

Curriculum Vitae
(Prepared on 2024-11-23)

RACHEL LIU

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EDUCATION

Master of Science in Pathology Candidate, Case Western Reserve University, Cleveland, OH
Sep 2023 – expected graduate date Jun 2025

Accredited Canadian Pharmacy Residency (ACPR), University Health Network affiliated with
University of Toronto, Toronto, ON
Sep 2017 – Aug 2018

Doctor of Pharmacy, University of Toronto, Toronto, ON
Sep 2012 – Jun 2017

LICENCES & CERTIFICATIONS

Registered Pharmacist, State of Ohio Board of Pharmacy	Jan 2024 – Present
Board Certified Critical Care Pharmacotherapy Specialist (BCCCP)	Nov 2022 – Present
Board Certified Pharmacotherapy Specialist (BCPS)	Dec 2020 – Present
Registered Pharmacist, Ontario College of Pharmacists	July 2017 – Present
Foreign Pharmacy Graduate Examination Certificate	2019
Accredited Canadian Pharmacy Residency	2018

AWARDS

Ontario Pharmacists' Association Award **Jun 2016**
University of Toronto Leslie Dan Faculty of Pharmacy, Toronto, ON

- Awarded to students entering Year 4 of the undergraduate program who have achieved academic excellence and have demonstrated outstanding service to the community

RESEARCH EXPERIENCE

Masters of Science Research Student **Aug 2023 - Present**
Case Western Reserve University, Cleveland, OH
Supervisor: Dr. Douglas Brubaker, PhD

- Compared microbiome associated host gene signatures to drug perturbation host gene signatures to identify gut microbe metabolites with high statistical similarity to drugs

Pharmacy Resident – Research Project **Sep 2017 – Nov 2018**
University Health Network, Toronto, ON
Supervisor: Dr. Miranda So, PharmD, MPH (Epidemiology), BScPhm

- Prepared research proposal for Research Ethics Board submission: “Antimicrobial Management and Outcomes of Cancer Patients with Febrile Neutropenia Admitted to General Internal Medicine at Toronto General Hospital”
- Assessed electronic medical record data for patients that fit inclusion criteria
- Collected and completed data analysis for 100 admitted patients
- Submitted research manuscript for ACPR completion

Advanced Pharmacy Practice Experience (APPE) Student**Jun – Aug 2016***Non-direct patient care rotation**St. Mary's Hospital Lacor, Gulu, Uganda (10 weeks)**Supervisors: Dr. Doret Cheng, PharmD & Dr. Jacinta Apio, PharmD*

- Developed and performed a drug administration audit in various clinical units to identify gaps of patient care
- Developed and performed a rational prescribing audit to aid the pharmacy department in the justification of ordering non-formulary items for the hospital

Summer Pharmacy Research Student**May – Aug 2014***The Hospital for Sick Children, Toronto, ON**Supervisor: Dr. Winnie Seto, BScPhm, PharmD, MSc, ACPR, RPh (Primary Investigator)*

- Retrospectively collected and reviewed data on Once Daily Dosing (ODD) gentamicin and tobramycin in 200 critically ill pediatric patients
- Prospectively collected, reviewed, and calculated pharmacokinetic parameters on ODD aminoglycosides in 30 hospital-wide pediatric patients
- Reviewed Monte-Carlo simulations with pharmacokinetic data

PROFESSIONAL EXPERIENCE

Clinical Pharmacist**Jan 2024 – present***University Hospitals Cleveland Medical Center, Cleveland, OH*

- Reviewed, and verified physician orders for safety and optimization of therapy in various clinical areas including the emergency department (ED), intensive care units (ICUs), and Seidman Cancer Center
- Prepared and checked emergent medications using sterile compounding as per the USP 797 guidelines in the ED

Pharmacy Intern**April 2023 – Dec 2023***University Hospitals Cleveland Medical Center, Cleveland, OH*

- Optimized automated dispensing cabinets inventory in the ED
- Developed roles and responsibilities of the pharmacy intern in the ED
- Served as the liaison between the ED clinical pharmacist and the ED clinical pharmacy specialists to optimize timely patient care
- Participate in topic discussions with IPPE and APPE students with the ED pharmacists for layered learning
- Perform 12 Medication Reconciliations for admitted patients in the ED weekly

Clinical Pharmacist**Sep 2018 – Jan 2024***Michael Garron Hospital, Toronto, ON*

- Reviewed, and verified physician orders for safety and optimization of therapy in dispensary
- Identified and resolved drug therapy problems, providing therapeutic recommendations to various clinical units including: ICU, General Internal Medicine (GIM), Emergency, Cardiology, Surgery, Maternal Health & Paediatrics and Antimicrobial Stewardship Program (ASP)
- Evaluated appropriate antimicrobial use through ASP on ICU and ward patients via thrice-weekly to daily rounding between Infectious Diseases and main responsible physician
- Developed an ICU Pharmacists Handbook in response to COVID-19 to facilitate onboarding clinical pharmacists to critical care clinical practice

- Developed a standardized Medication Reconciliation documentation for admitted patients
- Precepted Advanced Pharmacy Practice Experience (APPE) pharmacy student and Early Practice Experience-2 pharmacy student on GIM, ICU and Antimicrobial Stewardship

Relief Pharmacist

Aug 2017 – Jan 2021

Shoppers Drug Mart #993, Toronto, ON

- Verified, filled, and dispensed average of 200 prescriptions daily, including methadone
- Assessed prescriptions for appropriate dosage, drug interactions, allergies, and contraindications before dispensing medications
- Provided flu vaccination throughout flu season and immunization injections

Pharmacy Resident

Sep 2017 – Aug 2018

University Health Network, Toronto, ON

- Provided patient-centered pharmacotherapy care in an interprofessional healthcare team on:
 - GIM, Multi-Organ Transplant (MOT), Malignant Hematology, Medical-Surgical ICU, Ambulatory Hemodialysis, and Orthopedic Surgery
- Clinical Instructor:
 - Precepted Early Practice Experience-2 pharmacy undergraduate student on MOT
 - Facilitated small group seminars on Asthma/COPD and Gout for first year pharmacy students
- Presentations to clinical pharmacists:
 - Direct Oral Anticoagulants in Solid Organ Transplant
 - Persistence for Resistance – a VAP with an ESBL
 - Alternative Vancomycin Regimens for Recurrent *Clostridium Difficile* Infection

Advanced Pharmacy Practice Experience (APPE) Student

May 2016 – Apr 2017

Shoppers Drug Mart #993, Toronto, ON (10 weeks)

- Under the supervision of a pharmacist, provided medication counseling to patients
- Presentation: “Probiotics in Community” presented to pharmacy staff members

Toronto East General Hospital, Toronto, ON – Mental Health (5 weeks)

- Performed therapeutic drug monitoring to admitted patients on the psychiatric ward
- Presentation: “Use of Carbamazepine as a Mood Stabilizer in Psychosis” to pharmacists

Sunnybrook Health Sciences Centre, Toronto, ON – Neonatal Intensive Care Unit (NICU) (5 weeks)

- Collaborated with the health care professional team to resolve medication related problems for 15 patients daily by participating in rounds
- Applied literature search skills to answer drug information questions as well as apply evidence based medicine to neonatal population
- Presentation: “Dexmedetomidine use in Neonates” presented to allied health professionals

The Hospital for Sick Children, Toronto, ON – Cardiology Unit (5 weeks)

- Completed full pharmacotherapy workups on 3-5 patients daily and implemented care plans to follow-up and monitor patients by actively participating in interprofessional team rounds
- Developed the Best Possible Medication Histories (BPMH) tool as a nursing aide
- Prepared ‘Family Med-Aid’ on sildenafil to provide patient friendly information

St. Mary’s Hospital Lacor, Gulu, Uganda (10 weeks)

- Updated the Parenteral Drug Manual on high risk medications to improve patient care
- Presentation: “Drug Administration and Rational Prescribing Audits” to clinicians

Toronto East General Hospital, Toronto, ON – Oncology Outpatient Clinic (5 weeks)

- Improved patient interaction and communication skills by obtaining and documenting BPMHs from 2 patients daily
- Developed a teaching manual for oral chemotherapy administration to provide patient medication education
- Presentation: “All-trans Retinoic Acid for Acute Promyelocytic Leukemia” to pharmacists

Early Practice Experience-2 (EPE-2) Pharmacy Student

Jun 2014

The Hospital for Sick Children, Toronto, ON

- Conducted pharmacotherapy work up in Cardiac Critical Care Unit (CCCU) for 4 weeks to resolve drug therapy problems, monitor and follow-up on 5 patients weekly
- Provided nursing in-service presentations on most hospital wards for the hospital-wide implementation of ODD aminoglycosides
- Provided therapeutic drug monitoring (TDM) services by managing and documenting therapeutic recommendations to hospital-wide pediatric patients in their chart notes
- Conducted twice weekly literature searches to resolve drug information questions

ACADEMIC & ADMINISTRATIVE EXPERIENCE

Pharmacy Preceptor

Sep 2018 – Oct 2022

IMAGINE (Interprofessional Medical and Allied Groups for Improving Neighbourhood Environments) Clinic, Toronto, ON

- Supervised pharmacy students through the pharmacotherapy thought process to provide patient centered care to underprivileged patients in downtown Toronto

Clinical Instructor – International Pharmacy Graduate (IPG) Program

Sep 2021 – Sep 2022

Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto ON

- Evaluated counselling and medication therapy management (MTM) skills of international pharmacy graduates virtually
- Provided verbal and written feedback to students regarding performance of MTM skills

Education Co-Coordinator

Sep 2020 – December 2021

Michael Garron Hospital, Toronto, ON

- Coordinated experiential pharmacy student rotations for University of Waterloo, and University of Toronto PharmD candidates
- Developed orientation packages and executed orientation to 3-4 rotating students monthly

Multiple Mini Interview (MMI) Volunteer

Mar 2013, 2014, 2016, 2017, 2018, 2019, 2021

University of Toronto, Leslie Dan Faculty of Pharmacy, Toronto, ON

- Interviewed candidates to assess potential successful pharmacy students

Clinical Instructor – MTM3, MTM4

Jan 2019 – Dec 2020

Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto ON

- Evaluated skills, performance, and documentation work of students in practical practice labs
- Provided feedback and assist students with clinical evaluation

Pharmacy Volunteer

Mar 2016 – Jun 2016

St. Michael's Hospital, Toronto, ON

- Converted paper drug information files into an electronic library to increase efficiency
- Organized electronic files to increase accessibility for clinical pharmacists and researchers

Child Life Volunteer

Aug 2011 – Apr 2016

The Hospital for Sick Children, Toronto, ON

- Engaged children aged 3-18 in arts and crafts with Child Life Team to improve hospital stay
- Implemented supportive stress-reduction strategies for patients and family members in the hospital, such as providing parents breaks
- Followed strict hospital protocols to ensure the safety and cleanliness of playrooms

Pharmacy Volunteer

Nov 2013 – Apr 2014

The Hospital for Sick Children, Toronto, ON

- Assisted the medication safety pharmacist with a quality improvement and patient safety project to improve medication flow and administration of medications in the hospital
- Reduced human error by compiling comparison list between ISMP look-alike drugs & SickKids commonly confused drugs
- Assessed frequency of physicians reviewing patient allergies to find opportunities for promoting safe practices

PUBLICATIONS

Liu, R., Gitman, M., Morris, A., & So, M. (2023). Going local: Evaluating guideline adherence and appropriateness of antibiotic prescribing in patients with febrile neutropenia at an academic teaching hospital. *Antimicrobial Stewardship & Healthcare Epidemiology*, 3(1), E3. doi:10.1017/ash.2022.353

Liu, R., Battistella, M. (2018) Management of pain in patients on hemodialysis. *The Canadian Association of Nephrology Nurses and Technologists (CANNT) Journal*, 28(2):47-55.

POSTER PRESENTATIONS

Liu, R., Gitman, M., Porter, S., Morris, A., So, M. Antimicrobial stewardship intervention: Institutional guideline concordance is low in cancer patients with febrile neutropenia admitted to general internal medicine at an academic hospital. Poster session presented at: American Society of Health-System Pharmacists Midyear Clinical Meeting & Exhibition 2018. 2018 Dec 5; Anaheim, CA.

Cicinelli, E., Liu, R., Saifi, T., Lachere, J., Apio, J., Cheng, D. A Prospective Audit of Medication Preparation and Administration Practices: A Quality Improvement Initiative. Poster session presented at: Canadian Pharmacists Conference 2017; 2017 June 3; Quebec City, QC.

Cicinelli, E., Liu, R., Saifi, T., Lachere, J., Apio, J., Cheng, D. A Retrospective Audit of Medication Prescribing Practices: A Quality Improvement Initiative. Poster session presented at: Canadian Pharmacists Conference 2017; 2017 June 4; Quebec City, QC.

Chung, E., Liu, R., Strzelecki, M., Pe, M., Wang, L., Papaioannou, V., Harvey, E., Richardson, S., Bitnun, A., Seto, W. A Pharmacokinetic Validation Study of Once Daily Dosing of Intravenous Gentamicin and Tobramycin in Paediatric Patients. Poster session presented at: Antimicrobial Agents: PK/PD Studies. ID Week 2015; 2015 October 9; San Diego, CA.

PROFESSIONAL ASSOCIATIONS

- Biomedical Engineering Society
- Canadian Society of Hospital Pharmacists

2024 – Present

2015 – Present