

SHS-UHN ANTIMICROBIAL STEWARDSHIP PROGRAM RESEARCH ACTIVITIES 2015/16

“Getting patients the right antibiotics, when they need them”

PREAMBLE

We are submitting a brief overview of the productivity of the research arm of the Sinai Health System-University Health Network Antimicrobial Stewardship Program. We have had a very productive year in 2015/16. The core research group includes our Research Coordinator Marilyn Steinberg, Medical Director Dr. Andrew Morris, and Research Director Dr. Chaim Bell. We hold monthly research meetings with the entire program, which includes physicians, pharmacists, and operational team members. This helps our team to stay informed about the group’s research activities, as well as allowing us to follow up on and begin new projects or learn about new aspects of research (e.g. new databases, techniques).

OUR RESEARCH FOCUS

The Sinai Health System-University Health Network Antimicrobial Stewardship Program has decided to focus on the following areas of research:

- Staphylococcus aureus bacteremia and its effect on patient outcomes
- The effect of Antimicrobial Stewardship Programs in Critical Care
- Antimicrobial approach to the care of the immunocompromised host
- Antimicrobial Stewardship in Primary Care

We have not entirely limited our research focus to these areas. However, we felt that, by investing time and resources into building expertise and databases in these areas, we could achieve higher impact research.

PUBLICATIONS 2015/16

Peer Reviewed

- + Bai AD, Showler A, Burry L, Steinberg M, Ricciuto DR, Fernandes T, Chiu A, Raybardhan S, Science M, Fernando E, Bell CM, Morris AM. Impact of Infectious Disease Consultation on Quality of Care and Mortality in *Staphylococcus aureus* Bacteremia: Results from a Large Multicenter Cohort Study. *Clin Infect Dis*. 2015 May 15;60(10):1451-61. (Editor’s choice)
- + Bai AD, Showler A, Burry L, Steinberg M, Ricciuto DR, Fernandes T, Chiu A, Raybardhan S, Science M, Fernando E, Bell CM, Morris AM. Comparative effectiveness of cefazolin versus cloxacillin as definitive antibiotic therapy for methicillin-susceptible *Staphylococcus aureus* bacteremia: results from a large multicenter cohort study. *J Antimicrob Chemoth*. 2015 May;70(5):1539-46 (Featured in NEJM ID Journal Watch)
- + Thampi N, Showler A, Burry L, Bai AD, Steinberg M, RN, Ricciuto DR, Bell CM, Morris, AM. Multicenter Study of Healthcare Costs of Patients Admitted to Hospital with *Staphylococcus aureus* Bacteremia. *Am J Infect Control*. 2015 Jul 1;43(7):739-44

- + Steinberg M, Dresser LD, Daneman N, Smith OM, Matte A, Marinoff N, Bell CM, Morris AM. A National Survey of Critical Care Physicians' Knowledge, Attitudes, and Perceptions of Antimicrobial Stewardship Programs. *J Intensive Care Med*. 2016 Jan;31(1):61-5.
- + Bai AD, Burry L, Showler A, Steinberg M, Ricciuto D, Fernandes T, Chiu A, Raybardhan S, Tomlinson G, Bell CM, Morris AM. Usefulness of previous screening for methicillin-resistant *Staphylococcus aureus* in guiding empiric therapy for *S. aureus* bacteremia. *Can J Infect Dis Med* 2015 Jul-Aug;26(4):201-206.
- + Showler A, Burry L, Bai AD, Steinberg M, Ricciuto DR, Fernandes T, Chiu A, Raybardhan S, Science M, Fernando E, Bell CM, Morris AM. Use of transthoracic echocardiography in the management of low-risk *Staphylococcus aureus* bacteremia: results from a retrospective multicenter cohort study. *JACC-Cardiovasc Imag*. 2015 Aug;8(8):924-31.
- + Jeffs L, Thampi N, Maione M, Steinberg M, Morris AM, Bell CM. A Qualitative Analysis of Implementation of Antimicrobial Stewardship at 3 Academic Hospitals: Understanding the Key Influences to Success. *Can J Hosp Pharm*. 2015 Sep-Oct;68(5):395-400.
- + So M, Yang DY, Bell CM, Humar A, Morris AM, Husain S. Are There Opportunities for Antimicrobial Stewardship? *Clin Transplant*. 2016 March [in press].

The following manuscript was published on-line in the Public Health Agency of Canada's 'Canada Communicable Disease Report':

- + Nakamachi Y, West S, Dresser L, Morris AM. Developing and expanding hospital antimicrobial stewardship: The Ontario experience. *Canada Communicable Disease Report*. Volume 41 S-4, June 18, 2015. Available at: http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/15vol41/dr-rm41s-4/overview-apercu_03-eng.php

Published Commentaries

- + Morris AM, Gollish J. Arthroplasty and postoperative antimicrobial prophylaxis. *Can Med Assoc J*. 2016 Mar 1;188(4):243-4
- + Morris AM, Webb GD. What to think about antibiotic prophylaxis and infective endocarditis. *Can J Cardiol*. DOI: <http://dx.doi.org/10.1016/j.cjca>. 2015 Oct 14; [Epub ahead of print]

Submitted Manuscripts, Currently Undergoing Peer Review

- + Vallipuram J, Dhalla S, Bell CM, Dresser L, Han H, Husain S, Minden M, Paul NS, So M, Steinberg M, Vallipuram M, Wong G, Morris AM. Chest CT Scans are Frequently Abnormal in Asymptomatic Patients with Newly Diagnosed Acute Myeloid Leukemia.
- + Duplisea K, Nelson S, Bell CM, Morris AM, Bunce PE. A Process to Assess Appropriateness of Antimicrobial Prescribing in General Internal Medicine using Point Prevalence Audits.

ABSTRACTS AND POSTER PRESENTATIONS 2015/16

- + West S, Morgan M, Dushenski D, McDonald C, Van Den Broek K, Morris A. SNAP—Sepsis Now a Priority: Development and Implementation of a Sepsis Algorithm in the Emergency Department of an Academic Hospital. Poster presentation at AMMI Annual Conference, April 16-19, 2015; Charlottetown, PEI.
- + Bai A, Showler A, Burry L, Steinberg M, Ricciuto D, Fernandes T, Chiu A, Raybardhan S, Science M, Fernando E, Tomlinson G, Bell C, Morris A. Positive Impact of Infectious Disease Consultation on Quality of Care, Mortality and Length of Stay in *Staphylococcus aureus* Bacteremia: Results from a Large Multicenter Cohort Study. Poster presentation at AMMI Annual Conference, April 16-19, 2015; Charlottetown, PEI.

- + Bai A, Burry L, Showler A, Steinberg M, Ricciuto D, Fernandes T, Chiu A, Raybardhan S, Tomlinson G, Bell C, Morris A. Usefulness of previous methicillin-resistant Staphylococcus aureus screening results in guiding empiric therapy for S. aureus bacteremia. Poster presentation at AMMI Annual Conference, April 16-19, 2015; Charlottetown, PEI.
- + Rostom M, Marr P, Kwan D, Papoushek C, Dresser L, Lemieux C. Antimicrobial Stewardship in Primary Care: An Evaluation of the Management of Acute Uncomplicated Cystitis in a Family Health Team. Poster presentation at AMMI Annual Conference, April 16-19, 2015; Charlottetown, PEI.
- + Huo X, Hughes JS, Coburn B, Hurford A, Morris AM, Wu J. Modeling the Evolutionary Ecology of Antimicrobial De-escalation. Poster presentation at the Guelph Biomathematics and Biostatistics Symposium, May 5, 2015; Guelph ON
- + So M, Mamdani M, Deotare U, Schimmer A, Kim D, Bell C, Morris A. Evaluating the Long-Term Safety and Effectiveness of an Antimicrobial Stewardship Program in Leukemia Patients. Oral presentation at ICAAC Annual Conference, Sept. 17-21, 2015; San Diego, CA, USA.
- + So M, Yeats B, Lu S, Bell C, Morris A, Husain S. Compliance to a Febrile Neutropenia Protocol for Leukemia Patients Developed Based on Antimicrobial Stewardship Principles and Human Factors Engineering. Poster presentation at ICAAC Annual Conference, Sept. 17-21, 2015; San Diego, CA, USA.
- + Hughes J, Hurford A, Patrick D, Finley R, Morris A, Wu, J. How to measure antibiotic resistance using empiric therapy indices. Poster presentation at ID Week 2015, Oct 7-11, 2015; San Diego, CA.
- + Dresser L, Hughes J, McIntyre M, Nelson S, Ferguson N, Lapinsky S, Lazar N, Mehta S, Burry L, Singh J, Bell CM, Morris AM. Antimicrobial stewardship programs reduce daily prescribing variability in academic ICUs. Poster presentation at Critical Care Canada Forum, Oct 25-28, 2015; Toronto, ON.

ONGOING GRANT-FUNDED RESEARCH PROJECTS 2015/16

- + Evaluation of a Province Wide Roll-out of Antimicrobial Stewardship Programs in Critical Care Units: A Prospective Observational Study
 - Principal Investigator: Andrew Morris
 - Co-investigators: Chaim Bell, Lisa Burry, Yoshiko Nakamachi, Marilyn Steinberg
- + Development of an Antimicrobial Resistance Diversity Index (ARDI) to Guide Initiatives and Investment in Public Health, Antimicrobial Stewardship and Infection Control
 - Principal Investigators: Jainhong Wu, Andrew Morris
 - Co-investigators: Josie Hughes, Allison McGeer, David Patrick, Gerald Wright, Amy Hurford, Troy Day
- + Council of Academic Hospitals of Ontario (CAHO) Adopting Research To Improve Care (ARTIC) Spread Project: ARTIC CHILL - Community Hospital ICU Local Leadership.
 - Principal Investigator: Andrew Morris
 - Co-investigators: Yoshiko Nakamachi, Sarah West, Chaim Bell
- + Building Capacity to Improve and Sustain Antimicrobial Stewardship Programs in ICUs. Canadian Institutes of Health Research, Knowledge to Action.
 - Principal Investigators: Lianne Jeffs, Andrew Morris
 - Co-investigators: Chaim Bell, Madelyn Law, Jonathan Mitchell, Susan Straus

- + Technology Evaluation in the Elderly Network (TVN): FRAMING-LTC: Frailty and Recognizing Appropriate Medications IN Geriatrics and Long-Term Care.
 - Principal Investigator: Andrew Morris
 - Co-Investigators: Chaim Bell, Susan Bronskill, Colleen Maxwell, Lianne Jeffs
- + AHSC AFP Innovation Fund: Designing an Effective Outpatient Antimicrobial Stewardship Program to Reduce Unnecessary Antibiotic Use in Primary Care using a Mixed-Methods Collaborative Model.
 - Principal Investigators: Warren McIsaac, Andrew Morris
 - Co-investigators: Chaim Bell, Lianne Jeffs, Jeff Bloom, David Tannenbaum
 - Collaborators: Yoshiko Nakamachi, Linda Dresser, Mark McIntyre
- + Developing and Evaluating an Educational Intervention to Guide in the Implementation of Antimicrobial Stewardship Programs in Community Hospitals Across Ontario
 - Principal Investigator: Linda Dresser
 - Co-investigators: Marilyn Steinberg, Kevin Duplisea, Sandra Nelson, Miranda So, Chaim Bell, Andrew Morris

ONGOING RESEARCH PROJECTS 2015/2016

- + A Point Prevalence Study to Evaluate Clinical Compliance with a Ventilator Associated Pneumonia Algorithm in the Intensive Care Unit
 - Principal Investigator: Andrew Morris
 - Co-investigators: Qasim Mohiuddin, Marilyn Steinberg, Linda Dresser, Chaim Bell
- + Evaluation of the Effectiveness and Impact of an Antimicrobial Stewardship Program (ASP) in the Neonatal Intensive Care Unit (NICU)
 - Principal Investigator: Andrew Morris, Nisha Thampi
 - Co-investigators: Chaim Bell, Sandra Nelson, Prakesh Shah
- + SNAP—Sepsis Now a Priority: Development and Implementation of a Sepsis Algorithm in the Emergency Department of an Academic Teaching Hospital using an Integrated Knowledge Translation Approach
 - Principal Investigator: Andrew Morris
 - Co-investigators: Christine McDonald, Sarah West, Chaim Bell
- + Recognition and Management of *Clostridium Difficile* Infections Before and After Implementation of an Antimicrobial Stewardship Intervention
 - Principal Investigator: Andrew Morris
 - Co-investigators: Shaqil Peermohamed, Sarah West, Chaim Bell
- + Evaluation of ASP in General Internal Medicine Service
 - Principal Investigator: Paul Bunce
 - Co-investigators: Sandra Nelson, Kevin Duplisea, Chaim Bell, Andrew Morris