

Benyam Muluneh, PharmD, BCOP, CPP
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University of North Carolina Eshelman School of Pharmacy
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Education and Training

ASHP Accredited PGY2 Hematology/Oncology Specialty Residency University of North Carolina Hospitals Chapel Hill, North Carolina	July 2011- June 2012
ASHP Accredited PGY1 Pharmacy Practice Residency University of North Carolina Hospitals Chapel Hill, North Carolina	June 2010 – July 2011
Doctor of Pharmacy University of North Carolina Eshelman School of Pharmacy Chapel Hill, North Carolina	August 2006 – May 2010
College of Arts and Sciences Pre-Pharmacy Undergraduate Coursework University of North Carolina Chapel Hill, North Carolina	August 2004 - May 2006

Licensure and Certification

Lean Six Sigma Certification Purple Belt, Yellow Belt	October 2017 – Present
Board Certified Oncology Pharmacist Credential number: 5130125	December 2013 – Present
Clinical Pharmacist Practitioner License number: 0070-00323	December 2012 - Present
North Carolina Pharmacy Licensure License number: 21097	July 2010 - Present
Pharmacy Based Immunization Delivery Certification Provided by American Pharmacists Association	2008 - 2010
Basic Life Support American Heart Association	2007 – 2009

Professional Development

Mentored Research Investigator Training (MeRIT) Provided by American College of Clinical Pharmacy <i>Mentors:</i> Jennifer Elston-Lafata, PhD; Alan Zillich, PharmD, FCCP	June 2018 – Present
International Society for Pharmacoeconomics and Outcomes Research Distance Learning Program	January 2018 – Present

Certificate Topics: HRQOL, Propensity Scoring Models, Pharmacoeconomics, Systematic Reviews, Meta-Analysis, Development of Patient Reported Outcomes, Public Survey Data in Research

Teaching Certificate Program

July 2011-June 2012

University of North Carolina Eshelman School of Pharmacy
Mentor: Christine Walko, PharmD, BCOP

Professional Experience and Appointments

Clinical Assistant Professor

July 2019 - Present

Division of Pharmacotherapy and Experimental Therapeutics
University of North Carolina Eshelman School of Pharmacy
Chapel Hill, North Carolina

Assistant Professor of Clinical Education

May 2018 – June 2019

Division of Practice Advancement and Clinical Education
University of North Carolina Eshelman School of Pharmacy
Chapel Hill, North Carolina

Clinical Pharmacist Practitioner

October 2012 - Present

Malignant Hematology Clinic
University of North Carolina Medical Center
Chapel Hill, North Carolina

Adjunct Assistant Professor

January 2013 - April 2018

Division of Practice Advancement and Clinical Education
University of North Carolina Eshelman School of Pharmacy
Chapel Hill, North Carolina

Clinical Instructor

June 2010 – June 2012

Division of Practice Advancement and Clinical Education
University of North Carolina Eshelman School of Pharmacy
Chapel Hill, North Carolina

Staff Pharmacist

June 2010–Sept 2012

University of North Carolina Hospitals
Chapel Hill, North Carolina

Pharmacy Intern

June 2007 - May 2010

CVS Pharmacy #1832, 1391, 3880
Woodbridge, Virginia & Greensboro, North Carolina

Lab Assistant

August 2004 - May 2005;
August 2005 - May 2006

University of North Carolina Eshelman School of Pharmacy
PIs: Roy Hawke, PharmD, PhD; PI: Kim Brouwer, PharmD, PhD

Awards and Honors

Best Paper Award - Research International Society of Oncology Pharmacist Practitioners London, United Kingdom	October 2019
UNC Pharmacy Residency Preceptor of the Year University of North Carolina Medical Center Chapel Hill, NC	June 2019
UNC Oncology Excellence Award Nominee University of North Carolina Cancer Hospital Chapel Hill, NC	September 2017
HOPA Patient Advocacy Award Hematology Oncology Pharmacists Association, Chicago, IL	March 2016
HOPA Travel Grant Hematology Oncology Pharmacists Association	January 2016
ASHP Best Practices Award (Lead) <i>Impact of an Integrated, Closed-loop, Pharmacy-led Oral Chemotherapy Program on Clinical and Financial Outcomes</i> American Society of Health-System Pharmacists New Orleans, LA	December 2015
Buxton Williams Hunter Award University of North Carolina Eshelman School of Pharmacy	May 2010
Howard and Mescal Ferguson Scholarship University of North Carolina Eshelman School of Pharmacy	August 2008, August 2009
Kappa Epsilon Award University of North Carolina Eshelman School of Pharmacy	April 2009
Student National Pharmaceutical Association 2009 Scholarship University of North Carolina Eshelman School of Pharmacy	April 2009
Kroger "Future Pharmacists, Future Leaders" Endowed Scholarship Student National Pharmaceutical Association Las Vegas, Nevada	July 2008, July 2009
Phi Lambda Sigma University of North Carolina Eshelman School of Pharmacy Chapel Hill, North Carolina	Inducted April 2008
National Pharmaceutical Association Presidential Scholarship Student National Pharmaceutical Association Fort Lauderdale, Florida	July 2007

Peer-Reviewed Publications

1. Dennison T, Deal A, Foster M, Deal A, **Muluneh B**. A Pharmacist-Led Oral Chemotherapy Program Impact on Chronic Myeloid Leukemia Patient Satisfaction, Adherence, and Outcomes. *Journal of the Advanced Practitioner in Oncology*. *Accepted*
2. Wind L, Knight T, Auten J, Bates J, Marucci L, Creedle C, Foster M. **Muluneh B**. Evaluation and Optimization of a Clinical Pharmacist Driven Transitions of Care Model for Malignant Hematology. *Journal of Oncology Pharmacy Practice*. *Accepted*.
3. Mulu Fentie A, Buhlinger K, Borlagdan J, Bernstein A, Weitzman, S, Bekele W, Korones D, Alexander TB, Broas J, Shad A, Dinkiyie AM, Hailu D, **Muluneh B**. Pre-implementation assessment of a national Ethiopian pediatric cancer registry. *Blood Adv*. 2019;3(Suppl 1):16–19. doi:10.1182/bloodadvances.2019GS121614
4. Esparza S, **Muluneh B**, Galeotti J, Matson M, Richardson DR, Montgomery ND, Coombs CC, Jamieson K, Foster MC, Zeidner JF. Venetoclax-induced tumour lysis syndrome in acute myeloid leukaemia. *Br J Haematol*. 2020;188(1):173–177. doi:10.1111/bjh.16235
5. Trantham T, Auten J, **Muluneh B**, Van Deventer H. Ruxolitinib for the treatment of lymphoma-associated hemophagocytic lymphohistiocytosis: A cautionary tale [published online ahead of print, 2019 Oct 1]. *J Oncol Pharm Pract*. 2019;1078155219878774. doi:10.1177/1078155219878774
6. **Muluneh B**, Richardson DR, Hicks C, Jensen BC, Zeidner JF. Trials and Tribulations of Corrected QT Interval Monitoring in Oncology: Rationale for a Practice-Changing Standardized Approach. *J Clin Oncol*. 2019;37(30):2719–2721. doi:10.1200/JCO.19.00922.
7. Mackler E, Segal EM, **Muluneh B**, Jeffers K, Carmichael J. 2018 Hematology/Oncology Pharmacist Association Best Practices for the Management of Oral Oncolytic Therapy: Pharmacy Practice Standard. *J Oncol Pract*. 2019 Apr;15(4):e346-e355.
8. Bates J, Auten J, Sketch MR, Patel T, Clark SM, Morgan KP, **Muluneh B**, McLaughlin JE, Pinelli NR, Foster MC, Amerine LA. Patient engagement in first cycle comprehensive chemotherapy consultation pharmacist services and impact on patient activation. *J Oncol Pharm Pract*. 2019 Jun;25(4):896-902.
9. Copeland AC, Foster MC, **Muluneh B**, Xenakis JG, Ivanova A, Frankfurt O, Clayton M, Black A, Rapchak B, Wehbie RS. The utility of a telemedicine platform to monitor adherence and adverse effects of tyrosine kinase inhibitors. *Leuk Lymphoma*. 2019 Jul;60(7):1842-1844.
10. Chargualaf MJ, Giau TT, Abrahamson AC, Steeb D, Law M, Bates J, Nedi T, **Muluneh B**. Layered learning pharmacy practice model in Ethiopia. *J Oncol Pharm Pract*. 2019;25(7):1699–1704.
11. **Muluneh B**, Schneider M, Faso A, Amerine L, Daniels R, Crisp B, Valgus J, Savage S. Improved Adherence Rates and Clinical Outcomes of an Integrated, Closed-Loop, Pharmacist-Led Oral Chemotherapy Management Program. *J Oncol Pract*. 2018;14(6):e324-e334.

12. Yogarajah M, Montgomery N, Matson M, Blanchard L, Frank C, Gallagher S, Pepin K, Vaught L, **Muluneh B**, Foster M, Zeidner J. Clonal evolution of Philadelphia chromosome in acute myeloid leukemia after azacitidine treatment. *Leukemia & Lymphoma*. 2018 May 11:1-3. 9. [Epub ahead of print], doi: 10.1080/10428194.2018.1459614.
13. **Muluneh B**, Buhlinger K, Deal AM, Zeidner JF, Foster MC, Jamieson KJ, Bates J, Van Deventer HW. A Comparison of Clofarabine-based (GCLAC) and Cladribine-based (CLAG) Salvage Chemotherapy for Relapsed/Refractory AML. *Clin Lymphoma Myeloma Leuk*. 2018;18(1):e13-e18. Epub 2017 Sep 22, doi: 10.1016/j.clml.2017.09.016.
14. Mitchell A, **Muluneh B**, Patel R, Basch E. Pharmaceutical assistance programs for cancer patients in the era of orally administered chemotherapeutics. *J Oncol Pharm Pract*. 2018;24(6):424-432. Epub 2017 Jul 17, doi: 10.1177/1078155217719585.
15. Morgan KP, **Muluneh B**, Deal AM, Amerine LB. Impact of an integrated oral chemotherapy program on patient adherence. *J Oncol Pharm Pract*. 2018;24(5):332-336. Epub 2017 Apr 5, doi: 10.1177/1078155217703792.
16. **Muluneh B**, Deal A, Alexander MD, Keisler MD, Markey JM, Neal JM, Bernard S, Valgus J, Dressler LG. Patient perspectives on the barriers associated with medication adherence to oral chemotherapy. *J Oncol Pharm Pract*. 2018;24(2):98-109. Epub 2016 Nov 30, doi: 10.1177/1078155216679026
17. Arnall J, **Muluneh B**. Loss of Pregnancy in a Patient with Chronic Myeloid Leukemia During Treatment with Nilotinib. *J Hematol Oncol Pharm*. 2016;6(1):Mar;6(1):22-27.
18. Roth ME, **Muluneh B**, Jensen BC, Madamanchi C, Lee CB. Left Ventricular Dysfunction After Treatment With Ipilimumab for Metastatic Melanoma. *Am J Ther*. 2016 ;23(6):e1925-e1928.
19. Dusetzina SB, **Muluneh B**, Khan T, Richards K, Keating N. Obstacles to Affordable Cancer Treatments. *N C Med J*. 2014;75(4):257-260.
20. **Muluneh B**, Buie LW, Collichio F. Vemurafenib-Associated Pancreatitis: Case Report. *Pharmacotherapy*. 2013 Apr;33(4):e43-4. Epub 2013 Feb 22, doi: 10.1002/phar.1208.
21. **Muluneh B**, Dean A, Armistead P, Khan T. Successful clearance of cutaneous acyclovir-resistant, foscarnet-refractory herpes virus lesions with topical cidofovir in an allogeneic hematopoietic stem cell transplant patient. *J Oncol Pharm Pract*. 2013;19(2):181-5. Epub 2012 May 25, doi: 10.1177/1078155212448408.
22. Bottiglieri S, **Muluneh B**, Sutphin S, Iacovelli L, Adams V. Optimal Blood Pressure Control in Patients Receiving Angiogenesis Inhibitors in an Outpatient Cancer Center. *J Oncol Pharm Pract*. 2011;17(4):333-8. Epub 2010 Sept 3.

Book Chapters

1. Martin KE, Alexander M, **Muluneh B**. "Extended-spectrum triazole antifungals: posaconazole and voriconazole." *Casebook in clinical pharmacokinetics and drug dosing*. New York: McGraw-Hill, 2015.

- Alexander M, **Muluneh B**. "Accomplishing from Within: Defining Your Own Success in a Professional Environment." *Nourishing the Soul of Pharmacy: Stories of Reflection*. Ed. Zlatic TD, Zellmer WA. Lenexa, KS: American College of Clinical Pharmacy, 2011. 257-261.

Non-Peer Reviewed Publications

- Day J, **Muluneh B**. Initiation Checklist for a New Start Oral Chemotherapy. Hematology Oncology Pharmacist Association (HOPA). *Published Online in July 2017*. URL: http://www.hoparx.org/images/hopa/resource-library/guidelines-standards/Oral_Chemo_Resources_Web_Outline.pdf
- Savage SW, Bates JS, **Muluneh B**. Challenges Continue for True Patient-Centered Access. *Specialty Pharmacy Times*. 2016 Jun 02.
- Muluneh B**, Luter DN, Rowe E. "Metastatic Breast Cancer Updates." *Pharmacy Times*, 2013 September.

Abstracts and Posters (presenter underlined)

- Mulu Fentie A, Buhlinger K, Borlagdan J, Bernstein A, Weitzman, S, Bekele W, Korones D, Alexander TB, Broas J, Shad A, Dinkiyi AM, Hailu D, **Muluneh B**. Pre-implementation assessment of a national Ethiopian pediatric cancer registry. *Blood Adv*. 2019;3(Suppl 1):16–19. Presented at the 2019 American Society of Hematology Annual Meeting Global Capacity Showcase, Orlando, FL, December 2019.
- Yazdy MS, Mato A, Roeker L, Jarral U, Ujjani C, Shadman M, Skarbnik A, Whitaker K, Deonaraine I, Kabel C, Stump S, Goodfriend J, Pagel J, Bailey N, Patel K, Jacobs R, Feldman T, Leslie L, Goy A, Coombs C, **Muluneh B**, Khajavian S, Lamanna N, Weissbrot H, Weiss J, Cheson B. *Toxicities and Outcomes of Acalabrutinib-Treated Patients with Chronic Lymphocytic Leukemia: A Retrospective Analysis of Real World Patients*. *Blood*, 134(Supplement_1), 4311. [Abstract]. Presented at the 2019 American Society of Hematology Annual Meeting, Orlando, FL, December 2019.
- Yin S, Zhu A, Deal A, Faso A, **Muluneh B**, Van Deventer H, Lucas AT. *A Retrospective Analysis of the Use of Pregabalin or Gabapentin on the Incidence of Pegfilgrastim-Induced Bone Pain*. Presented at the 2019 American College of Clinical Pharmacy (ACCP), New York, NY. October 2019
- Muluneh B**, Deal A, Virparia R, Garcia S, Elston-Lafata J. *The impact of health-related quality of life and associations with adherence in real-world leukemia patients*. Presented at the 2019 American College of Clinical Pharmacy (ACCP), New York, NY. October 2019
- Drawdy L, Kline T, Miller J, Deal A, Zhu A, Sketch M, Coombs C, **Muluneh B**. *Impact of Adherence to Ibrutinib on Clinical Outcomes in Real-World Patients with Chronic Lymphocytic Leukemia*. Presented at the 2019 International Workshop on Chronic Lymphocytic Leukemia (iwCLL), Edinburgh, Scotland. September 2019.
- Cole AL, Wood WA, **Muluneh B**, Lund JL, Lafata JE, Dusetzina SB. *Comparative Safety and Healthcare Expenditures Associated With Frontline Therapy For Chronic Myeloid Leukemia*. Presented at the 35th annual International Conference on Pharmacoepidemiology and Therapeutic Risk Management. Philadelphia, PA. August 2019.

7. Cole AL, Wood WA, **Muluneh B**, Lund JL, Lafata JE, Dusetzina SB. *Comparative Safety and Healthcare Expenditures Associated With Frontline Therapy For Chronic Myeloid Leukemia*. Presented at the 2019 Annual Research Meeting of Academy Health. Washington, DC. June 2019.
8. Bucci T, Szeto A, Deal A, Zhu A, Ahmad M, Cass A, Sketch M, Foster M, **Muluneh B**, Crona D. *Response to Tyrosine Kinase Inhibitors in Real World Patients with Chronic Myeloid Leukemia*. Presented at the 2019 Hematology Oncology Pharmacists Association Annual Meeting. Fort Worth, TX. April 2019.
9. Dennison T, Zhu A, Deal A, Foster M, Valgus J, **Muluneh, B**. A Pharmacist-led Oral Chemotherapy Program Impact on Chronic Myeloid Leukemia Patient Satisfaction, Adherence, and Outcomes. Presented at the 2019 Hematology Oncology Pharmacists Association Annual Meeting. Fort Worth, TX. April 2019.
10. Day J, Lena R, Lucas A, Walker J, Foster M, Crona D, **Muluneh B**. A Systematic Literature Review of POMP Maintenance Therapy Dosing and Dose Intensity in Adult Acute Lymphoblastic Leukemia. Presented at the 2019 Hematology Oncology Pharmacists Association Annual Meeting. Fort Worth, TX. April 2019.
11. Morgan KP, Sellers JB, **Muluneh B**, Carlson M, Wood WA, Shea TC. *Feasibility of Medication Coordination with Lay Navigators in Outpatient Oncology Clinics*. Presented at the 2018 American Society of Clinical Oncology Quality Care Symposium, Phoenix, AZ, September 2018.
12. Cole AL, Wood WA, **Muluneh B**, Lund JL, Lafata JE, Dusetzina SB. *Predictors of First-Line Tyrosine Kinase Inhibitor Treatment for Chronic Myeloid Leukemia*. Presented at the 24th Annual Agency for Healthcare Research and Quality (AHRQ) NRSA Trainees Research Conference, Seattle, WA, June 2018.
13. Samanas L, Auten J, **Muluneh B**, Van Deventer H. *Dose Intensity of HyperCVAD in Patients with Acute Lymphocytic Leukemia (ALL)*. Presented at the 2016 Research in Education and Practice Symposium, Chapel Hill, NC, May 2016.
14. Abrahamson A, Chargualaf M, Giao T, **Muluneh B**. *Needs Assessment and Gap Analysis of Clinical Pharmacy in Addis Ababa During an International Advanced Pharmacy Practice Experience*. Presented at the 2016 American Society of Health Systems Pharmacy Midyear Meeting, Las Vegas, NV, December 2016.
15. **Muluneh B**, Buhlinger K, Deal AM, Zeidner JF, Foster MC, Jamieson KJ, Bates J, Van Deventer HW. *A Comparison of Clofarabine-Based (GCLAC) and Cladribine-Based (CLAG) Salvage Chemotherapy for Relapsed/Refractory AML*. *Blood*, 126(23), 1342. [Abstract]. Presented at the 2015 American Society of Hematology Annual Meeting, Orlando, FL, December 2015.
16. **Muluneh B**, Schneider M, Faso A, Valgus J, Amerine L, Daniels R, Crisp B, Savage S. *Impact of an Integrated, Closed-loop, Pharmacy-led Oral Chemotherapy Program on Clinical and Financial Outcomes*. Presented at the 2015 American Society of Health-System Pharmacists Annual Meeting, New Orleans, NO, December 2015.

17. Blomberg BA, Van Deventer HW, Gold S, Jamieson KJ, Zeidner JF, **Muluneh B**, Moore D, Foster MC. *A Single-Center Retrospective Analysis of a Pediatric Salvage Chemotherapy Regimen for Adults with Relapsed/Refractory Acute Lymphoblastic Leukemia*. Blood, 126(23), 4919. [Abstract]. Presented at the 2015 American Society of Hematology Annual Meeting, Orlando, FL, December 2015.
18. Thorne A, **Muluneh B**, Bates JS. *Acute kidney injury in patients treated with high-dose cisplatin, dexamethasone, and cytarabine (DHAP): a retrospective study*. Presented at the 2015 American Society of Health-System Pharmacists Annual Meeting, New Orleans, NO, December 2015
19. Wind LS, Knight TG, Auten JJ, Bates JS, **Muluneh B**. *Evaluation of a Transitions of Care Model for Malignant Hematology*. Presented at the 2016 Research in Education and Practice Symposium, Chapel Hill, NC, May 2015.
20. Morgan KP, **Muluneh B**, Deal A, Burgess HC, Schneider M, Poppe L. *Evaluation of an institutional specialty pharmacy's impact on adherence to oral chemotherapy*. Presented at the 2014 Hematology Oncology Pharmacists Association annual meeting, New Orleans, LA, March 2014.
21. **Muluneh B**, Alexander M, Deal A, Keisler M, Markey J, Neal J, Bernard S, Valgus J, Dressler L. *Prospective evaluation of perceived barriers to medication adherence by patients on oral antineoplastics*. Presented at the 2012 American Society of Clinical Oncology Annual Meeting, Chicago, IL, June 2012.
22. **Muluneh B**, Redding R, Rao K, Nyirenda M, Hosseinipour M. *Successful competency training in safe handling of chemotherapy in Malawi*. Journal of Oncology Pharmacy Practice, June 2012. Vol. 18, Number 2, Supplement, Page 15 Abstract. Presented at the 2012 International Society of Oncology Pharmacy Practitioners Annual Meeting, Melbourne, Australia, May 2012.
23. Khan T, **Muluneh B**, Alexander M, Lasater K, Hoang V, Olson L, Patel R, Mark N, Smith K, Savage S, Poppe L. *Model to Improve Patient and Learner Outcomes: A Partnership in Patient Care Initiative (PIPC) in the HSCT Population*. Biology of Blood and Marrow Transplant, February 2012. Vol. 18, Issue 2, Supplement, Page S240 Abstract.
24. **Muluneh B**, Alexander M, Deal M, Valgus J, Dressler L, Deal A, Markey J. *Prospective evaluation of perceived barriers to medication adherence by patients on oral antineoplastics*. Presented at the 2011 University Health System Consortium Pharmacy Council Annual Meeting, New Orleans, LA, December 2011.

Invited Presentations

Implementation of Clinical Pharmacy Services

March 2019

Addis Ababa University
Addis Ababa, Ethiopia

Precision Dosing: A Clinician's Perspective

October 2018

Platform Presentation
American College of Clinical Pharmacy (ACCP)
Seattle, WA

<p>Managing Financial Toxicity When Facing Cancer Webinar Presentation University of North Carolina Cancer Network (UNCCN) Chapel Hill, NC</p>	<p>September 2017</p>
<p>Oral Chemotherapy: Overcoming the Challenge to Adherence Webinar Presentation University of North Carolina Cancer Network (UNCCN) Chapel Hill, NC</p>	<p>April 2017</p>
<p>Adherence Concepts for the Cancer Patient Webinar Continuing Education Presentation ProCE, Inc., <i>ACPE number: 0221-9999-17-097-H01-P</i></p>	<p>January 2017</p>
<p>Management of Oral Chemotherapy Services: A Pharmacist-Led Model Platform Presentation American Community Cancer Centers (ACCC) Regional Meeting Austin, TX</p>	<p>March 2017</p>
<p>Management of Oral Chemotherapy Services: A Pharmacist-Led Model Platform Presentation American Community Cancer Centers (ACCC) Regional Meeting Costa Mesa, CA</p>	<p>December 2016</p>
<p>Management of Oral Chemotherapy Services: A Pharmacist-Led Model Platform Presentation Hematology Oncology Pharmacists Association (HOPA) Chicago, IL, <i>ACPE number: 0465-0000-16-060-L04-P</i></p>	<p>September 2016</p>
<p>Anemia: Considerations for the Elderly Oral Presentation NC Association of Pharmacists Chronic Care Practice Forum Meeting Greensboro, NC, <i>ACPE number: 0046-9999-15-012-L01-P</i></p>	<p>March 2015</p>
<p>Pharmacy Perspectives in Multiple Myeloma: Sequencing Therapy Speakers: Harvey D, Muluneh B. Webinar Continuing Education Presentation Medscape (WebMD LLC), <i>ACPE number: 0461-0000-14-090-H01-P</i></p>	<p>December 2014</p>
<p>Successful Oncology Collaborative Practice Agreements: Outpatient Oncology Oral Presentation American College of Clinical Pharmacy Austin, TX</p>	<p>October 2014</p>
<p>Establishing a Collaborative Practice Workshop Speakers: Muluneh B, Byar KL, Gallo M, Hylton HM. Panel Discussion Advanced Practitioner Society for Hematology and Oncology Orlando, FL</p>	<p>October 2014</p>

Oral Chemotherapy Considerations August 2013
Oral Presentation
North Carolina Oncology Pharmacists Association
Cary, NC, *ACPE number:* 0088-9999-13-093-L01-P

Safe Handling of Hazardous Drugs October 2011
Basic Chemotherapy Training Course
Tidziwe Centre (UNC and Kamuzu Central Hospital collaboration)
Lilongwe and Blantyre, Malawi

Teaching Experience: Didactic and Facilitation

Facilitator, Patient Care Experience (PHCY 617) August 2019 – Present
University of North Carolina Eshelman School of Pharmacy

Facilitator, Integrative Pharmacotherapy (PHCY 732) August 2019 – Present
University of North Carolina Eshelman School of Pharmacy

Lecturer, Opioid and Analgesics Pharmacology August 2019 – Present
University of North Carolina Eshelman School of Pharmacy
Course: Applied Pharmacology (PHCY 611)

Lecturer, Hematology, Hemostasis, Thrombosis August 2019 – Present
University of North Carolina Eshelman School of Pharmacy
Course: Pathophysiology (PHCY 502)

Lecturer, Chronic Leukemias February 2018 – Present
University of North Carolina Eshelman School of Pharmacy
Course: Hematology/Oncology Elective (PHCY 822)

Hematology/Oncology and Supportive Care Lectures January 2015 - Present
Addis Ababa University School of Pharmacy
Masters in Clinical Pharmacy – Oncology Module
Addis Ababa, Ethiopia

Lecturer, Adherence to Oral Chemotherapy May 2013 - 2016
University of North Carolina School of Nursing
Course: Nurse Practitioner Program (NURS 720)

Lecturer, Chronic Leukemias November 2012 - 2016
University of North Carolina Eshelman School of Pharmacy
Course: Hematology/Oncology (PHCY 447)

Lecturer, Chemotherapy Induced Nausea and Vomiting November 2013
University of North Carolina Eshelman School of Pharmacy
Course: Hematology/Oncology (PHCY 447)

Lecturer, Hematology Sept 2013 – Sept 2015
University of North Carolina Eshelman School of Pharmacy
Course: Physiology (PHCY 203)

Lecturer, Primary Brain Tumors April 2013
University of North Carolina Eshelman School of Pharmacy
Course: Hematology/Oncology Elective (PHCY 812)

Lecturer, Supportive Care in Oncology January 2012
University of North Carolina Eshelman School of Pharmacy
Course: Hematology/Oncology Elective (PHCY 812)

Lecturer, Tumor Lysis Syndrome November 2011
University of North Carolina Eshelman School of Pharmacy
Course: Acute Care Pharmacotherapy Elective (PHCY 802)

Lecturer, Management of Dental Pain July 2011
University of North Carolina School of Dentistry
Course: Clinical Pharmacology and Therapeutics (OMSU 220)

Clinical Instructor, Pharmacy Care Laboratory July 2010 – Dec 2011
University of North Carolina Eshelman School of Pharmacy
Chapel Hill, North Carolina
Courses: PHCY 404, PHCY 405

Lecturer, Rate Control in Atrial Fibrillation February 2010
University of North Carolina Eshelman School of Pharmacy
Course: Cardiology Module (PHCY 446)

Teaching Experience: Experiential

Global Pharmacy Scholars – International Experience August 2016 – Present
Primary Preceptor, Location: Addis Ababa, Ethiopia
Facilitated Memorandum of Understanding between UNC
Eshelman School of Pharmacy and Addis Ababa University
Learners Precepted: Michael Chargalauf (PGY2), Kaitlyn
Buhlinger (PGY2), Jared Borlagdan (PGY2), Anna Abrahamson
(PY4), Tieumy Giao (PY4)

Longitudinal Leukemia Clinic August 2016 – Present
Primary Preceptor
PGY2 Residents Precepted: Jordan Miller, Sarah Stump, Kaitlyn
Buhlinger

Malignant Hematology Clinic August 2013 – Present
Primary Preceptor
Precepted PY2, PY3, and PY4 students and PGY1, and PGY2
residents

Teaching Experience: Mentorship

Daniel Tobben, Abigail Danos, Sheila Garcia January 2020 – Present
Role: Primary Advisor
Project: The impact of health-related quality of life and
associations with adherence in real-world leukemia patients

<p>Mariela Burgos Role: Primary Advisor Project: Scoping Review of Clinical Pharmacy Consortia for Generation of Real World Evidence</p>	<p>December 2019 – Present</p>
<p>Viraj Barot and Toneth Sang Role: Primary Advisor Project: Evaluation of the WHO Essential Medicine’s List</p>	<p>December 2019 – Present</p>
<p>Christine Chong, PharmD Role: Fellowship research advisor Project: Antifungal Prophylaxis in FLT3+ AML Induction Regimens with Midostaurin</p>	<p>January 2020 – Present</p>
<p>Faculty Advisor – Hager House UNC Eshelman School of Pharmacy</p>	<p>December 2019 – Present</p>
<p>Taylor Werner Role: Internship Research Advisor Project: Evaluation of Actionable Germ Line Drug/Gene Pairs in the Leukemia, BMT, and GI Oncology Populations.</p>	<p>October 2019 – Present</p>
<p>Catherine Nguyen, PharmD Role: Fellowship research advisor Project: <i>“Impact of adherence to ibrutinib on clinical outcomes in real-world patients with chronic lymphocytic leukemia”</i></p>	<p>June 2019 – Present</p>
<p>Sheel Patel, PharmD Role: Fellowship research co-advisor Project: “Preliminary evaluation of TKI exposure-response relationships in real world patients (RWPs) with chronic myelogenous leukemia (CML)”</p>	<p>June 2019 – Present</p>
<p>Kurtis Stocker, PharmD Role: Resident research co-advisor Project: Venetoclax and Azole Antifungal Interaction in Real World AML Patients.</p>	<p>July 2019 – Present</p>
<p>Kelly Brunk, PharmD Role: Teaching and Learning Certificate Advisor</p>	<p>July 2019 – Present</p>
<p>Riddhi Virparia, PharmD Role: Teaching and Learning Certificate Advisor</p>	<p>July 2018 – Present</p>
<p>Karthik Adapa, MBBS, MPH, MPP Role: Member in PhD dissertation committee Dissertation title: “Patient education, engagement and activation using neurocognitive methods.”</p>	

- Lauren Drawdy, PharmD, and Theresa Kline, PharmD** July 2018 – Present
 Role: Primary PGY-2 research advisor (Co-advisor: Dr. Jordan Miller)
 Project: *“Impact of Adherence to Ibrutinib on Clinical Outcomes in Real-World Patients (RWP) with Chronic Lymphocytic Leukemia”*
- Tyler Bucci, PharmD, MSPS** January 2018 – Present
 Role: PGY2 research advisor (Primary advisor: Dr. Daniel Crona)
 Project: *“Response to tyrosine kinase inhibitors (TKIs) in real world patients (RWPs) with chronic myeloid leukemia (CML)”*
- Sarah Stump, PharmD, Raena Rhone** December 2017 – Present
 Role: Primary faculty advisor for PGY2 and student
 Project: Evaluation of Venetoclax Initiation Process at University of North Carolina Medical Center
- Bemnat Agegnehu, Ebose Ikheloa** October 2017 – Present
 Role: Faculty advisor on the development of a cancer registry in Black Lion Medical Center in Addis Ababa, Ethiopia
- Ashley Cole, MPH** October 2017 – Present
 Role: Member in PhD dissertation committee
 Dissertation title: *“Comparative Safety and Healthcare Resource Utilization Associated with First-Line Treatments for CML”*
- Shengmei Yin** December 2016 – Present
 Role: Faculty advisor for RASP student project (Co-advisor: Andrew Lucas, PharmD)
 Project: *“Retrospective analysis of the use of pregabalin or gabapentin on the rates of pegfilgrastim-induced bone pain”*
- Jacki Day** November 2016 – May 2019
 Role: Faculty advisor UNC Health Leukemia Summer Internship (Co-advisors: Dr. Daniel Crona and Dr. Brandi Reeves)
 Project: *“Direct Oral Anticoagulants as Secondary Prophylaxis in Classical Myeloproliferative Neoplasms: A Retrospective Review”*
 Abstract submitted to American Society of Hematology
- Taylor Dennison** August 2016 – May 2019
 Role: Faculty advisor for hematology/oncology intern
 Project: *“Efficacy of the pharmacist led oral chemotherapy program on CML patient satisfaction, adherence, and outcomes at the UNC Medical Center”*
- Robert Lena and Jacki Day** August 2015 – June 2016
 Role: Faculty advisor for UNC Health Leukemia Summer Internship
 Project: *“A systematic review on acute lymphoblastic leukemia maintenance”*

Lisa Samanas, PharmD

Dec 2014 – May 2017

Role: PGY2 research advisor (Co-advisor: Dr. Jessica Auten)
Project: *“Dose intensity of Hyper-CVAD in Acute Lymphoblastic Leukemia”*
Current Position: Hematology/Oncology Clinical Pharmacist at Froedtert Health, Milwaukee, WI

Andrew Thorne

Nov 2014 – June 2015

Role: Faculty advisor for hematology/oncology pharmacy intern
Project: *“Acute Kidney Injury in Patients Treated with DHAP Chemotherapy Regimen: A Retrospective Study”*
Current Position: IDS System Manager, UNC Health Care

Kaitlyn Bulinger

August 2014 – June 2015

Role: Faculty advisor for UNC Eshelman School of Pharmacy Honors Program
Project: *“Efficacy and toxicity of the GCLAC and CLAG regimens for relapsed/refractory acute myeloid leukemia”*
Current Position: UNC PGY-2 Hematology/Oncology Resident

Lucas Wind, PharmD

Sept 2012 – June 2013

Role: PGY-2 research advisor
Project: *“Evaluation of a transitions of care model for malignant hematology”*
Current Position: Duke, Inpatient Bone Marrow Transplant

Amber Proctor, PharmD

August 2013 – June 2014

Role: PGY-2 research advisor
Project: *“Identification of risk factors associated with 30-day readmissions in patients with cancer at a university-health system”*
Current Position: UNC ESOP Assistant Professor/UNC CPP, Thoracic Oncology

Katherine Morgan, PharmD

Role: Faculty advisor for PGY2 residency project
Project: *“Comprehensive Oral Chemotherapy Program to Improve Adherence and Outcomes to Oral Chemotherapy”*
Current Position: UNC CPP, Genitourinary Oncology

Research Funding

Extramural

HOPA Early Career Research Grant
Title: Precision Dosing of TKIs for Real World Patients with Chronic Myelogenous Leukemia
Sponsor: Hematology Oncology Pharmacists Association (HOPA)
Dates: August 2019 – August 2021(\$47,500)
Role: Co-investigator, 5% effort (no salary support)
Principal Investigator: Daniel Crona, PharmD, PhD, CPP

Fulbright Specialists Program

Title: Innovative didactic and experiential teaching in hematology/oncology pharmacotherapy of MS pharmacy students in Addis Ababa University (Addis Ababa, University)
Sponsor: Fulbright Program (United States Department of State)
Dates: May 2017 (\$3,100) (on Fulbright specialist roster from 2015-2020)
Role: Principal Investigator, 80% effort during May 2017 (no salary support)

HOPA Research Grant

Title: Evaluation of pharmacist-driven first cycle chemotherapy consultation
Sponsor: Hematology Oncology Pharmacists Association (HOPA)
Dates: August 2016 – August 2018 (\$18,950)
Role: Co-investigator, 5% effort (no salary support)
Principal Investigator: Jill S. Bates, PharmD, MS, BCOP, CPP

Pfizer Investigator-Initiated Research (IIR) Grant

Title: A phase I/II, placebo-controlled, randomized, trial of pregabalin for the prophylaxis of granulocyte colony stimulating factor (GCSF)-induced bone pain
Sponsor: Pfizer Inc. (investigational drug and placebo)
Dates: January 2014 – December 2017
Role: Principal Investigator, 5% effort (no salary support)

Novartis Investigator-Initiated Research (IIR) Grant

Title: The Feasibility of a Telemedicine Platform to Monitor Adherence and Adverse Effects of ABL Kinase Inhibitors
Dates: January 2013 – December 2015
Sponsor: Novartis Pharmaceuticals, Leap of Faith Technologies (handheld device)
Role: Co-investigator, 5% effort (no salary support)
Principal Investigator: Robert Wehbie, MD

Intramural

NC Tracs

Title: “Phenotypic Biomarkers of Cytochrome P450 3A to Improve Precision Dosing in Chronic Lymphocytic Leukemia (CLL)”
Sponsor: The North Carolina Translational and Clinical Sciences Institute
Proposed Dates: 03/01/2020 – 02/28/2022 (\$50,000)
Role: Co-investigator, 5% effort (no salary support)
Principal investigator: Klarissa Jackson, PhD

EII Tier 1 Award

Title: “Precision Dosing of TKIs for Patients with CML”
Sponsor: UNC Eshelman Institute for Innovation
Proposed Dates: 06/01/2018-05/31/2019 (\$50,000)
Role: Co-investigator, 5% effort (no salary support)
Principal Investigator: Daniel Crona, PharmD, PhD, CPP

Additional Research Experience

Macrocytosis as a predictive indicator of clinical outcomes in patients treated with oral TKIs: a retrospective review May 2017 – Present
University of North Carolina Medical Center
Role: Co-Investigator

The feasibility of using high-dose methotrexate during interim maintenance for young adults with acute lymphoblastic leukemia January 2016 – July 2016
University of North Carolina Medical Center
Role: Co-Investigator

Comprehensive Oral Chemotherapy Program to Improve Adherence and Outcomes to Oral Chemotherapy Sept 2014 – Dec 2017
University of North Carolina Medical Center
Role: Co-Investigator

Prospective evaluation of patient perceived barriers to adherence to oral antineoplastic agents in metastatic renal Cell Carcinoma, Breast Cancer, and Chronic Myelogenous Leukemia Aug 2010 – Aug 2012
University of North Carolina Hospitals
Mentors: John Valgus, PharmD, BCOP, CPP and Lynn Dressler, Dr.P.H

Drug Use Evaluation: Accuracy of Heparin Nomogram Aug 2010-June 2011
University of North Carolina Hospitals
Mentor: Maryann Oertel, PharmD, BCPS

Optimal Blood Pressure Control in Patients Receiving Angiogenesis Inhibitors in an Outpatient Cancer Center Sept 2009 – March 2010
Moses Cone Regional Cancer Center
University of Kentucky Markey Cancer Center
Mentor: Lew Iacovelli, PharmD, BCOP, CPP

Professional Service

University of North Carolina Cancer Network December 2019 – Present
Speaker Selection Committee

Pharmacotherapy Stream Committee July 2019 – Present
UNC Eshelman School of Pharmacy

American Society of Hematology January 2020 – Present

Lay Navigator Program Pilot March 2018 – June 2019
Lead (Co-lead: Katherine Morgan)
Funded by Duke Endowment Grant
UNC Medical Center

Pharmacogenomics and Pharmacometrics Center Development Working Group UNC Eshelman School of Pharmacy	June 2018 – Present
Partnership in Patient Care v2.0 Research Committee UNC Medical Center and UNC Eshelman School of Pharmacy	February 2018 – Present
Precision Dosing Initiative Department of Pharmacotherapy and Experimental Therapeutics UNC Eshelman School of Pharmacy	Nov 2017 - Present
Global Engagement Advisory Committee (GEAC) Primary Preceptor, Ethiopia Site UNC Eshelman School of Pharmacy	Nov 2016 – June 2019
Residency Progression Committee (RPC) PGY1 and PGY2 Mentor UNC Medical Center	July 2015 – June 2016
Leukemia Lymphoma Society Man/Woman of the Year Campaign 2018: “\$5000 Club” Recognition (Raised over \$5000) 2017: Team Member, (Raised over \$5000) 2016: Mentor to Candidate Joshua Zeidner, MD; Team Member, (Raised over \$5000) 2015: Lead Candidate Representing UNC Healthcare; Top Fundraiser Recognition (Raised over \$62,000)	January 2015 – Present
Specialty Pharmacy Advisory Committee (SPAC) Clinical Subcommittee Co-Chair (2014-2016) UNC Medical Center	Sept 2014 – Present
Reviewer, Journal of Oncology Pharmacy Practice	August 2013 – Present
Hematology Oncology Pharmacists Association (HOPA) Oral Chemotherapy Taskforce: July 2017 – Present Practice Outcomes and Professional Benchmarking Committee: July 2018 – Present Vice Chair, Global Health Taskforce: August 2018 – Present	October 2012 – Present
American College of Clinical Pharmacy (ACCP)	January 2009 – Present
American Society of Health-System Pharmacists (ASHP)	Dec 2006 – Present

References available upon request

Last updated on January 2020