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Pilot HIV Prevention Study for Adolescent Young Women
Ellen Long-Middleton, PhD, RN, FNP

**Purpose:** The purpose of this study was to pilot a behavioral HIV prevention intervention to reduce heterosexually transmitted HIV in a culturally diverse sample inclusive of Black, Hispanic and White adolescent young women ages 15-19 years. The specific aims of the study were to: 1) Determine the feasibility of an HIV prevention intervention involving motivational interviewing with behavioral skills building in a primary care setting; 2) Determine the training needs of health care providers who deliver the intervention.

**Rationale and Significance:** HIV/AIDS is a threat to the lives, health and well-being of individuals worldwide. Among women of reproductive age, AIDS is the leading cause of death globally. Heterosexual transmission of HIV is the primary mode of infection in women, and adolescent young women are particularly vulnerable. As there is no cure currently for AIDS and no vaccine to protect against HIV, implementation of behavioral HIV prevention interventions that are culturally sensitive and inclusive is imperative. Motivational interviewing (MI) and behavioral skills building (BSB) are modes of behavioral interventions that have proven to be efficacious and are dynamic and flexible enough to address cultural inclusiveness and sensitivity, as well as adolescent and adult developmental differences. Yet there is a need for further studies to establish proven HIV prevention interventions in general, and specifically studies that are geared toward reducing heterosexually mediated HIV infection in culturally diverse adolescent young women. Given that adolescents utilize primary health care services, an opportunity exists to reach adolescent young women and adapt proven HIV prevention interventions to their needs in primary care settings.

**Description of Methodology:** A brief primary care-based HIV prevention intervention, utilizing MI and BSB techniques, was implemented in a federally funded community health center and a university-based adolescent clinic. Feasibility of the intervention was assessed by: 1) Length of time to collect the demographic and sexual practices data and implement the intervention, 2) Period of time for participant enrollment, and 3) Integration of the intervention into a primary care setting. Length of training was determined by length of time to achieve fidelity; the extent to which delivery of the HIV prevention intervention adhered to MI/BSB protocol. Three nursing students served as research assistants (RAs) and participated in MI/BSB training sessions, which included didactic information, discussion, and clinical simulation. The Behaviour Change Counselling Index (BECCI) and the Motivational Interviewing Treatment Integrity Code (MITI) were used to establish fidelity for the HIV prevention intervention.

**Subjects:** Twelve adolescent young women between the ages of 15-19 years and of Black, Hispanic and White cultural backgrounds served as the sample for this pilot study.

**Findings:** The mean length of time for the participants to complete the demographic/sexual practices survey was 4.5 minutes, with a mean of 13.8 minutes to deliver the intervention. Two participants were recruited per 4-hour clinic session. There was no disruption in the clinic schedule or physical resource utilization during the pilot study. Fifteen hours of training were needed to attain fidelity in the MI/BSB intervention delivery.

**Conclusion:** Pilot data suggest that a one-on-one HIV prevention intervention is feasible in a primary care office setting.

**Recommendation for Future Study:** Development of larger, longitudinal investigations are needed to measure the outcomes of motivational interviewing and behavioral skills building interventions on HIV risk reduction.
Does a Structured Education Program Reduce 30-day Heart Failure Readmissions?

Robert Hamble, RN BSN

Purpose of Study:
Replicate the findings from an evidence based research project that showed a structured, comprehensive, individualized, one hour educational program over four days, delivered by a Heart Failure Nurse Clinician can help reduce 30-day readmissions.

Rationale and Significance:
With CMS moving forward with the ability to impose up to a 3% reimbursement penalty for excessive readmissions, hospitals risk losing millions of dollars due to poor performance. Focused patient education regarding self-care has a dramatic impact in reducing 30-day readmission rates. Recent research has shown that only 59.6% of patients were able to describe their diagnosis accurately after discharge. 58.3% of nurses surveyed reported spending less than 15 minutes providing pre-discharge Heart Failure education to patients (Albert, 2016). Based on these numbers, there is great opportunity for improvement.

Description of Methodology:
Created a structured, comprehensive, individualized, 1 hour educational program over four days, delivered by a Heart Failure Nurse Clinician to patients with a primary diagnosis of Heart Failure. The teaching focused on key self-care topics which have shown in the past to reduce 30-day readmissions.

Subjects:
Four hundred hospitalized patients with either a primary or secondary diagnosis of Heart Failure.

Findings:
A comprehensive educational program coordinated by a nurse clinician, with additional support from the healthcare team has a statistically significant effect in reducing re-admission numbers (20.4% in 2014 to 17.4% in 2015). Patient feedback was very positive regarding the one-on-one teaching they received from the nurse clinician. Overall bedside nurse engagement was shown to improve under this program evidence by chart auditing of patient education.

Conclusions:
This quality improvement project's results matched the results from an evidence based research project showing a structured educational program using a nurse clinician to educate patients within a hospital setting does reduce readmissions.

Recommendation for Future Study:
Test current teaching structure against a more patient driven teaching process to see if there is an improvement in compliance and a reduction in re-admissions rates over the current process.

References:
**Purpose:** The present pilot study was designed to investigate how an oral preload of fructose and its metabolites influence functional connectivity between the hypothalamus and reward and control regions of the brain in obese children aged 10-16 years.

**Rationale and Significance:** Adolescents ingest upwards of 100 grams per day of high fructose corn syrup in such beverages, 43% of their total daily caloric intake. Fructose has been found to dramatically increase hypothalamic connectivity across the hippocampus, amygdala, insula, caudate, and nucleus accumbens following ingestion. When administered intravenously, fructose hypothalamic blood oxygenation level dependent (BOLD) signal decreased in cortical control regions, suggestive of reduced cognitive control over food intake and satiety. Such research is limited to lean adults. How fructose affects neurobiological mechanisms known to be involved in neural reward and eating behaviors in obese children remains unknown. A better understanding of the mechanistic and metabolic effects of fructose on neural reward may offer insights into mechanisms behind addictive-like eating in obese children that researchers can use to better understand contributory factors to obesity in children.

**Methodology:** Cross sectional study. Participants attended 3 study visits. BMI and measures of disordered eating and food craving were collected on day 1. Subjects followed a 2-day low fructose/caffeine diet and overnight 12 hour fast prior to data collection. At visit 2, subjects consumed 1g/kg per lean body mass of fructose in water followed by serial serum, breath, and urine metabolic assays. Within 1-3 weeks subjects followed the same pre-visit procedure and fructose drink followed by fMRI to assess resting-state functional connectivity and blood flow with the hypothalamus and ventral striatum as the regions of interest.

**Subjects:** 16 clinically obese children aged 10-16.

**Results:** fMRI data were available for 13 participants. Mean body mass index was 36.7 and 50% were female. Mean fructose dose was 59.5 grams. All children were normotensive. Peak serum fructose and fructose lag time ($T_{lag}$) were positively correlated with increased cerebral blood flow (CBF) to the hypothalamus ($p < .05$). No relationship between fructose metabolism and ventral striatal CBF was observed. Hypothalamic CBF was positively correlated with ventral striatal CBF. Further, serum fructose peak was negatively correlated with connectivity between the right inferior frontal gyrus (rIFG) and the ventral striatum (VS) during resting state analysis.

**Conclusion:** The inverse relationship between peak serum fructose and the connectivity between the rIFG and VS suggests both metabolic and brain functional contributions to obesity. Compromise in the role of the rIFG to regulate VS reward responses may contribute to eating behaviors of these obese youth. Our findings indicate that soon after ingestion fructose enhances CBF to the hypothalamus and that increased CBF persisted as maximum concentrations of fructose were achieved. Collectively, this suggests that consumption of fructose stimulates neural reward circuits whilst impairing cognitive control, similar to that of drugs of abuse and dependence. Such neurobiological effects might explain why certain obese children are unable to mitigate their drive to eat highly palatable foods beyond homeostatic needs.

**Recommendations for Future Study:** Future studies should compare the effect of various sugars and sweeteners (sucrose, glucose, fructose, artificial sweeteners) on neurocognitive function and the relationship to addictive food behaviors among lean, overweight, and obese children.
A Framework Analysis of Authentic Leadership Behaviors Among Experienced Nurse Leaders

Catherine Alexander, DNP, MPH(c), RN

Objective: Identify and describe the behaviors nurse leaders use to build a healthy work environment using the theoretical framework of authentic leadership.

Background: The leader behaviors that promote and sustain a healthy work environment are not well understood in the healthcare literature. The AACN Standards for Establishing and Sustaining a Healthy Work Environment (2005) recommend authentic leadership (AL) as one of six standards that create and sustain a healthy work environment (HWE) but do not make recommendations as to how leaders achieve these goals. The results of the most recent AACN Nurse Work Environment Survey (2013) based on the AACN standards indicate there has been an overall decline in the work environment since 2006 decline in all three critical elements of the AL standard from 2008-2013. The 2013 results signal the urgency to better understand the leader behaviors that support a HWE.

Methods: This descriptive qualitative study used key informant sampling of 17 NE’s from across the US. The overall response rate of study participants was 61%. Data was collected using a semi-structured, open-ended interview questionnaire. Framework analysis was used to analyze data. The AL constructs used for study questions included; self-awareness, transparency, balanced processing and moral leadership.

Results: Many of the behaviors identified by nurse executives align with the theoretical underpinnings of AL from the business literature. Themes associated with self awareness included the private and public self; transparency; honesty, integrity and trust, balanced processing; open hearted leadership, trust in the process, courage and risk taking; and moral leadership; the values and principles of nursing practice in decision making. Significant behaviors of nursing leadership included compassionate, patient centered leadership, utilizing nursing principles in moral decision making, making an ongoing commitment to care for others (staff and patients), leading with heart, knowing when to fight for principles that support patient care, and remaining a lifelong student of leadership-open to learning everyday.

Conclusion and Future Direction: This preliminary study indicates that many of the behaviors identified by nurse leaders align with the four constructs of AL and may serve as a useful theory to build education and training programs for leaders in the future. In addition, participants in this study provided new descriptors around the four constructs of AL adding new knowledge to the theory supporting its application to current nursing leadership practices and behaviors as described by experienced nurse leaders. Last, study results indicate that authentic leadership may be reliable framework that provides leaders with the necessary “tools” to build and sustain a healthy work environment as outlined in the AACN standards of practice (2005).
Using Evidence to Develop a Local, Risk-Based Approach to Isolation of Patients with Methicillin-Resistant *Staphylococcus aureus*

Monica Raymond, RN, MPH, MS

**Purpose of Study:** This project was aimed at developing a new approach to screening and isolation for hospitalized patients with a history of methicillin-resistant *Staphylococcus aureus* (MRSA), with the goal of reducing patient isolation-days without compromising patient safety.

**Rationale and Significance:** The presence of patients colonized with MRSA is strongly associated with nosocomial acquisition of MRSA in hospitals. Patients with known MRSA colonization are placed on contact precautions (isolation) in our 562-bed hospital. Those with a history of MRSA are in isolation until they have two negative nares screens 48 hours apart (and in some cases extra-nasal cultures). Given the high sensitivity of MRSA polymerase chain reaction (PCR) testing, the second screen might be redundant and eliminating it could reduce isolation days. However, nasal screening only detects about 60-75% of colonized individuals.

**Description of Methodology:** We drafted a new protocol to discontinue isolation after one negative nares MRSA PCR, with exceptions based on risk factors established in the literature. To evaluate the safety of this approach, we searched our electronic medical record for patients who had history of MRSA, a negative nares PCR within 2 days of admission, and later had a positive MRSA screen or culture. We reviewed their charts to determine if, under the new protocol, they would be removed from isolation, potentially placing other patients at risk. From these data we were able to identify risk factors for persistent MRSA colonization in our population.

**Subjects:** Patients admitted to UVM Medical Center between Jan. 1, 2013 and Sept. 30, 2015 who had a history of MRSA, a negative nares MRSA PCR within two days of admission and a subsequent positive MRSA result.

**Findings:** Of 736 patients who were admitted with a history of MRSA and negative screen within two days of admission, 63 had a positive screen or culture later during the admission or post discharge.

If the proposed protocol had been in place, 48 of these would have remained on precautions due to the exclusionary criteria and 15 would have had precautions discontinued. All 15 of the latter had one or more of the following risk factors: diabetes, morbid obesity, mildly impaired skin integrity, or lived in senior housing or a nursing home.

**Conclusions:** We incorporated the additional risk factors into our final protocol. It includes lists of “concerning conditions” and “disqualifying conditions” and divides patients into three groups in terms of eligibility for MRSA clearance: (1) *eligible* patients do not have any concerning or disqualifying conditions and may have isolation discontinued after a single negative nares PCR; (2) patients who *require extra testing* are those who have a concerning condition and must undergo cultures of extra-nasal body sites such as axilla and perineum before isolation can be discontinued, and (3) patients who are *ineligible* have one or more disqualifying conditions and remain in isolation. We estimate that we can save 1254 patient isolation-days per year with the new protocol without increasing the risk of nosocomial transmission of MRSA.
Minimizing Antibiotic Exposure in Infants at Risk for Early Onset Sepsis

Rachel Sooter, RN; Jennifer Laurent, PhD, FNP-BC; Roger Soll, MD

**Purpose of Study:** The objective of this research was to compare current practice at the University of Vermont Medical Center (UVMMC) to guidelines published by the Centers for Disease Control and Prevention (CDC) and American Academy of Pediatrics (AAP) and compared to treatment recommendations generated by a neonatal early onset sepsis (NEOS) infection probability calculator.

**Rationale and Significance:** Antibiotics are the most prescribed class of medications in the neonatal intensive care unit (NICU) and are lifesaving in the setting of a serious infection. Conversely, overuse of antibiotics has potential negative effects to individuals and the population as a whole. Increasing resistance to antibiotics, new research on the importance of the microbiome, and studies that associate antibiotic use early in life with negative health outcomes highlight the need for antibiotic stewardship programs and reconsideration of the threshold for antibiotic initiation.

Early onset sepsis (EOS) is an infection typically acquired in the birth canal that affects some babies in the first 72 hours of life. EOS is difficult to diagnose due to nonspecific symptoms and a lack of reliable tests. EOS can progress quickly and is potentially fatal or have neurodevelopmental consequences for survivors. Current guidelines published by the CDC and AAP recommend empiric antibiotics for all neonates born to mothers with a diagnosis of chorioamnionitis due to increased risk of EOS regardless of the neonates’ clinical presentation, gestational age, or other factors. The management of neonates at risk for EOS is flawed when it is based on the subjective diagnosis of chorioamnionitis. The diagnosis of maternal chorioamnionitis is clinical, with variable criteria leading to the diagnosis. Studies have shown that more strict diagnosis criteria of chorioamnionitis identifies a neonatal population with higher rates of EOS.

**Description of Methodology:** To examine this problem a retrospective chart review was performed. Data on maternal risk factors associated with EOS were collected with the clinical characteristics of neonates. Data were entered into a NEOS calculator to determine the specific risk of infection to each neonate. Treatment of the neonate was compared to the CDC and AAP guidelines and NEOS calculator recommendations.

**Subjects:** Paired maternal and neonatal dyads delivered in 2014 at UVMMC with a maternal diagnosis chorioamnionitis and gestational age of greater than or equal to 37 weeks. Exclusion criteria were neonates with congenital anomalies as defined by the Vermont Oxford Network and multiple gestation.

**Findings:** UVMMC currently treats 78% of neonates according to CDC and AAP guidelines. Use of the NEOS calculator would reduce antibiotic treatment to 18% of term neonates born to mothers with a diagnosis of chorioamnionitis.

**Conclusions:** Using the NEOS calculator to determine a more specific risk profile promotes antibiotic stewardship by reducing the number of neonates treated empirically while better targeting antibiotic therapy to ensure all neonates that need treatment receive it.

**Recommendation for Future Study:** Future study should include prospective investigation of the NEOS calculator. Additional study should focus on the diagnosis of chorioamnionitis, better testing for EOS, and the long term effects of antibiotics on the microbiome.
Differences in Heart Failure Symptom Cluster Profiles by Age and Gender

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Rationale and Significance: Patients with heart failure (HF) typically experience a number of symptoms concurrently. Gender, age and length of time with HF are posited to play a role in the HF symptom experience. However, little is known about specific symptom cluster profiles in HF patients and corresponding age and gender differences. Before developing person-centered interventions, more information about gender and age variations in HF symptom clusters is needed.

Purpose: The purpose of this study was to describe HF symptom clusters and to determine if there were differences in symptom clusters by age, gender and length of time with HF.

Methods and Subjects: A total of 133 patients with HF (mean age 79 years, 56% male, mean 3.3 years with HF) completed the 18 item Heart Failure Somatic Awareness Scale during hospitalization. Symptom clusters were determined by hierarchical agglomerative clustering techniques in SPSS 20. Chi square and ANOVA (post hoc LSD) analyses were used to compare differences in age, gender and length of time with HF by 3 symptom cluster groups.

Findings: Three clusters were found: 1. Cardiac symptom cluster (palpitations, chest pain, upset stomach, decreased appetite, cough), 2. Shortness of breath cluster (SOB) (tired, SOB when dressing, SOB lying flat, SOB at night, rest during day, less activity), 3. Edema cluster (swollen feet, tight shoes, tight clothes, weight gain). Significant differences in age (clusters 1 and 2 older than cluster 3, p = .003), gender (more men in group 3 and women in group 1, p = .05) and length of time with HF (cluster 1 > cluster 2, p = .038) existed between the clusters.

Conclusions: Results suggest that significant age and gender differences exist in the symptom experience of patients with HF. Therefore, nursing care should include complete assessment of and education about the unique symptom cluster profiles of older adults and women.

Recommendations for Future Study: Future research should also include psychological and physical symptom profiles to obtain a more accurate understanding of the symptom experience during an acute exacerbation of heart failure.
“We will never be normal”: The Lived Experiences of Discovering a Partner has Autism Spectrum Disorder

Laura Foran Lewis, PhD, RN

Purpose of Study: The purpose of this phenomenological study was to explore the lived experience of discovering a partner has Autism Spectrum Disorder (ASD). I aimed to answer the research question: What is the essence of the experience of realizing that a partner has ASD?

Rationale & Significance: Nearly half of adults with ASD and no intellectual disability enter into long-term relationships, often before they are diagnosed with ASD, ASD is defined by deficits in social communication and social interaction, which has significant implications for partners of individuals affected by ASD. Anecdotal evidence, such as online forums for partners of individuals with ASD and lay literature, suggests that these partners experience stress, depression, and trauma. Yet, the experience of partners of individuals with ASD has not been scientifically explored.

Description of Methodology: In this descriptive phenomenological study, participants were recruited online via public forums and support groups and asked to participate in online open-ended survey-style interviews. Colaizzi’s 7-step method was used for data analysis, including: 1) reading all protocols; 2) extracting significant statements; 3) formulating meaning from significant statements; 4) sorting formulated meanings into theme clusters; 5) integrating theme clusters into an exhaustive description of the phenomenon; 6) describing the fundamental structure of the phenomenon; and 7) asking participants to review the fundamental structure and exhaustive description to validate findings.

Subjects: A purposive sample of 45 partners of individuals who were formally diagnosed (36%), informally diagnosed (24%), or self-diagnosed (40%) with ASD as adults participated.

Findings: Six themes captured the experience of partners of individuals diagnosed with ASD, including: 1) issues crept into the relationship, in which differences emerged and caused tension; 2) insisting their partner get diagnosed, in which partners learned about ASD and recognized symptoms in their partners, often forcing them to seek diagnosis; 3) relief and validation, in which partners were grateful for the diagnosis because it legitimized their concerns; 4) disappointment and grieving loss of “normal” relationships, in which partners described losing hope for change within their relationships; 5) making accommodations, in which partners developed strategies in attempt to make their relationships work; and 6) wishing for help, in which participants mourned the lack of support and understanding they received from the healthcare community.

Conclusions: Findings indicate that there is evidence of depression and stress-related trauma within this partner population. Nurses must realize the importance of screening for depression, anxiety, and trauma-related disorders among partners following a new diagnosis of ASD. Both partners need help to promote mutual understanding, effective communication, and maintain healthy relationship expectations.

Recommendation for Future Study: Future research on the mental health landscape of partners of individuals with ASD is warranted, particularly to examine the presence of depression and trauma-related disorders.