocols, such as surgical prophylaxis, treatment of infectious diseases and use of antimicrobial agents
  - None of the above
  - Not applicable