

of Americans have completed ADs. The limited effectiveness of traditional interventions to increase AD completion may be because they do not address the behavioral aspects of advance care planning. Behavioral Design is an innovative approach that combines design thinking and behavioral economics to identify predictable behavioral bottlenecks and create real-time solutions. This study used Behavioral Design to address low AD completion rates of long-term care residents. Consistent with the Behavioral Design process, an interdisciplinary team compiled evidence from 10 diverse data sources to identify behavioral bottlenecks to AD completion. These barriers were analyzed using the cognitive bias codex to determine behavioral levers for intervention. Informed by these findings, the study team designed multicomponent interventions to address behavioral aspects of AD completion. Four behavioral bottlenecks incorporating ten behaviorally mediated causes for lack of AD completion were identified. For example, AD completion is affected by complexity mediated by hassle factor, choice overload, and ambiguity effect. Three interventions were designed to address these behaviorally mediated causes. For example, the intervention HeAD Start would provide a simple, easy to read AD (addressing choice overload) to residents upon admission (addressing hassle factor) with scheduled follow-up by trained staff (addressing ambiguity effect). Behavioral Design incorporates design thinking and leverages behavioral economic principles to create behaviorally mediated AD interventions. Next steps include testing behaviorally informed designs in practice.

#### ASPIRIN BENEFIT IS NOT AFFECTED BY BODY WEIGHT IN HEALTHY OLDER PERSONS

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Recent meta-analysis (Rothwell et al, *Lancet* 2018;392:387-99) of aspirin trials in predominantly middle-aged people suggested that aspirin's effects on clinical outcomes vary according to dose and body weight, concluding that under dosing in heavier people may be responsible for reduced efficacy of aspirin. Data from ASPREE (ASpirin in Reducing Events in the Elderly; randomized primary prevention trial of low dose aspirin versus placebo in 19,114 healthy older participants, mainly aged 70+ years) were analyzed for interaction of body habitus on the main outcomes after 4.7 years of study treatment. Increases in body weight, BMI or waist circumference (WC) did not influence cardiovascular endpoints or incident cancers in the aspirin group compared with placebo. In ASPREE men, an increase of 10 kg body weight elevated the risk of major hemorrhage with aspirin (HR 1.20; 95% confidence interval 1.01-1.43;  $P=0.04$ ) and 10 cm increase in WC elevated all-cause mortality by 23% with aspirin (HR 1.23; 95% confidence interval 1.05-1.44;  $P=0.01$ ), driven by cancer-related deaths (HR 1.39; 95% confidence interval 1.11-1.73;

$P=0.004$ ). These effects of increased abdominal girth were not seen in women. Evidence from ASPREE does not support increasing the dose of aspirin in larger older people to improve the drug's efficacy. Our results point to a link between central adiposity, hemorrhage risk and cancer-related death in older men taking aspirin.

#### A HOSPICE COLLABORATIVE NETWORK TO IMPROVE SERIOUS ILLNESS CARE IN A LARGE HEALTHCARE SYSTEM

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The quality of hospice care in the United States varies significantly, yet healthcare systems lack methods to comprehensively evaluate and stimulate quality improvement in organizations that serve their patients. Partners HealthCare, an integrated healthcare system located in Eastern Massachusetts, sought to create a high-quality hospice collaborative network based on objective and quantitative criteria obtained from public reporting as well as the hospice itself. Through a modified Delphi procedure, clinicians, administrators, and data scientists developed a set of criteria and a scoring system focused on three areas: organizational information, clinical care quality indicators, and training and satisfaction. All Medicare-certified hospices in good-standing in Massachusetts were eligible to participate in a request for information (RFI) process. We blinded all hospice data prior to scoring and invited hospices scoring above the 15th percentile to join the collaborative for a 2-year initial term. Of 72 eligible hospices, the majority (53%) responded to the RFI, of which 60% submitted completed surveys. Hospices could receive up to 23.75 points with scores ranging from 2.25 to 19.5. The median score was 13.62 (IQR: 10.5-16.75). For the 19 hospices scoring above the 15th percentile, scores ranged from 10.0-19.5 (median: 14, IQR: 11.1-16.9). There was no association between quality score and continuous (Spearman's correlation 0.24,  $p=0.27$ ) or dichotomous (Wilcoxon rank sum test  $p=0.13$ ) measures of hospice size. The hospice collaborative network is one healthcare system's initial attempt to effectively leverage its influence and relationships to improve hospice quality for the benefit of its seriously ill patients and their families.

#### TRENDS AND FACTORS ASSOCIATED WITH PLACE OF DEATH AMONG INDIVIDUALS WITH CARDIOVASCULAR DISEASE IN THE UNITED STATES

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While most patients prefer to die at home, trends and factors associated with place of death for patients dying of cardiovascular disease (CVD) remain unknown. Using data from the National Center for Health Statistics from 2003-2017, we described trends and conducted multivariable logistic regression to evaluate associations between demographic characteristics and place of death among CVD patients in the United States. From

2003-2017, the rate of CVD deaths occurring at home increased from 21.3% to 30.9%, and rate of hospice facility deaths increased from practically none to 6.0%. Over the same period, the rate of hospital deaths decreased from 36.5% to 27.3%, and nursing facility deaths decreased from 25.1% to 20.6%. With the exception of conduction disorders, temporal trends in place of death were consistent across CVD diagnosis subgroups: ischemic heart disease, hypertensive heart disease, heart failure/cardiomyopathy, cerebrovascular disease, aortic stenosis, and all other CVDs. Differences between demographic groups persisted over the study period, with reduced odds of home death among Hispanic versus non-Hispanic (OR=.942; 95% CI .929-.955) decedents, Black versus White (OR=.837; CI .809-.866) decedents and greater odds of home death among decedents with some college education or more (OR=1.08; CI 1.06-1.09) versus decedents with a high-school education or less. In 2014, home surpassed hospital as the most common place of death for CVD patients. CVD patients often have acute and intense needs at the end of life that are challenging to manage in the home and the quality of care these patients receive should be further investigated.

#### ETHNIC AND DEMOGRAPHIC DIFFERENCES IN THE UTILIZATION OF ANCILLARY HOSPICE SERVICES

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Background: Research shows that ethnic differences exist in hospice service election, with fewer African American patients enrolling in hospice and having lower satisfaction with care compared to Non-Hispanic Whites. Hospice is interdisciplinary, with nursing care and “ancillary” services (social work, chaplain, nurses’ aide, volunteer). Little research exists about whether disparities exist in ancillary service election, and if patient demographics correlate with service utilization. We examined if ethnic or demographic differences exist among hospice beneficiaries in utilization of hospice services. Methods: Mixed-methods data collection took place from two community hospices. The quantitative arm involved retrospective chart review on new admissions from 2012 to 2016: acceptance of ancillary services and demographic data were collected as well as code status and outcome of hospice admission. The qualitative arm collected interview data from hospice personnel about thoughts on hospice care, which patients they think might decline ancillary services, and why. Results: Chart review was completed on 491 patient charts: interviews of hospice staff are ongoing. Sample was 55% female, 77% white, average age 77.8 years. Initial analysis on demographic data did not show statistical significance in utilization. Declination was lowest for social work (3.4% declined) and highest for hospice volunteer (88.9% declined). Initial interview themes involved need for patient education and role of health literacy. Discussion: Initial research does not show statistical ethnic or demographic differences in ancillary service utilization. However, broad utilization differences exist between services. Data can identify areas where hospices can improve care accessibility through patient education and personalization of services.

#### ALIVIADO DEMENTIA CARE-HOSPICE EDITION: FEASIBILITY AND ACCEPTABILITY RESULTS OF A TWO-PHASED PILOT STUDY

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Limited work has been performed in helping hospice agencies to care for persons with dementia (PWD) and their caregivers in an evidence-based manner despite the increasing number of PWD cared for in this setting. To change the culture of care for PWD and their caregivers receiving hospice, we adapted Aliviado Dementia Care, an evidenced-based interdisciplinary quality improvement program, for use in hospice. The purpose of this pilot study is to examine feasibility and applicability of implementing the Aliviado Dementia Care-Hospice Edition sequentially in 2 hospice agencies in preparation for a nation-wide pragmatic trial. In the first pilot, concluded in March 2019, seven hospice interdisciplinary clinicians were trained as program champions and completed a two-day in-person intensive training on dementia symptom assessment and management, and quality improvement processes. Additionally, 47 interdisciplinary team (IDT) members were provided training via a 5-hour, online program covering dementia symptom assessment and management. All champions trained (100%) reported being satisfied/very satisfied with the program and agreed that the training is applicable to hospice practices. All IDT members who completed the online training (100%) reported being satisfied/very satisfied with the program quality, or agreed/strongly agreed that the content was relevant. The high rates of satisfaction and applicability, reported by the hospice champions and IDT members, provided preliminary evidence supporting the feasibility and applicability of the Aliviado Dementia Care-Hospice Edition.

#### CHRONIC DISEASE AND TERMINAL DECLINE IN VERY OLD MEN: THE MANITOBA FOLLOW-UP STUDY

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The Manitoba Follow-up Study is in its 71st year of continuous operation. Since 1948, 3,983 aircrew recruits to the Royal Canadian Air Force during the Second World War have submitted routine medical examinations and completed questionnaires. On May 1, 2006, 1001 of these men (25%) were alive mean age of 86 years. The effects of 7 chronic diseases (CDs) diagnosed before 2006 were modeled with multinomial logistic regression to predict the pattern of decline of living and dying through an 11 year window to 2017. By 2017, 11% were still alive, 10% died very early in the window, 44% experienced a slow decline of a least three years to death, 17% experienced a step decline to death, and 18% experienced a terminal drop, death within six months of decline in functioning. Only 30% were free of CD in 2006; 36% had 1 CD, and 34% had more than 1 CD. As the number of CDs increased, the probability of remaining alive by 2017 decreased: 18% alive if no CD, 10% if 1 CD, 8% if 2 CDs, and 3% of >2 CDs. The chance of death with a terminal drop decreased: 22% if no CD, 20% if 1 CD, 14% if 2 CD, 11% if >2 CD. Conversely, the