

POPULATION: The OMG Business Process Management for Healthcare (BPM+Health) specification combines BPMN™ with Case Management Model and Notation (CMMN™) and Decision Model and Notations (DMN™) to “disseminate and leverage evidence-based best-practices at the point of care.” The American College of Emergency Physicians (ACEP) Board-certified Emergency Physicians modeled practice guidelines in the BPM+ modeling language during on-line meetings. Two common emergency conditions were selected for initial pilot testing: 1) evaluation and treatment of first trimester bleeding in pregnant patients, and 2) the evaluation and treatment of non-traumatic low back pain. RESULTS/ANTICIPATED RESULTS: The protocols were successfully modeled during four on-line meetings in less than 2 months. Process steps from initial evaluation to disposition were implemented using BPMN™. When clinicians need to evaluate the patient to collect data for decision making the inputs and outputs were modeled in CMMN™. Decision logic is represented as DMN™. The software tool linked the components for easy browsing and authoring the logic. The Physicians easily followed the displayed logic. The practice recommendations from each policy were successfully modeled, using the standard BPM+ notation to support rapid implementation in EHRs. Detailed implementation specifications will be shared. DISCUSSION/SIGNIFICANCE OF IMPACT: This pilot project demonstrated the feasibility of the OMG approach to solving Clinical Practice Guideline Implementation and Dissemination Barriers. Ongoing work by involved specialty societies will be necessary to demonstrate the scalability and sustainability of this approach.

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Poor provider-patient communication, lack of readiness for discharge, and perceived illness threat are associated with quality of life after survival from cardiac arrest

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OBJECTIVES/GOALS: Studies have shown that cardiac arrest survivors have poor quality of life (QoL) secondary to neurologic injury. We hypothesized that poor provider-patient communication, lack of readiness for discharge, and perceived illness threat would be associated with QoL in cardiac arrest survivors. METHODS/STUDY POPULATION: We distributed an online survey to the Sudden Cardiac Arrest Foundation listserv. Survivors completed the Questionnaire for the Quality of Provider-Patient Interactions (QQPPI), Readiness for Hospital Discharge Scale (RHDS), and the Brief Illness Perception Questionnaire (B-IPQ). When completing the QQPPI and RHDS, survivors were asked to think back to their hospitalization and discharge. QoL domains (physical, psychological, social) were measured via the WHO-QOL BREF. Three multiple regression models examined associations between QQPPI, RHDS, and B-IPQ scores with QoL domains, adjusted for age, sex, months since arrest, and understanding of arrest and post-arrest symptoms at discharge. RESULTS/ANTICIPATED RESULTS: A total of 163 survivors (mean age 50.1 years, 50.3% women) provided complete survey data. Greater perceived illness threat (β : $-.45$, $p < .001$) and lower readiness for discharge (β : $.22$, $p = .01$) were associated with worse physical QoL; greater perceived illness threat (β : $-.45$, $p < .001$) was associated with worse psychological QoL; and greater perceived illness threat (β : $-.3$, $p < .001$) and poor provider-patient communication (β : $.35$, $p < .001$) were associated with worse social QoL. Our models explained 48%, 43%, and 30% of the variance in physical, psychological, and social

QoL, respectively ($p < .001$). DISCUSSION/SIGNIFICANCE OF IMPACT: In-hospital interactions and perceived illness threat have important ramifications for cardiac arrest survivors attempting to return to daily life. Discussions regarding cardiac arrest sequelae, expectations, and specific treatment options during hospitalization could impact future QoL.

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Positive Deviants for Medication Therapy Management: A Mixed-Methods Comparative Case Study of Community Pharmacy Practices[†]

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OBJECTIVES/GOALS: To optimize medication use in older adults, Medication Therapy Management (MTM) was launched as part of Medicare Prescription Drug (Part D) policy. The objective of this study was to generate hypotheses for strategies that contribute to community pharmacies' ability to achieve high performance on policy relevant MTM quality measures. METHODS/STUDY POPULATION: This mixed-methods comparative case study design incorporated two conceptual models; the Positive Deviance model and Chronic Care Model. The study population consisted of pharmacy staff employed by a Midwestern division of a national supermarket-community pharmacy chain. Data consisted of semi-structured interviews and demographics. Qualitative and quantitative data were analyzed abductively or using descriptive statistics, respectively. Case comparisons were synthesized using the Framework Method. MTM quality measures used to evaluate participant pharmacies' MTM performance mirrored quality measures under Domain 4 (Drug Safety and Accuracy of Drug Pricing) of the 2017 Medicare Part D Plan[†] Star Rating measures. RESULTS/ANTICIPATED RESULTS: Staff at 13 of the 18 selected pharmacies (72.2%) participated in interviews. Interviewees included 11 pharmacists, 11 technicians and three student interns. Strategies hypothesized as contributing to MTM performance included: 1. Strong pharmacist-provider relationships and trust, 2. Inability to meet patients' cultural, linguistic, and socioeconomic needs (negatively contributing), 3. Technician involvement in MTM, 4. Providing comprehensive medication reviews in person vs. phone alone, 5. Placing high priority on MTM, 6. Using maximum number of clinical information systems (CISs) to identify eligible patients. 7. Technicians using CISs to collect information for pharmacists, 8. Faxing prescribers adherence medication therapy problems (MTPs) and calling on indication MTPs. DISCUSSION/SIGNIFICANCE OF IMPACT: Our study resulted in eight strategies hypothesized to contribute to community pharmacy performance on MTM quality measures. To inform MTM policy recommendations, future research should engage stakeholders to assist with prioritizing hypotheses to be tested in a larger representative sample of pharmacies. CONFLICT OF INTEREST DESCRIPTION: This research was supported, in part, with support from the Indiana Clinical and Translational Sciences Institute funded, in part by grant number TL1TR001107 from the National Institutes of Health, National Center for Advancing Translational Sciences, Clinical and Translational Sciences Award. Dr. Adeoye-Olatunde is a part-time employee and Dr. Lake is a full-time employee at the

Midwestern division, national supermarket-community pharmacy chain, where study procedures were conducted. Dr. Snyder reports personal fees from Westat, Inc., outside the submitted work.

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Preoperative Goal-setting by Patients is Correlated with Baseline and Not 6-week Outcomes following Total Knee Arthroplasty (TKA)

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OBJECTIVES/GOALS: Patient beliefs and goals can facilitate discussion of recovery expectations, patient-provider collaboration and maximization of goal achievement. In this study, we sought to address an evidence gap and examine the association of preoperative self-assessment of goals with preoperative and 6-week knee function and gait speed among total knee arthroplasty (TKA) patients. **METHODS/STUDY POPULATION:** We conducted a secondary analysis of data from the VERITAS randomized, controlled trial conducted from 11/2016-03/2018 that included adults age ≥ 18 years with scheduled and completed unilateral TKA followed by post-surgical physical therapy. Patients rated their ability to perform various activities of daily living goals scaled from 0 (unable to perform) to 10 (full performance). Patients were categorized by pre-surgical (baseline) goal rating: low = 0-2, intermediate = 3-4, and high = 5-10. Outcomes including gait speed and the KOOS were assessed within 10 days prior to surgery and 6-weeks post-surgery. Descriptive statistics and outcomes were compared for patients by preoperative goal rating using Chi-square or Fisher's exact tests and ANOVA or Kruskal-Wallis tests as appropriate. **RESULTS/ANTICIPATED RESULTS:** Of 288 patients (mean age 65 \pm 8; 62.5% women; 82% white), 102 had a low goal rating (GR), 86 intermediate, and 99 high. Patients with low GR preoperatively generally had lower baseline mean scores than intermediate and high GR patients, respectively, on the KOOS (33.9/35.6/39.8; $p < 0.001$) and lower gait speed (m/s) compared to intermediate and high GR patients at baseline (0.9/1.1/1.0; $p = 0.009$). The low, intermediate, and high GR groups, respectively, showed no difference across mean KOOS scores (61.0/61.2/61.9; $p = 0.63$) or gait speed (m/s) (1.0/1.0/1.0, $p = 0.33$) at 6 weeks postoperative. **DISCUSSION/SIGNIFICANCE OF IMPACT:** In this study, adults who perceived greater difficulty with a pre-selected activity goal, exhibited lower function prior to TKA but showed no differences in function 6-weeks after surgery. Follow-up studies will describe the association between goal-setting preoperatively and patient goal attainment and satisfaction following surgery.

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Racial/ethnic difference in the relationship between periodontitis and cardiovascular disease among adult populations

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OBJECTIVES/GOALS: Several lines of studies have supported the existence of periodontitis (inflammation of the gums) as a risk factor for cardiovascular disease (CVD). The goal of this study is to evaluate the relationship between periodontitis and CVD among Hispanic, African American, and Caucasian populations. **METHODS/**

STUDY POPULATION: We analyzed data from the National Health and Nutrition Examination Survey, 1999-2004 (NHANES). The population was all adults with a periodontal exam. Periodontal Disease was defined as mild, moderate, and severe (2 loss of attachments of at least 3mm, 2 sites with probing depth of at least 4mm, or one site with probing depth of at least 5mm). Cardiovascular disease was defined by a questionnaire regarding prevalence of any of 5 diagnosis (congestive heart failure [CHF], coronary artery disease [CAD], angina, heart attack or stroke). Data were analyzed using multinomial regression in SAS version 9.3 taking into consideration the design and weight. **RESULTS/ANTICIPATED RESULTS:** The study included 3375 adults; 13% were Hispanic and 10% were Blacks, 58% had > high school education, 81% were insured, 11% were heavy alcohol drinkers, 27% were smokers, 13% were physically inactive, 14% had periodontitis, 62% visited dentist last year, 2% had CHD, and 1.5% had CHF or stroke. In the multiple multinomial regression, overall, people with periodontitis were more likely to have both CHD (AOR = 2.0, 95% CI = 1.1-3.8, $p < 0.05$) and CHF or stroke (AOR = 1.8, 95% CI = 1.01, 3.0, $p < 0.05$) than to have no heart condition. There was a racial/ethnic difference in the relationship between periodontitis and cardiovascular disease but it was not statistically significant ($p > 0.05$). **DISCUSSION/SIGNIFICANCE OF IMPACT:** Overall, people with periodontitis were more likely to have CHD, CHF or stroke than to have no heart condition, but with no significant effect of racial/ethnic group. This study provides a foundation to future studies on the connection of periodontitis and CVD in relation to ethnic/racial groups.

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Racial/ethnic variation in the relation between diabetes control and healthy eating, food security, exercise, and access to health care

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OBJECTIVES/GOALS: Diabetes mellitus is a common metabolic disease. Uncontrolled diabetes can lead to complications. The objective of this study is to examine the racial/ethnic variation in the relation between diabetes control and healthy eating, food security, exercise, and access to health care. **METHODS/STUDY POPULATION:** We analyzed data related to diabetes control, demographics, insurance, healthy eating, food security and physical activity for 949 diabetics from the National Health and Nutrition Examination Survey (NHANES). The population examined was adults with diabetes mellitus. Diabetes control was classified as fair control [HbA1c 7- $<$ 8 and fasting glucose $<$ 126 mg/dL], good control [HbA1c $<$ 7 and fasting glucose $<$ 110 mg/dL] or uncontrolled [HbA1c 8 and fasting glucose $<$ 110 mg/dL]. We used multinomial logistic regression controlling for confounders to analyze the data overall and for each racial/ethnic group and report adjusted odds ratios (AOR) and 95% confidence limits (CL). **RESULTS/ANTICIPATED RESULTS:** Of the 949 diabetics, 14.7% were Blacks, 15.9% were Hispanics, 11.0% had fair control, 61.0% had good control, 14.2% were uninsured, 18.1% had low/very low food security, and 39.7% were inactive. Overall, uninsured subjects had a lower chance of fair diabetes control (AOR = 0.2, 95% CL = 0.1-0.9, $p = 0.04$), but this relationship was significant only for Hispanics and Blacks ($p < 0.05$). Whites with low/very low food security were less likely to have fair control (AOR = 0.2, 95% CI = 0.001-