

2016-2017 RURAL GRANTS

A Double Blind Randomized Study of the Role of Mobile Phone Text Message Reminders in Adherence to Bowel Preparation for Outpatient Colonoscopy in a Rural West Virginia

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Colon cancer deaths in West Virginia are the second leading cause of cancer related deaths with 1,126 new cases on average diagnosed each year. Among individuals 50 or older, 1,030 new cases on average are diagnosed annually with 40% of new cases being late stage. Deaths rates due to colon cancer in West Virginia in 2013 were reported to be 22.1 per 1,000. However, in rural southern and southwestern counties of West Virginia, death rates due to colon cancer are as high as 64.5 per 1,000, nearly three times the state rate. Colonoscopy is the gold standard in the diagnosis of colorectal disease. Successful colonoscopic evaluation of the bowel relies on patient adherence to bowel preparation. Failure of adequate bowel evacuation results in reduced cecal intubation rates, decreased polyp detection rates, and the need for repeated procedures. Although multiple approaches have been utilized to improve the quality of bowel cleaning, it often remains suboptimal. Text messaging is a common communication modality vastly used in today's society for relaying information and studies have shown that text message reminders have a positive impact on patient behaviors. This prospective, randomized, double blind study will compare adherence to colonoscopy preparation in patients that receive reminder text messages via their mobile devices at scheduled times prior to procedure. By sending automated text message reminders, we intend to increase adherence to bowel preparation and minimize the potential hazards including poor visualization of bowel lesions secondary to suboptimal lumen visualization for optimal detection of polyps for earliest diagnosis of colon related cancers and reduce the need for repeated procedures of outpatient colonoscopies.

Marshall Teen Talk: a telehealth project to rural high school teens.

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This project involves teaching reproductive health to male and female high school students in McDowell County, West Virginia using telehealth technology. This is an expansion of a previously successful project that involves standardization of the telehealth curriculum, and expansion of a previously designed website. McDowell County is a rural county plagued by poverty, high teen pregnancy and increased school dropout rates. Telehealth is an innovative technology that allows medical and educational services to reach areas where individuals with this expertise may not be available; a technology especially useful for rural underserved

communities. Telehealth sessions are incorporated into existing afterschool programs within two McDowell County high schools. Each session will cover reproductive health topics including anatomy, physiology, contraception, sexually transmitted disease prevention, relationship health, and gender stereotypes. Topics are based on previous years, but will be modified to meet criteria of a standardized curriculum. Expansion will also be made to the website: www.marshallteentalk.org based on McDowell student feedback from previous years. Each topic will be discussed by Marshall University medical students under the mentorship of physicians and faculty with expertise in adolescent healthcare and education. The primary outcomes of this project are knowledge scores of reproductive health topics, measures of behavioral self-efficacy, and evaluation of telehealth curriculum. Assessment of medical student telehealth facilitators will also be conducted for curriculum evaluation. Long term outcomes are teen pregnancy rate and school dropout rate at yearly intervals following the educational intervention. Data will also be analyzed among students that have participated for the past three years.

Application of Guideline-Based Venous Thromboembolism (VTE) Risk Stratification in the Evaluation of Patients with Suspected VTE: A Review of Emergency Department Compliance in a Rural Community

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Mentor: Fuad M. Zeid, MD

Historically, the D-dimer assay has been utilized to assess low risk patients for the appropriateness of receiving an imaging study for the evaluation of a possible pulmonary embolism. The high sensitivity of the D-dimer assay for pulmonary embolism makes the test an indispensable tool in the emergency department for aiding in the risk stratification of a possible pulmonary embolus. However, its low specificity, particularly in patient populations with multiple medical comorbidities, can make a positive result difficult to interpret.

This research study will help ascertain overall compliance with the established evidence-based guidelines in the evaluation of VTE, centering on the appropriate use of the Wells/Geneva criteria, D-dimer assay, and CT-angiography, in a rural emergency department.

As part of this project, we will:

- 1) Offer a CME opportunity with PVH physicians to teach about the test and using it as a diagnosis tool in their rural emergency department (ED).
- 2) Hold a patient educational session with rural patients who suffered from a pulmonary embolism (PE).

The use of FitBit technology to improve physical activity among adolescents in rural West Virginia.

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Mentors: Jennie Yoost, MD; Jennifer Gerlach, MD, Holly Cyphert, PhD; Nalini Santanam, PhD, MPH

Adolescent obesity is a significant problem in the United States, especially among underserved populations. In rural areas, there is less access to community fitness programs, gyms, and community parks compared to more developed or urban regions. This project involves the use of FitBit technology to improve physical activity among adolescents in rural West Virginia. FitBit technology allows adolescents to track their daily steps, heart rate, sleep and overall physical activity, while setting personal goals for themselves and without the need for additional equipment or facilities. Adolescents from rural areas will be followed prospectively for a period of three months. Primary outcomes include body mass index, vital signs and laboratory values at the start and finish of the study period, along with FitBit daily steps and heart rate over the three months. Comparison will be made between adolescent boys and girls. Comparison will also be made among adolescents that choose to link their FitBit with other peers as a motivational social networking tool. Quality of life measures will be assessed at start and finish of the study period. Continuation of the use of FitBit technology will also be assessed at six months' time. The goal of this study is to assess whether FitBit technology can have an impact on adolescents' physical activity in rural areas, and whether social networking has a positive impact on their fitness achievements.

Integration of onsite primary care services in a community-based behavioral health agency

Kasey Stickler, MS4; Dustin Moore, MS1

Mentor: Adrienne Mays, MD

Patients with mental or behavioral disorders are known for over-utilizing the medical system. Behavioral health agencies provide services to each of their clients that are non-billable to the client's account every time the health care system is accessed. These services include mileage for transport to physicians' offices as well as time for travel and waiting for professional staff. This non-refundable cost is a strain to the agencies, restricting the amount and quality of services that they offer.

The integration of behavioral health into primary care has been studied, but the integration of onsite primary care services into a rural behavioral health agency is non-existent. We propose to student what will be affected by providing onsite primary care at Mainstream Services, a behavioral health agency in Lavalette, WV. The study's focus will be twofold to include 1) the satisfaction of patient's guardian(s), professional and direct care staff to the increased access to acute and chronic medical care, as well as 2) the additional benefits of decreased medical resource utilization.

Both qualitative and quantitative data will be obtained to study the items mentioned above. A qualitative satisfaction survey will be collected at the onset of the study and again at the end of the study period. The quantitative data will be collected retrospectively at the onset of the study for the previous 2 years. The study will then proceed for the next two years, during which data will be collected every 6 months for continued analysis.

We are hoping to find that providing onsite primary care in a behavioral health agency will improve compliance with annual visits while decreasing the number of acute care visits. We also hope to improve satisfaction for

our patients' guardians as well as the professional and direct care staff. We expect a decreased in non-billable expenses for the agency allowing them to further expand their services in rural West Virginia.

Assessing Colorectal Cancer Screening Barriers in Rural Appalachian Area

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Mentor: Amanda Arrington, MD; Errington Thompson, MD

Colorectal cancer continues to be the second most common cause of malignancy-related death in West Virginia. Interestingly, while the overall rate of colorectal cancer in US has been decreasing, incidence rate in West Virginia has not subsided and continues to remain stable or rising in some counties. Multiple studies have shown an alarming increase in the rate of colorectal cancer in younger patients (age <50) nationwide. According to the National Cancer Institute Surveillance, Epidemiology, and End Results Program (SEER), there are approximately 1,122 people diagnosed with colorectal cancer, including 273 new cases of colorectal cancer diagnosed per year in Cabell and surrounding counties. Per SEER, 40% of these patients die from this cancer. These deaths could be prevented if early stage cancer can be detected through screening. Preliminary data, from the year 2003 to 2016, has indicated that approximately only 22.8% of colorectal cancer patients >50 years old had prior screening colonoscopy and 6% of our patients <50 did not have a colonoscopy for evaluation of ongoing rectal bleeding prior to diagnosis. There is a significant discrepancy between the participant rates in West Virginia area compared to 65% national participant rate per Centers for Disease Control (CDC) data. The identification of the attitudes, behaviors and challenges that confront rural patients who forego screening has not been well studied.

Impact of Music on Memory in Patients with Dementia

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Mentors: Adam Franks, MD; Cynthia Pinson, MD; Marianna Lintz, PhD

According to the Alzheimer's Association, 5.4 million people in the US have Alzheimer's disease, which translates to 1 in 9 Americans older than 65 years old. In 2016, 700,000 of those afflicted with dementia died. This represents a massive increase from the 84,000 people who died of the disease three years prior. The national financial burden of dementia is likewise staggering with \$236 billion in total payments for health care, long term care and Hospice. This represents 1 in 5 dollars spent by Medicare. By 2050, the financial burden is projected to increase by 360%.

Within West Virginia, as the state with the 3rd oldest population, the burden is also significant. Approximately 37,000 individuals age 65 and older have dementia and that number is projected to balloon to 44,000-50,000

individuals by 2025. 590 of those afflicted in 2013 died¹ making it currently the 5th leading cause of death in WV (11% higher than the national average).

Financially, the cost of caring for WV patients with dementia is great. In 2016, Medicaid spent \$360 million on health care for this issue. As of 2007, 64% of residents in Long Term Care Facilities (LTCFs) have dementia. It is estimated that the annual cost for care of each patient with dementia in a LTCF is \$33,007, three times more Medicare dollars than required for LTCF patients without dementia. But the financial burden extends beyond the state as 70% of people with Dementia live at home. Family care givers average spending \$5,000 a year out of their own pockets caring for their family members with the disease.

Music and Memory is a program that matches patients with music from the years in their prime. It has shown significant enough results in improving behavior, decreasing medications and augmenting quality of life that it is a state funded program in six states. It has not been studied on a population in a rural LTCF however. This project will implement the Music and Memory program in a LTCF in both Lincoln and Wayne counties allowing for evaluation of changes in cognition, behavior, medication burden and quality of interactions.