MMSRD Recap and Winners

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MMSRD Recap

It was our immense pleasure this year to host the 9th annual McMaster Medical Research (MMSRD), held on April 25th, 2018. Every year, MMSRD proudly showcases the tremendous efforts and achievements of McMaster University’s MD and MD-PhD students, in the hopes of encouraging students and faculty to consider the nuances of medicine by exploring research endeavours that highlight the diversity of modern healthcare. Success in improving patient care and medical practice relies upon individuals who embrace the astonishingly interdisciplinary nature of medicine to embark upon initiatives that range from examining the chemistry of novel antibiotics to efforts that affect both local and global communities.

For the first time, we were pleased to welcome students from neighbouring Canadian medical schools as part of an annual initiative that we hope will strengthen ties and foster collaborations between the next generation of physicians.

MMSRD 2018 featured an exciting program of more than 80 abstracts spanning the basic sciences, clinical research, community research, and quality improvement projects. The events of the day were highlighted by two exciting keynote speakers: Dr. Hertzel C. Gerstein, who spoke about the immense role of randomized controlled trials in the age of “big data”, and Dr. Kerstin de Wit, who spoke about the value of research in informing clinical tools and how she uses it to change her practice.

We were immensely impressed with the variety and quality of research presented by medical students, and were thrilled to provide this platform to showcase it. We hope that moving forward, MMSRD continues to grow as a platform that enables the McMaster community to gain a breadth of perspectives and find inspiration in the research efforts of peers and colleagues.
Empiric antibiotic therapy for hospital-acquired pneumonia: a network meta-analysis

Yung Lee, Yutong Fei, Romina Brigardello-Petersen, Theresa Aves, Dena Zeraatkar, Paul Alexander, Behnam Sadeghirad, Xun Li, Nathan Evaniew, Neera Bhattacharjee, Isaac I Bogoch, Mark Loeb, Gordon H. Guyatt, Reed A. Guyatt

ABSTRACT:

Background: Hospital-acquired pneumonia (HAP) is a common complication of hospitalisation and has a high risk of death. The optimal empiric antibiotic therapy regimen is uncertain.

Methods: We systematically searched Medline, EMBASE, and CENTRAL for randomised controlled trials (RCTs) comparing at least two empiric antibiotic regimens in patients with non-ventilator associated HAP to March 17, 2017. We performed a systematic review and network meta-analysis and network meta-regression using the GRADE framework to assess certainty.

Results: From 14,686 citations, we included 63 RCTs (10,096 patients). Most studies were limited by inadequate allocation concealment and blinding. All networks had low global heterogeneity (I² 0% to 12.9%). Fluoroquinolones reduced risk of death compared to third generation cephalosporins (relative risk and 95% credible interval; 0.46, 0.22 to 0.87, moderate certainty), fourth generation cephalosporins (0.41, 0.19 to 0.86, moderate certainty), beta-lactam/beta lactamase inhibitors (0.45, 0.18 to 0.99, moderate certainty), and carbapenems (0.50, 0.21 to 1.03, low certainty). Fluoroquinolones also had a lower risk of treatment failure compared to most alternatives (low or moderate certainty). Second generation cephalosporins were associated with an increased risk of treatment failure compared to fluoroquinolones and other beta-lactams (moderate certainty).

Conclusion: The certainty in evidence is low or moderate for many comparisons because of imprecision and risk of bias concerns. In patients with HAP, fluoroquinolones probably reduce mortality and treatment failure compared to other commonly used options.

Pre-treatment with Amiodarone for Elective Electrical Cardioversion of Atrial Fibrillation: A Systematic Review and Meta-Analysis

Kevin J. Um, William F. McIntyre, Emilie P. Belley-Cote, Pablo A. Mendoza, Alex Koziarz, Guy Amit, Victor A. Chu, Richard P. Whitlock, Jeff S. Healey

ABSTRACT:

Background: Atrial fibrillation (AF) is a common cardiac arrhythmia that leads to stroke, heart failure, and increased mortality. Electrical cardioversion (ECV) for AF is common and has known complications. Amiodarone is a class III anti-arrhythmic drug that is often used for AF treatment. This study aimed to determine the effect of amiodarone pre-treatment on AF recurrence and other post-ECV complications.

Methods: We conducted a systematic review and meta-analysis of randomized controlled trials comparing amiodarone pre-treatment with placebo or no pre-treatment for AF. The primary outcome was AF recurrence at 90 days post-ECV. Secondary outcomes included post-ECV complications such as atrial flutter, heart block, and hypotension.

Results: Eight trials involving 1,239 participants were included in the meta-analysis. Amiodarone pre-treatment was associated with a significant reduction in AF recurrence at 90 days post-ECV (RR 0.56, 95% CI 0.39-0.80, p = 0.002). There was no significant difference in post-ECV complications between the amiodarone and placebo groups.

Conclusion: Amiodarone pre-treatment is associated with a significant reduction in AF recurrence at 90 days post-ECV compared to placebo or no pre-treatment. This finding supports the use of amiodarone pre-treatment for AF recurrence, particularly in high-risk patients.