

Noll Linden Campbell, PharmD, MS

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Professional Experience

Assistant Professor Department of Pharmacy Practice Purdue University	Indianapolis, IN August 2016-present
Research Assistant Professor Department of Pharmacy Practice Purdue University	Indianapolis, IN September 2010-August 2016
Scientist, IU Center for Aging Research	Indianapolis, IN September 2010-present
Investigator, Regenstrief Institute, Inc.	Indianapolis, IN September 2010-present
Director, Indianapolis Discovery Network for Dementia	Indianapolis, IN January 2013-December 2015
Clinical Pharmacy Specialist, Geriatrics Eskenazi Health Services	Indianapolis, IN August 2004-present
Outpatient Staff Pharmacist (Resident) University of North Carolina Hospitals	Chapel Hill, NC July 2003-June 2004
Clinical Pharmacist (Resident) St. Vincent Hospital and Health Services	Indianapolis, IN July 2002-June 2003

Licensure & Certification

Pharmacist, State of North Carolina	January 2004-2009
Pharmacist, State of Indiana	August 2002-Present
Board Certified Geriatric Pharmacist	2004-2009
Board Certified Psychiatric Pharmacist	2007-2014

Education & Training

Masters of Science in Clinical Research Indiana University School of Medicine	Indianapolis, IN September 2014- December 2016
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Geriatric Specialty Residency
University of North Carolina Eshelman School of Pharmacy

Chapel Hill, NC
July 2003-June 2004

Pharmacy Practice Residency
St. Vincent Hospital and Health Services

Indianapolis, IN
July 2002-June 2003

Doctor of Pharmacy
Butler University College of Pharmacy
and Health Sciences

Indianapolis, IN
August 1996-May 2002

Research Activities

Peer Reviewer

Journal of the American Medical Association
New England Journal of Medicine
Journal of the American Medical Association Surgery
Journal of the American Geriatrics Society
Alzheimer's & Dementia
Drugs & Aging
British Medical Journal Open
American Journal of Geriatric Psychiatry
BMC Geriatrics
BMJ Open
Pharmacotherapy
Journal of Public Health
Cochrane Database of Systematic Reviews

AHRQ Technical Expert Panel

2018-Present

Consultant to comparative effectiveness review of antipsychotics in the prevention and treatment of delirium in hospitalized adults.

NIH Study Section Reviewer (RPHB-Y (12))

2017

STTR/SBIR:Neuro/Psychopathology, Lifespan Development, and STEM Education Special Emphasis Panel

AHRQ Study Section Reviewer – Special Emphasis Panel for Diagnostic Accuracy

2019

DSMB Member – SHED-MEDS Deprescribing Trial

2017-2022

NIH/NIA-funded clinical trial

DSMB Member – Decreasing Delirium through Music (DDM)

2019-2024

NIH/NIA-funded clinical trial

DSMB Member – Progesterone QTc study

2019-2020

AHA-funded trial

Advisory Board Member – De-prescribing Networks

2016-2019

Indiana State Dept. of Health Award

Awards/Honors

- Departmental Annual Best Paper Award** August 2019
Purdue University Department of Pharmacy Practice
- Invited Presenter of the Charleston** February 2015
Conference for Alzheimer's Disease
- Tony and Mary Hulman Award for achievement** October 2014
in Geriatrics: Indiana Public Health Association
- Merck/AGS New Investigator Award** May 2012

Projects

- Feasibility of a Novel Deprescribing Program to** 2017-Present
Reduce High-Risk Medications in Older Adults
Implementation of a pharmacist-based deprescribing protocol within primary care at Indiana University Health
- Media and Mobile Application to Increase Awareness** 2017-2018
Of Adverse Cognitive Effects of Anticholinergics
Development of patient-directed tools to address the gap of poor awareness of adverse cognitive effects of medications among community-dwelling older adults (and their caregivers)
- HAPPY MEDIUM: A behavioral intervention to** 2016-Present
reduce OTC drugs in older adults
Development of mobile technology to improve recognition of OTC medications with adverse cognitive effects.
- Anticholinergic Cognitive Burden Index** 2007-Present
Review of primary literature identifying medications with anticholinergic activity with a goal of developing a clinically useful tool to assess total anticholinergic burden in cognitively impaired older adults
- Medication Adherence Assessment and Protocol to** 2013-2015
for Older Adults with Cognitive Impairment
Development and pilot testing of a medication adherence barrier assessment and response protocol in ambulatory older adults with a diagnosis of mild cognitive impairment.
- COMET-AD** 2010-2015
Comparison effectiveness study of safety and tolerability of acetylcholinesterase inhibitors in patients with dementia.
- Pharmacologic Management of Delirium** 2009-2015
Development and implementation of a pharmacologic delirium treatment protocol for adults in the ICU in conjunction with physicians, researchers, other pharmacists, and nurse practitioners.

- Medication Management of Asthma and Diabetes** **2013**
Assessment of drug dispensing database for coverage gaps and adherence trends in adults with Diabetes and Asthma.
- Cost-effectiveness of colorectal cancer care** **Jan-September 2011**
Systematic review and database analysis of costs of colorectal cancer care for older adults. Completed project with IU Simon Cancer Center for grant funding from the Army Corps of Engineers.
- Indianapolis Ibadan Dementia Project** **2008-2010**
Secondary data analysis of an ongoing prevalence study comparing rates of cognitive impairment and dementia in African-Americans in Indianapolis with Yoruba from Ibadan, Nigeria.
- Falls Committee – Eskenazi Health System** **2007-2015**
Charged with addressing JCAHO standard of falls risk identification and management of hospitalized patients
- Enhancing the Care for Hospitalized Older Adults with Memory Problems** **2005-2010**
NIH-funded study aimed at decreasing episodes of delirium and length of stay in cognitively impaired elders admitted to the hospital
- Student Project Preceptor** **2007-2010**
Preceptor for Doctor of Pharmacy students through the generation of clinical question, data collection, analysis, and presentation phases of required responsibilities in the curriculum of both Butler University and Purdue University Schools of Pharmacy:
-Evaluation of Serum Hydroxyvitamin D Levels
-Adherence to Osteoporosis Guidelines at Hospital Discharge
-Medication Use and Evaluation of Memantine
-Medication adherence among older adults with cognitive impairment
-Adherence and risk of hypoglycemia in diabetic adults
- Evaluation of Drug Therapy Problems in a Geriatric Outpatient Clinic** **2003-2004**
Residency project evaluating the frequency and types of drug therapy problems in an ambulatory geriatric population
- Pain Management Conversion Guide** **2002-2003**
Development of user-friendly conversion guide for pain medications, with safe-use guidelines and management of PCA/CADD pumps.
- DVT Management in the ED** **2002-2003**
Protocol development and cost analysis of outpatient DVT treatment in the emergency department.

Publications

Griebing TL, Campbell NL, Mangel J, Staskin D, Herschorn S, Elsouda D, Schermer C. Effect of mirabegron on cognitive function in elderly patients with overactive bladder: MoCA results from a phase 4 placebo-controlled study (PILLAR). *Under Review*.

Richardson K, Wharton SB, Grossi CM, Matthews FE, Fox C, Maidment I, Loke YK, Steel N, Arthur A, Myint PK, Boustani M, **Campbell NL**, Robinson L, Brayne C, Savva GM. Neuropathological correlates of cumulative benzodiazepine and anticholinergic drug use. *Under Review*.

Weigand AJ, Bondi MW, Thomas KR, **Campbell NL**, Galasko DR, Salmon DP, Sewell D, Brewer JB, Feldman HH, Delano-Wood L, for the Alzheimer's Disease Neuroimaging Initiative. Anticholinergic medications increase risk of incident MCI and accelerate cognitive decline. *Under Review*.

Khan BA, Perkins AT, Prasad AK, Shekhar A, **Campbell NL**, Gao S, Wang, S, Khan SH, Marcantonio ER, Twigg, HL, Boustani MA. Biomarkers of Delirium Duration and Delirium Severity in the ICU. *Crit Care Med* 2019 Nov 26. (epub ahead of print) PMID: 31770149

Rose L, Agar M, Burry L, Campbell NL, Clark M, Lee J, Marshall J, Siddiqi N, Page V. Reporting of outcomes and outcome measures in studies of interventions to prevent and/or treat delirium in the critically ill (Del-CORs): Systematic review. *Crit Care Med* (In Press).

Grossi CM, Richardson K, Fox C, Maidment I, Steel N, Loke YK, Arthur A, Myint PK, **Campbell N**, Boustani M, Robinson L, Brayne C, Matthews FE, Savva GM. Anticholinergic and benzodiazepine medication use and risk of incident dementia: a UK cohort study. *BMC Geriatr*. 2019 Oct 21;19(1):276. doi: 10.1186/s12877-019-1280-2.

Lozano-Ortega G, Johnston KM, Cheung A, Wagg A, **Campbell NL**, Dmochowski RR, Ng DB. A review of published anticholinergic scales and measures and their applicability in database analyses. *Arch Gerontol Geriatr* 2019 May/ pii: S0167-4943(19)30120-7. doi: 10.1016/j.archger.2019.05.010. PMID: 31155228

Lozano-Ortega G, Szabo SM, Cheung A, Suehs B, Caplan EO, Wagg A, **Campbell NL**, Dmochowski R, Rogula B, Ng DB. An Evaluation of Longitudinal Measures of Anticholinergic Exposure for Application in Retrospective Administrative Data Analyses. *Adv Ther* 2019 Sep;36(9):2247-2259. doi: 10.1007/s12325-019-01035-z. PMID: 31385284

Richardson K, Mattishent K, Loke YK, Steel N, Fox C, Grossi CM, Bennett K, Maidment I, Boustani M, Matthews FE, Myint PK, **Campbell NL**, Brayne C, Robinson L, Savva GM. History of benzodiazepine prescriptions and risk of dementia: possible bias due to prevalent users and covariate measurement timing in a nested case-control study. *Am J Epidemiol*. 2019 Jul 1;188(7):1228-1236.

Campbell NL, Holden R, Boustani MA. Preventing Alzheimer Disease by deprescribing anticholinergic medications. *JAMA Intern Med* 2019 Jun; doi: 10.1001/jamainternmed.2019.0676. PMID: 31233087.

Szabo SM, Gooch K, Shermer CR, Walker D, Lozano-Ortega G, Rogula B, Deighton A, Vonesh E, **Campbell NL**. Association between cumulative anticholinergic burden and falls and fractures in patients with overactive bladder: A US-based retrospective cohort study. *BMJ Open* 2019 May;9(5):e026391.

Holden RJ, **Campbell NL**, Abebe E, Clark DO, Ferguson D, Bodke K, Boustani MA, Callahan CM; Brain Health Patient Safety Laboratory. Usability and feasibility of consumer-facing technology to reduce unsafe medication use by older adults. *Res Social Adm Pharm*. 2019 Feb 26. pii: S1551-7411(19)30033-6. doi: 10.1016/j.sapharm.2019.02.011. [Epub ahead of print] PMID: 30853507

Campbell NL, Perkins AJ, Khan BA, Gao S, Farber MO, Boustani MA. Deprescribing in the Pharmacologic Management of Delirium (de-PMD): A Randomized Trial in the Intensive Care Unit. *J Am Geriatr Soc* 2019 Apr;67(4):695-702. Doi:10.1111/jgs.15751.

Khan BA, Perkins AJ, **Campbell NL**, Gao S, Hui SL, Farber MO, Zarzaur BL, Boustani MA. Pharmacological Management of Delirium in the Intensive Care Unit: A Randomized Pragmatic Clinical Trial. *J Am Geriatr Soc* 2019. Doi:10.1111/jgs.15781. [Epub ahead of print].

Campbell NL, Solid CA, Boustani MA. Anticholinergics and dementia: the importance of patient education. *Aging Today* 2018;39:5.

Butterfield DJ, Williams G, Eaves S, **Campbell NL**, Overley A, Degenkolb K, Ott C. Evaluation of antidepressant use in patients in the prevention and recovery center for early psychosis clinic. *Under review: Early Intervention in Psychiatry*.

Khan BA, Perkins AJ, **Campbell NL**, Gao S, Khan SH, Wang S, Fuchita M, Weber DJ, Zarzur BL, Boustani MA, Kesler K. Preventing postoperative delirium after major noncardiac thoracic surgery – A randomized clinical trial. *J Am Geriatr Soc* 2018;66(12): 2289-2297.

Holden, R.J., Srinivas, P., **Campbell, N.L.**, Clark, D.O., Bodke, K.S., Hong, Y., Boustani, M.A., Ferguson, D., Callahan, C.M. (2018, in press). Understanding older adults' medication decision making and behavior: A study on over-the-counter (OTC) anticholinergic medications. *Research in Social and Administrative Pharmacy*. 2018; in press. doi:10.1016/j.sapharm.2018.03.002.

Fowler NR, **Campbell NL**, Pohl GM, Munsie LM, Kirson NY, Desai U, Treischman EJ, Meiselbach MK, Andrews JS, Boustani MA. One-year effect of the Medicare Annual Wellness Visit on Detection of Cognitive Impairment: A Cohort Study. *J Am Geriatr Soc*. 2018; 66(5):969-975.

Richardson K, Fox C, Maidment I, Steel N, Loke YK, Arthur A, Myint PK, Grossi C, Mattishent K, Bennett K, **Campbell NL**, Boustani M, Robinson L, Brayne C, Matthews F, Savva G. The association between up to 20 year history of anticholinergic medication use and dementia incidence varies by drug class: A nested case-control study using the Clinical Practice Research Datalink. *BMJ* 2018; Apr 25;361:k1315. doi: 10.1136/bmj.k1315. PMID: 29695481.

Campbell NL, Lane KA, Gao S, Boustani M, Unverzagt F. Anticholinergics increase transition from normal cognition to mild cognitive impairment in community-dwelling older adults. *Pharmacotherapy* 2018 May;38(5):511-519. doi: 10.1002/phar.2106. Epub 2018 Apr 25. PMID: 29600808. <https://doi.org/10.1002/phar.2106>.

Wang S, Allen D, Kheir YN, **Campbell NL**, Khan B. Aging and Post-Intensive Care Syndrome (PICS): A Critical Need for Geriatric Psychiatry. *Am J Geriatr Psychiatry* 2017, 10.1016/j.jagp.2017.05.016.

Rose L, Agar M, Burry LD, **Campbell N**, Clarke M, Lee J, Siddiqi N, Page VJ. Development of core outcome sets for effectiveness trials of interventions to prevent and/ or treat delirium (Del-COrS): study protocol. *BMJ Open* 2017;7:e016371.

Campbell NL, Perkins AP, Gao S, Skaar TC, Li L, Hendrie HC, Fowler N, Callahan CM, Boustani MA. Adherence and tolerability of Alzheimer's disease medications: a pragmatic randomized trial. *J Am Geriatr Soc* 2017;65(7):1497-1504.

Khan BA, Perkins AJ, Gao S, Hui SL, **Campbell NL**, Farber MO, Chlan L, Ely EW, Boustani MA. The CAM-ICU-7 Delirium Severity Scale: A Novel Delirium Severity Instrument in the Intensive Care. *Crit Care Med*. 2017 May;45(5):851-857.

Campbell NL, Zhan J, Tu W, Weber Z, Ambeuhl R, McKay C, McElwee N. Self-Reported Medication Adherence Barriers among Ambulatory Older Adults with Mild Cognitive Impairment. *Pharmacotherapy*. 2016;36(2):196-202.

Campbell NL, Perkins AJ, Bradt P, Perk S, Wielage R, Boustani M, Ng D. The association of anticholinergic burden with cognitive impairment and healthcare utilization. *Pharmacotherapy* 2016;36(11):1123-1131.

Khan BA, Perkins AJ, Hui SL, Gao S, **Campbell NL**, Farber MO, Boustani MA. Relationship between African-American Race and Delirium in the Intensive Care Unit. *Crit Care Med*. 2016;44(9):1727-1734.

Perk S, Wielage RC, **Campbell NL**, Klein TM, Perkins A, Posta LM, Yuran T, Klein RW, Ng DB. Estimated budget impact of increased use of mirabegron, a novel treatment of overactive bladder. *J Manag Care Spec Pharm* 2016;22(9):1072-1084.

Kolanowski A, Mogle J, Fick DM, **Campbell NL**, Hill N, Mulhall P, Behrens L, Colancecco E, Boustani M, Clare L. Anticholinergic Exposure During Rehabilitation: Cognitive and Physical Function Outcomes in Patients With Delirium Superimposed On Dementia. *Am J Geriatr Psychiatry* 2015;23(12):1250-1258.

Wang C, Gao S, Hendrie HC, Kesterson J, **Campbell NL**, Shekhar A, Callahan CM. Antidepressant Use in the Elderly is Associated with an Increased Risk of Dementia. *Alzheimer Dis Assoc Disord* 2016; 30(2):99-104.

AGS/NIA Delirium Conference Writing Group, Planning Committee and Faculty. The American Geriatrics Society/National Institute on Aging Bedside-to-Bench Conference: Research Agenda on Delirium in Older Adults. *J Am Geriatr Soc* 2015; doi: 10.1111/jgs.13406.

Campbell NL, Boustani MA. Adverse Cognitive Effects of Medications: Turning Attention to Reversibility. *JAMA Intern Med* 2015; 175(3): 408-409.

Campbell NL, Skaar T, Perkins AJ, Gao S, Li L, Khan BA, Boustani MA. Characterization of Hepatic Enzyme Activity in Older Adults with Dementia: Potential Impact on Personalizing Pharmacotherapy. *Clin Interv Aging* 2015; 10:269-275.

Khan BA, Gutteridge D, **Campbell NL**. Update on pharmacotherapy to prevent and treat post-operative delirium: a systematic evidence review. *Curr Anesth Rep* 2015; 5(1):57-64.

Khan BA, Fadel WF, Tricker JL, Carlos WG, Farber MO, Hui SL, **Campbell NL**, Ely EW, Boustani MA. Effectiveness of implementing a wake up and breathe program on sedation and delirium in the ICU. *Crit Care Med* 2014; 42(12):e791-e795.

Fox C, Smith T, Maidment I, Chan WY, Bua N, Myint PK, Boustani M, Kwok CS, Glover M,

Koopmans I, **Campbell NL**. Effect of medications with anti-cholinergic properties on cognitive function, delirium, physical function and mortality: a systematic review. *Age Aging* 2014; 43(5):604-615.

Campbell NL, Cantor B, Hui S, Perkins A, Khan B, Farber M, Nazir A, Garrett S, Ely W, Boustani M. (2013). Race and documentation of cognitive impairment in hospitalized older adults. *J Amer Geriatr Soc* 2014; 62(3):506-511.

Campbell NL, Unverzagt F, Lamantia MA, Khan BA, Boustani MA. Risk factors for progression of early cognitive impairment to dementia. *Clin Geri Med.*2013. 29 (4), 873-893.

Campbell NL, Dexter P, Perkins AJ, Gao S, Li L, Skaar T, Frame AL, Hendrie H, Callahan C, Boustani M. Comparative analysis of the pharmacotherapy of dementia: design of a randomized trial. *Trials.* 2013. 14, 125.

Campbell NL. Maidment I, Fox C, Khan B, Boustani M. The 2012 Update to the Anticholinergic Cognitive Burden Scale. *J Am Geriatr Soc Special Issue:* 2013; 61: Supplement S142-143.

Khan BA, Farber MO, **Campbell NL**, Perkins A, Prasad NK, Hui SL, Miller DK, Calvo-Ayala E, Buckley JD, Ionescu R, Shekhar A, Ely EW, Boustani MA. S100 calcium binding protein B as a biomarker of delirium duration in the intensive care unit – an exploratory analysis. *Int J Gen Med* 2013; 6:855-861.

Cai X, **Campbell N**, Khan B, Callahan C, Boustani M. Chronic Anticholinergic Use and the Aging Brain. *Alzheimers Dement* 2013; 9 (4), 377-385.

Boustani MA, Frame A, Munger S, Healey P, Westlund J, Farlow M, Hake A, Austrom MG, Shepard P, Bubp C, **Campbell NL**, Dexter P. Connecting research discovery with care delivery in dementia: the development of the Indianapolis Discovery Network for Dementia. *Clin Interv Aging* 2012;7:509-16.

Khan BA, Zawahiri M, **Campbell NL**, Fox GC, Weinstein EJ, Nazir A, Farber MO, Buckley JD, Macullich A, Boustani MA. Delirium in hospitalized patients: implications of current evidence on clinical practice and future avenues for research – A systematic evidence review. *J Hosp Med* 2012;7(7):580-589.

Khan BA, Calvo-Ayala E, **Campbell N**, Perkins A, Ionescu R, Tricker J, Campbell T, Zawahiri M, Buckley JD, Farber MO, Boustani MA. Clinical decision support system and incident delirium among cognitively impaired hospitalized older adults transferred to the intensive care unit. *Am J Crit Care* 2013;22(3):257-262.

Khan BA, Guzman O, **Campbell NL**, Walroth T, Tricker JL, Hui S, Perkins A, Zawahiri M, Buckley JD, Farber MO, Ely EW, Boustani MA. Comparison and agreement between two sedation scales; Richmond Agitation Sedation Scale and Sedation Agitation Scale in evaluating patients' eligibility for Delirium assessment in the Intensive Care Unit. *Chest* 2012; 142(1):48-54.

Campbell NL, Boustani MA, Skopeljia EN, Gao S, Unverzagt F, Murray MD. Medication adherence in older adults with cognitive impairment: a systematic evidence-based review. *Am J Geriatr Pharmacother* 2012 Jun;10(3):165-77.

Boustani M, **Campbell N**, Khan BA, Abernathy G, Zawahiri M, Campbell T, Tricker J, Hui S, Buckley JD, Perkins AJ, Farber MO, Callahan CM. Enhancing care for hospitalized older adults with cognitive impairment: a randomized controlled trial. *J Gen Intern Med* 2012 May;27(5):561-7.

Campbell N, Perkins T, Hui S, Khan B, Boustani M. Association of the Prescribing of Anticholinergic Medications with Incident Delirium: A Cohort Study. *J Am Geriatr Soc* 2011;59(S2):S277-281.

Khan B, Zawahiri M, **Campbell N**, Boustani M. Biomarkers for Delirium – A Review. *J Am Geriatr Soc* 2011;59(S2):S256-261.

Campbell N, Khan B, Farber M, Campbell T, Perkins T, Hui S, Abernathy G, Buckley J, Singh R, Tricker J, Zawahiri M, Boustani M. Improving the care of Delirium in the ICU: Design of a Pragmatic Study. *Trials* 2011; 12: 139.

Khan B, Hui K, Hui S, Gulati R, Tricker J, **Campbell N**, Farber M, Boustani M, Buckley J. Time-motion analysis of healthcare workers' hand hygiene: open vs. closed units. *Am J Crit Care* 2011;20(3):e75-e79.

Campbell N, Boustani M, Lane K, Gao S, Hendrie H, Khan B, Murrell J, Unverzagt F, Hake A, Smith-Gamble V, Hall D. Use of anticholinergics and the risk of cognitive impairment in an African-American population. *Neurology* 2010;75:152-159.

Boustani M, Baker MS, **Campbell N**, Munger S, Hui SL, Castelluccio P, Farber M, Guzman O, Ademuyiwa A, Miller D, Callahan CM. Impact and Recognition of Cognitive Impairment Among Hospitalized Elders. *J Hosp Med* 2010;5(2):69-75.

Campbell N, Boustani M, Ayub A, Fox C, Munger S, Ott C, Guzman O, Farber M, Ademuyiwa A, Singh R. Pharmacologic Management of Delirium in Hospitalized Adults – A Systematic Evidence Review. *J Gen Intern Med* 2009;24(7):848-853.

Campbell N, Boustani M, Limbil T, Ott C, Fox C, Maidment I, Schubert C, Munger S, Fick D. The Cognitive Impact of Anticholinergics: A Systematic Evidence Review. *Clinical Interventions in Aging* 2009;4:1-9.

Campbell N, Ayub A, Boustani M, Fox C, Farlow M, Maidment I. Impact of Cholinesterase Inhibitors on Behavioral and Psychological Symptoms of Alzheimer's Disease: A Meta- Analysis. *Clin Interv Aging*. 2008; 3(4):719-728.

Boustani M, **Campbell N**, Munger S, Maidment I, Fox C. The Impact of Anticholinergics on the Aging Brain: A Review and Practical Application. *Aging Health* 2008; 4(3): 311-320.

Ott CA, **Campbell NL**, Dworek EA. Valproic Acid-Induced Hyperammonemia in a Patient with Schizoaffective Disorder. *Journal of Pharmacy Practice* 2007;20:82-92.

Boustani M, Munger S, Weiner M, Beck R, Schubert C, **Campbell N**, Callahan C. Developing A CDSS To Care For Hospitalized Elders with CI: The e-CHAMP Study. *Alzheimer's Disease: NEW ADVANCES* 2007: 169-172.

Boustani MA, Limbil T, **Campbell N**, Fox C, Maidment I. Anticholinergic Burden: Measurement and Impact. *J Amer Geriatr Soc* 2007;55:S52.

Boustani M, Munger S, Beck R, **Campbell N**, Weiner M. A gero-informatics tool to enhance the care of hospitalized older adults with cognitive impairment. *Clin Interv Aging* 2007;2(2); 247-253.

Oral Presentations

Campbell NL, Reeve E, Green A, Wagle K, Mecca M. Symposium Moderator, American Delirium Society Annual Scientific Meeting. "Talk the Talk and Walk the Walk, Communicating About Deprescribing with Patients and Caregivers". Portland, OR. May, 2019.

Campbell NL. Pre-Conference symposium, Hospital Elder-Life Program, American Geriatrics Society Annual Scientific Meeting. "Pharmacologic Prevention and Treatment of Delirium" Portland, OR. May, 2019.

Campbell NL, Wang S, Khan SH, Golovyan D, Serrano P, Khan BA. Symposium presentation at the American Association of Geriatric Psychiatry Annual Meeting, "A Double-Edged Sword: Do Drugs Cause or Cure Delirium?." Atlanta, GA. March 2019.

Greibling TL, Campbell NL, Mangel J, Staskin D, Herschorn S, Elsouda D, Schermer CR. Oral Abstract presented at the 34th Annual Congress of the European Association of Urology. "Effect of mirabegron on cognitive function in elderly patients with overactive bladder: Results from a phase-IV placebo-controlled study (PILLAR)." Barcelona, Spain. March 2019.

Campbell NL. Clinical Practice Symposium: American Society of Nephrology Kidney Week Annual Meeting. "Medication Safety Considerations and the Role of Deprescribing." San Diego, CA. October, 2018.

Campbell NL. Plenary session, Australasian New Zealand Delirium Association. "Drugs for Delirium: Are they ever a good idea?" Melbourne, AU. September 2018.

Campbell NL. Pre-conference symposium, Australasian New Zealand Delirium Association. "Treatment of Delirium." Melbourne, AU. September 2018.

Campbell NL. Medicine Grand Rounds, Cleveland Clinic. "Deprescribing: A Tough Pill to Swallow?" Cleveland, OH. April 2018.

Bredhold BE, Deodhar KS, Davis CM, Campbell NL, DiRenzo BM, Isaacs AN. Scientific abstract presented at the Great Lakes Pharmacy Residency Conference, "Deprescribing opportunities for elderly inpatients in an academic, safety-net health system." West Lafayette, IN, April 2018.

Zahn ED, Fritschle-Hilliard AC, Cheatham M, Erdman S, Campbell N, Whitten JA. Scientific abstract presented at the Great Lakes Pharmacy Residency Conference, "Role of a pharmacist in a critical care recovery clinic". West Lafayette, IN, April 2018.

Wang S, Khan BA, Campbell NL. Symposium presentation at American Association of Geriatric Psychiatry Annual Meeting, "Aging and Post-Intensive Care Syndrome: The Burden on Older ICU Survivors and Their Families." Honolulu, HI. March 2018.

Campbell NL, Khan BA, Perkins AP, Gao S, Farber MO, Boustani MA. Scientific Abstract presented at European Delirium Association Annual Meeting, "De-prescribing to reduce delirium in the ICU: a pragmatic randomized trial". Oslo, Norway, November 2017.

Campbell NL, Oldham M, Weckmann M, Duprey M, Barnes S. Plenary session at American Delirium Society Annual Meeting, “2016-7 Delirium Literature Update.” Nashville, TN. June 2017.

Campbell NL. Indiana Medical Directors Association Semi-Annual Meeting. “Pharmacotherapy Update: STOPP/START Applications in LTC.” Indianapolis, IN. May 2017.

Jeffery S, Holmes H, Gokula M, Campbell N, Tannenbaum C, Mecca M, Steinman M, Brandt N, Pruskowski J. Pre-conference symposium at the American Geriatrics Society Annual Meeting, “Tools, Tips, and Technology to improve drug outcomes through de-prescribing”. San Antonio, TX. May 2017.

Bynum J, Campbell NL, Karlawish J, Oh E. Symposium presentation at American Geriatrics Society Annual Scientific Meeting, “Changing landscape of Alzheimer’s disease diagnosis.” San Antonio, TX. May 2017.

Campbell NL, Khan BA, Wang S. Symposium presentation at American Association of Geriatric Psychiatry Annual Meeting, “Pharmacist Integration in the Care of Survivors of Critical Illness.” Dallas, Tx. March 2017.

Campbell NL, Bain K, D’Souza M. Symposium presentation at National PACE Association Annual Meeting, “Framework and application of de-prescribing in frail older adults.” October 2016, San Francisco, CA.

Campbell NL, Boustani MA, Tannenbaum C, Bensadon C, Jeffery S. Accepted symposium at American Geriatrics Society Annual Scientific Meeting, “Medication targets and Evidence-Based Approaches to De-Prescribing in Older Adults with Cognitive Impairment.” May 2016, Long Beach, CA.

Jeffery S, Campbell NL, Holmes H, Mecca M, Gokula M. Clinical skills workshop presented at American Geriatrics Society Annual Scientific Meeting, “De-Prescribing: Practical Steps to Reducing Polypharmacy. May 2016, Long Beach, CA.

Campbell NL, Kudchadkar S, Brummel N, Han J. Invited symposium at American Delirium Society Annual Scientific Meeting, “Annual Literature Update”. June 2016, Nashville, TN.

Campbell NL. Evaluating the Adverse Cognitive Effects of Medications. Invited CE presentation for the Indiana Academy of Family Physicians. French Lick, IN. October 2015.

Campbell NL. University of Nebraska Medical Center, Invited Presentation, “Adverse Cognitive Effects of Medications.” January 2015, Omaha, NE.

Campbell NL, Marcantonio E, Lyketsos C, Stevens R, Hughes C. Moderator for Symposium at American Delirium Society, “Delirium Pathophysiology: Focus on Clinical Mechanisms of Brain Injury.” June 2014, Baltimore, MD.

Boustani MA, Fick D, Davydow D, Campbell NL. American Geriatrics Society Annual Scientific Meeting, Invited Presentation. Dementia Care Management Symposium, “Managing Adverse Cognitive Effects of Medications in Dementia”. May 2014, Orlando, FL.

Campbell NL, Routh C, Mackie P. Indiana Chapter of American College of Physicians, Invited Presentation, “Pain Management: Implementing Narcotic Laws in the Office.” October 2014,

Indianapolis, IN.

Campbell NL. Indiana Alzheimer's Disease Center, Invited Presentation for Memory University, "Recognizing the Adverse Cognitive Effects of Medications." June 2014, Indianapolis, IN.

Campbell NL. American Delirium Society Symposium, Invited presentation "Role of Pharmacogenomics in Delirium Research". June 2013, Indianapolis, IN.

Campbell NL. American Delirium Society Symposium: Moderator for "Clinical Trial Update". June 2013, Indianapolis, IN.

Campbell NL. American Society of Hospital Pharmacists, Invited presentation: "Reducing Harm in the Elderly: A Focus on Delirium, Falls and Medication Errors". December 2013, Orlando, FL.

Campbell NL. Indiana Geriatrics Society, Invited presentation: "Update on Pharmacotherapy of Cognitive Impairment". October 2013, Indianapolis, IN.

Campbell NL. Kentucky Geriatrics Society, Invited presentation: "Medications as risk factors for dementia and delirium". April 2013. Louisville, KY.

Campbell NL. Updates from the 2012 Beer's Criteria. Invited Lecture: Indiana Geriatrics Society. Indianapolis, IN. October 2012.

Campbell NL. Updates from the 2012 Beer's Criteria. Invited Lecture: Community Health Network Update for Clinicians. Indianapolis, IN. October 2012.

Campbell NL. Medications as a risk factor for delirium. Invited Presentation. American Delirium Society Annual Scientific Meeting. Indianapolis, IN. June 2012.

Campbell NL. Clinical Trial Updates. Session Moderator. American Delirium Society Annual Meeting. Indianapolis, IN. June 2012.

Campbell NL. Delirium: A Geriatric Vital Sign. Invited Lecture: Indiana College of Clinical Pharmacists. Indianapolis, IN. September 2011.

Campbell NL. Clinical Trials Presentation: the eCHAMP trial. American Delirium Society Inaugural Conference. Indianapolis, IN. June 2011.

Campbell NL, Rudolph J, Sink KM, Boustani MA. Understanding the Impact of Anticholinergics on the Aging Brain. American Geriatrics Society Annual Scientific Meeting. Orlando, FL. May, 2010.

Campbell NL. Anticholinergic Use and the Risk of Cognitive Impairment. American Geriatrics Society Annual Scientific Meeting: Epidemiology Paper Session. Orlando, FL. May, 2010

Campbell NL. Medication Toxicity in the Aging Brain: Impact of anticholinergic medications. IU Geriatrics Conference. Indianapolis, IN. April, 2009.

Nazir A, and Campbell N. A Fall in Quality; Are Physicians Using Evidence-Based Medicine to Treat Unsteady Patients? Indiana Geriatrics Society Fall Conference. Nashville, IN. October, 2008.

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Campbell NL. Management of Falls: Identifying Characteristics and Medications as Risk Factors. Indiana Pharmacists Alliance Annual Meeting. Indianapolis, IN. August 2008.

Campbell NL. New Drug and FDA Warning Update: 2007/8. Indiana University Geriatric Conference Series. Wishard Hospital. Indianapolis, IN. January 2008.

Campbell NL. Initiating Treatment in Elderly Type 2 Diabetics. Indiana University Geriatric Conference Series. Wishard Hospital. Indianapolis, IN. May 2007.

Campbell NL. Newly Approved Medications: Indication, Risks, and Applicability to Long-Term Care. Indiana Area Agency on Aging: Education Institute Spring Conference. Indianapolis, IN. March, 2007.

Campbell NL. Pharmacologic Options in Dementia. Annual Meeting for Patients and Caregivers. Indiana Alzheimer's Association, Indianapolis, IN. October, 2006.

Campbell NL. Rational Prescribing for the Elderly. Medical Resident Monthly Lecture Series. IU School of Medicine. Wishard Hospital, Indianapolis, IN.

Campbell NL. Adverse Drug Reaction: Reporting and Considerations for Geriatric Practitioners. Geriatric Conference Series. Wishard Hospital, Indianapolis, IN. October, 2005.

Campbell NL. Pharmacologic Options for the Treatment of Alzheimer's Dementia. Alzheimer's Association Healthcare Employee Forum. Lilly Conference Center, Indianapolis, IN. April 2005.

Campbell NL. Treatment Options for Moderate to Severe Alzheimer's Dementia. Continuing Education Lecture Series, UNC Hospitals. Chapel Hill, NC. April 2004.

Campbell NL. Oral vs. Intramuscular Replacement of Vitamin B12. Resident Seminar Series, UNC Hospitals. Chapel Hill, NC. September 2003.

Campbell NL. Pharmacokinetic/Pharmacodynamic Changes in the Elderly. Geriatric Medicine Fellow Lecture Series, UNC Hospitals. Chapel Hill, NC. September 2003.

Campbell NL. Review of Atypical Antipsychotics. Continuing Pharmaceutical Education Program. St. Vincent Hospitals. Indianapolis, IN. May 2003.

Campbell NL. Pharmacologic Management of Hypertension. Indiana University School of Medicine Student Clinical Lecture Series. St. Vincent Hospital, Indianapolis, IN. March 2003.

Campbell NL. Medications and the Risk of Falls in the Elderly. Educating Healthcare Professionals in the Institute on Aging. St. Vincent Hospital, Indianapolis, IN. October 2002.

Campbell NL. Reviewing the Treatment of Crohn's Disease. Education of Outpatient Nursing Staff. St. Vincent Hospital, Indianapolis, IN. August 2002.

Poster Presentations

Lee A, Alamer K, **Campbell NL**. Presented at the American Society of Hospital Pharmacists Midyear Clinical Meeting. “Exploring the use of behavioral economics principles in deprescribing interventions.” Las Vegas, NV. December 2019.

Campbell NL, Holden RJ, Clark D, Boustani MA, Tu W, Callahan CM. Presented at the Alzheimer’s Association International Conference. “Application of Behavioral Economics in Deprescribing: Impact on Brain Health.” Los Angeles, CA. July 2019.

Rogula B, Lozano-Ortega G, Gooch KL, Schermer CR, Walker DR, Szabo SM, Deighton AM, **Campbell NL**. Presented at the Society of Urodynamic Female Pelvic Medicine & Urogenital Reconstruction Winter Meeting, “Impact of falls or fractures on annual all-cause healthcare costs, according to anticholinergic exposure status, among those with overactive bladder.” Miami, FL. March 2019.

Cole ML, Davis CM, Bredhold BE, Deodhar KS, DiRenzo BM, Isaacs AN, **Campbell NL**. Student research presented at the ASHP Midyear Clinical Meeting, “Deprescribing in hospitalized older adults: summary of a case series to understand current practice.” Anaheim, CA. December 2018.

Richardson K, Grossi CM, Fox C, Maidment I, Loke Y, Steel N, Arthur A, Myint PK, **Campbell N**, Brayne C, Matthews FE, Boustani M, Robinson L, Savva GM. Anticholinergic medications, benzodiazepines, and long term cognitive decline in large observational studies. UK Alzheimer’s Society, London, UK, June, 2018

Grossi CM, Richardson K, Fox C, Maidment I, Steel N, Loke Y, Arthur A, Myint PK, Brayne C, Matthews FE, Robinson L, Boustani M, **Campbell N**, Savva GM. Anticholinergics and Benzodiazepines medication use and 10-year cognitive decline in the MRC Cognitive Function and Ageing Study. UK Alzheimer’s Society, London, UK, June, 2018.

Lozano-Ortega G, Ng DB, Johnston K, Cheung A, Guttschow A, Gooch K, Szabo SM, Dmchowski R, **Campbell NL**, Wagg A. Assessment of anticholinergic burden scales and measures for estimating anticholinergic exposure in retrospective US database analyses. Poster presentation at the ISPOR Annual International Meeting, Baltimore, MD, May, 2018.

Schoenle M and **Campbell NL**. Development of an evidence-based urinary antimuscarinic de-prescribing protocol. Poster presentation at the ASHP Midyear Meeting, Orlando, FL, December 4, 2017.

Bredhold BE, Deodhar KS, Davis CM, **Campbell NL**, DiRenzo BM, Isaacs AN. Deprescribing opportunities for elderly inpatients in an academic, safety-net health system. Poster presentation at the ASHP Midyear Meeting, Orlando, FL, December 4, 2017.

Risacher SL, West JD, McDonald BC, Tallman EF, Glazier BS, Gao S, Brown SA, Apostolova LG, Brosch J, Farlow MR, Unverzagt FW, **Campbell NL**, Boustani MA, Saykin AJ. Anticholinergic Medication Use is Associated with Reduced fMRI Activity During Visual Episodic Encoding. Alzheimer’s Association International Conference. London, UK. July 2017.

Fowler N, **Campbell NL**; Pohl GM, Munsie LM, Kirson NY, Desai U, Trieschman EJ, Meiselbach MK, Andrews JS, Tanaka Y, Boustani MA. Is the Annual Wellness Visit Adequate to Impact Cognitive Care? Alzheimer’s Association International Conference. London, UK. July 2017.

Campbell NL, Lane KA, Gao S, Boustani MA, Unverzagt F. Adverse cognitive effects of

anticholinergics: a prospective observational study. Alzheimer's Association International Conference. London, UK. July 2017.

Campbell NL, Lane KA, Gao S, Boustani MA, Unverzagt F. Adverse cognitive effects of statins: a retrospective cohort study. American Geriatrics Society. San Antonio, TX. May 2017.

Richardson K, Fox C, Maidment I, Steel N, Loke Y, Arthur A, Grossi CM, Bennett K, Myint PK, **Campbell N**, Brayne C, Matthews FE, Boustani M, Robinson L, Savva G. Medications with potent anticholinergic activity and incident dementia diagnosis in the UK older population. Poster presentation at the International Society for Pharmacoepidemiology. Dublin, Ireland. August 2016.

Fritschle-Hilliard AC, Whitten JA, Walroth TA, **Campbell NL**, Khan BA. Implementing clinical pharmacy services in a multidisciplinary critic care recovery center. Poster presentation at the American Delirium Society Annual Meeting. Nashville, TN. June 2016.

Wagle KC, **Campbell NL**, Carnahan J, Skopelja EN, Counsell SR. Improving safe medication practices in vulnerable elders by supporting caregivers: a systematic evidence-based review. Poster presentation at the American Geriatrics Society Annual Scientific Meeting. Long Beach, CA. May 2016.

Campbell NL, Perkins AJ, Bradt P, Perk S, Wielage R, Boustani MA, Ng D. Relationship between anticholinergic burden, cognitive impairment and healthcare utilization. Poster presentation at the American Society of Consultant Pharmacists Annual Scientific Meeting. Las Vegas, NV. October 2015.

Campbell NL, Perkins AJ, Gao S, Skaar T, Li L, Boustani MA, Callahan CM. A randomized trial of the adherence and tolerability of acetylcholinesterase inhibitors. Poster presentation at the Alzheimer's Association International Conference. Washington, D.C. July 2015.

Wielage RC, Perk S, **Campbell NL**, Ng DB, Klein TM, Posta LM, Yuran T, Klein RW, Perkins A, Berner T. Cost effectiveness of miragebron for the treatment of overactive bladder: three US perspectives. Poster presentation at the American Geriatrics Society Annual Scientific Meeting. National Harbor, MD. May 2015.

Lu WY, Weber Z, **Campbell NL**. Correlation between level of medication adherence to anti-hyperglycemic agents and the risk of hyperglycemia. Poster presentation at the American Society of Health-Systems Pharmacists. Anaheim, CA December 2014.

Campbell NL, Skaar T, Gao S, Perkins A, Li L, Boustani M. Personalized approach to prescribing acetylcholinesterase inhibitors: focus on pharmacogenomics and drug interactions. Poster presentation at the American Geriatrics Society Annual Scientific Meeting. Orlando, FL May 2014.

Campbell NL, Perkins A, Gao S, Dexter P, Boustani MA. Methods of ADE surveillance in cognitively impaired older adults. Poster presentation at the American Geriatrics Society Annual Scientific Meeting. Orlando, FL May 2014.

Taylor T, Zhan J, McKay C, Weber Z, **Campbell N**. Impact of Mild Cognitive Impairment Subtype on Self-Reporting of Medication Adherence. Poster presentation at the American Society of Health-Systems Pharmacists. Orlando, FL December 2013.

Franz N, Weber Z, McKay C, McElwee N, **Campbell N**. Medication Adherence Among Older Adults with Mild Cognitive Impairment: A Brief Study Protocol. Poster presentation at the

American Society of Health-Systems Pharmacists. Orlando, FL December 2013.

Kocher J, Zhan J, McKay C, Weber Z, McElwee N, **Campbell N**. Comparison of Two Medication Adherence Barrier Surveys among Older Adults with Mild Cognitive Impairment. Poster presentation at the American Society of Health-Systems Pharmacists. Orlando, FL December 2013.

Campbell N, Maidment I, Fox C, Khan B, Boustani M. The anticholinergic cognitive burden scale: version 2012. Poster presentation at the American Geriatrics Society Annual Meeting. Dallas, Tx, May 2013.

Campbell N, et al. Medication Adherence in Older Adults with Cognitive Impairment: A Systematic Review. Poster presentation at the American Geriatrics Society. Seattle, WA. May 2012.

Campbell N, et al. Impact of Race on Recognition of Cognitive Impairment in Hospitalized Elders. Poster presentation at the American Geriatrics Society. Seattle, WA. May 2012

Campbell N, Khan B, Perkins T, Hui S, Farber M, Zawahiri M, Campbell T, Boustani M. Improving medication orders through a computerized decision support system in hospitalized older adults with cognitive impairment. Poster presentation at the American Delirium Society Inaugural Meeting. Indianapolis, IN. June 2011.

Campbell N, Perkins T, Hui S, Khan B, Boustani M. Association of Anticholinergics with Incident Delirium: A Cohort Study. Poster presentation at the American Geriatrics Society Annual Scientific Meeting. National Harbor, MD. May 2011.

Khan B, Tielker M, Weinstein E, Farber M, Buckley J, **Campbell N**, Boustani M. Effectiveness of a Computerized decision support system in decreasing the use of anticholinergics in the ICU. Poster presentation at the Society of Critical Care Medicine Annual Meeting. San Diego, CA. January 2011.

Boustani M, **Campbell N**, Tu W. Is long-term use of anticholinergics a risk factor for developing MCI and Dementia? Poster presentation at the American Geriatrics Society Annual Scientific Meeting. Chicago, IL. May, 2009.

Campbell NL, Schubert CA. Spontaneous orgasm with duloxetine and citalopram in an elderly woman. Poster presentation at the American Geriatric Society Annual Scientific Meeting. Seattle, WA. May, 2007.

Boustani M, Austrom MG, Bachman J, **Campbell NL**, Evans RM, Hake AM, Munger S, Sennour Y. Indianapolis Discovery Network for Dementia. Abstract and Poster Presentation at the American Association for Geriatric Psychiatry, March 2007. New Orleans, LA.

Boustani M, Munger S, Weiner M, Beck R, Schubert C, **Campbell NL**, Callahan C. Developing A CDSS To Care For Hospitalized Elders with CI: The e-CHAMP Study. Poster Presented at The Proceedings of the 10th International Conference on Alzheimer's Disease and Related Disorders 2006, Madrid, Spain. July, 2006.

Boustani M, Munger S, Weiner M, Callahan C, **Campbell NL**, Beck R, Schubert C, Gagovic V. Effective Implementation of a Computerized Decision Support System for the Care of Hospitalized Older Adults with Cognitive Impairment.. Abstract and Poster Presentation at the Annual Meeting of the American Geriatrics Society, May 2006, Chicago, IL.

Ott CA, **Campbell NL**, Dworek EA. Valproic Acid-Induced Hyperammonemia in a Patient with Schizoaffective Disorder. Poster Presentation at Purdue University, West Lafayette, IN. April, 2006.

Campbell NL, Roth MT, Visco JL. Evaluation of Drug Therapy Problems in a Geriatric Clinic. Poster presentation at American Society of Hospital Pharmacists Midyear Meeting. New Orleans, LA. December, 2003.

Book Chapters

Jeffery SM, & Campbell NL. Medication-related problems in surgical patients. In: Principles and Practice of Geriatric Surgery. 3rd edition. Springer International Publishing; New York, New York: 2018.

Campbell NL & Khan BA. Treatment strategies in delirium. In: Delirium in the Critically Ill. 1st edition. Springer Publishing; New York, New York: 2019.

Ongoing Grant Support

R01AG061542 PI: Campbell 05/2019 - 03/2024
National Institute on Aging
Reducing the Risk of Dementia through Deprescribing
This award will support a cluster-randomized clinical trial to evaluate the impact of a pharmacist-based deprescribing intervention on measures of cognition, pain, anxiety, depression, and sleep in primary care older adults using a strong anticholinergic medication.

R01AG056926 PI: Holden 06/2019-05/2024
National Institute on Aging
Brain Safe: Consumer intervention to reduce exposure to drugs linked to AD
This award will test the impact of a mobile application on deprescribing in primary care older adults with efficacy determined by measures of medication exposure and safety through symptom burden scales.

P30 Brain Safety Learning Laboratory PI: Callahan 10/2015 – 9/2019
Agency for Healthcare Quality and Research
This award funds a multi-step process to understand the challenges of de-prescribing anticholinergic medications among community-dwelling older adults, and develops multiple interventions that can be tested to promote brain safety through the safe, effective reduction of these medications throughout the healthcare system.

Geriatric Workforce Enhancement Program PI: Litzelman 7/2018-6/2019
Health Resources and Service Administration

1-year extension award for continuation of HRSA award to enhance geriatric knowledge and delivery of geriatric-specific care in various care environments.

Completed Grant Support

K23 AG044440-01 PI: Campbell 04/2014 - 03/2019 9 CAL
National Institute of Health \$805,201 (Total)
Evaluating the Adverse Cognitive Effects of Medications
This award will support the career development of Dr. Campbell in pharmacoepidemiology of the aging brain by developing a database that will merge measures of medication exposure with annual neuropsychological assessment to clarify the relationship between widely used medications and adverse cognitive outcomes.

Deprescribing Networks in Indiana PI: Abrahamson 04/2016 - 03/2019
Indiana State Department of Health
Newly funded grant to support the development of de-prescribing approaches to reduce the burden of polypharmacy among nursing home residents in the state of Indiana.

Merck-Regenstrief Program in Personalized Health Care 2/2014 – 01/2015 3.06 CAL
Research and Innovation PI: Campbell \$352,000 (sub-only)
Medication Adherence in Older Adults with Cognitive Impairment
The objective of this project is to identify barriers to medication adherence experienced by older adults with mild cognitive impairment. The project will seek to determine the value of self-reporting tools and determine potentially modifiable barriers that will develop personalized medication adherence interventions.

Astellas/Medical Decision Modelling, Inc. 09/2014-11/2014 0.6 CAL
Pharmacoepidemiology PI: Campbell \$100,000
Determine the impact of increasing anticholinergic burden on cognitive impairment, visit frequency (inpatient, outpatient, emergency), and costs of care among ambulatory older adults.

Merck-Regenstrief Program in Personalized Health Care 02/2013 – 01/2014 3.06 CAL
Research and Innovation PI: Campbell \$196,019 (sub-only)
Medication Adherence in Older Adults with Cognitive Impairment
The objective of this project is to identify barriers to medication adherence experienced by older adults with mild cognitive impairment. The project will seek to determine the value of self-reporting tools and determine potentially modifiable barriers that will develop personalized medication adherence interventions.

1E1CMS331082-02-00 PI: Sachs 09/2012 -03/2014 1.20 CAL
DHHS-CMS \$10,001 (sub only)
The OPTIMISTIC Project - Optimizing Patient Transfers, Impacting Medical quality, and Improving Symptoms: Transforming Institutional Care

The goal of this project is to reduce avoidable hospitalizations for long stay nursing home residents in local nursing facilities through medical, care transition and palliative care evidence based interventions

CMS331000-02-01 PI: Boustani
DHHS-CMS

10/2013 -03/2014 2.25 CAL
\$18,593 (Sub-only)

Dissemination of the Aging Brain Care Program

The major goals of this award are to rapidly expand the services of the ABC program across the county-wide system of community health centers affiliated with Wishard/Eskenazi Health. In doing so we will serve more than 2,000 Medicare beneficiaries with dementia or late life depression, many of whom are dual-eligible, and receive support from family/informal caregivers within this urban and safety net health care system.

R01 AG034205-04 PI: Boustani
NIH NIA

05/2010 -04/2015 4.50 CAL
\$47,082 (Sub-only)

Pharmacological Management of Delirium

The major goal of this award is to test the efficacy of a pharmacological intervention in reducing delirium severity, duration, length of stay and mortality among adults cared for in various Intensive Care Unit environments.

AHRQ PI: Dexter
COMET/PROSPECT

09/2010 – 09/2013 3.0 CAL
\$132,200 (Sub-only)

Comparative trial of the safety and tolerability of acetylcholinesterase inhibitors among older adults with a diagnosis of dementia.

Teaching Experience

Purdue University College of Pharmacy
Research Project Coordinator
Student: Marilyn Schoenle
Student: Melanie Pugh

Summer 2017
Fall 2016

Ambulatory Geriatrics Rotation Preceptor
Geriatric Elective Course Coordinator
Pharmacotherapy Course, Lecturer
Lecture: Parkinsonism
Lecture: Dementia and Delirium

2005-2010
Spring 2005-2008
Spring 2006-2008, Spring 2018-Present

Purdue University School of Nursing
Pharmacotherapy Course, Lecturer
Lecture: Dementia

Spring 2006-2008

Butler University College of Pharmacy and Health Sciences
Adjunct Assistant Professor

2005-2010

Ambulatory Geriatrics Rotation Preceptor

2005-2010

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Rotation Preparatory Course, Lecturer	Spring 2007-2009
Lecture: Pearls of Geriatric Care	
Geriatric Elective Course, Coordinator	Spring 2008-2009
University of North Carolina-Chapel Hill School of Pharmacy	
Pharmaceutical Skills Lab Clinical Instructor	8/03 – 5/04 (Fall, Spring)
Ambulatory Care Elective, Lecturer	8/03 (Fall)
Lecture: Facilitated Discussion of Introduction to Geriatrics	
Geriatrics Elective, Lecturer	1/04 (Spring)
Lecture: Clinical Pharmacology and Aging	
Lecture: Management of Constipation	

Certifications

Board Certified Psychiatric Pharmacist	December 2007-2014
Fellow of the American Society of Consultant Pharmacists	March 2007-2010
Parkinson's Disease Pharmacotherapy Traineeship	September 2006
ASCP – Northwestern University Movement Disorders Clinic, Chicago, IL	
Certified Geriatric Pharmacist	2004-2010
Residency Teaching Certificate Program Purdue University/Eli Lilly and Company	May 2003
Primer in Pharmacy Education, Butler University	August 2002

Professional Associations/Affiliations

American Society of Health-System Pharmacists	2001-2005
American College of Clinical Pharmacists	2003-2008
Indiana College of Clinical Pharmacists	2004-2009
Membership Recruitment Chair	2006
President	2007-2008
American Geriatrics Society	2003-Present
Program Planning Committee	2015-Present
Chair, Clinical Research in Dementia Special Interest Group	2014-Present
Indiana Geriatrics Society	2006-Present
Treasurer	2006-2016
President-Elect	2016-2017
President	2017-Present

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American Society of Consultant Pharmacists	2006-2010
Indiana Society of Consultant Pharmacists President	2006-2010 2009
American Delirium Society	2011-Present
Board of Directors	2011-Present
Program Planning Committee Member	2011-Present
Chair, Research Committee	2012-Present
Speaker's Bureau – Forest Pharmaceuticals	2007-2010
Consultant – Astellas Pharma, US.	2016-2017