

## RESEARCH GRANT SPOTLIGHT...



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### Sheryl Zelenitsky, PharmD

*Professor, College of Pharmacy, University of Manitoba (UM)*

### ***“Is the Recommended Cefazolin Prophylaxis Adequate in Cardiac Surgery?”***

Dr. Sheryl Zelenitsky and co-investigators Ms. Divna Calic, Dr. Rob Ariano, Dr. Rakesh Arora, and Dr. Hilary Grocott received a Foundation Research Grant of \$10,210.

#### **Q: How did the concept/idea for your research project come about?**

**A:** I have always been interested in antimicrobial prophylaxis as an intervention with measurable impact on patient care. I believe the area was lapsing with the focus on specific questions such as: What is the best pre-operative timing? When is re-dosing required? I saw more value and opportunity in answering the question: What is the goal (what are the targets) when administering antimicrobials for the purpose of prophylaxis? Previously, we showed that low antibiotic concentration at closure (of the incision) was one of the most significant risk factors for surgical site infection following colorectal operations. In this context, I questioned whether the standard, guideline-recommended cefazolin dosing for antimicrobial prophylaxis would maintain effective concentrations in patients undergoing cardiac surgery.

#### **Q: Briefly describe your research project and what it revealed.**

**A:** We studied cefazolin prophylaxis and resultant plasma concentrations in 55 patients undergoing cardiac surgery with cardiopulmonary bypass. There were significant changes in cefazolin pharmacokinetics with low plasma concentrations at some point during the operation in 30% of patients. Most notably, those with low cefazolin levels at incision closure were more likely to develop post-operative sternal wound infection. Furthermore, the cefazolin concentrations required for optimal prophylaxis in this population were higher than those reliably delivered by the standard, guideline-recommended cefazolin dosing.

#### **Q: How will the results of your research project be used?**

**A:** Our research will be used to emphasize the importance of antimicrobial closure concentration in preventing surgical site infection. By identifying effective targets, our findings will also be used to develop evidence-based cefazolin dosing that is more appropriate for patients undergoing cardiac surgery.

#### **Q: What impact will your research have on hospital pharmacy and patient care?**

**A:** In hospital pharmacy, our research can be used to optimize antimicrobial prophylaxis guidelines. The potential benefits for patient care include reducing post-operative wound infections, thereby avoiding extended hospitalizations, re-admissions, excess treatment costs and infection-related mortalities.

#### **Q: Why should healthcare professionals, key decision makers and the general public pay attention to the research done by pharmacists?**

**A:** Through their patient-centered and collaborative role in healthcare, pharmacists can identify important issues that stand in the way of delivering optimal patient care. Our project shows how pharmacist-led research has advanced the understanding of effective antimicrobial prophylaxis with significant potential to improve the outcomes of patients undergoing cardiac surgery.

**Publications:** See the Foundation's [Publications](#) webpage for links to three recent posters on this work.

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