CSU– Pueblo 5th Annual

2017 STUDENT SYMPOSIUM

A Celebration of Research, Scholarship & Creative Activity

Showcasing scholarly activities by students of:

Biology, Business, Chemistry, Communication & Rhetoric, Engineering, English/Creative Writing, Mass Communications, Music, Nursing, Psychology, Sociology/Criminology

April 7, 2017

Malik and Seeme Hasan School of Business, Hoag Hall, & LARC 108 and 109

REGISTRATION & BREAKFAST
7:30–10 AM
HSB Lobby

PROVOST'S WELCOME & KEYNOTE
12:30–1:30 PM
Hoag Hall

ORAL SESSIONS
8:30–9:40 AM
9:50–11 AM
11:10 AM–12:20 PM
3–4:30 PM

ART SHOW
1:45–2:45 PM
Fine Art Gallery

MUSIC PRESENTATIONS
1:45–2:45 PM
A/M 205 (Choir Room)

POSTER SESSIONS
8–10 AM
10–12 PM

Refreshments provided for attendees.

SPECIAL THANKS TO OUR SYMPOSIUM SPONSORS

Little Caesars

Colorado State University-Pueblo Hasan School of Business

Honors Colorado State University Pueblo

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Sigma Theta Tau

Poster Session A | HSB 110

SESSION A1 | 8-10 AM

Comparison of Extraction Methods on the Quantification of Cannabinoids in Hemp
Collin Arellano (MS, Chemistry)

Heroin and Related Societal Costs: National Trends and Pueblo-Specific Recommendations
Sydni Riley (Psychology/Sociology/Criminology)

The Impact of Cannabinoid Receptor (CB1) Antagonism/Agonism on Alphavirus Replication
Juan Rodriguez, Joseph Lopez (Biology & MS, Biology)

Novel Extraction Method for Cannabidiol from Industrial Hemp
Ana Gurau (Chemistry)

SESSIONS A1&2 | 8 AM-12 PM

Kangaroo Care vs. Conventional Methods in Newborn Nursing Care
(Harold) Delton Bartell, Charlie Moreschini, Ahna Masek, Adrian Marquez, Alex Fernandez, Sydney Marie Reese, Leah Lushan Pielsticker, Amanda Marie Bishop (Nursing)

Does Elective Induction with Pitocin Result in More Negative Outcomes for Laboring Mothers than Spontaneous Vaginal Delivery?
Graham Nagi, Haley Perrin, Reyna Gonzales, Maritza Rodriguez, Rich Simms, Tiffany Longest, Chelsi Baruth, Trena Fowler-Johnson (Nursing)

NICU Nursing Burnout as it Relates to Safety Culture
Jordan Krider, Katie Ryan, Amber Jandreau (Nursing)

The Effectiveness of Cannabis vs. Anti-Emetics in Reducing Chemotherapy Induced Nausea and Vomiting
Sierra Watts, Alexis Mayber, Olivia Navarro, Makenzie Olguin, Steven Gonzales, Megan Krutsche (Nursing)

Episiotomy vs. Tearing in Childbirth
Taryn Langlois, Natalie Trolle, Elizabeth Ryann Hignite, Brittany Walker, Stephanie M O'Day, Jasmine Maria Martin, Amanda Kristen Mikschl, Christine Elizabeth Pryor (Nursing)

Comparison of Nitrous Oxide and Epidural Analgesia: Safety Matters
Zolanye McCulley, Nursing (Pueblo, CO), *Maggie Seminoff*, Nursing (Denver, CO), *Claire Ackley*, Nursing (Canon City, CO), *Trisha Mathis*, Nursing (Colorado Springs, CO), *Terra Chambers*, Nursing (Pueblo, CO), *Stacie Gray McCue*, Nursing (Colorado Springs, CO), *Matt Gigliotti*, Nursing (Colorado Springs, CO), *Cassandra Day*, Nursing (Canon City, CO)

Poster Session B | HSB 111

SESSION B1 | 8-10 AM

Comparing EMDR and CBT in the Treatment of Childhood Trauma
Cynthia Hamilton-Hardin, Anna Barker, Kalpana Narayanan Nair (MSN, Psychiatric/Mental Health Nurse Practitioner)

Statistical Analysis of Pavement System in the US
Jill Rivera (Civil Engineering Technology)

Imatinib as an Effective Anti-Viral Treatment for Alphavirus Infection
Jessica Costlow, Erika Krow (Biology)

Microwave Synthesis of beta-Fluoroamides from Alkenes
Andrea Trimble (Chemistry)

Mitotic Red Blood Cells in Mojave Desert Tortoises
Tanja Ranilovic (Biology)

SESSIONS B1&2 | 8 AM-12PM

Effectiveness of Contact Precautions in MRSA Transmission in the Acute Care Setting
Claire Lorenzo, Keane Velez, Alexis Vigil, Destiny Maes, Cheyenne Chavez, Matthew Nitka, and Dawn Rosa (Nursing)

Does the Use of Chlorhexidine on Critical Ill Patients Prevent Nosocomial Infections During Their Hospital Stay Compared to Not Using Chlorhexidine?
Jessica Buresh, Nancy Gomez, Brittany Glatzel, Celeste Oden, Ashley Jones, Danyale Hager, Halee Spurlock, Katie Gerlock (Nursing)

SESSION B2 | 10 AM-12 PM

Bioaccumulation of Carbamazepine in Hornworms through Herbivory of Spiked Tomato Plants
Kristi Bartolo (MS, Biology)

Effects of Rhizosphere Bacteria (*Azospirillum Brasilense*, *Pseudomonas Flurorescens* and *Pseudomanas Pseudoalcaligenes*) on Carbamazepine Uptake from Reclaimed Water in Corn (*Zea mays*)
Ryan Schillling (MS, Biology)

Fecal Matter as a Diagnostic Tool for Measuring for the Exposure of Freshwater Aquatic Mammals to Anthropogenic Organic Contaminants in the Aquatic Environment
Frankline Nwanguma (MS, Chemistry/Biochemistry)

Treating Clostridium Difficile: Changing Your View on Poo
Kindra LeDuc, Bethany Caton, Patrick Wright, Joseph Miller (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Maggot Debridement Therapy
Leah Ruch, Christine Bohannan, Cher Li Ang (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner & MSN, Psychiatric/Mental Health Nurse Practitioner)

Use of the Aquatic Bryophytes (Physcomitrella) as an Integrative Sampling Tool for Monitoring of Anthropogenic Organic Contaminants in Fresh Water Systems
Shixue Liu, James S. Carsella (Chemistry)

Poster Session C | HSB 120

SESSION C1 | 8-10 AM

Are Written Asthma Action Plans for Children the Way to Go?
Elizabeth DeMarco, Michael Hathaway, Jennifer Merten, Rebecca Penkoff (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner & MSN, Psychiatric/Mental Health Nurse Practitioner)

Multi-Modal Approach to Migraine Pain in the Emergency Department
Natalie Zufall, Christine Christiansen, Lexie Lichvar, Amy Millsap (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Chronic Low Back Pain: Management Therapy
Tina Tripp, Daniel Marque, Irene Rawls, Jennifer Berrier (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

SESSIONS C1&2 | 8 AM-12 PM

Targeted Temperature Management Therapy
Amelia Boyd, Peter Nguyen, Preston Heinen, Kristin Salcedo, Kendahl Caminiti, Michael Hiner, Cari Anaya, Lauren Willkomm (Nursing)

Patient Care: BSN vs. ADN Nursing
Jonathan Demaree, Deepika Ghimire, Guy Inzunza, Xuyan Parry, Nick Nordstrom, Tifuh Nkweti, Aleiya Pence (Nursing)

Biometrics to Aid in Patient Identification
Katie Zortman, Angela Roe, Gwena Rinaldi, Pamela Duffee, Katherine Howe, Darryl Davis (Nursing)

SESSION C2 | 10 AM-12 PM

Low Risk Chest Pain and Observation Units
Abigail Saldua, Adrianna Allen, Kaitlin Veselicky, Rebecka Reatherford (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Atrial Fibrillation Treatment Guidelines
Jamison Lester, Lindsey Bollinger, Amber Doss, Yaghma Norouzi (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

How Low Should You Go? Induced Hypothermia in Post-Cardiac Arrest
Kimberly Jones, Elizabeth Gillespie, Kim Huynh, Amanda Spaak (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Mental Illness: Breaking Down the Barriers
Annette Ferri, James Anderson, Dawn Okeefe (MSN, Psychiatric/Mental Health Nurse Practitioner)

Oral Session 1 | 8:30-9:40 AM

SESSION 1A — HSB 108

Alirocumab (Praluent) and Low Density Lipoprotein Reduction
Amanda Anderson (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner)

Takotsubo Cardiomyopathy
Bobbi Hall (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Sleep Apnea and White Matter Disease in Hypertensive Patients: A Case Series
Terri EJ Kiernan (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner)

SESSION 1B — HSB 113

Target Temperature Hypothermia: How Cold Is Cool?
Daniel Mirshamsi (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner)

Reducing the Recurrence of Bacterial Vaginosis with Antibiotics and Probiotics
Danielle Riker (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner)

Evaluation of the Current Temperature Prediction Model for Asphalt Pavement Design
Ronald Millemon (Civil Engineering Technology)

SESSION 1C — HSB 122

Qualitative Research through the Eyes of an Undergraduate
Eliana Taylor (Communication & Rhetoric)

Ball is Life: Using Sports Intervention to Teach Life Skills
Devon Miller (English/Creative Writing/Communication & Rhetoric)

The Effects of Short Term Disabilities in College Aged Students
KayLynn McAbee (Mass Communications/Electronic Media)

SESSION 1D — LARC 108

The Effect of the Paleo Diet on Plasma Glucose in Type II Diabetes Mellitus
Marissa Cassio (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner)

The Artificial Pancreas Device System Versus Traditional Glucose Monitoring for Tighter Glycemic Control
Natalia Menert (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner)

The New Age of Stored Blood
Sarah Mitchell (MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner)

SESSION 1E — LARC 109

Anticoagulation in Hereditary Hemorrhagic Telangiectasia
Sean M. White (MSN, Adult-Gerontology Acute Care Nurse Practitioner)

Use of Dual Antiplatelet Therapy and Reduction of Recurrent Ischemic Stroke in Patients with Aortic Arch Atheromas
Briana Belisle BSN, RN (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Oral Antiplatelet Therapy
Rebecca Baker (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Oral Session 2 | 9:50–11 AM

SESSION 2A — HSB 108

Clindamycin and Probiotics
Alison Risk (Family Nurse Practitioner)

Tai Chi Versus Physical Therapy for Knee Osteoarthritis
Brendon Madrid (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Treatment of Cannabis Hyperemesis Syndrome: Comparison of IV Therapy with and without Haloperidol in the Emergency Department
Lindsey G. Fox (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

SESSION 2B — HSB 113

Curcumin in the Treatment of Osteoarthritic Joint Pain
Emily Dill (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Loratidine Treatment of Bone Pain
Tiffanie Hoover (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Fibromyalgia
Toloa Pearl (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

SESSION 2C — HSB 122

Evidence Based Care of Depression in Adolescents
Debra Tota (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Telemedicine for Rural Patients Living With Depression
Jessi Lamb (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Treatment of Depression and Anxiety
Amanda Moret (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

SESSION 2D — LARC 108

HINTS Exam to Diagnosing Posterior Stroke
Angela Allen (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Wireless Pulmonary Artery Pressure Monitoring
Bree Bacalis (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Blood Pressure Management: Reducing Cardiovascular Risk
Molly Unrein (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

SESSION 2E — LARC 109

Solar Energy in Pueblo: PV System Owners' Perspective
Tochukwu Chikwendu (MS, Industrial and Systems Engineering)

Diagnosis of Cannabinoid Hyperemesis Syndrome
Bryan Wood (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Oral Session 3 | 11:10 AM–12:20 PM

SESSION 3A — HSB 108

Understanding Postoperative Delirium
Carla Flores (MSN, Adult-Gerontology Acute Care Nurse Practitioner)

Is Honey an Effective Analgesic for Post Tonsillectomy Pain in the Pediatric Population?
Spencer Waller (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Probiotics for the Prevention of Recurrent Overt Hepatic Encephalopathy
Taylor Sederberg (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

SESSION 3B — HSB 113

Left Atrial Appendage Device: A Potential Substitute for Long-Term Anticoagulation Therapy
Kim Eisenbach (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

Combating Bullying: A Positive Approach
Robert Fitzpatrick (Psychology)

SESSION 3C — HSB 122

Acceptance of HPV Vaccination among Latino Parents
Jesusita Tafoya (MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner)

From Pictures to Practice: The Abuse of the Black Female Body
Hannah Sapp (Business Management)

Keynote | 12:30–1:30 PM

WELCOME & KEYNOTE — HOAG HALL

Provost's Welcome
Rick Kreminski, Provost

Getting Strength from My Struggles: The Secret to Success in College That Nobody Talks About
Taylor Voss, South Colorado Small Business Development Center (CSU-Pueblo HSB Class of 2016)

Spring Music Recital | 1:45-2:45 PM

RECITAL **HOAG HALL**

Students from Applied Piano, Collaborative and Piano Ensemble Classes perform duets and solos:

Ballade for flute and piano by Frank Martin

Sonata in E Minor for flute and keyboard by Johann Sebastian Bach

Barcarolle for piano from Six Pieces, Op. 11 by Sergei Rachmaninov

Danzas Argentinas for piano by Alberto E. Ginastera

Prelude, Book I, No. VI "Des pas sur la neige" by Claude Debussy

Barcarolle from Fantasy Suite, Op. 5, No. 1 by Sergei Rachmaninov

Sonata Op. 28, No. 15 in D Major by Ludwig van Beethoven

Art Presentations | 1:45-2:45 PM

ART SHOW **FINE ART GALLERY**

Senior BFA and BA art majors will present their artwork in an exhibit in the Fine Art Gallery:

- Mariah Algien
- Kayla Alire
- Megan Artus
- Carmen Clary
- Amanda Crucabur
- McKenzie Dalton
- Edward Doyle
- Ashley Eakman
- Erica Frieden
- Tatiana Herran
- Madison Hildebrand
- Sam Ingo
- Anthony Lucero
- Molly Moreschini
- Jadan Morrow
- Sean Pauley
- Jason Prescott
- Joyce Pretzer
- Rachel Reynolds
- Courtney Stephens
- Rachel Tallent
- Brianna Walrod
- Stavros Yfantis

Oral Session 4 | 3-4:30 PM

SESSION 4A **LARC 109**

Heroes & Villains: Creating Characters and Making Choices
Alec Portillos (English/Creative Writing)

Writing Between the Lines (Overcoming Writer's Block)
Alison Gervais (English/Creative Writing/Communication & Rhetoric)

Love to Talk: Communicate Your Way to a Better Future
Kevin Cano (Mass Communications/Electronic Media/ Communication & Rhetoric)

SESSION 4B **LARC 108**

Why So Serious?: Communication as a Means of Addressing Depression and Suicide
Vera Coleman (Psychology/Communication & Rhetoric)

Hepatitis C Medications
Harry Aragon (MSN, Adult-Gerontology Acute Care Nurse Practitioner)

Abstracts

Posters A1 | Comparison of Extraction Methods on the Quantification of Cannabinoids in Hemp
Collin Arellano, MS, Chemistry (Pueblo, CO)

Senate Bill 241 classifies industrial hemp as having no more than 0.3% Δ9-tetrahydrocannabinol (THC). This project focuses on a comparison of extraction methods on the quantity of reported cannabinoids in industrial hemp. A standard method published by the United Nations that employs ultrasonic assisted liquid extraction (UN method) was compared to a more aggressive method employing a pressurized liquid extract (PLE method). Both the PLE and UN methods can be used to extract and analyze different cannabinoids in hemp. At this point in the study, focus has been on THC and cannabidiol (CBD). The concentrations of THC and CBD are reported to have an average percent difference of 123.68% for CBD and 161.77% for THC in hemp when employing the PLE method compared to the UN method. This can be problematic from a regulatory standpoint given that standard extraction protocols have not been established, and we demonstrate two extraction methods yielding very different results for the same hemp samples. Escalating concern is that the results of the PLE method may result in a THC concentration greater than the 0.3% regulatory limit while the results of the UN method suggest the plant complies with the regulatory limit. In part, this difference may be explained when considering the acidic form of these two analytes, CBD-A and THC-A. While the extracts prepared using the UN method contained both THC-A and CBD-A, the PLE method did not contain detectable quantities of CBD-A and THC-A. This is likely a result of the elevated temperature (100° C) at which the PLE method was carried out. The PLE method employs both high temperature (100° C) as well as high pressure (>10,000 kPa). At elevated temperatures THC-A and CBD-A are known to decarboxylate into their non-acidic forms, THC and CBD respectively. However, even though this is likely to have contributed to the elevated concentrations of THC and CBD following the PLE method, a mass balance of the THC-A and CBD-A present in the extracts using the UN method suggests that even complete decarboxylation of THC-A and CBD-A is insufficient to fully account for the concentrations of THC and CBD detected in the PLE method extract. This suggests that the PLE method is more efficient than the standard UN method. Ultimately, such extraction methods dependent THC concentrations and decarboxylation can cause a plant to appear to have more available THC than it does with a competing method. This has serious implications for the regulatory community especially when monitoring plants for

compliance with Senate Bill 241.

Posters A1 | Heroin and Related Societal Costs: National Trends and Pueblo-Specific Recommendations
Sydni Riley, Psychology/Sociology/Criminology (Florissant, CO)

Recent increases in heroin use and abuse rates in Pueblo county and surrounding areas have left many local residents, media outlets, and officials troubled. The associated problems with heroin abuse have sparked dialogue on what exactly should be done about the crisis. In this report, we think it important to situate the issue within the context of statewide and national trends with licit and illicit opioid use, abuse, and overdose statistics. Similar patterns are observed nationwide and in this respect, Pueblo is not an anomaly. In addition to exploring trends, we will also outline the associated costs and social burdens of heroin abuse. The cost and rate of crime will be analyzed as well as public health and safety implications such as the spread of HIV and the disposing of needles in public areas. We will conclude with evidence-based recommendations for interventions and treatments such as harm reduction versus mass incarceration (i.e., programs like LEAD and The Angel Project) as well as needle exchange programs and syringe disposal receptacles for increased public safety.

Posters A1 | The Impact of Cannabinoid Receptor (CB1) Antagonism/Agonism on Alphavirus Replication
Juan Rodriguez, Biology (Pueblo, CO), *Joseph Lopez*, MS, Biology (Pueblo, CO)

Cannabinoid receptors are found on many cells throughout the body. Endocannabinoids bind to the receptors and initiate a signaling cascade within the cell. It has been shown that activation of cannabinoid receptors (CB1) alter cellular physiology and increase anabolic pathways such as fatty acid and glucose synthesis. Viruses are obligate intracellular parasites that require a host cell to provide essential macromolecules, nutrients, and energy for replication. Alterations to metabolic pathways directly impact the ability of the virus to successfully replicate and produce new virions. We hypothesized that activation or inhibition of the CB1 receptor/endocannabinoid signaling pathway will cause specific changes in cellular physiology which will directly impact alphavirus infection in cultured cells. To investigate our hypothesis, we have utilized murine and human cell lines to measure the impact of the endocannabinoid system on alphavirus infection. At this point, all testing has been performed with the prototype alphavirus, which is Sindbis virus. This is a plus strand RNA virus that is transmitted by infected mosquitoes. SINV is a safe virus to be used for testing in a lab setting, but it is closely related to other mosquito viruses that are causing outbreaks around the world, including Chikungunya virus. All cells being used have been confirmed to have CB1 receptors on the cells. We have tested the activation of CB1 receptors (using the agonist/activator ACEA) and the inhibition of the receptors (using the antagonist/inhibitor AM251) and have found that treatment with either the agonist or antagonist cause significant changes to virus replication at 24 hours post infection. We are also investigating the change in CB1 receptor expression during chronic viral infection to measure different susceptibilities that may be influenced by the endocannabinoid system. Specific details and results will be discussed at the poster.

Posters A1 | Novel Extraction Method for Cannabidiol from Industrial Hemp
Ana Gurau, Chemistry (Longmont, CO)

The purpose of this research is to develop and optimize an efficient novel method of extracting cannabidiol (CBD) from industrial hemp plants (<3% Δ9-tetrahydrocannabinol; THC). CBD is a compound with significant interest for medical benefits that is emerging nationwide as a treatment for a variety of conditions. The current standard for extraction of CBD and other cannabinoids from hemp is super critical CO2 extraction. The method under development employs pressurized liquid extraction (PLE) for the extraction of CBD, using an accelerated solvent extractor. A variety of PLE parameters can be adjusted to improve extraction efficiencies. The initial un-optimized parameters (temperature, solvent volume, and time) resulted in an extraction efficiency that exceeds other solvent based methods. Currently, extraction temperature was the first variable to be optimized. At this time, extraction temperatures from 60°C to 140°C are being tested. Further analysis of samples is needed to optimize extraction temperature. Other PLE parameters to be tested will include solvent volume and extraction time. The optimized extraction method will ultimately be compared to the industry standard super critical CO2 extraction.

Posters A1/2 | Kangaroo Care vs. Conventional Methods in Newborn Nursing Care
(Harold) Delton Bartell, Nursing (Pueblo West, CO), *Charlie Moreschini*, Nursing (Pueblo, CO), *Ahna Masek*, Nursing (Pueblo, CO), *Adrian Marquez*, Nursing (El Paso, TX), *Alex Fernandez*, Nursing (Colorado Springs, CO), *Sydney Marie Reese*, Nursing (Aurora, CO), *Leah Lushan Pielsticker*, Nursing (Denver, CO), *Amanda Marie Bishop*, Nursing (Tijeras, NM)

Kangaroo Care is an affordable and convenient method of delivering newborn nursing care. It is being

implemented in various areas and institutions across the world. In 1979, research was conducted in Bogota, Columbia to determine if skin-to-skin contact decreased infant mortality rates in the absence of advanced nursing methods and medical equipment. The purpose of this study is to determine whether Kangaroo Care is more beneficial for health promotion and newborn nursing care than conventional methods. This is a translational research study utilizing a literature review design. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. Rigorous and thorough review of multiple research studies revealed that Kangaroo Care is an effective method of nursing care, and it is most effective when used as a supplement to conventional methods. Kangaroo care was found to decrease pain, improve parent-baby bonding, decrease infant mortality, and improve long lasting social and behavioral benefits. These results support the incorporation of Kangaroo Care into newborn nursing care and health promotion. Kangaroo Care benefits outweigh the risks in uncomplicated pregnancies. The implementation of Kangaroo Care in nursing care and health promotion can improve outcomes for mothers and their babies.

Keywords: skin-to-skin, kangaroo care

Posters A1/2 | Does Elective Induction with Pitocin Result in More Negative Outcomes for Laboring Mothers than Spontaneous Vaginal Delivery?

Graham Nagi, Nursing (Saline, MI), *Haley Perrin*, Nursing (Canandaigua, NY), *Reyna Gonzales*, Nursing (Pueblo, CO), *Maritza Rodriguez*, Nursing (Aurora, CO), *Rich Simms*, Nursing (Auberry, CA), *Tiffany Longest*, Nursing (Santa Maria, CA), *Chelsi Baruth*, Nursing (Lexington, NE), *Trena Fowler-Johnson*, Nursing (Wiley, CO)

The rates of induction of labor in pregnancy more than doubled from 1990 to 2010 rising from 9.6% to 23.8% for all gestational age groups. One fifth of all births in the United States were completed utilizing uterotonic medications to induce labor. The high percentage of births completed with this method prompted this inquiry into the general outcomes associated with elective induction of labor managed with Oxytocin or Pitocin. This review of current research answered the research question "Does elective induction with Pitocin result in more negative outcomes for laboring mothers than spontaneous vaginal delivery?" This is a translational research study utilizing a literature review design. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. Each current research article reviewed was critically appraised for credibility, significance, and implications for practice. The review demonstrated elective induction with Pitocin resulted in no greater negative maternal outcomes, when additional clinical measures to increase cervical ripening are included as compared to spontaneous vaginal delivery (SVD). Implications for safe practice include the use of a Pitocin administration checklist, monitoring Bishop's score ≥8 prior to treatment, and use of a ripening agent.

Keywords: Pitocin, Induction, outcome, oxytocin, elective induction, results

Posters A1/2 | NICU Nursing Burnout as it Relates to Safety Culture

Jordan Krider, Nursing (Fort Collins, CO), *Katie Ryan*, Nursing (Colorado Springs, CO), *Amber Jandreau*, Nursing (Woodland Park, CO)

The Neonatal Intensive Care Unit (NICU) is a high intensity setting where nurses are especially prone to burnout syndrome (BOS) due to increased patient needs, uncertain outcomes, long shift hours, emotional exhaustion, and being short staffed. High burnout is correlated to lower perception of safety culture as evidenced by decreased quality of care, high turnover rates, lower reporting of near misses, increased missed care, and being less alert to potential safety hazards. The purpose of this study was to explore the question, "Does a decrease of daily workload lead to decreased staff burnout and improve patient safety outcomes compared to current nursing practices?" This is a translational research study utilizing a literature review design. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. This research study revealed that shorter shifts and decreased workload by optimal nurse-patient ratios based on the number of care hours required by each patient increase patient safety.

Keywords: burnout syndrome, NICU, workload, safety

Posters A1/2 | The Effectiveness of Cannabis vs. Anti-Emetics in Reducing Chemotherapy Induced Nausea and Vomiting

Sierra Watts, Nursing (Colorado Springs, CO), *Alexis Mayber*, Nursing (Pueblo West, CO), *Olivia Navarro*, Nursing (Pueblo West, CO), *Makenzie Olguin*, Nursing (Pueblo West, CO), *Steven Gonzales*, Nursing (Pueblo West, CO), *Megan Krutsche*, Nursing (Littleton, CO)

Due to the increase in availability and prescription of medical cannabis this study seeks to find if medical cannabis is more effective at treating chemotherapy induced nausea and vomiting (CINV) compared to anti-emetics. This transitional research study utilized a literature review design. All authors have completed

the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. Over 15 current research articles were found that conducted research on the current effects of both cannabis and antiemetic's on CINV. The articles reviewed vary in results of the level of effectiveness of decreased CINV. This literature review revealed that both cannabis and anti-emetics are effective at decreasing patient symptoms of CINV. Since both cannabis and antiemetic's have different side effects, ultimately, the use of either cannabis or anti-emetics will come down to the patient's subjective experience and preference. Due to federal legal implications, cannabis research is sparse. Therefore, further clinical research is needed to determine evidence of medicinal uses of cannabis.

Keywords: cannabis, chemotherapy, anti-emetics, nausea and vomit, CINV

Posters A1/2 | Episiotomy vs. Tearing in Childbirth

Taryn Langlois, Nursing (Seattle, WA), *Natalie Trolle*, Nursing (Peoria, IL), *Elizabeth Ryann Hignite*, Nursing (Colorado Springs, CO), *Brittany Walker*, Nursing (Murrieta, CA), *Stephanie M O'Day*, Nursing (Colorado Springs, CO), *Jasmine Maria Martin*, Nursing (Panama City, Panama), *Amanda Kristen Mikschl*, Nursing (Vermilion, OH), *Christine Elizabeth Pryor*, Nursing (Pineville, NC)

Over the past century, the use of episiotomies during childbirth have become common. Recently, practitioners began questioning whether the use of episiotomies caused more negative patient outcomes than allowing a laboring woman to tear naturally. This literature review synthesizes research on patient outcomes following an episiotomy compared to tearing naturally during labor. The clinical question is: "Does allowing laboring mothers to tear naturally during childbirth increase positive patient outcomes compared to the use of episiotomies?" This is a translational research study utilizing a literature review design. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. After rigorous review and proven critical appraisal of over twenty current research studies, the use of episiotomies were found to have many negative effects on mothers postpartum. These effects included, but were not limited to: delayed healing time, increased degree of laceration, increased risk of infection, increased blood loss, and disturbed family bonding. Consistently, each article concluded that the routine use of episiotomies caused more adverse effects and that laboring mothers should be allowed to tear naturally. However, episiotomies should be used in extreme circumstances that include the threat of life to the fetus due to imminent delivery.

Keywords: episiotomy, laceration, dyspareunia, dysuria, infection, blood loss, perineal pain, perineal damage, labor, sphincter disruption

Posters A1/2 | Comparison of Nitrous Oxide and Epidural Analgesia: Safety Matters

Zolanye McCulley, Nursing (Pueblo, CO), *Maggie Seminoff*, Nursing (Denver, CO), *Claire Ackley*, Nursing (Canon City, CO), *Trisha Mathis*, Nursing (Colorado Springs, CO), *Terra Chambers*, Nursing (Pueblo, CO), *Stacie Gray McCue*, Nursing (Colorado Springs, CO), *Matt Gigliotti*, Nursing (Colorado Springs, CO), *Cassandra Day*, Nursing (Canon City, CO)

Laboring mothers have many options for pain control during their labor. In the U.S., the epidural is commonly used for pain control. Historically, many countries use a 50/50 mix of nitrous oxide and oxygen (nitrous oxide) for analgesia as an option for laboring mothers. This review evaluates the following question: "For laboring mothers, does the use of nitrous oxide for pain management during labor provide a higher level of safety for mother and fetus compared to the use of an epidural?" This is a translational research study utilizing a literature review design. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants". This review found that nitrous oxide poses minimal risk to mother and fetus, although its measure of effectiveness for pain control is less than an epidural, the intervention is less invasive than an epidural, it is patient controlled, and the most common side effects are nausea and vomiting, agitation, and euphoria. In conclusion, nitrous oxide is a viable alternative for laboring mothers that may pose minimal risk to mother and fetus. This method of pain control can be incorporated into clinical practice, as long as the laboring environment has a scavenging system to protect all participants. Given current implications about the safety of nitrous oxide, further research would benefit clinical practice.

Posters B1 | Comparing EMDR and CBT in the Treatment of Childhood Trauma

Cynthia Hamilton-Hardin, MSN, Psychiatric/Mental Health Nurse Practitioner (Colorado Springs, CO), *Anna Barker*, MSN, Psychiatric/Mental Health Nurse Practitioner (Colorado Springs, CO), *Kalpana Narayanan Nair*, MSN, Psychiatric/Mental Health Nurse Practitioner (Colorado Springs, CO)

Aim: To explore if eye movement desensitization and reprocessing (EMDR) reduces symptoms of post-traumatic stress (PTS) in children better than cognitive behavioral therapy (CBT). Currently CBT is the

treatment of choice, but there may be just as effective or more effective treatments available.

Background: Cumulative childhood stress exposure creates a vulnerability to adult social dysfunction, poorer adult health outcomes, and decreased quality of life as well as higher risk for homelessness and incarceration. There is a need for health care providers to identify risk factors like PTS from childhood trauma, and provide early quality interventions to prevent poor outcomes and soaring healthcare costs. Much of the research and support has been focused on CBT.

Conceptual Framework: While using the Tidal Model, providers can facilitate reduction in PTS symptoms by implementing EMDR. The Tidal model uses a holistic, patient-centered approach for mental health nurses to improve the security and well-being of the patient in any mental health setting.

Methods: The key search terms childhood, trauma, PTSD, and EMDR, were used in the CINHAL, PsychInfo, and Cochrane Library databases to complete a literature review related to the efficacy of EMDR compared to CBT in children affected by trauma. Five articles were reviewed: a systematic review (1), randomized control studies (3), and a case study (1). All group members completed National Institute of Health (NIH) modules.

Results: As demonstrated, EMDR is more effective ($p<0.05$) than CBT ($p=0.116$).

Implications: Currently, the literature endorses the use of CBT for the reduction of symptoms related to trauma. An advanced practice nurse can offer more options for treatment and referral for an EMDR specialty provider.

Posters B1 | Statistical Analysis of Pavement System in the US

Jill Rivera, Civil Engineering Technology (Peyton, CO)

Although asphalt and concrete are the primary materials for pavement construction, the statistical data of these two pavements are not readily available. This study explores the updated literature and analyzed the statistics of the total pavement in the United States. There is the total of 8.7 million miles of pavement (2.5% Interstate and 97.5% Non-Interstate) in the United States. Interstate comprises 65% concrete, and 35% asphalt pavements. Non-interstate has 94% asphalt and 6% concrete. The construction of asphalt and concrete pavements cost per mile-lane the average of $3.1 and $2.8 million, respectively. The total construction cost is $26.7 trillion. The average maintenance cost for asphalt pavement is $34,000 per mile-lane per year (totaling about $295 billion per year).

Posters B1 | Imatinib as an Effective Anti-Viral Treatment for Alphavirus Infection

Jessica Costlow, Biology (Fountain, CO), *Erika Krow*, Biology (Pueblo, CO)

Imatinib is a cancer chemotherapy that is FDA approved for treating several types of cancers. It works by inhibiting kinases within the cell, including hexokinase of the glycolysis pathway. Cancers are essentially a metabolic/cell division disorder where cells grow uncontrollably with an elevated metabolic rate. Many cancer drugs target this elevated metabolism and inhibit or slow down metabolism to normal levels. Viruses have been shown to be dependent on glycolysis and increase the glycolytic flux during infection. Glucose uptake in BHK cells was tested by infecting the cells with the alphavirus Sindbis virus (SINV) and comparing with uninfected cells. The cells infected with SINV show an increased intake of glucose as the level of infection (MOI) increases. The dependence on glucose has also been shown by using different concentrations of glucose in cell culture media and infecting the cells. As the concentration of glucose or glutamine increases in media, there is an increase in viral infection. We hypothesized that glucose is critical for SINV replication and that cancer drugs that slow metabolism may potentially be repurposed and used as effective antiviral treatments. We have screened 3 cancer drugs, Imatinib, DCA, and Lonidamine and have found that Imatinib is successful at inhibiting alphavirus replication in cultured cells. Treatment with 12uM Imatinib showed a decrease in viral replication at 24 hours, while maintaining cell viability. This inhibition has been effective at various levels of infection (MOI's), times post infection, and cell lines from different species. We have also found that altering the level of glucose and glutamine in cell culture media directly impacts the level of virus replication. Further work is being performed to validate and confirm the potential use of Imatinib as an antiviral therapy and to better understand metabolic changes that are occurring during alphavirus infection.

Posters B1 | Microwave Synthesis of beta-Fluoroamides from Alkenes

Andrea Trimble, Chemistry (Pueblo, CO)

Previously we have reported the generation of β-fluoroamides from alkenes via electrophilic fluorinations with F-TEDA in dry acetonitrile. We now report improved yields in this reaction using microwave assisted chemistry. The low to modest yields from thermal reactions were improved to at least 80% in a series of alkenes when the microwave approach was used. We continue to explore structural boundaries in these reactions as well as the conversion of the fluoroamides to biologically interesting β-fluoroamines.

Posters B1 | Mitotic Red Blood Cells in Mojave Desert Tortoises

Tanja Ranilovic, Biology (Belgrade, Serbia)

Relative numbers of red blood cell differ from species to species, and can be influenced by environmental or genetic factors. Seasonal variations could have an impact on the maturation and development of red blood cells in desert tortoise populations. Our research focused on comparing red blood cells from six wild tortoises—with mitotic red blood cells—in summer and fall. By simple visual count, we separated samples that contained mitotic and immature cells and analyzed them with ANOVA. These results suggested that samples obtained in summer had a significant number of mitotic and immature cells when compared to fall ($p=0.043$, for immature blood cells). This could be explained as a variation during the seasons, where winter and spring are slower seasons for tortoises while they stay buried under ground hibernating while summer is the good time for the organism to recover and awake.

Posters B1/2 | Effectiveness of Contact Precautions in MRSA Transmission in the Acute Care Setting

Claire Lorenzo, Nursing (Littleton, CO), *Keane Velez*, Nursing (Colorado Springs, CO), *Alexis Vigil*, Nursing (Pueblo, CO), *Destiny Maes*, Nursing (Pueblo, CO), *Cheyenne Chavez*, Nursing (Pueblo, CO), *Matthew Nitka*, Nursing (Pueblo, CO), *Dawn Rosa*, Nursing (Grand Junction, CO)

This analysis was conducted to evaluate the effectiveness and potential adverse outcomes related to utilizing contact precautions versus standard precautions for prevention of Methicillin-Resistant Staphylococcus aureus transmission in the acute healthcare setting. According to the Center for Disease Control and Prevention, Methicillin-Resistant Staphylococcus aureus (MRSA) is defined as a strain of Staphylococcus aureus that is resistant to the antibiotic Methicillin. MRSA is a bacterium spread by direct contact. The presence of MRSA in the acute healthcare setting has contributed to mortality and an increase in healthcare costs.Therefore, this translation research study utilized a literature review design to answer the research question,"Does the utilization of contact precautions by healthcare providers in the acute care setting decrease the rate of nosocomial Methicillin Resistant Staphylococcus Aureus infections compared to standard precautions?" All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. The scientific databases used to uncover current research for this project included: EBSCOhost, CINAHL, and PubMED. Through rigorous critical appraisal of current research conducted on the prevention of nosocomial MRSA infections in the acute healthcare setting, the research concludes that there was no difference in nosocomial MRSA infection rates when standard precautions versus contact precautions were utilized. Proper hand hygiene performed by healthcare providers is the number one preventative measure to decrease the spread of MRSA.

Keywords: MRSA, standard precautions, contact precautions, infection control, hand hygiene, cost effectiveness, nosocomial infections, prevention

Posters B1/2 | Does the Use of Chlorhexidine on Critical Ill Patients Prevent Nosocomial Infections During Their Hospital Stay Compared to Not Using Chlorhexidine?

Jessica Buresh, Nursing (Colorado Springs, CO), *Nancy Gomez*, Nursing (Denver, CO), *Brittany Glatzel*, Nursing (Pueblo, CO), *Celeste Oden*, Nursing (Pueblo, CO), *Ashley Jones*, Nursing (Parker, CO), *Danyale Hager*, Nursing (Pueblo, CO), *Halee Spurlock*, Nursing (Pueblo, CO), *Katie Gerlock*, Nursing (Colorado Springs, CO)

This translational research study utilized a rigorous literature review and proven critical appraisal process to explore the various applications of chlorhexidine (CHG) as an effective infection prevention technique in health care settings. Studies show through randomized controlled trials (RCT) the use of chlorhexidine reduces nosocomial infections in critically ill patients compared to other forms of infection prevention methods. All articles were sourced from databases provided by Colorado State University Pueblo Library. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. According to the majority of current research appraised the eradication of nosocomial infections improved patient outcomes. In 2007, the author Bleasdale found that using daily bathing with CHG was associated with a 61% reduction of developing bloodstream infections. Nosocomial infections are one of the most influential factors in patient outcomes and insurance reimbursement. Therefore, CHG should be implemented in all health care settings to reduce the incidence of nosocomial infections thus improving patient satisfaction and safety.

Keywords: Chlorhexidine, nosocomial infections, critically ill patients, infection prevention, daily bathing, intensive care unit, invasive lines

Posters B2 | Bioaccumulation of Carbamazepine in Hornworms through Herbivory of Spiked Tomato Plants

Kristi Bartolo, MS, Biology (Pueblo, CO)

There is an increasing trend in agriculture to use biosolids and as a means of replenishing nutrients to crop fields. This practice helps to increase crop production while simultaneously reducing cost associated with the use of synthetic fertilizers for farmers. Biosolids are the end product obtained from waste water treatment plants. Biosolids have been reported to contain active pharmaceutical compounds. When the biosolids are used to amend fields, the active pharmaceuticals are also transferred to the crop fields where they either are leached though the soil system into ground water or are taken up by the crop plants growing in the amended field. There is a myriad of research focused on pharmaceuticals being transferred to crop plants however there is not as much describing whether the pharmaceuticals are further transferred through the ecosystem. Carbamazepine (CBZ) is a commonly found pharmaceutical in biosolids and has been shown to be taken up by tomatoes. This study aims to determine the transfer of CBZ from tomato plant leaves to hornworms to illustrate the potential for pharmaceuticals to be transferred through increasing trophic levels. Tomatoes grown under greenhouse conditions in CBZ spiked soil were used as food for hornworms, who were collected for analysis at the fifth instar. CBZ has been detected in the tomato leaves and in hornworm tissue as well. A positive result in the worms supports the transfer of pharmaceuticals through trophic levels and further inquiries can be made about movement of pharmaceuticals through trophic levels. Further testing can include effects of pharmaceuticals on the behavior of organisms and also determine the biomagnification ability of the compounds all the way up to humans.

Posters B2 | Effects of Rhizosphere Bacteria (Azospirillum Brasilense, Pseudomonas Flurorescens and Pseudomanas Pseudoalcaligenes) on Carbamazepine Uptake from Reclaimed Water in Corn (Zea Mays)

Ryan Schillling, MS, Biology (Aurora, CO)

Human pharmaceuticals are a group of chemical substances of increasing concern due to the rising body of evidence showing that these drugs are in the environment. This concern stems from the fact that these compounds are biologically active, highly absorbable, and have been shown to accumulate. One major pathway these compounds enter the environment is through the use of the end products of wastewater treatment plants, reclaimed wastewater and biosolids, which even after treatment harbor these anthropogenic compounds such as the human pharmaceutical carbamazepine (CBZ), a widely prescribed anticonvulsant. Previous studies have established that plants can uptake these compounds under environmentally relevant concentrations making them available for higher trophic level non-target organisms. How plants are able to uptake these compounds is still a mystery. The focus of this study is to find out what role mutualistic rhizosphere bacteria Azospirillum brasilense, Pseudomonas flurorescens and Pseudomanas pseudoalcaligenes might play in the uptake of CBZ from a simulated reclaimed wastewater hydroponic system.

Posters B2 | Fecal Matter as a Diagnostic Tool for Measuring for the Exposure of Freshwater Aquatic Mammals to Anthropogenic Organic Contaminants in the Aquatic Environment

Frankline Nwanguma, MS, Chemistry/Biochemistry (Pueblo, CO)

The purpose of this work is to develop and validate a noninvasive method for analyzing exposure of aquatic mammals to anthropogenic organic contaminants (AOCs). Despite their increasing use to enhance quality of life, anthropogenic compounds can also have negative effects when washed down the drain into municipal waste systems, passed through the wastewater treatment systems, and when entering natural environments becoming contaminants. Anthropogenic contaminants include components in pharmaceuticals, personal care products, steroids, hormones, compounds for industrial use, and pesticides. These contaminants have been reported to interfere with the normal functions of many organisms such as; inhibits reproductive success, disrupts endocrine system, and decrease immune functions. Otters and minks are at a higher trophic level within the continental aquatic food chain, hence determining the exposure of these aquatic mammals to AOCs will help assess the potential for movement and biomagnification of AOCs in the aquatic habitat. However using traditional methods of tissue, fluid, or organ sampling are highly invasive requiring trapping, anesthetization, or even euthanizing the organism. We aim to develop an analytical method that could be applied to analyze AOCs in the fecal matter to avoid the need for other invasive sampling processes. The analytical method being developed utilizes pressurized liquid extraction (PLE) to extract representative analytes of interest from the fecal matter. The extract is put through a cleanup and preconcentration process using solid phase extraction and evaporation of the PLE extract prior to quantitative analysis using gas chromatography-mass spectrometry. When fully validated the method will be applied to fecal samples of aquatic mammals recovered from natural habitats using trained canines to identify potential exposure to AOCs.

If successful, a new noninvasive analytical method to measure AOCs in the fecal matter of aquatic mammals could be the basis for further research on similar analytical methods for other organisms.

Posters B2 | Treating Clostridium Difficile: Changing Your View on Poo

Kindra LeDuc, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Castle Rock, CO), *Bethany Caton*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Alamosa, CO), *Patrick Wright*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Omaha, NE), *Joseph Miller*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO)

Aim: To determine the most effective treatment for recurrent Clostridum Difficile Infection (CDI) by comparing the use of standardized treatment of Vanco/ Flagyl vs Fecal Microbia Transplant.

Background: From 1996 to 2005 the incidence of recurrent CDI has tripled. Longstanding treatment for CDI's has been the use of Flagyl and Vancomycin, with a failure rate of 30% after first recurrence, and 60% after two or more recurrences.

Conceptual Framework: Sister Callista Roy's Adaptation theory is used to guide the plan of care for the patient with recurrent clostridium difficile, where the patient's ability to adapt is a function of the stimulus to which he/she is exposed.

Methods: Using the search terms fecal microbia transplant, vancomycin/flagyl use in recurrent CDI treatment, practice guidelines, CINHAL, AHRQ, and the Cochrane databases were searched for information related to treatment for recurrent CDI. Five articles were reviewed; a practice guideline (1), systematic reviews (3), and a interview compiled this search (1). All group members successfully completed the NIH modules.

Results: Data from 2015 demonstrate clinical success rates of 66.3% for metronidazole vs 78.5% for vancomycin for severe recurrent CDI. Newer therapies show promising results, including fecal microbiota transplantation with response rates of 83%-94% for recurrent CDI.

Implications: Based upon the evidence collected, the Advanced Practice Nurses (APN) would advocate for using FMT for treatment of recurrent CDI for patient safety, comfort, cost effectiveness, increasing antibiotic resistance, as well as improving overall patient outcomes.

Posters B2 | Maggot Debridement Therapy

Leah Ruch, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Englewood, CO), *Christine Bohannan*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Denver, CO), *Cher Li Ang*, MSN, Psychiatric/ Mental Health Nurse Practitioner (Pueblo, CO)

In diabetic adults with wounds lasting greater than three months (P), how does maggot debridement therapy (I) compared to surgical debridement (C) lead to better wound healing (O) over a year (T)?

Aim: The aim of research was to compare maggot debridement therapy versus surgical debridement of necrotic tissue in patients with chronic diabetic wounds, lasting greater than 3 months, to determine which therapy lead to better wound healing over a period of a year.

Background: Current statistics have found that there are 194 million people worldwide and 25.6 million residents within the United States who have diabetes. Of those, 15% will develop a diabetic foot ulcer within their lifetime.

Theory: The Decision Making Model was used to compare and choose the best overall alternative from a set of treatment modalities.

Methods: Translational research process using a literature review method. Key search terms: maggot therapy, diabetic wounds, debridement. Databases PubMed and ClinicalKey were utilized. Research articles include systematic reviews, meta-analysis, and cohort studies. All group members completed NIH certificate.

Results: The meta-analysis results showed a confidence interval of 95% with a $p<0.001$, demonstrating a decrease in necrotic tissue while sparing viable tissue and stimulating healing when compared to surgical debridement therapy.

Implications: Based on available evidence maggot debridement therapy indicates a superior effectiveness for debriding necrotic diabetic wounds when compared to traditional surgical debridement.

Posters B2 | Use of the Aquatic Bryophytes (Physcomitrella) as an Integrative Sampling Tool for Monitoring of Anthropogenic Organic Contaminants in Fresh Water Systems

Shixue Liu, Chemistry (Tianjin, China), *James S. Carsella*

This project is designed as a proof of concept for the use of the aquatic plant, bryophytes (Physcomitrella), as a diagnostic tool for monitoring anthropogenic organic contaminants (AOCs) in aquatic environments. Initial work is using the pharmaceutical carbamazepine (CBZ) as a model AOC to explore the potential uptake of AOCs by bryophytes. Replicate bryophytes samples in a modified Knop growth media were equally grouped into three study groups including a control group, a carrier control group (addition of a small volume of methanol), and an experimental group (addition of CBZ in methanol). The concentration of CBZ used in the experimental group, 400mg/L, is representative of the upper range of CBZ concentrations measured in surface waters receiving treated wastewater. Following 7 days of

exposure, bryophytes were be separated from the growth media and rinsed with deionized water and then store frozen (-20°C). Carbamazepine in the bryophyte samples will be extracted using pressurized liquid extraction, and the resulting extracts concentrated by evaporation at 70°C under a gentle stream of nitrogen. The final extraction will be undergo quantitative analysis using liquid chromatography triple-quadrupole mass spectrometry.

Posters C1 | Are Written Asthma Action Plans for Children the Way to Go?

Elizabeth DeMarco, MSN, Adult-Gerontology Acute Care Nurse Practitioner (Salida, CO), *Michael Hathaway*, MSN, Psychiatric/Mental Health Nurse Practitioner (Colorado Springs, CO), *Jennifer Merten*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Winter Park, CO), *Rebecca Penkoff*, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Denver, CO)

Aim: According to the National Asthma Education and Prevention Program (NAEPP) guidelines, providers should provide a personalized Written Asthma Action Plan (WAAP) to all patients with asthma. The purpose of this study is to determine if a WAAP decreases the frequency of asthma exacerbations in pediatric patients compared to no WAAP.

Background: Over 6 million children have asthma in the United States. Asthma is the number one chronic disease among children, accounting for the highest number of missed school days. The latest expert panel by the NAEPP recommends integrating a WAAP, however conflicting evidence exists on it's effectiveness in controlling asthma in children.

Methods: We conducted a translational research review, using current literature, evaluating the impact of WAAPs in children. We found no significant difference when including a WAAP (p=0.0001) versus no WAAP (p=0.0006). By incorporating these results into Dorothea Orem's Theory of Self-Care, an improved evidence-based action plan, revealed by a decrease in asthma exacerbations, can be integrated into treatment plans. All group members completed the NIH modules.

Results: The literature review does not reveal improved asthma control in children using a WAAP versus no WAAP. This poster explores the research on utilizing a WAAP versus no WAAP when treating children with asthma.

Implications: Evidence on the effectiveness of a WAAP is imperative for the advanced practice nurse because of its effects on clinical practice. Based on these research results, resources and time should be allocated to in-person education and frequent follow-up.

Posters C1 | Multi-Modal Approach to Migraine Pain in the Emergency Department

Natalie Zufall, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO), *Christine Christiansen*, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Black Forest, CO), *Lexie Lichvar*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Westminster, CO), *Amy Millsap*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Colorado Springs, CO)

Purpose: The aim of this study is to conduct an extensive literature review to compare the effectiveness of a non-opioid multimodal approach versus an opioid approach in treating adult patients presenting to the emergency department with an acute exacerbation of migraine.

Background: Four million adults suffer from an acute exacerbation of migraine every year and it is the leading cause of emergency department visits accounting for over $36 billion in yearly costs. Despite clinical guidelines of using a multi-modal treatment, providers continue to use opioids as acute migraine therapy regardless of its transient effects, headache relapse occurrences and consequential risks.

Conceptual Framework: Dr. Marian Good's Theory of Acute Pain Management was used to guide APN interventions.

Methods: Translational research process using literature reviewed in PubMed, CINHAL, Cochrane, Up-To-Date, Google Scholar were used as well as key terms: acute, migraine, management. All group members completed the NIH modules.

Results: Two systematic reviews compared numerous RTC's and the data revealed significant efficacy of multi-modal migraine management (p=0.05). Research significantly favors non-opioid multimodal approach in comparison to an opioid approach in treatment of migraine headaches (p<0.1) Use of opioids resulted in poorer outcomes (longer and more frequent visits) (p=0.003) when compared to non-opioid treatments.

Implications: Strong data implicating the efficacy of the recommended clinical guideline and the need to change practice in treating acute migraine exacerbation in the emergency department was discovered.

Posters C1 | Chronic Low Back Pain: Management Therapy

Tina Tripp, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO), *Daniel Marque*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO), *Irene Rawls*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO), *Jennifer Berrier*, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

Aim: The purpose of this review is to determine the efficacy of massage therapy compared to opioid medications for the treatment of chronic low back pain over a thirty-day period.

Background: Low back pain is a major health issue in the United States, accounting for more than fifteen million primary care provider visits each year. The Center for Disease Control recently reported deaths from prescription opioids—drugs like oxycodone, hydrocodone, and methadone—have more than quadrupled since 1999.

Methods: An extensive literature review by four individuals, who have National Institute of Health (NIH) certificates, was conducted utilizing CINAHL, PubMed, and Cochrane. Two systematic reviews containing a total of thirty-four randomized control trials (RCT) were used.

Results: The results indicate that massage is beneficial for patients with chronic low back pain; however, there is a gap in available research comparing the use of massage therapy to the use of opioid medication in patients with chronic low back pain.

Implications: The Gate Control Theory demonstrates closure of substantia gelatinosa which regulates pain transmission making it beneficial for nurse practitioners to prescribe massage therapy as alternative treatments to minimize pain levels with 95% confidence using a range of -1.85 to -0.64.

Keywords: chronic low back pain, acute low back pain, alternative treatment, opioid use, massage

Posters C1/2 | Targeted Temperature Management Therapy

Amelia Boyd, Nursing (Pueblo, CO), *Peter Nguyen*, Nursing (Lakewood, CO), *Preston Heinen*, Nursing (Canon City, CO), *Kristin Salcedo*, Nursing (Tampa, FL), *Kendahl Caminiti*, Nursing (Newberg, OR), *Michael Hiner*, Nursing (Colorado Springs, CO), *Cari Anaya*, Nursing (Pueblo, CO), Nursing, *Lauren Willkomm*, Nursing, (Erie, CO)

According to the World Health Organization (WHO), cardiovascular diseases are the leading cause of death in the United States. In 2015, WHO estimated that 14 million people die each year due to cardiac arrest. Targeted Temperature Management (TTM) has been studied and used in the acute care setting to help increase neurologic outcomes in patients who suffered a cardiac arrest. This review of research studies was conducted to determine if TTM improved neurologic outcomes in unconscious patients after cardiac arrest compared to those who do not receive TTM. This was a translational research study utilizing a literature review design. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. Research articles were reviewed through proven critical appraisal methods. One groundbreaking research study was conducted in Melbourne, Australia. There was a total of 77 participants. 43 received TTM and the other 34 received normothermia. The study concluded that the group who received TTM had a 49% survival rate with good neurological outcomes, compared to 26% of those who received normothermia. An additional 20 research articles were reviewed using proven critical appraisal methods with the majority finding significant results that TTM improved neurologic outcomes. It was concluded that TTM improved neurologic outcomes in unconscious cardiac arrest patients compared to those who received normothermia.

Keywords: target temperature management, cardiac arrest, neurological outcomes, therapeutic hypothermia, normothermia

Posters C1/2 | Patient Care: BSN vs. ADN Nursing

Jonathan Demaree, Nursing (Pueblo, CO), *Deepika Ghimire*, Nursing (Pueblo, CO), *Guy Inzunza*, Nursing (Pueblo, CO), *Xuyan Parry*, Nursing (Pueblo, CO), *Nick Nordstrom*, Nursing (Pueblo, CO), *Tifuh Nkweti*, Nursing (Pueblo, CO), *Aleiya Pence*, Nursing (Pueblo, CO)

The purpose of this study was to determine if baccalaureate nurses provide better health outcomes compared to associate degree nurses. This paper explores the quality of care provided to patients by nurses with varying degrees of education. This was a translational research study utilizing a literature review design to answer the research question, "Is there a correlation between the quality of patient care (O) provided by nurses (P) with bachelor's degrees (BSNs) (I) versus the quality of patient care provided by nurses without bachelor's degrees (ADNs) (C)?" All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants," this semester and hold current certification. There are three educational routes to becoming a Registered Nurse, a high school diploma followed by three years of an apprenticeship in a hospital; a two-to-three year associates degree in nursing (ADN); or, a four year bachelor's degree in nursing (BSN). According to their research, the American Nurses Association, an association with strong legislative influence, recommends all nurses have bachelor's degrees. For this translational research study, 30 articles were critically appraised related to BSN versus non-BSN care. 10 articles were selected based upon adherence to Critical Appraisal Checklists for Descriptive Case Studies from the Joanna Briggs Institute. Collectively, the articles were inconclusive; some suggested a significant difference between BSN and non-BSN patient care, whereas others showed no significant

difference. Further research is needed to support the ANA's stance.

Posters C1/2 | Biometrics to Aid in Patient Identification

Katie Zortman, Nursing (Colorado Springs, CO), *Angela Roe*, Nursing (Yakima, WA), *Gwena Rinaldi*, Nursing (Florissant, CO), *Pamela Duffee*, Nursing (Cincinnati, OH), *Katherine Howe*, Nursing (Pueblo, CO), *Darryl Davis*, Nursing (Pueblo, CO)

Exploring how the use of biometric identification software aids in preventing patient identification errors in the healthcare setting versus current practice is vital to the future of patient safety. Current practices of patient identification encompasses asking a patient to state their name and date of birth, while reviewing a band and/or scanning a barcode attached to the patient. This research study was then designed to answer the question, "Does the use of biometric identification software aid in preventing patient identification errors in the healthcare setting versus current practice?" This translational research study utilizes a literature review design where ten peer-reviewed articles were chosen through exploration of multiple databases. All authors have completed the National Institute of Health (NIH) Office of Extramural Research's online training, "Protecting Human Research Participants", this semester and hold current certification. This analysis of current research has confirmed that a positive relationship exists between biometric identification software (BIS) and patient identification. The potential implications include evidence-based practice changes to current patient identification protocol, and thus, increased patient safety. Future research on BIS utilization would be beneficial for healthcare settings in which high acuity patients and high patient to staff ratios are found.

Keywords: biometric identification software, patient safety, evidence-based practice

Posters C2 | Low Risk Chest Pain and Observation Units

Abigail Saldua, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Colorado Springs, CO), *Adrianna Allen*, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Colorado Springs, CO), *Kaitlin Veselicky*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Colorado Springs, CO), *Rebecka Reatherford*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Colorado Springs, CO)

Aim: Demonstrate how patients with low-risk chest pained admitted to an observation unit influence the risk of a major acute cardiac event with in 30 days.

Background: Low-risk adult chest pain patients, defined as patients with a HEART score of less then three, that come through the emergency department are either discharged home or are admitted to an observation unit. The prediction of a patient's 30-day risk after discharge of a myocardial infarction is largely dependent upon the diagnostic testing, such as serial troponin, electrocardiograms, and other noninvasive testing. Research has shown that the vast majority of patients discharged home do to experience any major cardiac events.

Conceptual Framework: By applying the conceptual model by Donabedian, which utilizes environmental structure and processes to focus on patient outcomes, clinical guidelines focusing on chest pain diagnosis protocols and algorithms can be implemented.

Method: Using the key terms related to chest pain and observation units, CINHAL and online databases were searched from information regarding the health outcomes of patients presenting to the emergency department with chest pain, of those patients that were determined to be low risk, what the 30-day risk of acute cardiac event was based on admission to an observation unit versus being discharged home from the emergency department. Translational research process via literature review was used. All group observation unit evaluations should not be kept from observation and should be discharged home from the emergency department. This proved to be safe and cost effective, with minimal risk of major acute cardiac events within 30 days after discharge.

Implications: Within the development of chest pain guidelines and chest pain observation unit evaluations, it has been shown that discharging low-risk chest pain patients home form the emergency department with negative diagnostic findings is cost effective and safe. Nurse practitioners working in emergency departments are in the ideal position to utilize the HEART and chest pain observation unit guidelines to identify low-risk chest pain patients and interpret the diagnostic findings to see if admission to an observation unit or discharge home is appropriate.

Posters C2 | Atrial Fibrillation Treatment Guidelines

Jamison Lester, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Colorado Springs, CO), *Lindsey Bollinger*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO), *Amber Doss*, MSN, Adult-Gerontology Acute Care Nurse Practitioner (Pueblo, CO), *Yaghma Norouzi*, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

Aim: To demonstrate the best treatment for adult patients with persistent atrial fibrillation. Background: 6.1 million people in the United States suffer from atrial fibrillation. The cost to treat atrial fibrillation in the U.S. is estimated up to $26 billion per year. Uncontrolled atrial

fibrillation can lead to more serious and costly diseases such as ischemic stroke, pulmonary embolism, and heart failure.

Conceptual Framework: The AACN Synergy Model incorporates nurse competencies with patient needs is utilized to demonstrate the APN's role in clinical decision making.

Methods: Using the key terms atrial, fibrillation, ablation, amiodarone, betablocker, calcium channel blocker, the CINAHL, PubMed, Google Scholar, and Ovid databases were searched for information relating to atrial fibrillation treatment methods. Six articles were reviewed: systematic review (1), meta analyses (2), randomized control trials (3). All group members have their NIH certificate.

Results: Medical management is preferred over ablation for treatment of atrial fibrillation per current clinical guidelines to achieve and maintain sinus rhythm. Despite research showing that ablation has a 70% success rate compared to medical management which has a 34% success rate ($p<0.0001$).

Implication: The APN recognizes the role of ablation in treatment of atrial fibrillation and maintaining sinus rhythm. Further evaluation of clinical guidelines is recommended to reflect current research.

Posters C2 | How Low Should You Go? Induced Hypothermia in Post-Cardiac Arrest

Kimberly Jones, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Lakewood, CO), *Elizabeth Gillespie*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Englewood, CO), *Kim Huynh*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Denver, CO), *Amanda Spaak*, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Severance, CO)

Aim: To determine whether the use of a hypothermia treatment protocol at 32°C to 34°C versus increasing the temperature to 36°C affects mortality in patients who initially survive cardiac arrest.

Background: In the United States, approximately 500,000 out of hospital cardiac arrests occur each year. Severe neurological damage is the number one cause of death following cardiac arrest. In 2010, the American Heart Association (AHA) released recommendations to cool patients post cardiac arrest from 32°C to 34°C to help preserve neurologic function. In 2015, the AHA updated their recommendations to allow for a body temperature up to 36°C.

Theory: Betty Neuman's systems theory refers to the human body as an open system that responds to both internal and external stressors. Stressors, such as cardiac arrest, can evoke either a positive or negative response within the body.

Methods: Utilizing the translational research process, a literature review using CINAHL and Cochrane databases with keywords therapeutic hypothermia, cardiac arrest, and mortality rates was conducted. A meta-analysis of six controlled trials with a total of 1,399 patients was reviewed, along with a retrospective study including 8,316 patients from 454 hospitals. All group members have completed the National Institutes of Health (NIH) modules entitled "'Protecting Human Research Participants".

Results: Current studies have shown no difference in mortality rates using therapeutic hypothermia between 32°C up to 36°C, also known as targeted temperature management (TTM).

Implications: Since the AHA released their initial guidelines in 2010, medical centers around the country have adopted hypothermia protocols in an effort to reduce mortality in victims of cardiac arrest. However, not all have changed their protocols to meet the updated AHA guidelines. Along with other members of the health care team, nurse practitioners should stay current with the latest guidelines as they help to develop and update hypothermia protocols.

Posters C2 | Mental Illness: Breaking Down the Barriers

Annette Ferri, MSN, Psychiatric/Mental Health Nurse Practitioner (Fort Collins, CO), *James Anderson*, MSN, Psychiatric/Mental Health Nurse Practitioner (Thornton, CO), *Dawn Okeefe*, MSN, Psychiatric/Mental Health Nurse Practitioner (Boulder, CO)

Aim: To establish how the coordination of an interprofessional team at a centralized location affects hospital readmission rates in mental health patients with comorbid conditions.

Background: Mental illness with physical comorbidities is associated with an increase in hospital readmissions. Co-occurring illness is contributory to declining health and increases the risk of readmissions. An estimated 25% of the adult population has serious mental health illness (SMI) and 68% have a comorbid health condition. The Affordable Care Act links readmissions of chronic health conditions to suboptimal care. Establishment of a collaborative team facilitates a proactive and preventative approach prompting early referral and efficient care minimizing hospital readmissions.

Conceptual Framework: The utilization of Orem's Self Care Framework links the concepts of human beings, environment, health, and nursing which facilitates a goal of responsible self-care.

Methods: Utilizing a Translational Research Process and application of pertinent search terms, the PubMed, Ovid, and PsychINFO databases were explored to identify

the rates of readmission for those with comorbid illness and benefits of medical home models. All group members completed NIH modules.

Results: Adult patients with SMI and comorbid physical illness were found to have suboptimal disease management contributing to emergency care. In fact, a retrospective study evaluating 2 years of hospital records showed such patients, 48.4%; p<.001, were more likely to be admitted from the emergency room and the 30-60-90- and 180-day unadjusted readmission rates were higher for those with a comorbid SMI diagnosis. Higher morbidity and mortality rates were evident in comparison to the overall adult population.

Implications: Nurse practitioners are at the forefront of identification of co-morbid health conditions and are exemplary models of team collaboration. Attainable future goals can be implemented by further research identifying gaps in care.

Oral Session 1A | Alirocumab (Praluent) and Low Density Lipoprotein Reduction

Amanda Anderson, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Colorado Springs, CO)

Primary care practitioners spend significant time in the diagnosis, treatment, and management of hyperlipidemia in attempts to prevent relatable adverse cardiac events, a leading cause of death in the United States (Nelson, 2012). The 2016, Atherosclerotic Cardiovascular Disease (ASCVD) Primary Prevention Guideline, recommends the use of 3-hydroxy-3-methylglutaryl-coenzyme A reductase inhibitors "statin" therapy to treat hyperlipidemia in patients with low density lipoproteins (LDLs) over 100mg/dL. Some patients do not tolerate high intensity statin therapy or continue to have elevated LDLs despite intense statin treatment. This research investigates Alirocumab (praluent), a protein convertase subtilisin-kexin type 9 (PCSK9) inhibitor recently approved in 2015 by the Food and Drug Administration (FDA) for its additional LDL lowering abilities in high cardiovascular (CVD) risk patients when added to statin therapy (FDA, 2015). This is a translational research using a literature review. National Institute of Health (NIH) certification was obtained and four randomized controlled trials were analyzed to evaluate the safety, tolerability, cost and effectiveness of Alirocumab in patients not adequately controlled on statin therapy alone. Research concluded, Alirocumab is highly effective in lowering LDLs an additional 40-60% when added to statin therapy, showing no increased adverse effects compared to control groups. It has a high annual cost and further research is needed to determine its effectiveness in decreasing cardiac events and long term safety profile.

Keywords: low density lipoprotein, alirocumab (praluent), statin

Oral Session 1A | Takotsubo Cardiomyopathy

Bobbi Hall, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO)

Background: Takotsubo cardiomyopathy (TC) was first diagnosed in Japan in 1990. This condition was named after Japanese octopus traps which resembled the image providers were identifying on echocardiograms performed on patients who had signs and symptoms of myocardial infarctions with clean coronary arteries after cardiac catheterization. It is also called broken heart syndrome due to the link between patients who had an emotional crisis and then developed chest pain with cardiovascular type symptoms with a higher ratio in post-menopausal women.

Aim: To identify post-menopausal women who are evaluated acutely in the emergency room for chest pain who are at risk for increased mortality due to hospital complications prior to being discharged from the hospital setting associated with the diagnosis of takotsubo cardiomyopathy.

Method: Translational research using a literature review design.

Conclusion: Takotsubo cardiomyopathy is a rare disease, often under diagnosed and previously considered a benign condition. However, recent literature is proving this disease to be significantly underdiagnosed with increasing mortality associated with multiple hospital complications. When compared to acute coronary syndrome, TC patients have a significantly lower ejection fraction (p<0.001) with a higher neurological and psychiatric concurrent diagnosis (p<0.001) which places these patients at an increased risk for hospital complications. In-hospital events also demonstrate statistical significance (p=0.003). It is essential for providers to be aware of this potentially life threatening disease process in order to achieve early recognition and prompt treatment.

Keywords: takotsubo cardiomyopathy (TC), apical ballooning, broken heart syndrome

Oral Session 1A | Sleep Apnea and White Matter Disease in Hypertensive Patients: A Case Series

Terri EJ Kiernan, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Castle Rock, CO)

Obstructive sleep apnea (OSA) is associated with hypertension and cardiovascular disease. Transient episodes of hypoxia, hypercapnia, and blood pressure elevation during obstructive sleep apnea may lead to neural damage and subsequently white matter disease (WMD). As WMD is usually the result of chronic small vessel ischemia, a relationship between OSA and cerebrovascular disease may exist. Through translational research, utilizing a literature review design, this case

series aims to establish a relationship between OSA and WMD. A retrospective chart review of 62 patients without cerebrovascular disease who had both a polysomnogram and brain magnetic resonance imaging were identified. All patients carried the diagnosis of hypertension. White matter disease was evaluated using the age-related white matter changes scale. Although half of the study population had WMD on magnetic resonance imaging, no association was found between white matter disease with severity of OSA (p=0.9). The results are limited by the small sample size and by coexistent hypertension in all patients. Further studies are needed to elucidate the relationship between OSA and WMD, especially among nonhypertensive patients. Future research should also address if OSA treatment has any effect on WMD.

Oral Session 1B | Target Temperature Hypothermia: How Cold is Cool?

Daniel Mirshamsi, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

Background: It is estimated that 230,000 people experienced out of hospital cardiac arrests in the United States in 2015. (American Heart Association, 2015) This number is expected to drastically increase, as the American Heart Association's Heart and Stroke Statistics in the 2016 update projected report incidence is 324,000.

Aim: The aim is to evaluate and compare the evidence and research regarding the most effective target temperature for therapeutic hypothermia in adult patients with out of hospital cardiac arrest with return of spontaneous circulation, and their 180-day mortality and return neurological function.

Method: Translational research using a literature review design was conducted on current practice guidelines; as well as, two large randomized control trials reviewed to evaluate the evidence and find the best possible patient outcomes. This author has completed the NIH training with active certifications.

Conclusion: Survivors of cardiac arrest that were "cooled" via therapeutic hypothermia at a targeted temperature of 32˚C-34˚C (average 33˚C) did not receive any benefits as compared with a targeted temperature of 36˚C; in fact, the lower targeted temperature group did show an increase in overall health complications during hypothermia.

Keywords: Therapeutic hypothermia, targeted temperature cooling, ventricular tachycardia arrest, ventricular fibrillation arrest, post cardiac arrest

Oral Session 1B | Reducing the Recurrence of Bacterial Vaginosis with Antibiotics and Probiotics

Danielle Riker, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Colorado Springs, CO)

The Centers for Disease Control and Prevention (CDC, 2017) report that bacterial vaginosis is the most common vaginal infection in women ages 15-44. The purpose of this presentation is to discuss the role that probiotics play in reducing recurrence rates of bacterial vaginosis in women between the ages of 18 and 50. Translational research using a literature review design was utilized for the purposes of this presentation. A National Institute of Health Clinical Research Training Certificate was obtained. Research studies and articles from 2012-2017 from the Cumulative Index of Nursing and Allied Health (CINAHL), PubMed, and the Cochrane Library containing the keywords: bacterial vaginosis, recurrence, and probiotics were obtained and analyzed for the use of this presentation. The current gold standard treatment regimen for bacterial vaginosis is antibiotic therapy with either metronidazole or clindamycin (CDC, 2017). Within the collected research, it is reported that cure rates of bacterial vaginosis with conventional treatment are 80-90% within the first week, but recurrence rates are 15-66% within three months of initial treatment. (Homayouni et al., 2014) This suggests that the current recommended treatment for bacterial vaginosis is not adequate in preventing recurrence in a high percentage of these women. This also shows that the current recommendation for treatment lacks focus on recurrence of the infection. This presentation will discuss utilizing probiotics in addition to the recommended treatment to reduce the recurrence rates of bacterial vaginosis in this population.

Oral Session 1B | Evaluation of the Current Temperature Prediction Model for Asphalt Pavement Design

Ronald Millemon, Civil Engineering Technology (Colorado Springs, CO)

The design of flexible pavement is largely dependent on temperature of pavement as the mechanical properties of asphalt are very sensitive to temperature change; consider the asphalt surface in a winter morning versus in a noon summer. In the current design software, the temperatures at the different depths of asphalt concrete are predicted using an empirical equation which was developed by the Federal Highway Administration (FHWA). The current study evaluates the performance of that model using the measured temperature data in a pavement section on Interstate 40 (I-40) in New Mexico. Four temperature probes were installed at different depths of asphalt concrete in that pavement. After the analysis, it is found that the FHWA model is not as good as expected. Therefore, a revised model has been developed using the regression analysis with a full-year measured temperature data. Then the revised model has been evaluated with new measured temperature data and found that the

revised model is more accurate compared the to the FHWA model. Then, both the FHWA and the revised models were used to evaluate the pavement design using the recently developed pavement design software called PMED. It has been found that the revised model yields better pavement design.

Oral Session 1C | Qualitative Research through the Eyes of an Undergraduate

Eliana Taylor, Communication & Rhetoric (Monument, CO)

Based on experiences gained while conducting an empirical research study, supported by the Summer Undergraduate Research Program, this presentation will provide a theoretical overview of the value of using qualitative research methods as a means of collecting data. More importantly, it will focus on why these methods are appropriate for investigating discourse related to experiential education and how these methods allow study participants to foreground their own voices. Additionally, using personal narratives and detailed field notes, which were developed while conducting this study, this presentation will highlight five key aspects of being a new undergraduate researcher. The five focal points include 1) the benefits of doing a research project; 2) logistical considerations; 3) struggles encountered; 4) growth and development; and 5) tips for students who want to conduct qualitative research.

Oral Session 1C | Ball Is Life: Using Sports Intervention to Teach Life Skills

Devon Miller, English/Creative Writing/Communication & Rhetoric (Denver, CO)

This presentation will provide review of literature on sports as a form of life development intervention. More specifically, it examines the philosophies, strategies, and life skills developed and enhanced through participation in sports. After addressing the life skills that can be learned from sports, the discussion will detail how an experiential education approach was used to design, develop, and deliver a basketball workshop for youth participants. Workshop logistics, objectives, and activities will be emphasized. Finally, using an auto-ethnographic approach that employs personal narratives, I will discuss the challenges and benefits associated with developing programming for participants of different ages with varying physical and cognitive abilities and how these experiences could inform existing research on sport psychology.

Oral Session 1C | The Effects of Short Term Disabilities in College Aged Students

KayLynn McAbee, Mass Communications/Electronic Media (Denver, CO)

This presentation provides a theoretical overview of literature related to short-term disabilities and college students. First themes, recommendations, and common effects within the literature will be discussed. Subsequently I will use the personal narrative experience of being an able body person who became temporary handicapped, to describe challenges, insights, and practical solutions associated with this phenomenon. This auto-ethnographic data will be used to explain the difficulties and challenges associated with transitioning from an active person to becoming disabled overnight. More specifically, the presentation will focus on (1) day to day difficulties; (2) being disabled during an active experiential education class project; and (3) how a traumatic experience can lead to negative mental, emotional, physical and relational effects. The presentation will conclude with organizational and interpersonal recommendations for helping temporarily disabled individuals better navigate the college environment.

Oral Session 1D | The Effect of the Paleo Diet on Plasma Glucose in Type II Diabetes Mellitus

Marissa Cassio, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

The purpose was to research the outcomes of the Paleolithic (Paleo) diet compared to a non-Paleo diet and the effects on plasma glucose in type II diabetic adults aged 30-50 years old over a six-month period. The design of this research is a translational research using a literature review design. With the completion of the National Institutes of Health certificate and the method of a literature review consisting of five articles, an analysis was concluded. Articles consisted of three randomized control studies and one controlled study. The Paleo diet consists of a diet that avoids dairy, refined oils, refined sugars, grains, and low sodium. By following a Paleo diet, type II diabetic adults were able to decrease plasma glucose and control their type II diabetes. The Paleo diet showed a reduction in plasma glucose for type II diabetic adults within six months.

Keywords: Paleo diet, diabetes, plasma glucose

Oral Session 1D | The Artificial Pancreas Device System Versus Traditional Glucose Monitoring for Tighter Glycemic Control

Natalia Menert, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Fort Collins, CO)

Background: With no current cure available for type 1 diabetes, living with the condition typically means life-long insulin monitoring and replacement in conjunction with diligent carbohydrate counting to control blood sugar levels. Tight blood glucose control in type 1 diabetes is important because abnormal glucose levels can lead to

cardiovascular, neuropathic, and renal disease. In the fall of 2016, the United States Food and Drug Administration approved the first artificial pancreas device system to help regulate glucose levels in individuals with type 1 diabetes mellitus. The artificial pancreas device system is not a bionic organ, but rather a hybrid closed-loop system consisting of an insulin pump, a continuous glucose monitor under the patient's skin, and smartphone software that uses an advanced algorithm to predict and deliver insulin to the wearer.

Purpose: To evaluate whether the artificial pancreas device system provides tighter glycemic control in adult patients with type 1 diabetes mellitus compared to traditional blood glucose monitoring using finger sticks and self-injection of insulin. Tighter glycemic control will be defined as a reduction in HbA1c over a period of at least three months.

Method: Translational research using a literature review based on training obtained through National Institutes of Health certification was performed using the Cumulative Index of Nursing and Allied Health Literature, PubMed, and current practice guidelines to find several clinical studies.

Conclusion: Results from all studies reviewed indicated that the artificial pancreas device system demonstrated a decrease in HbA1c when compared to finger sticks and traditional self-injection of insulin.

Keywords: artificial pancreas device system, HbA1c, type 1 diabetes mellitus, glycemic control, insulin self-injection, traditional blood glucose monitoring, tight glucose control

Oral Session 1D | The New Age of Stored Blood

Sarah Mitchell, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Peyton, CO)

The purpose of this review is to determine if the current blood transfusion practice of utilizing standard red blood cells stored up to 30 days compared to fresher blood stored less than 10 days increases all-cause mortality rates in patients undergoing complex cardiac surgeries. Previous research indicates that red blood cells stored for longer periods can cause cells to become rigid, impede microcirculation and decrease the oxygen delivering capacity. Therefore, a translational research using a literature review design was completed. After completing the National Institute of Health Clinical Research Training Certificate, articles from 2012–2017 were obtained from Cumulative Index of Nursing and Allied Health Literature, PubMed and the Cochrane Library containing the keywords: red cell storage, age of transfused blood and transfusion thresholds. After analyzing the current research, there is no significant difference in all-cause mortality rates between blood stored up to 30 days and fresher blood stored 10 days or less. Research by Steiner et al. (2015) demonstrated that in 1,075 patients receiving complex cardiac surgeries, there was a 4.4% 28-day mortality rate in those receiving blood stored 12.6 days or less compared to 5.3% 28-day mortality rate in those receiving blood stored up to 28 days. This reveals that standard blood stored up to 30 days is just as efficacious as fresher blood. Therefore, the emphasis of using fresher blood for transfusions after complex cardiac surgeries should be discontinued.

Oral Session 1E | Anticoagulation in Hereditary Hemorrhagic Telangiectasia

Sean M. White, MSN, Adult-Gerontology Acute Care Nurse Practitioner (Colorado Springs, CO)

Hereditary Hemorrhagic Telangiectasia (HHT) is an autosomal dominant disorder that affects roughly 1 in 5000 patients in the United States, and it is estimated that nearly 90% of patients with HHT have not been diagnosed (Dittus, Streiff, & Ansell, 2015). Patients with this disease develop arteriovenous malformations in the lungs, brain, and mucosal linings of the nose and gastrointestinal system, and these malformations can bleed spontaneously. Additionally, patients with HHT have a high risk of developing blood clots, which provides an additional level of complexity for treatment options. Historically, providers have been hesitant to prescribe anticoagulants for patients with HHT due to the perception of an elevated risk for bleeding. In adult females age 18-60 with known hereditary hemorrhagic telangiectasia, does anticoagulation therapy compared to no anticoagulation therapy increase hemorrhagic events? Recent studies have found that while some antiplatelet agents do increase the risk for bleeding, some anticoagulants are safe to use in patients with HHT. Heparin and warfarin have been shown to provide safe anticoagulation for patients with HHT without significant increases in bleeding (Devlin, Hosman, & Shovlin, 2013), and HHT Centers of Excellence exist to aid providers in management of patients with this disease. This is translational research using a literature review design.

Oral Session 1E | Use of Dual Antiplatelet Therapy and Reduction of Recurrent Ischemic Stroke in Patients with Aortic Arch Atheromas

Briana Belisle BSN, RN, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO)

Stroke is one of the leading causes of death and morbidity in America, carrying with it a large financial burden. A significant cause of stroke originates as a complicated atherosclerotic plaque of the aorta. To date, medicine has little understanding of what pharmacologic

approach to take in preventing secondary ischemic strokes due to thromboembolism originating from the aorta, despite the high occurrence rate. A translation of evidence using a literature review design was conducted to analyze the effects of dual antiplatelet therapy versus monotherapy in reduction of recurrent ischemic stroke. However only one trial, the ARCH trial, has specifically evaluated patients with aortic arch atheromas measuring >4mm. The aim of this review is to compile known data and scrutinize the efficacy of treatment in patients with complex aortic atheromas. The review of literature demonstrates no statistically significant reduction in recurrent stroke using dual antiplatelet therapy. Practice recommendations conclude patients require extensive education on life style risk reduction, use of lipid lowering agents such as statins and at minimum single antiplatelet therapy over versus therapy at all.

Keywords: aortic atheroma, atherosclerosis, stroke, dual antiplatelet therapy, clopidogrel, aspirin, warfarin

Oral Session 1E | Oral Antiplatelet Therapy

Rebecca Baker, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

A review of oral antiplatelet thienopyridine derivatives compared with non-thienopyridine derivatives was investigated for risk stratification by the nurse practitioner of adults going for coronary artery bypass grafting (CABG). Adults with acute coronary syndrome frequently are on oral antiplatelet therapy, such as a P2Y12 inhibitor prior to coronary artery bypass surgery. A comparison was done to assess if a reversible non-thienopyridine derivative preoperatively will decrease bleeding, a postoperative complication, and mortality. Translational research using a literature review design was utilized, and CITI training with active certification was completed. Data sources reviewed were articles and guidelines from CINAHL Plus with Full Text and PubMed. Authors presented the results that non-thienopyridine derived oral antiplatelet therapy such as ticagrelor showed increased bleeding due to higher potency but also has superior efficiency when compared with the thienopyridine derivative of clopidogrel, which may have variable patient response and suboptimal platelet inhibition. Implications for the nurse practitioner managing postoperative care are understanding oral antiplatelet agents, coordinating care postoperatively using a team approach, assessing for bleeding by review of laboratory tests, chest tube output, cardiac output, cardiac index, and hypotension to intervene and prevent end organ damage and increased mortality due to blood loss. Guidelines recommend delay of surgery if possible, blood tests monitoring platelets, hemoglobin, hematocrit, and prothrombin time. Treatments include blood or platelet transfusion, and possible treatment with factor VII. Considerations prior to surgery are patient preferences regarding blood transfusion, and risk of continuation or discontinuation of platelet inhibitors.

Keywords: thienopyridine derivatives, P2Y12 inhibitors

Oral Session 2A | Clindamycin and Probiotics

Alison Risk, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Denver, CO)

Antibiotic-associate diarrhea (AAD) is defined as three or more watery stools in one day after taking a medication to fight a bacterial infection. The diarrhea can begin with first dose of antibiotic or surface up to several weeks after the last dose. According to the Center for Disease Control and Prevention, the United States spent $10.7 billion on antibiotics in 2009. Clindamycin causes 20% of patients taking the medication to have diarrhea and is one of the most frequently reported antibiotics to cause AAD. Clindamycin disrupts the balance of microorganisms in the intestinal flora, which allows harmful bacteria to colonize and cause AAD. Probiotics are microorganisms that also colonize in the intestinal flora to produce peptides that help block the harmful bacteria from growing in the flora. This raises the question, in adults who are prescribed clindamycin, does prescribing a probiotic versus not prescribing a probiotic prevent antibiotic associated diarrhea for a 5-day dose? A double-blind, randomized, placebo controlled clinical trial by Selinger et al., concluded probiotics significantly reduced the incidence of ADD with a p=0.006. A meta-analysis by Videlock and Cremonini that was a randomized, double-blinded, placebo-controlled trial concluded probiotics have a preventative effect in AAD with a CI of 0.44-0.63. Gaps in both studies include researcher and publication bias. New evidence based research supports prescribing a probiotic with Clindamycin to prevent AAD. These studies imply that continuing research should be conducted to help change guidelines to prescribe probiotics. This is a translational research using a literature review design.

Oral Session 2A | Tai Chi Versus Physical Therapy for Knee Osteoarthritis

Brendon Madrid, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

Osteoarthritis is a chronic condition of the joints that affects nearly 27 million people in the United States and is regarded as the most common cause of functional disability. Nearly 1-in-2 people will develop knee osteoarthritis in their lifetime (What is Osteoarthritis, 2017). Tai Chi Chuan is an ancient form of Chinese martial arts, which has been studied and practiced for centuries. It is a psychophysiological exercise that combines controlled breathing and relaxation, with slow

and smooth circular body movements (Publications, H.H., 2015). The purpose of this review is to compare the effectiveness of Tai Chi to physical therapy in adults over 60 years old who suffer from osteoarthritic knee pain. Translational research using a literature review design was used. PubMed, MEDLINE, and Cumulative Index to Nursing and Allied Health Literature (CINHAL) databases were searched for relevant studies. A literature review was conducted and NIH training was completed with active certifications. Included is a case study of a woman with knee osteoarthritis who is electing to delay knee replacement surgery. The advanced practice nurse utilizes Orem's Self-Care Theory and evidence-based practice to develop a treatment plan using the practice of Tai Chi. In conclusion, the review showed there is moderate evidence that Tai Chi is a safe alternative to physical therapy in the reduction of osteoarthritic knee pain. However, future research should be conducted with larger sample sizes and longer treatment periods to confirm the effectiveness of Tai Chi.

Oral Session 2A | Treatment of Cannabis Hyperemesis Syndrome: Comparison of IV Therapy with and without Haloperidol in the Emergency Department

Lindsey G. Fox, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Monroe, LA)

First identified in 2004, Cannabis Hyperemesis Syndrome (CHS) is a condition characterized by intractable nausea with emesis and compulsive bathing in users of cannabis products (Allen, de Moore, Heddle & Twartz 2004, p. 1566). Cannabis has recently been identified as the most commonly used illicit drug in the United States in that 22.2 million Americans or 1 in 10 Americans reported using cannabis within the last 30 days (Center for Behavioral Health Statistics and Quality 2015, p.1). The diagnosis and tracking of the disorder is still in early stages making the incidence of the condition difficult to track. Some research has found that in Colorado, there has been an increase in the prevalence of patients with intractable nausea and vomiting presenting to emergency departments since the legalization of cannabis for recreation in 2012 (Kim, Anderson, Saghafi, Heard, & Monte 2015, p.695). Treatment for CHS has been difficult due to the resistant nature of the hyperemesis to anti-emetic medications used for acute nausea in emergency departments. This project compares the use of intravenous fluid hydration therapy with the use of Haloperidol, a first generation anti-psychotic medication, and intravenous fluid hydration to treat intractable emesis in CHS during the hyperemesis phase of the condition. A case report from Jones & Abernathy (2016) and Hickey, Witsil, & Mycyk (2013) has found success in the use of this drug to control emesis and symptoms in CHS. Intravenous therapy has been the key to successful fluid resuscitation in the emergency department and continues to be a recommended therapy in patients in this condition who are volume depleted (Wallace, Andrew, Garmany, & Jelley 2011, p. 663).

Oral Session 2B | Curcumin in the Treatment of Osteoarthritic Joint Pain

Emily Dill, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Monument, CO)

Osteoarthritis is the most common joint disease in the United States, often more prevalent and more severe in women. By 2040, an estimated 78 million adults age 18 and older in the United States are projected to have a physician diagnosed arthritis (CDC, 2016). Currently, clinical guidelines recommend non steroidal anti-inflammatories (NSAIDS) for the treatment of osteoarthritic joint pain. Curcumin, the main ingredient in the Indian spice turmeric, has been used in ayurvedic medicine for centuries, utilized especially for its anti-inflammatory properties. The question arises, in women diagnosed with osteoarthritis, can the use of curcumin versus NSAIDS reduce osteoarthritic joint pain within 6 months? A literature review was done regarding the efficacy of curcumin in treating osteoarthritic joint pain and successful completion of the National Institutes of Health (NIH) research certification was performed. In a meta-analysis done by Henrotin et al. (2010), 12 separate studies showed significant anti-inflammatory properties with the use of curcumin. Additionally, an exploratory clinical trial showed a reduction in Coll2-1 (a specific biomarker of osteoarthritis), a reduction in CRP levels at 3 months ($p=0.002$) and an overall reduced global assessment of disease activity ($p=0.0047$) with the use of curcumin (Henrotin et al., 2014). Due to the proven efficacy of Curcumin and its anti-inflammatory properties, providers could offer this as an alternative to NSAIDs for the treatment of osteoarthritic joint pain. This is translational research using a literature review design.

Oral Session 2B | Loratidine Treatment of Bone Pain

Tiffanie Hoover, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Alamosa, CO)

Granulocyte-Colonizing Stimulating Factor (G-CSF) is used to treat or prevent oncologic febrile neutropenic emergencies that occur when the bone marrow doesn't produce enough white blood cells. This medication is used to stimulate the production of white blood cells in patients undergoing chemotherapy that cause low white blood cell counts which can prevent infections and neutropenic fevers. Bone pain is the most common and notorious side effect of G-CSF and is often very hard to manage which can lead to patient non-compliance with

the medication regimen. Traditional analgesics, such as non-steroidal anti-inflammatory drugs (NSAIDs) and opioids, can be ineffective in severe G-CSF-induced bone pain. Loratadine is showing to be a promising option for pain relief since histamine release is involved in the inflammatory process. In oncology patients receiving chemotherapy that requires Granulocyte-colony Stimulating Factor, does taking loratadine compared to not taking loratadine reduce bone pain during the week following administration? This is translational research using a literature review design.

Oral Session 2B | Fibromyalgia

Toloa Pearl, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Westcliffe, CO)

Fibromyalgia (FM) is a condition of chronic, widespread pain, fatigue, and cognitive dysfunction that often severely impairs its host. It is a devastating condition affecting 2%, or nearly 6 million United States adults (Centers for Disease Control, 2016). Current guidelines recommend exercise as first-line treatment; however many patients are resistant to this modality. In order to discover whether patients who exercise experience less pain than those who do not exercise, translational research using a literature review design was conducted. After obtaining the NIH clinical research certificate, data from the Cochrane Library, PubMed, Medscape and Cumulative Index to Nursing and Allied Health Literature were retrieved. Systematic reviews of randomized controlled trials including male and female adults in the United States were included. Data suggests that as a first-line treatment, aerobic and muscle strengthening exercise is the single most effective pain-relieving treatment for FM. Because exercise initially increases pain, patients with FM are generally not open to its implementation making caring for patients with FM challenging. Until an optimum approach for introduction and management of treatment plans is developed, providers must develop and maintain trusting and compassionate relationships as they care for patients with this painful condition.

Keywords: fibromyalgia, chronic pain, exercise

Oral Session 2C | Evidence Based Care of Depression in Adolescents

Debra Tota, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO)

The study was conducted to determine if medication alone or in combination with psychotherapy had a significant impact on adolescents suffering from depression. At least 1 in 20 adolescents will experience an episode of major depression, making it the most common illness in young adults (Hopkinsmedicine, n.d). Suicide in this population is the third leading cause of death. Annual cost is approximately $247 billion in the United States (Perou et al, 2013). Therapies are aimed to treat this illness before death is the only solution recognized by the sufferer. The first line of contact for depressed teenagers is the primary care provider and due to economical restraints and lack of mental health resources this may be their only means of care. Recommendations and guidelines encourage a combination of medication and therapy to treat teenage depression (Cheung, Zuckerbrot, Jensen, Ghalib, Laraque, & Stein, 2007). This translational research using a literature review design collected material from multiple websites including but not limited to PubMed, Cochrane, Science Direct, Center for Disease Control, World Health Organization, Guidelines for Adolescent Depression in Primary Care, Journal of Agency for Healthcare Research and Quality (AHRQ), and the Journal of Pediatric Psychology. Medications and psychotherapy are the main treatments at this time, but more research needs to be conducted to determine what other measures can be implemented.

Oral Session 2C | Telemedicine for Rural Patients Living with Depression

Jessi Lamb, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Colorado Springs, CO)

Telemedicine can be useful in reaching out to individuals in rural communities who otherwise would not be willing or able to receive treatment. The goal of this research is to evaluate the effectiveness of telemedicine therapy sessions versus in-person therapy sessions. Telemedicine therapy sessions were compared employing translational research using a literature review design. The author has completed a professional NIH training, and hold an active certification in this field. This literature review analyzes studies that were based on randomized control trials (RCT) following patients diagnosed with depression who used information and communication technology (ICT) to supplement their direct patient-care. Only studies using some form of ICT (other than telephone) were looked at regarding patient outcomes, utilization of resources, and/or satisfaction. The main results showed two categories; in some studies results showed no significant change in the levels of accessibility, improved disease control, relapse prevention, and follow-up continuity. In other studies results demonstrated a significantly greater level of accessibility, improved disease control, relapse prevention, and follow-up continuity. In conclusion, telemedicine therapy sessions have shown to be as effective as in-person therapy; however, for many depressed patients, telemedicine has shown to improve quality care by making therapy sessions more obtainable, improving disease control, and compliance. By analyzing results from previous studies and incorporating

telemedicine therapy along with collaborative care into advanced practice nursing (APN), telemedicine can make a significant difference in the lives of depressed patients.

Keywords: Telemedicine, Randomized control trials, Information and communication technology, Advanced practice nursing

Oral Session 2C | Treatment of Depression and Anxiety

Amanda Moret, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Highlands Ranch, CO)

Treatment for depression and anxiety comes in many forms. The most prominent and successful form to treat both depression and anxiety together is the use of Selective Serotonin Reuptake Inhibitors (SSRIs). This class of medications is approved by the Federal Drug Administration (FDA) to treat both depression and anxiety in both adults and children (Julien, Advokat, & Comaty, 2011). The selection of medication has many different variables attached. This should include the severity of the symptoms reported by the patient, the age of the presenting patient, any treatments already tried by the patient, which symptoms are more predominantly affecting the patient, and if there are any comorbid conditions to consider with the patient (Julien, Advokat, & Comaty, 2011). When starting these medications, it is important for the provider to remember to start with a low dose and titrate to the most tolerable dose for the patient. One standard dose will not treat each person the same, as each person experiences symptoms differently. Starting low and going slow is the common phrase used among all providers when starting these medications.

Oral Session 2D | HINTS Exam to Diagnosing Posterior Stroke

Angela Allen, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Alamosa, CO)

The patient presenting to the emergency department with the complaint of vertigo poses diagnostic difficulties for providers. Determining if the vertigo is a symptom of a benign peripheral origin versus fatal posterior ischemia is made difficult by a lengthy list of differentials, inconclusive testing, and cost of testing. These reasons lead to frequent misdiagnosis which can have life-threatening consequences. The purpose of this literature review is to investigate the sensitivity of a quick, bedside physical exam called the HINTS (head impulse, nystagmus, test of skew) exam, in diagnosing posterior stoke and compare it to the sensitivity of brain imaging; the diagnostic method endorsed by current practice guideline. Through translational research using a literature review design, the author will compare these two methods of diagnostics in terms of availability, cost, and most importantly, sensitivity. Current practice guidelines for the treatment of vertigo and ischemic stroke will also be reviewed. The author currently holds active certification by the National Institute of Health for the institutional review board. The available modalities of brain imaging are often limited by their sensitivity, cost and access. A rapid, bedside HINTS exam may offer superior diagnosis of posterior stroke, at a fraction of the cost. These gaps in practice offer opportunities for growth in areas of theory, practice, and research for the advanced practice nurse.

Keywords: HINTS, posterior stroke, vertigo, diagnosis

Oral Session 2D | Wireless Pulmonary Artery Pressure Monitoring

Bree Bacalis, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Loveland, CO)

As our United States population ages, so will the burden from heart failure (HF), as HF has one of the highest hospitalization rates. The use of wireless pulmonary artery hemodynamic monitoring (WPAM) as an adjuvant therapy to comprehensive guideline-directed medical therapy (GDMT) in adult patients with New York Heart Association (NYHA) Class III HF illustrates a gap between current guidelines and emerging evidence. Utilizing translational research methods, through a literature review design, this presentation aims to present substantial evidence supporting the use of WPAM in NYHA Class III HF patients, in conjunction with GDMT, as a beneficial approach to reducing HF-related hospitalizations. This presentation is guided by the National Institutes of Health Extramural Research Certification. Current evidence supports real-time WPAM in the outpatient setting improves short-term clinical outcomes ($p<0.001$). Evidence supports a significant 28% reduction in heart failure hospitalizations after six months ($p<0.0002$) of data collection and subsequent individualized medication-related changes. Pulmonary artery pressure-guided therapy, in conjunction with GDMT, significantly reduces heart failure hospitalizations by 37% ($p<0.0001$) in intervals greater than six months. This presentation concludes that implementing WPAM can reduce HF-related hospitalizations at six months.

Keywords: heart failure, wireless pulmonary artery pressure monitoring, guideline-directed medical therapy, heart failure hospitalizations

Oral Session 2D | Blood Pressure Management: Reducing Cardiovascular Risk

Molly Unrein, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Denver, CO)

Data from the United States National Health and Nutrition Examination Survey collected from 2009-2012 found that in adults aged 20 years or older, an estimated

80 million had hypertension, with a prevalence rate of 32.6% (Roger, 2012). It is a major preventable risk factor for stroke, myocardial infarction, and vascular disease. The Eighth Joint National Committee (JNC 8) guidelines, published in 2014, suggest treating patients age greater than 60 without diabetes or chronic kidney disease to a goal systolic blood pressure less than 150 mm Hg and diastolic pressure less than 90 mm Hg (James, 2014). However, more recent studies have found that even lower goals may provide better patient outcomes and further decrease the risk of major cardiovascular events. Data from the SPRINT (Systolic Blood Pressure Intervention) trial found that patients treated to a goal systolic blood pressure less than 120 mm Hg and a diastolic blood pressure less than 90 mm Hg had a ten-year predicted risk of cardiovascular events that was 25% lower than patients treated to JNC 8 goals (Perkovic, 2015). Thus, the purpose of this presentation is to examine whether in adult patients greater than 60 years of age without diabetes or chronic renal disease (P), does stricter blood pressure control following SPRINT guidelines (I) versus JNC 8 guidelines (C) lower the overall risk of cardiovascular events (O) throughout the patient's lifetime?

Oral Session 2E | Solar Energy In Pueblo: Pv System Owners' Perspective

Tochukwu Chikwendu, MS, Industrial and Systems Engineering (Pueblo, CO)

It is no news that the world's attention has largely shifted to climate change and global warming emissions. These phenomena caused by human activities result in an increased earth temperature with its attendant effects on human health, environment, and climate changes. Scientists believe that this dangerous trend will continue as long as human activities on the environment are not mitigated. The Intergovernmental Panel on Climate Change (IPCC), which includes more than 1,300 scientists from the United States and other countries, forecasts a temperature rise of 2.5 to 10 degrees Fahrenheit over the next century. In a bid to check this trend, alternative energy sources such as the solar, wind, hydro, geothermal, and biomass have over the years been explored and constantly harnessed in order to promote its usage among the populace hence, reducing the hazards associated with the use of fossil fuels. Understanding the need to consistently increase focus and investment in renewable energy sources, and the role solar energy plays as an integral part of alternative clean energy source, this project seeks to explore the motivation, challenges, benefits, and overall experiences of PV system owners and how ownership influenced and changed their lives concerning energy use, conservation and efficiency. The pilot phase of this program which was conducted in Pueblo, Colorado will help in understanding the experiences of PV system owners in this area, and will enable future policy designers to incorporate solutions that could improve the experiences with PV systems for future owners. Part of the result of this study is intended to contribute to the discussion of future government programs aiming at increasing the uptake of PV system installations, as well as its influence over the potential to reduce energy consumption at the household level.

Oral Session 2E | Diagnosis of Cannabinoid Hyperemesis Syndrome

Bryan Wood, MSN, Adult-Gerontology Acute Care/Family Nurse Practitioner (Pueblo, CO)

Advance Practice Nurses working in the emergency department and primary care office are often faced with the challenge of patients that present with abdominal pain and intractable vomiting. Differential diagnosis of these patients can be difficult, requiring in-depth testing and history taking. Cannabinoid Hyperemesis Syndrome (CHS) is a newly emerging cause of intractable vomiting and under recognized syndrome that presents clinically similar to Cyclic Vomiting Syndrome in adults. Legalization of recreational marijuana and general social acceptance has led to increased use in young adults. (Kim & Monte, 2016.) This increase in use has shown a distinct pattern in presentation of CHS. Advanced Practice Nurses need to be familiar with presenting symptoms of CHS to aid in the differential of this syndrome from other pathologies. CHS has a pattern related to demographics, alleviating factors, and other diagnostics. The author will use translational research using a literature review design in illustrating the most recent information regarding CHS.

Oral Session 3A | Understanding Postoperative Delirium

Carla Flores, MSN, Adult-Gerontology Acute Care Nurse Practitioner (Englewood, CO)

Delirium causes complications of 15–50% of surgical operations of the older adult and is associated with serious postoperative complications (Marcantonio, 2012). Delirium is defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM) Fourth Edition as an acute disturbance of consciousness along with the inability to focus, sustain or shift attention, as well as a change in cognition or development of perceptual disturbance. Postoperative complications that have been identified include dementia, prolonged length of stay, institutionalization, poor functional recovery, and death (Marcantonio, 2012). The identifiable problem being that clinicians fail to recognize and address postoperative delirium in as many as 80% of the cases (Marcantonio,

2012). There are successful strategies for prevention and treatment of postoperative delirium that include multifactorial intervention risk factor models that target predisposing and precipitating factors. One of the most effective interventions identified is the Hospital Elder Life Program (HELP) which was developed in 1993 as a targeted multicomponent strategy to prevent functional and cognitive decline in the hospitalized geriatric patient. The HELP program has been validated effective in the prevention of delirium in the postoperative patient by demonstrating a 40% relative risk reduction for delirium in a controlled clinical trial (Yue, 2014). Method consisted of a translational research design literature review, to include NIH training with active certification. The HELP model provides one of the most effective interventions that was developed to prevent and identify delirium in the elderly surgical patient during hospitalization.

Keywords: delirium, HELP, elderly, intervention, prevention, postoperative

Oral Session 3A | Is Honey an Effective Analgesic for Post Tonsillectomy Pain in the Pediatric Population?

Spencer Waller, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

Tonsillectomy is one of the most commonly performed surgeries in the pediatric population; however, it is associated with substantial post-operative pain. Failure to adequately control pain causes significant morbidity. Oral administration of honey has been proposed as a possible adjuvant treatment to provide increased pain control over acetaminophen and ibuprofen alone. To investigate the potential benefit of honey for pain control, the following question was proposed: In pediatric patients, older than 12 months (P), what is the effect of the adding oral honey (I) on post-operative tonsillectomy pain (O) compared with acetaminophen and ibuprofen alone (C) during the first 5 post-operative days (T)? Translational research using a literature review design was used to gather available evidence to answer the question. Two systematic reviews with meta-analysis related directly to the question; no additional randomized control trials or higher evidence was found. Authors of both systematic reviews concluded that meta-analysis indicated statistically significant decrease in pain on most of the first 5 post-operative days. Honey may be considered as a low cost, easy to administer, adjuvant treatment for post-tonsillectomy pain for the general pediatric population who do not have contraindications. Further, rigorously controlled studies are needed to clarify dose, duration of therapy, and quantify effect. The Cox Interaction Model of client health behavior provides a theoretical framework to understand the effects of honey therapy on patient health outcomes.

Oral Session 3A | Probiotics for the Prevention of Recurrent Overt Hepatic Encephalopathy

Taylor Sederberg, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Littleton, CO)

Background: Hepatic encephalopathy is characterized as a neuropsychiatric condition of liver dysfunction, specifically liver failure or cirrhosis. Cirrhotic patients are likely to experience hepatic encephalopathy at some point during the course of their disease. Recurrent episodes are associated with increased hospitalization rates, poor patient outcomes, and increased morbidity and mortality. Lactulose, with or without Rifaximin, are mainstream for secondary prophylaxis in patients who have experienced one or more episodes of overt hepatic encephalopathy. However, factors such as distaste, dose titration, and gastrointestinal symptoms are associated with non-adherence and treatment failure. Moreover, current guidelines report poor empiric support for its use.

Objectives: To explore alternative evidence-based treatments for a patient intolerant of lactulose therapy who requires secondary prophylaxis. The concepts of Shared-Decision Making are applied to preserve patient preferences, increase treatment adherence, and prevent recurrent overt hepatic encephalopathy.

Methods: National Institutes of Health (NIH) certification for protecting human research participants achieved. Translational research using a literature review design is used to facilitate treatment approach and promote optimal patient outcomes.

Findings: There is evidence to support probiotics as an alternative treatment option to lactulose for secondary prophylaxis of hepatic encephalopathy, although randomized-control trials are limited. Additional studies indirectly support its empirical significance, specifically its role in reducing ammonia levels, primary prophylaxis, and treatment of small intestinal bacterial overgrowth, all of which are factors in the pathogenesis of hepatic encephalopathy. These findings may have greater implications for preventing recurrence of hepatic encephalopathy, especially for patients intolerant and non-adherent with lactulose therapy.

Oral Session 3B | Left Atrial Appendage Device: A Potential Substitute for Long-Term Anticoagulation Therapy

Kim Eisenbach, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Fort Collins, CO)

Background: Stroke is a medical condition characterized by potentially devastating neurologic deficits. Individuals with atrial fibrillation have a higher risk of having a more disabling stroke compared to individuals who do not have atrial fibrillation. Stroke risk in patients with non-valvular atrial fibrillation (AF) can

be reduced by approximately 68% per year by using long-term anticoagulation. However, warfarin is prescribed to only 15%-44% of individuals eligible for anticoagulation.

Aim: To determine if the WATCHMAN, a left atrial cardiac appendage device, can decrease stroke risk in individuals with non-valvular AF.

Method: Translational research using a literature review design was performed using CINAHL, PubMed, and current practice guidelines. Two randomized control trials and a meta-analysis were utilized to determine the effectiveness of the WATCHMAN in comparison to warfarin in stroke reduction.

Conclusion: The data suggests that use of the WATCHMAN is non-inferior to warfarin. Although some studies implicated a higher risk of ischemic stroke with the WATCHMAN, the overall risk of stroke was similar between the device and warfarin.

Keywords: WATCHMAN, left atrial appendage device, nonvalvular AF, stroke

Oral Session 3B | Combating Bullying: A Positive Approach

Robert Fitzpatrick, Psychology (Pueblo, CO)

This presentation will provide a theoretical overview of negative psychological outcomes associated with bullying and the way children can properly conduct themselves when dealing with the negative effects it may cause. More specifically, it examines the ways in which peers, positive attitudes, and empathy can lessen the destructive effects bullying can cause. After discussing relevant theoretical concepts, I will discuss how I developed a workshop that gave students an experiential education learning opportunity. Objectives, curriculum, and subjective assessment of the workshop will be emphasized. Finally, using an auto-ethnographic approach that includes personal perspectives, I will discuss the strengths and weaknesses of my workshop and relate it to the possibility of future research in the field of psychology.

Oral Session 3C | Acceptance of HPV Vaccination among Latino Parents

Jesusita Tafoya, MSN, Adult-Gerontology Acute Care/ Family Nurse Practitioner (Pueblo, CO)

The Human Papillomavirus (HPV) vaccine is essential in preventing cervical cancer in women and anogenital and oropharyngeal cancers in men and women. Latinas are one and a half times more likely to be diagnosed with cervical cancer than their non-Latina white counterparts. In Latino adolescents 11 to 17-year-olds who are eligible to receive (P) the HPV vaccine (I) how does their parents' perception impede (C) the initiation and completion rates (O) over 1 year (T). Latino parents' perceptions dictate whether or not their children receive the HPV vaccine. To gain a better understanding, a meta-analysis has been conducted to see what factors prevent Latino parents from allowing their children to become vaccinated. In order to increase the acceptance of the initiation and completion of the HPV vaccine among the Latino population, there is an increased need for educational material both in English and in Spanish. When the educational material is simple, direct, and offered in Spanish, understanding and acceptance of the HPV vaccine is widely recognized. Once the parents have understanding of the need for the vaccine, they were more likely to allow their children to receive that HPV vaccine.

Oral Session 3C | From Pictures to Practice: The Abuse of the Black Female Body

Hannah Sapp, Business Management (Denver, CO)

This presentation explores the connections between 1) the hyper-sexual nature of African-American women represented in American media, 2) the endorsement of those stereotypes by African-American men and, 3) the leading killer of African-American women which is domestic abuse. To better label these connections, the word Misogynoir is suitable. Misogynoir is a word used to acknowledge the very specific convergence of anti-blackness and misogyny and is therefore not applicable to non-black women. This convergence is frequently disregarded in conversations about misogyny and in conversations about racism. Further, the impact that misogynoir has on intimate relationships in the African-American community is overlooked as a potential factor in the excessive amount of single parent African-American families. Because white feminists universalize womanhood as a homogeneously common experience based on the default narrative of white women, misogynoir has become thoroughly embedded in American culture and has had a detrimental effect on African American women and how their peers views them and more consequently, how intimate partners view them. Only by accurately analyzing socio-historical events can the origins of the convergence of racism and sexism be understood. This theory was derived from Tamika L. Gillum's 2007 study where she found that 71% of men surveyed endorsed negative stereotypical views of African American women. This presentation is not to synthesize data, rather its purpose is to analyze both the historical and social context of stereotypical images of African American women, gathered from historical and modern sources, in conjunction with Gillum's study. Only through this examination can we begin to discuss the impacts that hyper-sexual stereotypes of African American women have on the strength and health of the African American home, thus gaining a better understanding of the external forces that contribute to and normalize the dis-

proportionally high number of African American women killed by domestic abuse of a lover.

Keynote | Getting Strength from My Struggles: The Secret to Success in College That Nobody Talks About
Taylor Voss, South Colorado Small Business Development Center (CSU-Pueblo HSB Class of 2016)

Forget the old idea that college is about sitting through class and partying. To continue with that idea is to accept the status quo. For today's college students, there can be no status quo. This book represents a new way to experience college, empowers students to discover who they are, and inspires a movement to march the path less traveled.

Getting Strength From My Struggles is me challenging the status quo of college. We spend four years of our lives studying history, English, science; and yet after four years of education we fail to learn about ourselves. I was inspired to write my book because as I was graduating, I was surrounded by people who were totally lost. They were lost because they got swept away in the college experience and didn't discover who they were as a person in the midst of the chaos.

College, experienced in the most impactful way possible, is all about self-discovery. After four years you should graduate with a clear idea of who you are as a person and exactly what you want to do with your life. I know it's possible, because that was my experience. Simply leaving college with a piece of paper and good memories is a bad investment of thousands of dollars.

My mission in writing this book was to tell my story; illustrating a new way to experience college and thus leave behind my own clues for success along the way.

Oral Session 4A | Heroes & Villains: Creating Characters and Making Choices
Alec Portillos, English/Creative Writing (Pueblo, CO)

This presentation will provide an in-depth look at the art, creativity, and theories related to writing and storytelling. Drawing on the works of Wim Wenders and Friedrich Nietzsche, this project details how collaboration and interpersonal communication aid in creating characters and providing thick description of their human-like qualities. When characters are well developed, readers are more likely to connect with them. After reviewing related theory, this presentation will highlight the ways in which these theories informed the development of an experientially focused writing workshop for children. More specifically, the practices involved in teaching students to create multiple endings derived from one initial path, how personal experiences can influence storylines, and ways in which students should use their own voice in developing their creations.

Oral Session 4A | Writing Between the Lines (Overcoming Writer's Block)
Alison Gervais, English/Creative Writing/Communication & Rhetoric (Ramona, CA)

This presentation will provide a theoretical overview of literature related to overcoming writer's block, as well as practical techniques such as writing prompts, changing environment, and using materials or objects as inspiration to progress through what may be perceived as an inability to write. After reviewing practical and theoretical tips, the focus will shift to how these strategies, along with peer collaboration, were used to develop a writing workshop focusing on using writing as a means of coping and creating with a younger age group.

Oral Session 4A | Love to Talk: Communicate Your Way to a Better Future
Kevin Cano, Mass Communications/Electronic Media/ Communication & Rhetoric (Pueblo, CO)

This presentation will provide a theoretical overview of organizational, interpersonal and mass communications research related to social skills, timeliness, and radio broadcast. More specifically, it will elaborate on the way broadcast communications branch out and can be applied to multiple career paths and in life. In an effort to illustrate how these skills relate to multiple career paths, the presentation also focuses on the design, development, and implementation of a workshop for youth participants. The workshop curriculum, which includes exercises to enhance verbal and non-verbal communication skills, will be assessed in relationship to skills learned and existing literature. Finally, recommendations will be made for future research in these areas.

Oral Session 4B | Why So Serious?: Communication as a Means of Addressing Depression and Suicide
Vera Coleman, Psychology/Communication & Rhetoric (Pueblo, CO)

This presentation will focus on basic mental health awareness regarding youth depression and suicide. As such it will begin with information on childhood neurodevelopment, followed by a discussion of causes, symptoms, and coping behaviors. Following the review of psychological literature related to this topic, the focus will shift to how, experiential education was used to create a workshop designed for children, parents, and community members afflicted by youth suicide and depression. Finally, an auto-ethnographic approach using personal narratives will be used to explain the benefits and costs of utilizing experiential education as a tool for workshops of this nature.

Oral Session 4B | Hepatitis C Medications

Harry Aragon, MSN, Adult-Gerontology Acute Care Nurse Practitioner (Pueblo, CO)

The purpose of this research paper is to compare two direct acting antiviral medications in the treatment of patients who have Hepatitis C and have failed to be cured on prior treatments. The treatments available to cure Hepatitis C at this point in history have provided a chance to be free from the virus. The current chance to be cured is 80-99% depending on what type of Hepatitis C the patient has. The question is how providers can improve he chance of patients who have not achieved a cure based on current medications. The research design is translational research using a literature review design. The author has completed the NIH training with active certificates. The medications being released over the next may provide hope for a cure for patients unable to be cured with established medications. The research indicates that 90% of those patients who did not achieve a cure may be able to be cured with newer medications. The implications of this research will indicate which therapy to choose in order to best help these patients accomplish a lifelong cure for Hepatitis C.

Keywords: Hepatitis C, cure, medications, research

Colorado State University Pueblo

CAMPUS LEGEND

1. PHYSICS/MATHEMATICS BUILDING
2. LIFE SCIENCES BUILDING
3. CHEMISTRY BUILDING
4. GENERAL CLASSROOM BUILDING
5. LIBRARY ACADEMIC RESOURCES CENTER
6. CAPPS COPOZZOLO ACADEMIC CENTER FOR THE ARTS (HOAG HALL)
7. UNIVERSITY VILLAGE AT WALKING STICK APTS.
8. BELMONT RESIDENCE HALL
9. CRESTOME HALL
10. CULEBRA HALL
11. GREENHORN HALL
12. UNIVERSITY CHILD CARE CENTER
13. STUDENT RECREATION FIELD
14. HEATING PLANT
15. PHYSICAL PLANT
16. OCCHIATO UNIVERSITY CENTER
17. HEALTH, P.E. & RECREATIONAL BUILDING (MASSARI ARENA, SAM JONES SPORTS COMPLEX & LEVERT W. HOAG RECREATION CENTER)
18. STUDENT RECREATION CENTER
19. ADMINISTRATION BUILDING
20. LINDBERG GARDEN
21. UNIVERSITY FOUNTAIN PLAZA
22. PSYCHOLOGY BUILDING
23. McKINNEY PAVILLION
24. HASAN SCHOOL OF BUSINESS
25. TECHNOLOGY BUILDING
26. BUELL COMMUNICATIONS CENTER (KTSC-TV)
    CSU-PUEBLO VISITOR AND TRANSFER CENTER
27. OUTDOOR CLASSROOM
28. OUTDOOR AMPHITHEATER (HASAN)
29. SOLAR PANEL ARRAY

RAWLINGS OUTDOOR SPORTS COMPLEX

30. SOFTBALL
31. BASEBALL
32. TENNIS COURTS
33. ROPES COURSE
34. WEINDLING PARK
35. ART AND LORRAINE GONZALES SOCCER AND LACROSSE STADIUM

NETA & EDDIE DEROSE THUNDERBOWL STADIUM

36. FOOTBALL/TRACK FIELD
37. FIELD HOUSE
38. SUITES
39. PRESS BOX/PRESIDENTIAL SUITE
40. LEOMITI WARRIOR CENTER

PARKING LOT SECTORS

NORTH: N-1, N-2, N-3, N-4, N-5, N-6, N-7, and N-8.
EAST: E-1, E-2, E-3, E-4, E-5, E-6, E-7, E-8 (north & south), E-9, E-10 and E-11.
SOUTH: S-1, S-2, and S-3.
WEST: W-1, W-2, W-3, W-4, W-5 and W-6 (north & south).
(Visitors with permit may park in visitors' lot or white lines only.)

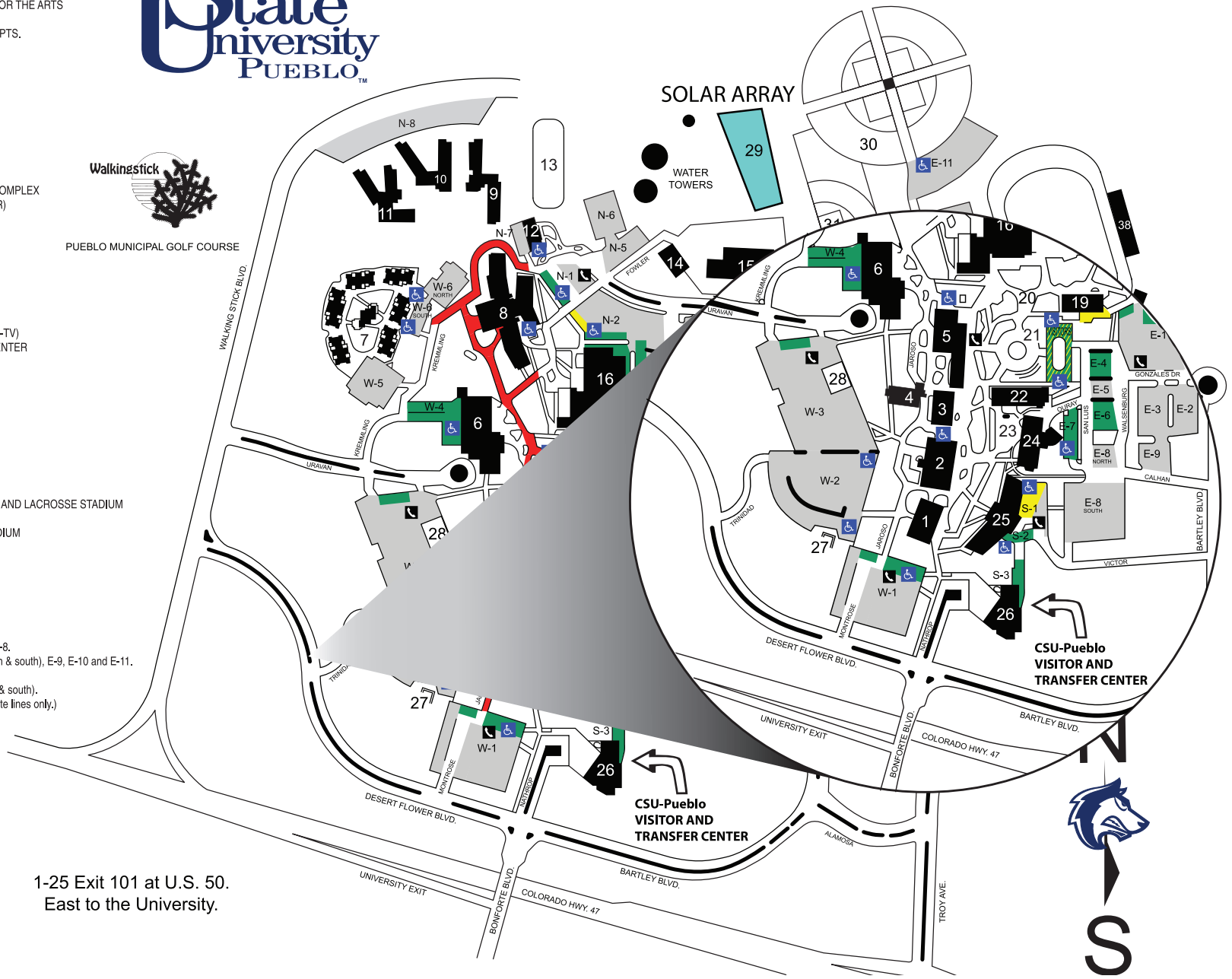
- Emergency Phones
- Handicapped Parking
- Student Parking (Permit Required)
- Authorized Parking Only as Designated
- Emergency and Service Vehicles
- Faculty/Staff/Reserved Parking
- Visitor Parking

Walkingstick

PUEBLO MUNICIPAL GOLF COURSE

SOLAR ARRAY

WATER TOWERS



1-25 Exit 101 at U.S. 50.
East to the University.