

# Kaley (Kaleen) Hayes, PharmD, PhD

Assistant Professor  
Department of Health Services, Policy, and Practice  
Brown University School of Public Health

## Curriculum Vitae

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121 South Main Street, #632  
Providence, Rhode Island, USA  
Citizenship: USA

## EDUCATION

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**PhD, Epidemiology** 2021  
Specialization: Pharmacoepidemiology  
University of Toronto Dalla Lana School of Public Health, Toronto, Ontario, Canada

**Doctor of Pharmacy (PharmD), *Summa cum laude*** 2017  
University of Pittsburgh School of Pharmacy, Pittsburgh, Pennsylvania, USA

## AFFILIATIONS

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**Assistant Professor (Primary)** 2021 – Present  
Department of Health Services, Policy, and Practice; Brown University, Providence, RI

**Health Science Research Specialist** 2024 – Present  
Providence VA Medical Center, Providence, RI

**Adjunct Assistant Professor** 2022 – Present  
Graduate Department of Pharmaceutical Sciences, University of Toronto, Toronto, Canada

**Investigator** 2021 – Present  
Center for Gerontology and Healthcare Research, Brown University, Providence, RI

## LICENSURES AND CERTIFICATIONS

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**Pharmacist (No. RP451466)** 2017 – Present  
Pennsylvania State Board of Pharmacy

**License to Administer Injectables (No. RPI011390)** 2017 – Present  
Pennsylvania State Board of Pharmacy

## RESEARCH

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### FUNDED FEDERAL GRANTS

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**RF1AG089541 (National Institute on Aging Project Grant)** 2024 – 2027  
Prescribing Cascades among Nursing Home Residents with ADRD  
**PI: Hayes, Zullo (contact)**  
Total costs: 2,238,104 USD

**R01AG078759 (National Institute on Aging Project Grant)** 2022 – 2026  
Benefits and Harms of Long-term Osteoporosis Pharmacotherapy:  
Impact of Treatment Length, Type, Switching, and Holidays  
**PI: Hayes (contact), Cadarette**  
Total costs: 2,537,664 USD  
*Funded by the NIA, NIH Office of the Director, and NIH Office of Disease Prevention*

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**U54AG063546-02S7, U54AG063546-02S8** 2021 – 2024  
**(National Institute on Aging Cooperative Agreement Supplemental Awards)**  
NIA AD/ADRD Health Care Systems Research Collaboratory  
PI: Mor  
**Role: Co-Investigator**

**RF1AG061221 (National Institute on Aging Project Grant)** 2019 – 2024  
Safe Cardiometabolic Drug Prescribing to Prevent Injury in Nursing Home Residents  
PI: Berry  
**Role: Co-Investigator**

**Canadian Institutes of Health Research Project Grant** 2019 – 2021  
Comparative benefits and harms of long-term osteoporosis pharmacotherapy  
**PI: Cadarette (contact), Hayes**  
Total direct costs: 100,000 CAD

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## **OTHER GRANTS AND RESEARCH AWARDS**

**Investigator-Initiated Industry Grant** (Sponsor: GlaxoSmithKline; Insight Therapeutics) 2024 – 2026  
Estimating the effect of herpes zoster vaccination on dementia risk  
**MPI: Hayes, Harris, Gravenstein**  
Total costs: 1,734,527 USD

**International Society for Pharmacoepidemiology Manuscript Grant** 2022 – 2024  
Use of real-world data to assess the effects of deprescribing medications on clinical outcomes in older adults  
**PI: Hayes**  
Total direct costs: 9,950 USD

**Investigator-Initiated Industry Grant** (Sponsor: Insight Therapeutics, Genentech) 2021 – 2025  
Comparative Effectiveness of Baloxavir versus Oseltamivir for Influenza Outbreak Management in  
U.S. Nursing Homes  
PI: Gravenstein  
**Role: Subaward PI**  
Brown University Subaward: 228,277 USD

**Investigator-Initiated Industry Grant** (Sponsor: Insight Therapeutics, Sanofi) 2021 – 2024  
Comparative effectiveness of Recombinant Influenza Vaccine versus Standard Dose Quadrivalent Influenza Vaccine in  
U.S. Nursing Homes  
PI: Gravenstein  
**Role: Subaward PI**  
Brown University Subaward: 114,724 USD

**Brown University Office of the Vice President of Research Salomon Research Award** 2022 – 2024  
Leveraging new databases to understand medication use in the post-acute care setting among older adults with hip  
fracture  
**PI: Hayes**  
Total direct costs: 14,050 USD

**Investigator-Initiated Industry Grant** (Sponsor: Insight Therapeutics, Sanofi) 2022 – 2023  
iGlarLixi versus Complex Insulin Regimens among Nursing Facility Residents with Type 2 Diabetes  
**PI: Hayes**  
Total costs: 50,000 USD

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## **RESEARCH TRAINING AWARDS AND SCHOLARSHIPS**

**Advancing Geriatrics Infrastructure and Network Growth (AGING) Initiative Multiple  
Chronic Conditions Scholars (MCCS) Program** 2023 – 2024  
*1000 USD for travel*

**US Deprescribing Research Network Junior Investigator Intensive Program** 2022 – 2023  
*2000 USD for travel*

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<b>Canadian Institutes of Health Research <u>Postdoctoral Fellowship</u></b> <i>100,000 CAD (NB: Declined to accept faculty position at Brown University)</i> <i>Rank: 1<sup>st</sup> of 98 post-PhD applicants (15 funded)</i>	2021
<b>American Society of Bone and Mineral Research <u>Young Investigator Travel Grant</u></b> <i>500 USD</i>	2021
<b>Canadian Institutes of Health Research <u>Doctoral Research Award</u></b> <i>105,000 CAD (90,000 CAD stipend; 15,000 CAD Research Grant; F32 Equivalent)</i> <i>Rank: 7<sup>th</sup> of 520 applicants in Health Sciences Research Stream (66 funded)</i>	2019 – 2021
<b>University of Pittsburgh <u>Full Tuition Merit Scholarship</u></b> <i>94,376 USD</i>	2011 – 2016
<b>International Society for Pharmacoepidemiology <u>Scholarship</u></b> <i>300 USD, 2021 Annual Meeting, Online</i>	2021
<b>Canadian Institutes of Health Research Drug Safety and Effectiveness <u>Cross-Disciplinary Training Program Award (DSECT)</u></b> <i>10,000 CAD; Stream 1 Trainee Stipend</i>	2018 – 2019
<b>International Society for Pharmacoepidemiology <u>Scholarship</u></b> <i>300 USD, 2020 Annual Meeting, Online</i>	2020
<b>Canadian Institutes of Health Research Drug Safety and Effectiveness <u>Cross-Disciplinary Training Program Award (DSECT)</u></b> <i>10,000 CAD; Stream 2 Trainee Stipend</i>	2020
<b>Society for Epidemiologic Research <u>Conference Scholarship</u></b> <i>275 USD; 2021 Annual Meeting, Online</i>	2021
<b>Ontario Drug Policy Research Network <u>Outstanding Applicant Award</u></b> <i>1,500 CAD</i>	2020
<b>International Society for Pharmacoepidemiology <u>Travel Scholarship</u></b> <i>1,205 USD; 2019 Annual Meeting, Philadelphia, USA</i>	2019
<b>Canadian Institutes of Health Research Drug Safety and Effectiveness <u>Cross-Disciplinary Training Program (DSECT) Travel Scholarship</u></b> <i>1,100 CAD; Awarded for visit to McGill University for scholarly collaboration</i>	2018
<b>International Society for Pharmacoepidemiology <u>Travel Scholarship</u></b> <i>1,655 USD; 2018 Annual Meeting, Prague, Czech Republic</i>	2018
<b>University of Pittsburgh School of Pharmacy <u>APhA-ASP Travel Award</u></b> <i>1,400 USD</i>	2014, 2015
<b>University of Pittsburgh Provost's <u>Study Abroad Scholarship</u></b> <i>1,000 USD; International Pharmacy Student Federation Exchange Program</i>	2013
<b>South Hills Pitt Club Alumni <u>Undergraduate Scholarship</u></b> <i>2,000 USD</i>	2011 – 2014
<b>Jeffrey's Drug Store Community <u>Undergraduate Scholarship</u></b> <i>1,000 USD</i>	2011

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## HONORS, DISTINCTIONS, AND LEADERSHIP RECOGNITION

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<b>American Geriatrics Society Health in Aging New Investigator Award</b>	2023
<b>Canadian Institutes of Health Research Drug Safety and Effectiveness Cross-Disciplinary Training Program (DSECT) Distinguished Alumni Award</b>	2022
<b>International Society for Pharmacoepidemiology Emerging Leader Award</b>	2022
<b>Canadian Association for Population Therapeutics Top 5 Abstract</b> <i>Time trends among new users of osteoporosis drugs in Ontario, Canada</i>	2018
<b>TEVA Pharmaceuticals Award for Outstanding Research</b> <i>Awarded for PharmD research contributions; 250 USD honorarium</i>	2017
<b>APhA-ASP 2015-2016 National Patient Care Award</b> <i>Directed student chapter and co-authored report which served for evaluation</i>	2017
<b>Rho Chi Chapter of the Year Award</b> <i>Served on executive board and co-authored report which served for evaluation</i>	2017
<b>University of Pittsburgh Student Affairs Program of the Year Award</b> <i>Co-directed HPV Vaccination Education and Research Initiative</i>	2016
<b>Outstanding Poster: APHA Population Reproductive, Sexual Health Section</b> <i>Evaluation of targeted HPV vaccination education; 50 USD honorarium</i>	2016
<b>Honoree, University of Pittsburgh Honors Convocation</b> <i>Awarded annually to the top 2% of all undergraduate students</i>	2015, 2014

## PUBLICATIONS

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### PEER-REVIEWED PUBLISHED MANUSCRIPTS

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Summary: total (52), first author (24), second author (5), senior author (4).

- Hayes KN\***, Niznik JD\*, Gnjjidic D, Tran N, Moriarty F, Coe AB, Zullo AR, Zhang S, Alcusky M, Bennett D, Hartikainen S, Laroche ML, Li, X, Lin, KJ, Lund JL, Sessa M, Shmuel S, Sirois C, Talbot D, Tiihonen M, Wen X, Sawan MJ, Moga DC. Evaluation of real-world evidence to assess health outcomes related to deprescribing medications in older adults: an International Society for Pharmacoepidemiology-endorsed systematic review of methodology. Submitted with minor revisions to: **Am J Epidemiol**. Submitted Sept 20, 2024. \*contributed equally as first authors.
- Tadrous M, Aves T, Fahim C, Riad J, Mittmann N, Prieto-Alhambra D, Rivera DR, Chan K, Lix LM, Kent S, Dawoud D, Guertin JR, McDonald T, Round J, Klarenbach S, Stanojevic, S, De Vera MA, Strumpf E, Platt RW, Husein F, Lambert L, **Hayes KN**. Development of a Canadian Guidance for Reporting Real-world Evidence for Regulatory and Health-Technology Assessment (HTA) Decision Making. Accepted for publication, **J Clin Epidemiol**, Sept 21, 2024.
- Cupp MA, Berry SD, **Hayes KN**, Daiello L, Riester MR, Zullo AR. Cholinesterase Inhibitor Initiation Does Not Increase the Risk of Fall-Related Injury in Older Adults Treated with Beta-blockers: a Self-controlled Case Series Design. **J Gerontol A Biol Sci Med Sci**. Published online ahead of print, Aug 31, 2024. PMID: 39215654.
- Hayes KN**, Cupp MA, Joshi R, Riester MR, Beaudoin FL, Zullo AR. Differences in opioid prescriptions by race among U.S. older adults with a hip fracture transitioning to community care. **J Am Geriatr Soc**. Published online ahead of print, Sept 11, 2024. PMID: 39257240.
- Singh T, Smith-Ray R, Ogunkoya E, Shah A, Harris DA, **Hayes KN**, Mor V. Health Equity in COVID-19 Testing among Patients of a Large National Pharmacy Chain. Published online ahead of print, **Front Public Health**, August 31, 2024.
- Hayes KN**, Oganisian A, Kiel DP. Invited Editorial: Improving the value and interpretation of observational studies comparing treatment effects of osteoporosis medications depends on standardized reporting of methods. **J Bone Miner Res**. 2024;39(7):807-809. PMID: 39068509. PMCID: PMC11301716.

7. Ko D, Lee Y, Kim DH, Shah SJ, **Hayes KN**, Zullo AR, Berry SD. Antiplatelet Use in Nursing Home Residents with Atrial Fibrillation. **JAMA Int Med**. Published online ahead of print, 2024 Aug 12:e243819. PMID: 39133502; PMCID: PMC11320326.
  - Accompanying commentary: Essien UR, Keller MS. Deprescribing Equity-A Research Framework for Older Adults. *JAMA Intern Med*. Published online ahead of print, 2024 Aug 12. PMID: 39133477.
8. Riester MR, Zhang Y, **Hayes KN**, Beaudoin FL, Zullo AR. Use of electronic health record data to examine administrations of pro re nata analgesics during hip fracture post-acute care. **Pharmacoepidemiol Drug Saf**. 2024;33(6):e5846. PMID: 38825963; PMCID: PMC11149906.
9. Shakya I, Zullo AR, **Hayes KN**, Joshi R, Berry SD. Risk Factors for Urinary Tract Infections among Nursing Home Residents Initiating Sodium-glucose Cotransporter-2 Inhibitors. **J Am Geriatr Soc**. Epub ahead of print. 2024 Jun 8. PMID: 38850171.
10. Riester MR, Zullo AR, Joshi R, Daiello LA, **Hayes KN**, Ko D, Kim DH, Munshi M, Berry SD. Comparative safety and cardiovascular effectiveness of sodium-glucose cotransporter-2 inhibitors and glucagon-like peptide-1 receptor agonists in nursing homes. **Diabetes Obes Metab**. 2024 Aug;26(8):3403-3417. PMID: 38779879; PMCID: PMC11233240.
11. **Hayes KN**, Cadarette SM, Burden AM. Methodological guidance for the use of real-world data to measure exposure and utilization patterns of osteoporosis medications. **Bone Rep**. 2024;20:10170. PMID: 38145014. PMCID: PMC10733639.
12. Wen KJ, Harris DA, Chachlani P, **Hayes KN**, et al. COVID-19 Vaccines: Moderna And Pfizer-BioNTech Use Varied By Urban, Rural Counties. **Health Affairs**. 2024;43(5):659-665. PMID: 38709973. PMCID: PMC11148879
13. Harris DA, Chachlani P, **Hayes KN**, et al. COVID-19 and influenza vaccine co-administration among older US adults. **Am J Prev Med**. 2024;67(1):67-78. PMID: 38401746; PMCID: PMC11193626.
14. Tat DP, Zullo AR, Mor V, **Hayes KN**. Sliding Scale Insulin Use in Nursing Homes Before and After Onset of the COVID-19 Pandemic. **J Am Med Dir Assoc**. 2024;25(3):459-464. PMID: 38307122. PMCID: PMC10923121.
15. Berry SD, **Hayes KN**, Lee Y, et al. Fall risk and Cardiovascular Outcomes of First-Line Antihypertensive Medications in Nursing Home Residents. **J Am Geriatr Soc**. 2024;72(3):682-692. PMID: 38051600. PMCID: PMC10947930.
16. **Hayes KN**, Zhang T, Kim DH, Daiello LA, Lee Y, Kiel DP, Berry SD\*, Zullo AR\*. Benefits and Harms of Standard versus Reduced-Dose Direct Oral Anticoagulant Therapy for Multimorbid Older Adults with Atrial Fibrillation. Published online ahead of print, **J Am Heart Assoc**. 2023;0:e029865. PMID: 37929769.
  - \*Drs. Berry and Zullo contributed equally as senior authors.
  - Accompanying commentary: Direct Oral Anticoagulants Versus Vitamin K Antagonist in Elderly Patients with Atrial Fibrillation: Sometimes Less Is More, but Sometimes More Is More. **J Am Heart Assoc**. 2023;12:e032127. PMID: 37929746.
  - Risk-Benefit Ratio Might Favor Lower Oral Anticoagulant Doses. **JAMA**. Published online November 22, 2023. doi:10.1001/jama.2023.22931.
  - Feature: **HealthDay** 2023. Bleeding Higher With Standard-Dose DOACs in Nonvalvular A-Fib. Published on November 16, 2023.
  - Feature: **McKnights Long-Term Care News**. Lower anticoagulant dose means less bleeding in older residents with NVAf, study finds. Published on November 9, 2023.
17. Riester MR, Beaudoin FL, Joshi R, **Hayes KN**, Cupp MA, Berry SD, Zullo AR. Evaluation of post-acute care and one-year outcomes among Medicare beneficiaries with hip fractures: a retrospective cohort study. **BMC Med**. 2023;21(1):232. PMID: 37400841; PMCID: PMC10318833.
18. **Hayes KN**, Harris DA, Zullo AR, Djibo DA, Smith-Ray RL, Taitel MS, Singh TG, McMahonill-Walraven C, Chachlani, P, Wen KJ, McCarthy EP, Gravenstein S, McCurdy S, Baird KE, Moran D, Fenson D, Deng Y, and Mor V. Data Resource Profile: COVID VAXines Effects on the Aged (COVVAXAGE). **IJPDS**. 2023. 8(6). PMID: 38425722; PMCID: PMC10900297.

19. Zhang T, Zullo AR, **Hayes KN**, Kim DH, Lee Y, Daiello LA, Kiel DP, Berry SD. Use of Diabetes Medications before and after a Heart Failure-Related Hospitalization among Nursing Home Residents. **J Am Med Dir Assoc.** 2024;25(3):454-458. PMID: 37553080; PMCID: PMC10839110.
20. **Hayes KN**, Harris DA, Zullo AR, Chachlani P, Wen KJ, Smith-Ray RL, Djibo DA, McCarthy EP, Pralea A, Singh TG, McMahill-Walraven CN, Taitel MS, Deng Y, Gravenstein S, Mor V. Racial and ethnic disparities in COVID-19 booster vaccination among U.S. older adults differ by geographic region and Medicare enrollment. **Front Public Health.** 2023;11:1243958. PMID: 37637796. PMCID: PMC10456997.
  - Feature: **PBS News Hour.** A new COVID vaccine is here, but those at greatest risk may not get it as outreach drops off. Published on Sept 17, 2023.
21. Harris DA, **Hayes KN**, Zullo AR, Mor V, Chachlani P, Deng Y, McCarthy EP, Djibo DA, McMahill-Walraven CN, Gravenstein S. Comparative risks of potential adverse events following COVID-19 mRNA vaccination among older US adults. **JAMA Netw Open.** 2023;6(8):e2326852. PMID: 37531110. PMCID: PMC10398407.
22. Morin SN, Feldman S, Funnell L, Giangregorio L, Kim S, McDonald-Blumer H, Santesso N, Ridout R, Ward W, Ashe MC, Bardai Z, Bartley J, Binkley N, Burrell S, Butt D, Cadarette SM, Cheung AM, Chilibeck P, Dunn S, Falk J, Frame H, Gittings W, **Hayes KN**, et al. Clinical practice guideline for management of osteoporosis and fracture prevention in Canada: 2023 update. **CMAJ.** 2023;195(39):E1333-E1348. PMID: 37816527. PMCID: PMC10610956.
23. Zhang Y, **Hayes KN**, Riester MR, Cupp MA, Lee Y, Zullo AR. Trends in COVID-19-related Medication Use in United States Nursing Homes, 2018-2022. **J Am Med Dir Assoc.** 2023 Aug;24(8):1120-1126.e1. PMID: 37336494. PMCID: PMC10209440.
24. Cupp MA, Beaudoin F, **Hayes KN**, Riester M, Berry S, Joshi R, Zullo AR. 2022. Post-Acute Care Setting after Hip Fracture Hospitalization and Subsequent Opioid Use in Older Adults. **J Am Med Dir Assoc.** 2023;24(7):971-977.e4. PMID: 37080246. PMCID: PMC10293035.
25. **Hayes KN**, Berry SD, Munshi M, Zullo AR. Adoption of sodium–glucose cotransporter 2 inhibitors among prescribers caring for nursing home residents. **J Am Geriatr Soc.** 2023;71(8):2585-2592. PMID: 37078149.
26. Tadrous M, Graili P, **Hayes KN**, Neville H, Houlihand J, Clement F, Guertin JR, Law M, Gomes T. Canadian Trends in Estimated Pharmaceutical Drug Purchases and Projections, 2023. **Can J Health Technol.** 2022;2(11):1-30. <https://doi.org/10.51731/cjht.2022.512>
27. Zullo AR, Riester MR, **Hayes KN**, Munshi M, Berry SD. Comparative Safety of Sulfonylureas among U.S. Nursing Home Residents. **J Am Geriatr Soc.** 2023;71(4):1047-1057. PMID: 36495141.
28. **Hayes KN**, Mor V, Zullo AR. Electronic Health Records to Rapidly Assess Biosimilar Uptake: An Example Using Insulin Glargine in a Large U.S. Nursing Home Cohort. **Front Pharmacol.** 2022; 13:855598. PMID: 35600866; PMCID: PMC9114471.
29. Hofmeister M, Sivakumar A, Clement F, **Hayes KN**, Law M, Guertin JR, Neville HL, Tadrous M. Trends in Canadian Prescription Drug Purchasing: 2001-2020. **J Pharm Policy Pract.** 2022;15(20). PMID: 35300714; PMCID: PMC8928614.
30. **Hayes KN**, Burden AM, Winter EM, Hauser B. Comment on: Paradoxically protective effect of glucocorticoids on bone mass and fragility fracture in a large cohort: a cross-sectional study. **Rheumatol Adv Pract.** 2022;6(2):rkac010. PMCID: PMC9073364.
31. Schneider T, Gomes T, **Hayes KN**, Suda KJ, Tadrous M. Comparisons of Insulin Spending and Price between Canada and the US. **Mayo Clin Proc.** 2022;97(3):573-578. PMID: 35135692.
32. **Hayes KN**, Cheung AM, Brown KA, Kim SA, Juurlink DN, Cadarette SM. Comparative risks of osteoporosis drug holidays following long-term risedronate versus alendronate therapy: a propensity score-matched cohort study. **Ann Intern Med.** 2022;175:335-343. PMID: 35007149.
  - Summary for Patients: Fracture Risk During Osteoporosis Drug Holiday. **Ann Intern Med.** (online only). <https://doi.org/10.7326/P21-0013>.
  - Continuing Medical Education Podcast: Centor RM, **Hayes KN**. Annals On Call - Time for a Bisphosphonate Holiday? **Ann Intern Med.** <https://doi.org/10.7326/A21-0013>.

- Feature: American College of Physicians (ACP-IM) Internal Medicine Meeting 2022: Recent Articles That Should Influence Practice. Presented April 29, 2022.
33. **Hayes KN**, Baschant U, Hauser B, Burden AM, Winter EM. When to start and stop bone-protecting medication for preventing glucocorticoid induced osteoporosis. **Front Endocrinol.** 2021;12:782118. PMID: PMC8715727.
  34. Tadrous M, Shakeri A, **Hayes KN**, Neville H, Houlihand J, Clement F, Guertin JR, Law M, Gomes T. Canadian Trends in Prescription Drug Expenditures and Projections, 2001-2023. **Can J Health Technol.** 2021;1(11):1-24. <https://doi.org/10.51731/cjht.2021.209>
  35. **Hayes KN**, Gomes T, Tadrous M. Greater than the sum: applying daily-dose equivalents to antipsychotic prescription claims. **Front Pharmacol.** 2021;12:709349. PMID: PMC8378135.
  36. Makari J, Dagenais J, Tadrous M, Jennings S, Rahmann I, **Hayes KN**. Hospital pharmacist discharge care is independently associated with reduced risk of hospital readmissions for patients with chronic obstructive pulmonary disease: a propensity score-matched cohort study. **Can Pharm J.** 2022;155(2):101-106.
  37. **Hayes KN**, Winter EM, Cadarette SM, Burden AM. Duration of bisphosphonate drug holidays in osteoporosis patients: a narrative review of the evidence and considerations for decision-making. **J Clin Med.** 2021;10(5):1140. PMID: PMC7963175.
  38. **Hayes KN\***, Burkard T\*, Burden AM, Weiler S, Tadrous M. Global adverse events reported for direct-acting antiviral therapies for the treatment of Hepatitis C: An analysis of the World Health Organization VigiBase. **Eur J Gastro Hep.** 2021;33(1S):e1017-e1021. PMID: PMID: 33883523. PMID: PMC8734625. \*Contributed equally.
  39. Cadarette SM, Maclure M, Delaney JAC, Gagne JJ, Whitaker HJ, **Hayes KN**, Wang SV, Tadrous M, Gagne JJ, Consiglio GP, Hallas J. Control yourself: ISPE-sponsored guidance for the application of self-controlled study designs in pharmacoepidemiology. **Pharmacoepidemiol Drug Saf.** 2021;30 (6):671-684. PMID: PMC8251635.
  40. **Hayes KN**, Hundal AK, Cadarette SM. Observational study methods used to assess type 2 diabetes pharmacotherapy effects on fracture risk: a scoping review protocol. **JBMI Evidence Synthesis.** 2021;19(11):3129-3141. PMID: 34054037.
  41. Shakeri A, **Hayes KN**, Gomes T, Tadrous M. Comparison of public and private payments for direct-acting antivirals (DAAs) across Canada. **Can Liv J.** 2021;4(4):429-9.
  42. Hundal AK, Watterson TL, **Hayes KN**. Addressing challenges of precepting student pharmacists enrolled in remote research advanced pharmacy practice experiences. **Am J Pharm Educ.** 2021; 85(5):8311. PMID: 34283730.
  43. **Hayes KN**, He N, Brown KA, Kim SM, Cheung AM, Juurlink DN, Cadarette SM. Over half of seniors who start oral bisphosphonate therapy are exposed for 3 or more years: novel rolling window approach and patterns of use. **Osteoporos Int.** 2021;32(7):1413-20. PMID: 33415374.
  44. **Hayes KN**, Giannakeas V, Wong AKO. Bisphosphonate use is protective of radiographic knee osteoarthritis progression among those with low disease severity and being non-overweight: data from The Osteoarthritis Initiative. **J Bone Miner Res.** 2020;35(12):2318-26. PMID: 33378555.
  45. **Hayes KN**, Giannakeas V, Wong AKO. Response to: Challenges to the Possible Use of Bisphosphonates in Early-Stage Osteoarthritis. **J Bone Miner Res.** 2021;36(4):815-816. PMID: 32662919.
  46. Kirisci LK, Tarter RE, Vanyukov MM, **Hayes KN**, Reynolds MD. Derivation and assessment of the opioid use disorder severity scale: prediction of health, psychological and social adjustment problems. **Am J Drug Alcohol Abuse.** 2020; 46(6):699-707. PMID: 31967913.
  47. **Hayes KN**, Nakhla N, Tadrous M. Further evidence to monitor chronic proton pump inhibitor use. **JAMA Netw Open.** 2019;2(11):e1916184. PMID: 31774516.
  48. **Hayes KN**, Pan I, Kunkel AC, McGivney MS, Thorpe CT. Evaluation of targeted HPV vaccination education among undergraduate college students. **J Am Coll Health.** 2019;67(8):781-789. PMID: 30570453.

49. **Hayes KN**, Tadrous M. The Name Game: A call for change of psychopharmacological nomenclature in clinical practice. **BMJ Opinion**. Nov 12, 2019. <https://bit.ly/2NOg5Jt>
50. **Hayes KN**, Ban JK, Athanasiadis G, Burden AM, Cadarette SM. Time-trends in oral bisphosphonate initiation in Ontario, Canada over 20 years reflect drug policy and healthcare delivery changes. **Osteoporos Int**. 2019;30(11):2311-2319. PMID: 31317249.
51. **Hayes KN**, Bastacky M. Essential statistics for pharmacists: guidance on confounders and regression. Continuing education article and assessment. **The Pennsylvania Pharmacist (Journal of the Pennsylvania Pharmacists Association)**. July/August 2019:29. Available at: [papharmacists.com/page/CEHomeStudies](http://papharmacists.com/page/CEHomeStudies).
52. Wong L, **Hayes KN**, Cadarette SM. Bad to the bone: how pharmacists can help minimize drug-induced fracture risk. **Pharm Prac + Business**. 2018;5(10):18-23.
53. **Hayes KN**, Meyer SM. Visual arts programs for health sciences students have unrealized potential for interprofessional education. **Health, Interprofessional Practice & Education**. 2018;3(3).

## INVITED PRESENTATIONS

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1. **Hayes KN**. Estimating the effect of herpes zoster vaccination on dementia risk: a target trial approach in US nursing homes. Sept 24, 2024. *Dept. of Population Health Sciences Seminar, University of Utah*.
2. **Hayes KN**. Mind the Gap: Implications of Drug Holidays for Fracture Risk. Jun 3, 2024. *2024 Annual Meeting of the Endocrine Society (ENDO 2024) invited symposium. (>300 attendees)*.
3. **Hayes KN**. Bisphosphonate Therapy Discontinuation: Consideration of Factors Affecting the Fracture Risk during Drug Holidays. Apr 5, 2023. *American Society for Bone and Mineral Research Educational Webinar (110 member attendees)*.
4. **Hayes KN**, Cadarette SM. Benefits and Harms of Long-term Osteoporosis Pharmacotherapy: Impact of Treatment Length, Type, Switching, and Holidays. Jan 12, 2023. *National Institute on Aging RFA AG-22-018 Investigator Meeting (2 Program Officers, 14 investigator attendees)*.
5. Tadrous M, **Hayes KN**. Consultation on the Canadian Real-World Evidence Guidance. Dec 2, 2022. *Canadian Association for Drugs and Technologies in Health Webinar in Collaboration with Health Canada (407 stakeholder attendees)*.
6. **Hayes KN**. Real-world patterns of long-term bisphosphonate use and comparative fracture risk of osteoporosis drug holidays. Oct 24, 2022. *Australian Institute for Musculoskeletal Science (AIMSS) Annual Research Symposium Keynote Address (50 clinician and researcher attendees)*.
7. **Hayes KN**. Comparative risks of osteoporosis drug holidays following long-term risedronate versus alendronate therapy. Jul 27, 2022. *Hebrew SeniorLife Musculoskeletal Group Journal Club Series. (10 researcher attendees)*.
8. **Hayes KN**. Evidence to Inform Deprescribing: Real-World Example on Anticoagulants and Protocol for Future Guidelines. Jun 24, 2022. *Australian Deprescribing Network Journal Club Series. (45 multidisciplinary attendees)*.
9. **Hayes KN**. The Why's and How's of Professional Websites. Apr 27, 2022. *International Society for Pharmacoepidemiology Mid-Year Meeting Course. (80 researcher attendees)*.
10. **Hayes KN**. Rolling (window) in the deep: methods to measure longitudinal drug exposures in claims data. Apr 14, 2022. *ICES Research Day. (27 researcher attendees)*.
11. **Hayes KN**. Comparative Fracture Risk During Osteoporosis Drug Holidays After Long-Term Risedronate Versus Alendronate Therapy. Mar 10, 2022. *UCSD Bone Health Interest Group. (82 patient attendees)*.



12. **Hayes KN.** Shorter drug holiday is important to maintain osteoporotic fracture protection during risedronate versus alendronate drug holidays. Feb 8, 2022. *Bone Health Extension for Community Health Outcomes (ECHO) group. (78 clinician attendees)*
13. **Hayes KN.** Understanding patterns and estimating effects of long-term bisphosphonate therapy and drug holidays. Mar 12, 2021. *Presented University of Waterloo School of Pharmacy Research Seminar Series (52 attendees).*
14. **Hayes KN.** Comparative effectiveness of long-term risedronate and alendronate therapy during drug holidays. Nov 23, 2020. *Research in Progress Seminar Presented at the Center for Pharmacoepidemiology Research and Training at the University of Pennsylvania School of Medicine.*
15. **Hayes KN.** Understanding patterns and estimating effects of long-term bisphosphonate therapy. Nov 2, 2020. *Presented to the Division of Pharmacoepidemiology and Pharmacoeconomics at the Brigham and Women's Hospital and Harvard Medical School.*
16. **Hayes KN.** Comparative effectiveness and safety of different sequential osteoporosis treatment regimens. Aug 10, 2020. *Presented to Osteoporosis Canada Pharmacotherapy Working Group.*
17. **Hayes KN.** Long-term oral bisphosphonate therapy patterns: use of healthcare administrative data to study medication utilization. Jul 2, 2020. *Presented to trainees of the Leslie Dan Faculty of Pharmacy Undergraduate Summer Research Program.*
18. **Hayes KN.** Long-term oral bisphosphonate therapy patterns among Ontario seniors, 2000-2016. Jun 22, 2020. *Presented to Osteoporosis Canada Guideline Update Pharmacotherapy Working Group.*
19. Cadarette SM, **Hayes KN.** Real-world experience and skills result from the DSECT Program. May 6, 2020. *Presented to trainees of the CIHR Drug Safety and Effectiveness Cross-Disciplinary Training (DSECT) Program at Annual Symposium.*

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#### **SELECTED PEER-REVIEWED ABSTRACTS AND SCIENTIFIC PRESENTATIONS (44 TOTAL)**

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1. **Hayes KN,** Zullo AR, Berry SD, Oganisian A, Aggarwal S, Sendhil SR, Adegboye M, Cadarette SM. Denosumab discontinuation rates among older adults in the US versus Canada. [Abstract] Poster presentation, American Society for Bone and Mineral Research Annual Meeting, Sept 2024, Toronto, Canada.
2. **Hayes KN,** Aggarwal S, Sendhil SR, Adegboye M, Cadarette SM. Denosumab data cleaning algorithm to inform exposure measurement and study inclusion: results from two international databases. [Abstract] Poster presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2024, Berlin, Germany.
3. **Hayes KN,** Niznik JD, Moga DC, Maciejewski M, Moriarty F, Johnson CM. Methodological guidance for real world evidence to assess the effects of deprescribing. [Abstract] Symposium and Workshop, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2024, Berlin, Germany.
4. **Hayes KN,** Aggarwal S, Adegboye M, Zullo AR, Berry SD, Oganisian A, Cheung AM, Cadarette SM. Differences in long-term bisphosphonate treatment between older adults in the United States and Canada. [Late-Breaking Abstract] *JBMR Plus*, 2023;38(S2):415. Late-Breaking Poster presentation, American Society for Bone and Mineral Research Annual Meeting, Oct 2023, Vancouver, Canada.
5. **Hayes KN,** Konstantelos N, Cheung AM, Cadarette SM. Zoledronic acid dosing frequency among older adults in the community. [Abstract] *JBMR Plus*, 2023;38(S2):180. Poster presentation, American Society for Bone and Mineral Research Annual Meeting, Oct 2023, Vancouver, Canada.
6. **Hayes KN,** Aggarwal S, Cadarette SM. Trends in osteoporosis drug initiation and use among community dwelling older adults. [Abstract] *JBMR Plus*, 2023;38(S2):358. Poster presentation, American Society for Bone and Mineral Research Annual Meeting, Oct 2023, Vancouver, Canada.
7. **Hayes KN,** Aggarwal S, Cadarette SM. Trends in osteoporosis drug initiation and use among community dwelling older adults. [Abstract] *Pharmacoepidemiol Drug Saf* 2023;32(S1):363. Poster presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2023, Halifax, Canada.

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8. **Hayes KN**, Zhang T, Zullo AR, Kim DH, Lee Y, Daiello LA, Kiel DP, Berry SD. Use of Diabetes Medications Before and After a Heart Failure-related Hospitalization Among Nursing Home Residents. [Abstract] Poster presentation, American Geriatrics Society Annual Meeting, May 2023, Long Beach, United States. *Top-rated abstract, selected for presentation at the Presidential Poster Session.*
  9. **Hayes KN**, Harris DA, Zullo AR, Mor V. COVID-19 booster vaccination by race, ethnicity, and frailty among 11.3 million older adults. [Abstract] Oral presentation, American Geriatrics Society Annual Meeting, May 2023, Long Beach, United States.
  10. Harris DA, Zullo AR, Mor V, **Hayes KN**. Comparative safety of BNT162b2 and mRNA-1273 vaccines across frailty subgroups among 6.4 million older adults. [Abstract] Poster presentation, American Geriatrics Society Annual Meeting, May 2023, Long Beach, United States. *Top-rated abstract, selected for presentation at the Presidential Poster Session.*
  11. **Hayes KN**, Zhang T, Berry SD\*, Zullo AR\*. Benefits and Harms of Standard versus Reduced-Dose Direct Oral Anticoagulants for Frail Older Adults. [Abstract] Poster presentation, U.S. Deprescribing Research Network Annual Meeting, May 2022, Orlando, United States.  
\*Drs. Berry and Zullo contributed equally.
  12. **Hayes KN**, Riestler MR, Zhang Y, Beaudoin F, Zullo AR. Administrations of pro re nata (PRN) analgesics among skilled nursing facility residents following a hip fracture. [Abstract] *Pharmacoepidemiol Drug Saf* 2022;31(S2):379. Poster presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2022, Copenhagen, Denmark.
  13. **Hayes KN**, Cupp MA, Commey A, Joshi R, Beaudoin F, Zullo AR. Differences in opioid use after hip fracture by race and post-acute care use among U.S. older adults. [Abstract] *Pharmacoepidemiol Drug Saf* 2022;31(S2):89. Oral presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2022, Copenhagen, Denmark.
  14. Shmuel S, Moga D, Niznik JD, Lauffenburger J, Morin L, Gnjidic D, Li X, **Hayes KN**. Using real-world data and pharmacoepidemiologic methods to advance the science of deprescribing research. [Abstract] Symposium presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2022, Copenhagen, Denmark.
  15. **Hayes KN**, Daiello LA, Zullo AR, Berry SD. Use of large-scale electronic health record data to examine precise antihypertensive medication exposures immediately before a fall among US nursing home residents. [Abstract] *Pharmacoepidemiol Drug Saf* 2022;31(S2):379. Poster presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2022, Copenhagen, Denmark.
  16. **Hayes KN**, Brown KA, Cheung AM, Kim SA, Juurlink DN, Cadarette SM. A shorter drug holiday after 3 or more years of risedronate versus alendronate is important to maintain osteoporotic fracture protection. [Abstract] *JBMR Plus* 2021, in press. Oral presentation, American Society for Bone and Mineral Research Annual Meeting, Oct 2021, online. **Featured Abstract, opening ceremony.**
  17. **Hayes KN**, Cheung AM, Brown KA, Juurlink D, Cadarette SM. Shorter drug holiday after 3 or more years of risedronate versus alendronate is important to maintain osteoporotic fracture protection. *Pharmacoepidemiol Drug Saf* 2021;29(S2):44. Oral presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2021, online.
  18. **Hayes KN**, Cheung AM, Brown KA, Juurlink D, Cadarette SM. Fracture risk associated with long-term risedronate versus alendronate therapy during osteoporosis treatment gaps: a propensity-score matched cohort analysis. [Abstract] Poster presentation, Society for Epidemiologic Research Annual Meeting, Jun 2021, online.
  19. **Hayes KN**, He N, Brown K, Cheung AM, Juurlink D, He N, Cadarette SM. Almost half of seniors initiating oral bisphosphonate therapy are exposed for 3 or more years — understanding the benefits and harms of therapy is needed. [Abstract] *Pharmacoepidemiol Drug Saf* 2020; 29(S3):196. Poster presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Sept 2020, online.
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20. Konstantelos N, He N, **Hayes KN**, Cadarette SM. Over 2000 seniors initiate second-line osteoporosis pharmacotherapy monthly in Ontario – impact of drug policy change and call for research. [Abstract] *Pharmacoepidemiol Drug Saf* 2020; 29(S3):165-66. Poster presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Sept 2020, online.
  21. **Hayes KN**, Giannakeas V, Wong AKO. Effects of bisphosphonate use on knee osteoarthritis progression: an analysis of the Osteoarthritis Initiative study. [Abstract] *Pharmacoepidemiol Drug Saf* 2019;28(S2):S22. Oral presentation, International Conference in Pharmacoepidemiology and Therapeutic Risk Management, Aug 2019, Philadelphia, United States.
  22. **Hayes KN**, Ban J, Athanasiadis G, Burden AM, Cadarette SM. Time trends among new users of osteoporosis drugs over 20 years in Ontario. [Abstract] Oral presentation, Canadian Association for Population Therapeutics Annual Meeting; Oct 2018, Toronto, Canada. *Winner, Top 5 Abstract.*
  23. **Hayes KN**, Ban J, Athanasiadis G, Burden AM, Cadarette SM. Time trends among new users of osteoporosis drugs over 20 years: considerations for study design. [Abstract] *J Bone Miner Res* 2018;32 (Suppl 1):169. Poster presentation, American Society for Bone and Mineral Research Annual Meeting, Sept 2018, Montréal, Canada.
  24. Cadarette SM, Maclure MM, Delaney JAC, Whithaker HJ, **Hayes KN**, Hallas J. Self-Controlled Crossover Observational Pharmacoepidemiologic (SCOPE) Study Designs. [Abstract] Symposium presentation (Advanced Topics Course), International Society for Pharmacoepidemiology Mid-Year Meeting, Apr 2018, Toronto, Canada.
  25. **Hayes KN**, Pan I, Thorpe CT. Evaluation of targeted HPV vaccination education among undergraduate college students. [Abstract] Poster presentation, American Public Health Association Annual Meeting, Oct 2016, Denver, USA. *Winner, APHA Outstanding Poster Award.*

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## REPORTS

1. Canadian Association for Drugs and Technologies in Health (Methods Authorship Team: Tadrous M, **Hayes KN**, Aves T, Fahim C). Guidance for reporting real-world evidence, version 1.0. May 2023. Available [here](#).
2. **Hayes KN**. Clinical Guideline Update Literature Review: Comparative effectiveness and safety of different sequential osteoporosis treatment regimens. Aug 10, 2020. *Delivered to the Osteoporosis Canada Guideline Update Pharmacotherapy Working Group.*
3. **Hayes KN**, Wong L, Cadarette SM. Clinical Guideline Update Literature Review: Relative effectiveness and safety of denosumab versus bisphosphonates after long-term bisphosphonate therapy. Apr 15, 2019. *Delivered to the Osteoporosis Canada Guideline Update Pharmacotherapy Working Group.*

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## SERVICE

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### SERVICE TO THE CENTER, DEPARTMENT, AND UNIVERSITY

Brown University

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<b>Health Services Research PhD Program Admissions Committee</b>	2023 – present
<b>Center for Health System Sustainability (CHeSS) Tenure Track Faculty Search Committee</b>	2024
<b>Infectious Disease Track Lead, Health Services Research PhD Program</b>	2023 – present
<b>Advisor, Undergraduate Public Health Concentration</b> <i>Number of advisees to date: 28</i>	2022 – present

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### PEER-REVIEW ACTIVITIES

## Grant Review

NIH Aging, Injury, Musculoskeletal, and Rheumatologic Disorders Ad Hoc Reviewer	2024 (4)
NIH Cardiovascular and Respiratory Diseases Study Section Ad Hoc Reviewer	2023 (1)
NIH Pathway to Independence (K99/R00; AGCD1) Reviewer	2022 (5), 2023 (6)
PSI Foundation Operating Grant Reviewer	2022 (1), 2023 (1)

## Manuscript ad hoc Peer Reviewer (Works Reviewed by Year)

2024: *Journal of the American Geriatrics Society* (1), *Journal of Bone and Mineral Research* (4), *Journal of Clinical Epidemiology* (2), *Osteoporosis International* (3), *Pharmacoepidemiology and Drug Safety* (1)

2023: *American Journal of Epidemiology* (1), *American Journal of Gastroenterology* (2), *Archives of Osteoporosis* (1), *BMJ Open* (1), *Journal of the American Geriatrics Society* (1), *Journal of Bone and Mineral Research* (4), *Journal of Comparative Effectiveness Research* (1), *Pharmacoepidemiology and Drug Safety* (2), *NEJM Evidence* (1), *Scientific Reports* (2).

2022: *BONE* (3), *Circulation: Cardiovascular Quality and Outcomes* (1), *Drugs and Aging* (1), *Drugs – Real World Outcomes* (3), *Frontiers in Endocrinology* (2), *Frontiers in Pharmacology* (1), *JBI Evidence Synthesis* (2), *Osteoporosis International* (1) *Pharmacoepidemiology and Drug Safety* (1).

2021: *BONE* (2), *Drugs – Real World Outcomes* (1), *Frontiers in Endocrinology* (3), *Health and Interprofessional Practice* (2), *JBI Evidence Synthesis* (2), *Journal of Clinical Medicine* (2), *NEJM Evidence* (1), *Pharmacoepidemiology and Drug Safety* (1), *PLOS One* (1), *Research in Social and Administrative Pharmacy* (1).

2020: *Health and Interprofessional Practice* (1), *PLOS One* (1), *Research in Social and Administrative Pharmacy* (1).

## Abstract Reviewer

International Society for Pharmacoepidemiology Annual Meeting	2022 (38), 2023 (24), 2024 (35)
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## SERVICE TO PROFESSIONAL ORGANIZATIONS

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### Canadian Agency for Drugs and Technology in Health (CADTH)

Real-World Evidence Guideline Authorship Team	2022 – 2023
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### Osteoporosis Canada

Member, Guideline Update Pharmacotherapy Working Group	2018 – Present
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### International Society for Pharmacoepidemiology (ISPE)

Geriatric Pharmacoepidemiology Special Interest Group Chair	2023 – 2025
Geriatric Pharmacoepidemiology Special Interest Group Vice Chair	2021
Moderator, Podium Presentations	2020, 2023, 2024

### Canadian Institutes of Health Research Drug Safety and Effectiveness Cross-Disciplinary Training (DSECT) Program

Stream 2 Trainee; Secondary Mentor: JM Gamble, PharmD, PhD	2020 – 2021
Stream 1 Trainee; Secondary Mentor: Robert Platt, PhD	2018 – 2019

### Ontario Drug Policy Research Network (ODPRN) Training Program

2020

### Public Health Students Association (PHSA), University of Toronto

International Students' Representative (Inaugural)	2017 – 2018
Epidemiology PhD Student Representative	2017 – 2018

## TEACHING AND ADVISING

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### COURSES

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#### **Brown University:**

#### **Introduction to Pharmacoepidemiology (PHP2440)**

Master of Public Health and Public Health Doctoral Programs

2023, 2024, 2025

#### **Independent Study** (number of students in parentheses)

Master of Public Health and Public Health Doctoral Programs

Course Instructor: **Hayes**

2021 (1), 2022 (2), 2023 (2), 2024 (4)

### GUEST LECTURES

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#### **International Society for Pharmacoepidemiology, UofT Chapter**

1. Advanced Pharmacoepidemiologic Study Designs

2020

2. Causal Diagrams, Third Variables, and Study Designs

2019

#### **Canadian Institutes of Health Research**

Drug Safety and Effectiveness Cross Disciplinary Training Program

3. Introduction to Pharmacoepidemiology

2019

#### **University of Toronto**

Preparation for Advanced Pharmacy Practice Experiences (PHM330)

4. Critical Appraisal of a Clinical Trial: Design and Bias

2020

Critical Appraisal (PHM606H)

5. Intention-to-treat analysis (online module)

2019, 2020 (2), 2021

6. Non-inferiority Trials (online module)

2019, 2020 (2), 2021

7. Qualitative Research (online module)

2020 (2), 2021

Scientific Overviews in Epidemiology (CHL5418H)

8. Tutorial: Conducting meta-analysis in Excel and R

2020

9. Tutorial: Applying PRISMA and GRADE to a systematic review

2019

10. Tutorial: Developing the "PICO" for a research question

2019

Introduction to Pharmacoepidemiology (JRH1000)

11. Pharmacology and Epidemiology: Entangled!

2018, 2019

12. Self-Controlled Study Designs

2018

Global Pharmaceutical Policy (PHM320H)

13. Case Study: Trade Related Agreement on International Property Rights

2017, 2018, 2019

14. Preparing for Assessment in Global Pharmaceutical Policy

2019

15. Preparedness for Research and Clinical Experiences Abroad

2019

### ADVISING AND SUPERVISION

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#### **Brown University School of Public Health**

##### *PhD Thesis Advisor / Dissertation Chair*

Yalin Deng, PharmD (Health Services Research PhD Student)

2024 – Present

Selvam Sendhill, MPH (Epidemiology PhD Student)

2024 – Present

##### *Academic Advisor, Infectious Disease PhD Track*

Jasmine Agostino, MPH, MSW

2023 – Present

##### *PhD Thesis Committee Member*

Molly (Elizabeth) Stettenbaur (Epidemiology PhD Student)

2024 – Present

Fiona Bhondoekhan, MSc (Epidemiology PhD Student)

2023 – Present

<i>Thesis Advisor, Master of Public Health</i>	2024 – present
Sirui (Rita) Zhang	2023 – 2024
Olivia Lewis	2023 – 2024
Katelle Donkor	2023 – 2024
Neelam Ahmed	2022 – 2023
Laurel Mangelsdorf, MPH	2022 – 2023
Darlene Tat, PharmD, MPH	2021 – 2022
Abednego Comney, MPH	

<i>Direct Staff Supervisor</i>	2024 – Present
Oshin Miranda, PharmD, PhD (Postdoctoral Research Associate)	2023 – Present
Tiffany Reynoso, MPA (Project Coordinator)	2022 – Present
Michael Adegboye, MPH (Biostatistician)	2022 – Present
Preeti Chachlani, MSc (Lead Biostatistician)	2022 – 2024
Dan Harris, PhD (Senior Research Scientist)	

<i>Paid Research Assistantship Supervisor</i>	2022 – Present
Yalin Deng, PharmD (Health Services Research PhD student)	2024 – Present
Selvam Sendhill, MPH (Epidemiology PhD Student)	2023
Fiona Bhondoekhan, MSc (Epidemiology PhD Student)	2022 – 2023
Yifan Zhao (Biostatistics MSc student)	2021 – 2022
Alexander Pralea (undergraduate student)	

**University of Toronto**

<i>MSc Thesis Committee Member, Graduate Department of Pharmaceutical Sciences</i>	2024 – Present
Yuna Choi, PharmD	2023 – 2024
Freddy Shgory, PharmD, MSc	

<i>Co-Supervisor, Faculty of Pharmacy Undergraduate Summer Research Program</i>	2020
Trainee: Anisha Hundal	