

## INPHARMATION UPDATE

Canadian Society of  
Hospital Pharmacists  
Alberta Branch



Société canadienne des  
pharmaciens d'hôpitaux



# September 2023 Issue 63

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# News from CSHP National

Mary Gunther, CSHP Alberta Branch Delegate

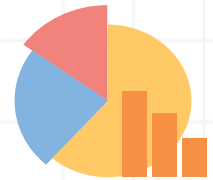


## CSHP Executives for 2022-2023

- President Elect - Ashley Walus (Manitoba)
- President - Sean Spina (British Columbia)
- Past President - Zac Dumont (Saskatchewan)
- Treasurer - Megan Riordan (Ontario)
- CEP - Jody Ciufo

## Update from National Committees

- CSHP has hired Rita Dhami as our next Chief Pharmacy Officer. Rita is a previous president of CSHP Ontario Branch, and most recently worked for CPhA. She started with CSHP in mid-June, and has hit the ground running!
- Katie Hollis has been selected as the incoming President Elect for CSHP, and will officially join the Board this fall. Katie has previous experience in leading CSHP Ontario Branch, but now lives in Nova Scotia and is the Director of Pharmacy for IWK Health
- The CSHP Board has approved a balanced budget for the 2023/2024 year. This marks the successful conclusion of our Strategy Towards Sustainability, which has unexpectedly also included the replenishment of our National reserve funds as a result of the sale of our office condominium. Congratulations and thank you to all of the CSHP leaders and members across the country who have worked so hard to ensure the success and sustainability of CSHP for many years to come!



**The two task forces currently struck are on track to complete their mandates on schedule for this Fall's Board Meetings**

o The **Vision for Hospital Pharmacy Practice in Canada Task Force** has a preliminary set of vision statements that are currently undergoing a Delphi process for feedback and refinement.

o The **Sustainability Task Force** has a preliminary set of recommendations that have been circulated broadly for feedback from CSHP members and other pharmacy leaders.



The next board meetings are scheduled to occur in Montreal October 20-22.

Please reach out any time with questions or comments related to CSHP National's activities!

Mary Gunther  
CSHP Branch Delegate - Alberta  
mary.gunther@ahs.ca

# CSHP-AB Student Column

The new school year means seeing pharmacy friends, studying, and attending all the educational and enlightening events the Faculty of Pharmacy and Pharmaceutical Sciences creates. It has been three and a half years since the COVID pandemic, and while COVID may never leave us, it is relatively under control and in-person campus activities remain here to stay!

The Faculty of Pharmacy and Pharmaceutical Sciences welcomes the Class of 2027 on August 30th and 31st. The first orientation day will consist of formal faculty introductions, followed by the APSA orientation the following day. During the APSA orientation, the CSHP team and I will greet prospective student members into CSHP. We will highlight what CSHP offers as an organization and the many perks of getting involved in CSHP early.

The CSHP-AB Student Committee will host the CSHP Student Symposium on September 27th, 2023. APSA has confirmed this date, and every pharmacy student is welcome to attend! Historically, CSHP created this event to entice first-year students into joining, but over time, many students from different years have come to learn about CSHP's yearly programming. Catherine Biggs (CSHP-AB Vision Portfolio and Clinical Practice Leader) and I will be cohosting the event with door prizes, food, and some vital information that can jumpstart a career in hospital pharmacy.

The CSHP-AB Student Committee also has some exciting programming for the rest of the fall semester. In October, we will have a new educational event highlighting AHS Drug Information. In November, we will host our annual 'Day in the Life of a Hospital Pharmacist' with various hospital pharmacists from all over Alberta.

Finally, in December, the CSHP-AB Student Committee and I hope to have a fundraiser for a hospital in Edmonton; this is similar to what other student-led pharmacy organizations put on (CAPSI and NCODA being two prominent examples).

While this may seem like ambitious programming for the rest of the 2023 year, I am very supported by the CSHP-AB committee and my predecessor, Karanvir Deol, who has answered all my questions throughout the summer months of planning and transitioning into the position. I want to thank him for his dedication and hard work in the role. I would also like to thank all the diligent student members with whom I had the pleasure of being on the committee with in 2022-2023. It was great seeing in-person events again, with a highlight being the hospital career night event! The newly elected CSHP student committee and I are very excited to carry on the torch and will continue to provide exciting events for the student body.



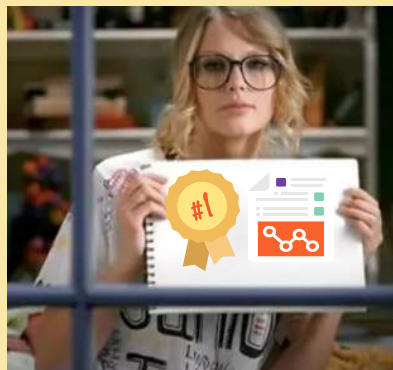
Hubert Piatkowski  
CSHP-AB Student Representative  
(Incoming)

Karanvir Deol  
CSHP-AB Student Representative  
(Outgoing)

# Research Committee



Virtual Poster (2020)



Award Winning Poster



Poster with a Presentation



The #BetterPoster



"Blank Space" Poster



"My PI asked me" Poster



"Forgot You Existed" Poster

## Which Research Poster are YOU? (CSHP Alberta's Version)

Missed out on the Eras Tour? Waitlisted for Toronto? We have the event for you!

We are calling for abstracts for CABS 2023 hosted in Edmonton! The in-person facilitated poster session is on **Saturday, October 21st**.

Poster abstracts are to be submitted to Emily (emily.cowley@ahs.ca) by **October 6th @11:59PM**. Stay tuned for submission details via e-mail.

# Pharmacist Spotlight



## Melanie Varughese

Pharmacy Manager  
Cross Cancer Institute

*"[I] really enjoyed the challenges and growth I experienced in this leadership role."*

**Rebecca (interviewer):** Can you start by telling me a bit about your pharmacy background and your journey to becoming the pharmacy manager at the CCI?

**Melanie:** I graduated in 2003 from U of A Pharmacy. Initially I started in retail for one year in Calgary and then moved to Edmonton and worked in a continuing care pharmacy. I later moved to Fort McMurray in 2005 and it was there that I started my first job in hospital pharmacy. I loved it and the clinical role of a hospital pharmacist! In 2007, we moved to Edmonton and I accepted a position at University of Alberta Hospital Pharmacy and worked as a pharmacist/clinical pharmacist in pediatrics. It was here that one of my managers challenged me, asking if I'd ever be interested in becoming a manager/leader because she thought I'd be good at it. I had honestly never thought of this before, and it was this prompting and encouragement that lead me to apply for a temporary manager position for a year at the U of A Pharmacy department. It was perfect because I could try it out, as I was worried I would miss working as a clinical pharmacist too much. I transitioned into the role and worked in it for just over a year and really enjoyed the challenges and growth I experienced in this leadership role.

Just as the temporary position was ending, a permanent position opened at the Cross Cancer Institute Pharmacy, and I applied and thankfully was hired. I have been in this position now for 13 years (minus two maternity leaves) and haven't looked back. I love my job and am thankful to be in it!

**Rebecca:** What is your favorite aspect of being a pharmacy manager?

**Melanie:** Being in a leadership position is a real privilege to me, as I have the unique opportunity to help our department navigate through the growth and changes in our health care system. This has included supporting all pharmacy staff to work to full scopes of practice, growing clinical practices, working to best practice (NAPRA, etc.) and navigating changes that come our way, such as the implementation of our new integrative computer system, or planning for construction, etc. There is always work to be done and new challenges as health care is continuously growing and evolving. One of my favorite aspects of my job is working with people. I love supporting and watching the pharmacists grow in their roles, whether new hires starting in oncology practice for the first time, all the way to staff who have been here for years and continue to push themselves in their professional practice.

I also enjoy working with other leaders in AHS, learning from them and collaborating on important projects, initiatives etc. It is extremely fulfilling to work together, with both front-line staff and AHS leaders, to see the progress and positive changes made to our system to ultimately improve patient care. It is an incredible feeling to look back over the years and see how much we've changed, grown and adapted!

**Rebecca:** Can you describe what role you and your colleagues have in the provision of cancer care to patients across Northern Alberta?

**Melanie:** The Cross Cancer Pharmacy is part of AHS Pharmacy and also works closely with Cancer Care Alberta to ensure our patients receive safe, effective cancer treatments. Geographically we support patients with cancer from Red Deer - north, as well as support some NWT and northern BC patients. Our pharmacy is unique as we have a mixed model – many patients are ambulatory and come in for appointments/treatment and then go home. Our outpatient pharmacy is involved in the sterile compounding of cancer infusions. Additionally we have an outpatient dispensary where we dispense oral cancer treatments to our patients. Our site is a hub that supports remote cancer sites by reviewing patient treatment plans and sending drugs to designated community cancer centers so that patients may be treated closer to home. We also provide remote service by preparing cancer treatments and delivery to a few sites outside of Edmonton. We also have clinical pharmacists working in ambulatory cancer clinics, where they help manage ongoing cancer treatments, manage supportive care therapies helping our patients be able to navigate through their treatment as best and safely as possible. With the growing demands on our health care system, clinical pharmacists working to full-scope of practice can help our tumour groups by helping manage stable and ongoing patient care and allow our oncologists to focus on new and sicker patients. We also have 3 inpatient units that our pharmacy provides medications and clinical services.

“

"I love supporting and watching the pharmacists grow in their roles, whether new hires starting in oncology practice for the first time, all the way to staff who have been here for years and continue to push themselves in their professional practice."

”

**Rebecca:** And finally, what hobbies do you have outside of pharmacy?

**Melanie:** I am married and have three kids, twin girls who are 12, and an 8-year-old son. I enjoy spending time with my family and supporting them in their school and extracurricular activities! In my free time I enjoy getting outdoors to go for a run. Being in nature recharges me and I enjoy family camping trips, swimming, hiking and biking! I enjoy baking, reading and doing crafts. We are also involved in our church and support a marriage ministry called Thrive.

## Contact Us

*Do you, or someone you know, want to be interviewed for the Pharmacy Spotlight initiative?*

*As part of our initiative to highlight the hard work and dedication of individuals, as well as the many innovative practices within pharmacy, we are publishing interviews with **pharmacists, technicians, and assistants** working in Alberta. If you would like to nominate an interviewee, please submit your request to Caitlyn & Lynnea (caitlyn.rozmahel@ahs.ca, lynnea@ualberta.ca).*

# short & snappy

-A CLINICAL OVERVIEW

## Is Linezolid Making You **Too** Happy? Linezolid and the Risk of Serotonin Syndrome

Zac Kronbauer, PharmD  
Pharmacy Resident 2022/2023, Calgary Zone

**Clinical Question:** What is the risk of developing serotonin syndrome or serotonin toxicity when using linezolid?

### The ID consultant "dilemma": START LINEZOLID?<sup>1</sup>



Linezolid is an oxazolidinone antibiotic that is effective against aerobic gram positive bacteria and some anaerobes by inhibiting protein synthesis (2). Some evidence has shown that, due to its mechanism of action, linezolid can reduce streptococcal toxin production in necrotizing skin infections and toxic shock syndrome (3). In addition to its antimicrobial activity, linezolid is a reversible non-selective inhibitor of monoamine oxidase (MAO) A and B; this causes interactions with other serotonergic agents such as antidepressants and opioids. (2)

Study	Study Type/Description	Results
Traver et al <sup>4</sup> 2022	Retrospective cross-sectional analysis of administration of linezolid with buprenorphine or methadone or both.	Of 494 total encounters, 2 possible cases of serotonin toxicity occurred. These were patients who received methadone with linezolid for ≥3 days. An important note is that other serotonergic medications were also given to these patients. No patients in the buprenorphine group had definite or suspected cases of serotonin syndrome.
Gatti et al <sup>5</sup> 2021	Pharmacovigilance/adverse effect reporting of linezolid prior to quarter 2 of 2020.	Prior to quarter 2 of 2020, worldwide FDA Adverse Event Reporting System identified 11,529 reports of linezolid adverse effects. Only 369 (3.3%) of these cases were serotonin syndrome. Of those, 271 (73.4%) reported the use of opioids or antidepressants in addition to linezolid.
Prakash et al <sup>6</sup> 2020	Systematic review of fatal cases of serotonin syndrome from January 1982 to July 2020.	From the search, 56 fatal cases were eligible to be included in the study. Of which only 3 cases had linezolid administration. In all of the linezolid cases, there was one other serotonergic medication given. The time to serotonin syndrome was delayed (9-14 days) and time to death delayed (2-3 weeks) after administration.
Karkow et al <sup>7</sup> 2017	Retrospective case control of SSRIs or SNRIs within 14 days of linezolid compared to linezolid alone.	87 patients with linezolid and SSRI or SNRI administration were compared to 261 patients on linezolid alone. The overall incidence of serotonin syndrome was 0.57% (1 patient in each group) with no statistically significant difference between the two groups. Both patients were administered other medications (aside from SSRIs or SNRIs) that could have contributed to serotonin syndrome.
Woytowish et al <sup>8</sup> 2013	Literature review of linezolid and serotonin syndrome through February 2013.	At the time of this study there were 32 documented cases. From the literature reviewed, the incidence of linezolid-associated serotonin syndrome ranged from 0.54-18.2%. The results of the study illustrated that the risk was higher when more serotonergic medications were involved. The time to onset and resolution of symptoms was variable in the studies that were reviewed.
Analysis Summary	Based on the limited retrospective, observational studies available, there is a possibility of serotonin syndrome with linezolid. Unfortunately, due to the small number of reports in these studies we cannot quantify the risk. Other limitations of the studies include the potential that cases of serotonin syndrome were missed, the inability to associate linezolid as the causal agent as other medications affecting serotonin were often coadministered, and not knowing what other medications definitively increase the risk.	

### Serotonin Toxicity Risk Table<sup>9</sup>

Lower Risk	buprenorphine codeine hydromorphone morphine oxycodone remifentanyl sufentanil
Intermediate Risk	fentanyl methadone oxycodone tapentadol
Higher Risk	meperidine tramadol

### Bottom Line:

Patients are at risk of developing serotonin syndrome when using linezolid. It appears that the risk increases as you add more serotonergic medications; this is to be expected due to the drug interactions seen with other MAO inhibitors. All patients prescribed linezolid should be aware of the risk and monitor accordingly. Resources such as RxFiles or SwitchRx can be utilized to manage interactions with antidepressants. From another mechanistic/clinical review, there is the potential that certain opioids may have a higher risk of serotonin toxicity than others; the risk is summarized in the table to the left. (9) If possible it is recommended to discontinue all other serotonergic medications prior to initiating linezolid. Overall, there should be careful consideration when starting a patient on linezolid; they should be monitored closely for serotonin syndrome especially if other medications that affect serotonin are concurrently prescribed.

1. Gatti M, Raschi E, De Ponti F. Serotonin syndrome by drug interactions with linezolid: clues from pharmacovigilance-pharmacokinetic/pharmacodynamic analysis. Eur J Clin Pharmacol. 2021 Feb;77(2):233-239. doi: 10.1007/s00228-020-02990-1. Epub 2020 Sep 8. PMID: 32901348; PMCID: PMC780371  
 2. Linezolid. 01 Jun 2018 [cited 04 Dec 2022]. In: Drug Product Database [Internet]. Toronto, Ontario: Apotex Inc.  
 3. Cortés-Penfield N, Ryder JH. Should Linezolid Replace Clindamycin as the Adjunctive Antimicrobial of Choice in Group A Streptococcal Necrotizing Soft Tissue Infection and Toxic Shock Syndrome? A Focused Debate. Clin Infect Dis. 2022 Sep 3;ciac720. doi: 10.1093/cid/ciac720. Epub ahead of print. PMID: 36056891.  
 4. Traver EC, Heil EL, Schmalzle SA. A Cross-sectional Analysis of Linezolid in Combination with Methadone or Buprenorphine as a Cause of Serotonin Toxicity. Open Forum Infect Dis. 2022 Jul 1;9(7):ofac331. doi: 10.1093/ofid/ofac331. PMID: 35899282; PMCID: PMC9310287.  
 5. Gatti M, Fusaroli M, Raschi E, Moretti U, Poluzzi E, De Ponti F. (2021) Serious adverse events with tedizolid and linezolid: pharmacovigilance insights through the FDA adverse event reporting system, Expert Opinion on Drug Safety, 20:11, 1421-1431, DOI: 10.1080/14740338.2021.1956461  
 6. Prakash S, Rathore C, Rana K, Prakash A. (2021) Fatal serotonin syndrome: a systematic review of 56 cases in the literature, Clinical Toxicology, 59:2, 89-100, DOI: 10.1080/15563650.2020.1839662  
 7. Karkow DC, Kauer JF, Ernst EJ. Incidence of Serotonin Syndrome With Combined Use of Linezolid and Serotonin Reuptake Inhibitors Compared With Linezolid Monotherapy. J Clin Psychopharmacol. 2017 Oct;37(5):518-523. doi: 10.1097/JCP.0000000000000751. PMID: 28796019.  
 8. Woytowish MR, Maynor LM. Clinical relevance of linezolid-associated serotonin toxicity. Ann Pharmacother. 2013 Mar;47(3):388-97. doi: 10.1345/aph.1R386. Epub 2013 Feb 19. PMID: 23424229.  
 9. Baldo BA, Rose MA. The anaesthetist, opioid analgesic drugs, and serotonin toxicity: a mechanistic and clinical review. Br J Anaesth. 2020 Jan;124(1):44-62. doi: 10.1016/j.bja.2019.08.010. Epub 2019 Oct 22. PMID: 31653394.

# short & snappy

-A CLINICAL OVERVIEW

## De-βunking the Fear of Delabeling: A Brief Review of Delabeling β-Allergies

Megan Hopkins, PharmD  
Pharmacy Resident 2022/2023, Calgary Zone

### Introduction

- In North America, it is estimated that ~10% of patients have a penicillin allergy label placed on their file<sup>1-3</sup>
  - ~2% of patients have a cephalosporin allergy label on their file<sup>3</sup>
- The vast majority of patients with labeled β-lactam allergies can receive one safely**<sup>1-7</sup>

### What is Delabeling?<sup>1-4,7,8</sup>

- The removal of presumed allergy label from a patient's health record. This is completed through a process involving **risk stratification**
- MOST allergies can be de-labeled with an allergy interview ALONE**
  - Direct or graded drug challenge is utilized if further testing is required
  - Skin testing is utilized in a very small minority of patients
- Non-cross-reactive β-lactams may be used when true delabeling is not feasible*

### Reasons for Mislabeling?<sup>1,9</sup>

- A side-effect or unknown reaction is labeled as an allergy** (E.g. GI upset or rash)
- Potential for loss of immune reactivity in IgE-mediated hypersensitivity over time (i.e. "growing out" of allergy)
  - 20% of individuals have lost reactivity at 1 year
  - 40% of individuals have lost reactivity after 1-10 years
  - 80% of individuals have lost reactivity after 10 years**
  - The risk of a clinically significant allergy is similar to the risk seen in the general population if the allergy is REMOTE (i.e. >20 years ago)**
    - This risk is <0.1%

### Benefits of Delabeling<sup>4-6,10</sup>

- |                                                                                                                                                                                                                                                       |                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li><b>Allows for use of first-line antibiotic therapy</b></li> <li><b>Less risk of causing antibiotic resistance</b></li> <li><b>Reduction of adverse effects</b></li> <li>Improved treatment outcomes</li> </ul> | <ul style="list-style-type: none"> <li>Cost-savings</li> <li>Decreased mortality risk</li> <li>Reduction in ICU treatment</li> <li>Reduction in hospital stays/re-admissions</li> </ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Challenges with Delabeling<sup>1-5,7</sup>

- Lack of OR deferred allergy history**
  - An allergy history does not always require discussion with the patient – utilize all available sources! (*Netcare: have they received this drug class recently? Proxies: Does their spouse know the reaction they had?*)
  - Just like a BPMH, an allergy history **can** be completed without talking to the patient e.g. *unconscious, confused*
- Clinician time-constraints
- Clinician/patient hesitancy
- Allergy is reported in multiple patient databases (Requires communication with the patient and other HCPs)<sup>7</sup>
- Patients must understand that they are not allergic to this drug

### General Process of Delabeling<sup>1,4,9,10</sup>

	Non-Allergy		Hypersensitivity Reactions	
Severity	Extremely Low Risk	Low Risk	High Risk IgE-Mediated	Severe Non-IgE
Examples of Reaction	<ul style="list-style-type: none"> <li>Isolated GI symptoms</li> <li>Isolated headache</li> <li>Dizziness</li> <li>Pruritus without rash</li> <li>Family history of β-lactam allergy</li> <li>Remote (&gt;10 year) unknown reaction without IgE features</li> <li>Known side-effect of medication</li> </ul>	<ul style="list-style-type: none"> <li>Isolated urticaria</li> <li>Remote (&gt;10 year) unknown reaction with IgE features</li> <li>Non-severe delayed drug rash</li> </ul>	<ul style="list-style-type: none"> <li>Recent severe IgE-mediated allergy</li> <li>Anaphylaxis</li> <li>Angioedema</li> <li>Reaction to multiple β-lactams</li> </ul>	<ul style="list-style-type: none"> <li>Cytotoxic Reaction (III)</li> <li>Immune-mediated Complex (III)</li> <li>DRESS (IVb)</li> <li>SJS/TEN (IVc)</li> <li>AGEP (IVd)</li> </ul>
Action to Take	<p><b>Immediately Delabel</b> <b>Educate Patient</b> <b>Communicate with other HCPs</b></p>	<p><b>Graded or Direct Challenge Testing</b></p>	<p><b>Skin Testing (+/- Allergist Referral)</b></p>	<p><b>Clarify Label</b> <b>Maintain Label</b> <b>Avoid Use</b></p>

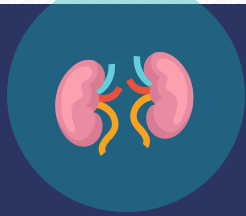
### Bottom Line

The process of delabeling beta-lactam allergies has many potential benefits for both patients and the healthcare system, such as reducing the risk of antibiotic resistance. Pharmacists are in an ideal position to be involved in the process of delabeling.

References: [1] Brockow et al. A Patients with questionable penicillin (beta-lactam) allergy: Causes and solutions. *Allergol Sel.* 2022 Jan 1;6(01):33–41. [2] Chua et al. The Penicillin Allergy Delabeling Program: A Multicenter Whole-of-Hospital Health Services Intervention and Comparative Effectiveness Study. *Clin Infect Dis.* 2021 Aug 2;73(3):487–96. [3] Jeimy et al. Practical guide for evaluation and management of beta-lactam allergy: position statement from the Canadian Society of Allergy and Clinical Immunology. *Allergy Asthma Clin Immunol.* 2020 Dec;16(1):95. [4] Shenoy et al. Evaluation and Management of Penicillin Allergy: A Review. *JAMA.* 2019 Jan 15;321(2):188. [5] Heng et al. β-Lactam allergy testing and delabeling—Experiences and lessons from Singapore. *Immun Inflamm Dis.* 2020 Sep;8(3):371–9. [6] Lee R. Penicillin Allergy Delabeling Can Decrease Antibiotic Resistance, Reduce Costs, and Optimize Patient Outcomes. *Fed Pract [Internet].* 2020 Oct Vol 37 No 10. [7] Lutfeali et al. Maintaining penicillin allergy delabeling: A quality improvement initiative. *J Allergy Clin Immunol Pract.* 2021 May;9(5):2104–2106.e2. [8] Trubiano et al. Development and Validation of a Penicillin Allergy Clinical Decision Rule. *JAMA Intern Med.* 2020 May 1;180(5):745. [9] BC Provincial Antimicrobial Clinical Expert (PACE) Group. Beta-Lactam allergy Delabeling Guideline and Toolkit. BC Provincial Antimicrobial Clinical Expert (PACE) Group [10]Staicu et al. Penicillin Allergy Delabeling: A Multidisciplinary Opportunity. *J Allergy Clin Immunol Pract.* 2020 Oct;8(9):2858–2868.e16.

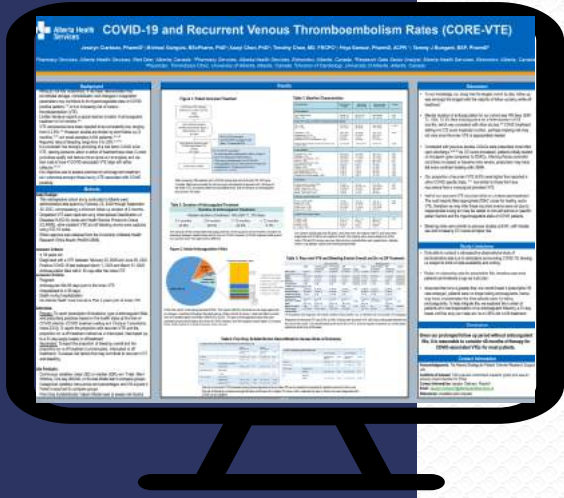
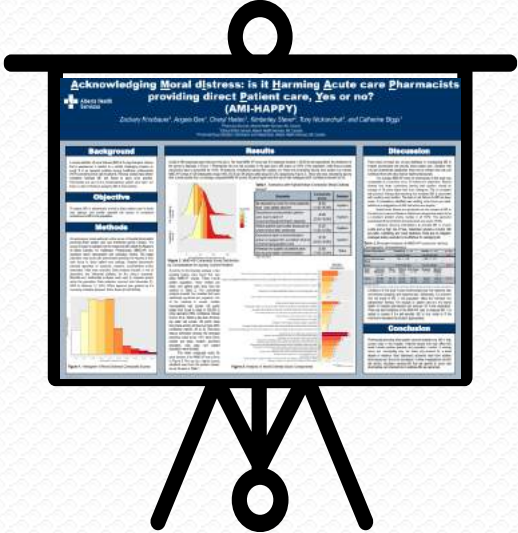


# Pharmacy Resident Research Projects

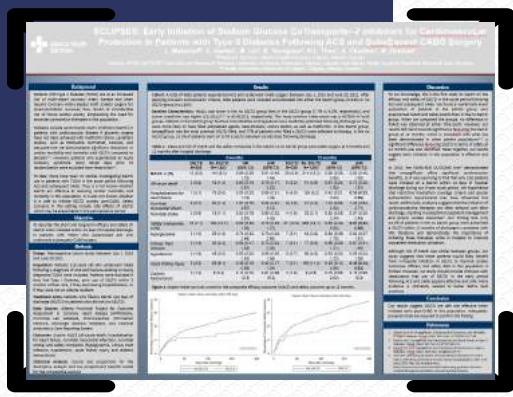


**Acknowledging Moral Distress: is it Harming Acute care Pharmacists providing direct Patient care, Yes or no? (AMI-HAPPY)**  
 Zachary Kronbauer

Click here to view enlarged posters!



**COVID-19 and Recurrent Venous Thromboembolism Rates (CORE-VTE)**  
 Jesalyn Clarkson



**ECLIPSES: Early Initiation of Sodium Glucose Co-Transporter-2 inhibitors for CardiovascuLar Protection In Patients with Type II Diabetes Following ACS and SubsequenT CABG Surgery**  
 Lena Makortoff

# Pharmacy Resident Research Projects



**Empiric Antibiotic Prescribing in Uncomplicated Intra-Abdominal Infections for Patients Presenting to the Emergency Department**

Teagan Zeggil

**Hospital Pharmacists' Perceived Competence in Providing Patient Care to Oncology Patients - (HoPP-CoP2)**

Megan Hopkins



**Identifying pre-, post-, and in-Hospital Utilization of Benzodiazepine Receptor Agonists in older adults admitted to Alberta Acute Care Facilities (ID BZRA)**

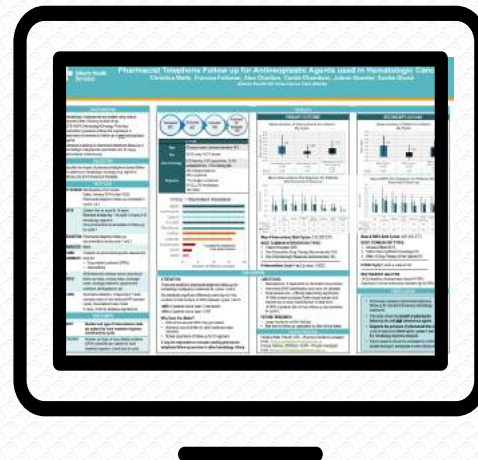
Alexi Yuzwenko



# Pharmacy Resident Research Projects

**Pharmacist Telephone Follow up for Antineoplastic Agents used in Hematologic Cancers**

Christina Watts

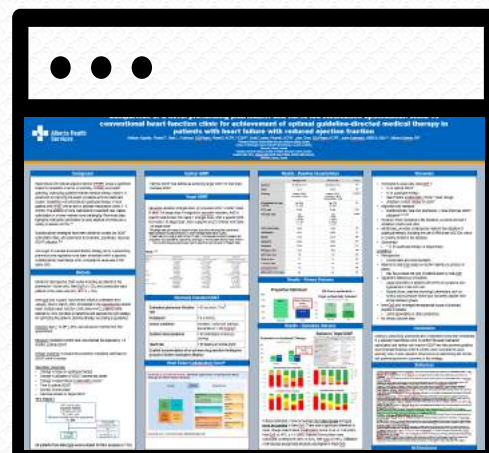


**Identification of Cardiovascular Risks and Outcomes for Allogeneic Stem Cell Transplant Recipients**

Julian Hopwood-Raja

**Comparison of a novel prescribing pharmacist and nurse-led medication optimization clinic vs conventional heart function clinic for achievement of optimal guideline-directed medical therapy in patients with heart failure with reduced ejection fraction**

Anthony Kapelke

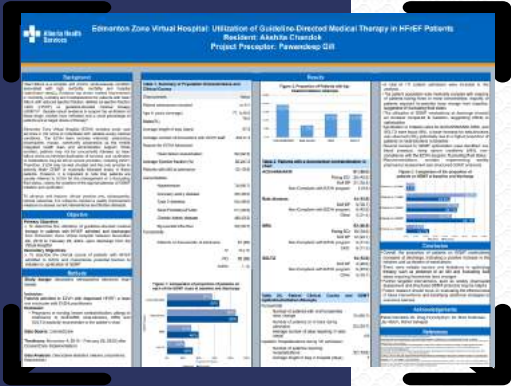
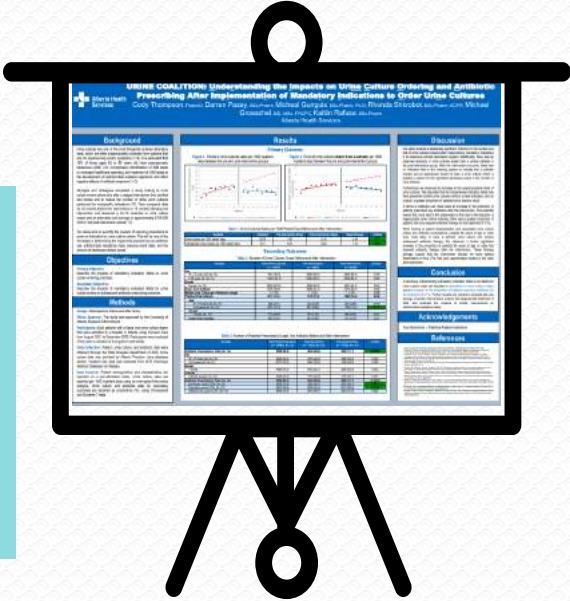


# Pharmacy Resident Research Projects



**URINE COALITION: Understanding the Impacts on Urine Culture Ordering and Antibiotic Prescribing After Implementation of Mandatory Indications to Order Urine Cultures**

Cody Thompson



**Edmonton Zone Virtual Hospital: Utilization of Guideline-Directed Medical Therapy in HFrEF Patients**

Akshita Chandok

Canadian Society of  
Hospital Pharmacists



Société canadienne des  
pharmaciens d'hôpitaux

CSHP AB-BRANCH SYMPOSIUM 2023

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