Methods: A search using the keywords vitamin D, cholecalciferol, calcitriol, critically ill, critical illness, sepsis, and intensive care unit was conducted on EMBASE, MEDLINE, ClinicalKey, and Google Scholar from January 2000 to present. Only randomized, prospective, placebo-controlled trials in critically ill adult patients were included in the review.
Results: Four studies were selected based on the inclusion criteria. A total of 305 mixed critically ill patients received vitamin D supplementation, although the doses and formulations were different among study protocols. Two trials reported 1,25-dihydroxyvitamin D levels; when compared with placebo, the vitamin D supplemented group had a statistically significant increase from baseline at all time points (P <0.001). The 1,25-hydroxyvitamin D levels also were evaluated in two of the trials and they reported a significant increase in the vitamin D supplemented group from baseline at all time points as well (P <0.001 and P <0.05). There was no statistical difference in length of stay or mortality between the vitamin D supplement and placebo groups for all studies. In the subgroup analysis of one study (VITdAL), defined as patients with severe vitamin D deficiency (<12 ng/mL), there was a statistically significant decrease in mortality (P <0.04).
Conclusions: Vitamin D deficiency has been linked to adverse outcomes in critically ill patients. Although its supplementation at different doses has been found to be safe, no statistical benefit was found regarding length of stay or mortality. Future studies in severely deficient patients are recommended.

Geriatrics and Long-Term Care

128—DETERMINATION OF ANTICHOLINERGIC MEDICATION USE IN PATIENTS PRESCRIBED MEDICATIONS FOR THE TREATMENT OF DEMENTIA.

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Objective: The objective of the study is to determine how often anticholinergic medications are concurrently prescribed with medications for the treatment of dementia in the community pharmacy setting.
Methods: Anticholinergic medications are not contraindicated in dementia, however a paucity of data exists determining the incidence of these medications in patients with dementia. A retrospective review of claims data was conducted within a practice-based research network of community pharmacies to determine the number of patients prescribed medications that treat dementia and an anticholinergic medication. The study was conducted from September 9, 2014 to September 9, 2015, and inclusion criteria included patients who received an acetylcholinesterase inhibitor (donepezil, galantamine, rivastigmine) or an *N*-methyl-D-aspartate–inhibitor (memantine) as any dosage form. Patients were excluded from the study if they did not receive more than 3 months of a medication to treat dementia. After the patients were identified, the medication profile was reviewed to ascertain whether the patient also received an anticholinergic medication within the time frame. A literature review was conducted to determine the list of medications considered "anticholinergic." Data collected included patient age, sex, dementia medication (name, dose, brand or generic, dosage form), and anticholinergic drug (name, class, dose, dosage form, quantity, and number of fills), if applicable. The data analysis was conducted using parametric tests for the continuous data and nonparametric tests for the nominal data.
Results: The expected results of this project will determine whether patients treated for dementia are also prescribed anticholinergic medications in a community pharmacy.

129—IDENTIFICATION OF PATIENT-INITIATED STEPS AND BARRIERS AFFECTING CHANGES TO HIGH-RISK MEDICATION THERAPY FOLLOWING PHARMACIST COUNSELING.

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Objective: The primary objective of this study is to identify the steps that patients take following pharmacist counseling that result in a medication therapy change regarding high-risk medications in patients older than 65 years of age. The secondary objective is to identify potential patient-perceived barriers to making a medication therapy change in high-risk medications after pharmacist counseling.
Methods: This prospective observational study will be conducted at an independent community pharmacy in Lehigh Valley, Pennsylvania. Patients older than 65 years of age who filled a select high-risk medication, as defined by the 2012 American Geriatrics Society Beers criteria, will be identified for pharmacist counseling. The classes of medications targeted consist of benzodiazepines, nonselective nonsteroidal anti-inflammatory drugs, central skeletal muscle relaxants, and nonbenzodiazepine hypnotics. Patients will receive medication-specific counseling by a pharmacist with incorporation of motivational interviewing over the telephone or in person. At 2-week follow-up, patients will be surveyed to determine those who have successfully made a change in therapy of the targeted medication. Among those reporting change, the type of change that was made as well as the patient-initiated steps that led to the change will be identified. Among those who did not make a medication therapy change, factors that are potential barriers to change will be identified. A secondary follow-up 30 days following the pharmacist encounter will be conducted to determine whether barriers were experienced that prevented the change from being initiated within 2 weeks. The secondary follow-up also will identify whether patients attempted to initiate discussion or change, but were unsuccessful.
Results: Data will be collected January to May 2016. The results of this study will be analyzed using descriptive statistics. The findings of this study will provide insight into patient behaviors that may offer future strategies for more effective pharmacist–patient communication regarding the use of high-risk medications.

130—VALIDATION OF A NOVEL MEDICATION PROFILE–BASED FALLS RISK ASSESSMENT TOOL.

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Objective: Falling remains a highly prevalent and potentially catastrophic event in patients older than 65 years of age. The objective of this study is to validate that a novel medication profile–based falls risk assessment tool can accurately stratify

patients into clinically significant risk groups. Although it has been shown that medications contribute to falls risk and the recent Cochrane review of Interventions for "Preventing Falls in Older People Living in the Community" found that discontinuing offending medications decreased the rate of falls, there is currently a lack of an easy to use, accessible, and validated tool to guide clinicians when prescribing and monitoring medications for older adults who may be at an increased risk for falling.

Methods: The design of this study is a retrospective data analysis to determine whether this tool is able to predict falls based on the medications being utilized at the time of the fall. Upon institutional review board approval, data are to be collected from an insurance claims database that includes ICD-9 diagnosis codes and medication claims data. From these data, patients older than age 65 years will have their medication profiles input into this novel tool, which uses the best currently published data associated with medications or medication classes contributing to falls risk to determine a risk score and assign a grade. Using multivariable logistic regression to account for potential disease-related confounders, investigators hope to demonstrate that this tool is able to show a statistically significant difference in the rates of falling between risk groups based on the score derived from the medication profiles.

Results: Research in progress.

Health Disparities and Cultural Issues

131—ANALYSIS OF STUDENT PHARMACIST–LED CARDIOMETABOLIC HEALTH SCREENINGS IN A MIDDLE EASTERN COMMUNITY.

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Objective: The primary objective was to summarize the health screening findings for the first student pharmacist–run organization, Middle Eastern Pharmacist Association (MEPA), targeting health awareness and patient care in the Middle Eastern community of Chicago, Illinois. The secondary objective was to assess which patient characteristics are associated with elevated blood glucose (BG) levels, blood pressures (BP) measurements, and body mass indexes (BMI).

Methods: This was a retrospective, cohort study reviewing all patient encounters of MEPA-run health screenings from November 2013 to May 2015. At each screening, student pharmacist volunteers measured patients' BP, BG, and BMI under the supervision of a pharmacist. Patients with abnormal readings were counseled on lifestyle changes in English/Arabic and referred for follow-up medical care. Data analyzed included pertinent patient history (age, sex, past medical and social history); percentage of patients within BP, BG, BMI goals; and risk factors associated with elevated readings (patient and family history of disease state, smoking history). Chi-square test was used to compare differences by a known history of diabetes or hypertension and whether a patient had controlled BG or BP, respectively.

Results: A total of 823 patients were screened over the course of 8 events; 77% (n = 288/374) were at goal for BP, 82.3% (n = 311/378) for BG, and 39.4% (n = 28/71) for BMI. Patients with a known history of hypertension (n = 83) or diabetes (n = 64) were more likely to have uncontrolled BP (45% vs. 11%; $P < 0.05$) or BG (39% vs. 14%; $P < 0.05$) compared with patients without a history of these chronic conditions. Seventeen percent of all patients screened were referred for further medical care.

Conclusions: In 2 years, MEPA increased health awareness in the Middle Eastern community in the Chicagoland area. Future screenings should target more counseling for patients with a known history of hypertension and/or diabetes.

132—THE CHANGING LANDSCAPE OF AMBULATORY CARE PHARMACIES IN WISCONSIN BETWEEN 2011 AND 2015

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Objective: The study objectives were to: (1) describe the changes in ambulatory care pharmacy availability and mix between 2011 and 2015 in Wisconsin by county and (2) describe variability in access after the changes.

Methods: Statewide listings of licensed pharmacies in 2011 and 2015 were obtained from the Wisconsin Department of Safety and Professional Services to identify and compare the numbers of new and closed ambulatory care pharmacies in each county. Pharmacies were categorized into independent (≤4 stores under same ownership), chain (≥5 stores under same ownership), and nonretail (clinic/outpatient) settings that could serve ambulatory patients. Accessibility was estimated as the total population per pharmacy ratio in each county in 2015.

Results: The 994 ambulatory care pharmacies available in 2015 represented a total net loss of 51 pharmacies in the 72 counties statewide compared with 2011. Across all settings, there were more closed than new pharmacies and the overall greatest loss was among independent pharmacies. In 24 counties, there were no new or closed pharmacies. In counties where no or minimal net changes occurred (±1 pharmacy), the availability of different settings was redistributed. In only 3 counties was there net growth representing more than 1 additional pharmacy (2 counties each with 2 pharmacies and 1 county with 4 pharmacies) representing up to 100% increase in pharmacy availability. Conversely, comparable magnitude net decreases occurred in 13 counties (with 4 counties losing 5 to 14 pharmacies). Sizeable net losses occurred in some of both urban and rural counties. However, the potential impact is greater in some rural counties; fewer pharmacies remained available, and poorer accessibility or higher total population to pharmacy ratios were present.

Conclusions: Overall availability of ambulatory care pharmacies in Wisconsin decreased between 2011 and 2015, but with variability across counties and potentially worsened access disparity in some areas.

133—DEVELOPMENT AND VALIDATION OF A SURVEY TOOL TO MEASURE HEALTH CARE PROVIDER BIAS IN PROVIDING SERVICES TO DIVERSE PATIENT POPULATIONS.

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