

**CSU Pueblo
4th Annual**

2016 STUDENT SYMPOSIUM

A Celebration of Research, Scholarship & Creative Activity

Showcasing scholarly activities by students of:

*Art, Art History, Biology, Biochemistry, Business Administration, Chemistry,
Engineering, English, History, Exercise Sports Science, Mass Communications,
Math, Music, Nursing, Political Science, Psychology*

April 8, 2016

**Occhiato University Center Ballroom &
Library 108 and 109**

Oral Presentations:

10:00 am, 1:45 pm,
3:30pm, 5:00 pm

Poster Presentations:

9:30-11:30 am
1:15-3:15 pm

Keynote Panel Address:

12:00 - 1:15 pm

Musical Performances:

9:30-10:30am, 1:30-2:30pm

Detailed program link: <http://www.csupueblo.edu/Grants/StudentSymposium/Pages/default.aspx>

Refreshments provided for symposium attendees

Special Thanks to Our Symposium Sponsors:



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**Little
Caesars**



2016 CSU-Pueblo Student Symposium Schedule At-a-Glance

Presenters (Oral and Poster) and Audience participants will be asked to sign-in twice:

1. 9 am-11:30 am: Presenter and audience registration/check-in OUC (Hearthwell Lounge Entrance)
2. 12:00 pm-12:15 pm: Presenter and audience sign-in for Keynote and Lunch session in OUC Ballroom C

Note: All posters must be set-up before 9:30 am (both am and pm sessions). All speakers must arrive 15 minutes before the first scheduled speaker in your assigned oral presentation group.

MORNING POSTER PRESENTATION SESSIONS (9:30am - 11:30am)

POSTER SESSION 1 Hearthwell Lounge

Biology/ Chemistry/ Math

Synthesis and Antimicrobial Activity of Benzohydrazides Substituted at the Aryl and N' Positions
Alisha Mason & Sarah Thompson (Biology and Chemistry)

Investigation of the relative migratory aptitude of phenyl and substituted phenyl groups in the Baeyer-Villiger
Megan Bissell (Mathematics), Jackie Killen (Biology), Beth Withrow (Chemistry)

EXPH

Partnership to Explore Mindfulness Training in Pueblo City Schools to Prevent School Violence and Empower Health Decisions

Bailey Bair, Cynthia Carmichael, Reggie Figgs, Catie Gregorich, Ashton Lujon, Jasmine Matthew, Alexis Romero, Andrea Tuck (Health Promotion Wellness)

Nursing-BSN

Effectiveness of Incentive Spirometry Use
Justin Cobler, Travis Krull, Brian Murray, Jasmine Smith

Dual vs. Mono Therapy in Prevention of Secondary Strokes
Dennie Brady, Justin Grissom, Erin Medina, Eric Sanchez

Mother Infant Bonding: The Effects of Early Postpartum Breastfeeding
Elva Harsch, Ariel Allee Jumbo, Meghan Miller, Sonja Nelson

Comparison of Community Stroke and Inpatient Stroke Outcomes
Erin Arnebeck, Nichole Gonzales, Stephen Mascarenas, Jenny Perich

Breastfeeding and Bonding
Margaret LaRock, Nhi Tran, Sabra Perdue, Lance Cox

Aromatherapy for Pain and Anxiety during Childbirth
Elizabeth Anderson, Wendy Gates, Clara Long, Joy Ownbey, Annabelle Yoo

Educational Gaps Related to Menstrual Hygiene Nursing Program
Rachel Moore, Ellen Skay, Victoria Barrett, Yamile Ingles

Art Therapy, Stress and Anxiety
Samantha Yoder, Tammy Freeman, Jordan McDonough, Yamili Serne-Green, Kayla Archuleta

The Relationship of Prenatal Care and Birth Outcomes
Amanda Salazar, Jamie Wells, Li'ana Martinez, Megan Deverich

Comparison of Sunlight vs Bili-light Therapy in Treating Hyperbilirubinemia in Newborns
Amber Farrell, John Langston, Adrian Tillery

MORNING POSTER PRESENTATION SESSIONS (9:30am - 11:30am)

Is Aromatherapy Effective for Pain Relief in Adult Patients compared with Conventional Treatment?
Amy Taylor, Arianna Cordova, Brianna Kuch, Carla Paredes-Diaz

Call Light Usage Related to Nursing Presence
Brianna Mason, Krisin Wrobel, Olivia Seipel, Bridgette Dreir

Do Parents being present during Pediatric Procedures reduce Psychosocial needs, compared to Pediatric Patients who's Parents are not Present?
Kenya Shavers, Jessica Metts, Samina Fitch, Trennea Harrod

Hand Hygiene
Shelby Hockett, Amy Bardessona, Ellysha Siegwarth, Anayancy Molina

The Effect of a Healthy Lifestyle on Type 2 Diabetes in the USA, Canada, and UK
Alexandria Davis, Kayla Lemons, Lindsey Walker, Sonia Ridley

Effect of Impedance Threshold Valves or Impedance Threshold Device on Return of Spontaneous Circulation in CPR
Olivia Cisneros, Sherri Kidner, Danielle Novak, Kourtney Stroud

Kangaroo Mother Care and Infant Thriving
Megan Komma, Morgan Cockrum, Mikaela Sullivan, Felicia Ortiz

The Effectiveness of Oral Sucrose
Jamee Baumlein, Erin Kears, Oriana Muasau, Sarah Steinhauser

The Effects of Isolation Precautions on Patient Care
Alexis Lebron-Frank, Taylin Trujillo, Briann Cumro, Alisa Proffer

Nursing-MSN

Implementation of Sepsis Bundles and Impact on Patient Mortality
Angela Allen, Amanda Fiegel, Taylor Sederberg

Chronic Obstructive Pulmonary Disease: The Impact of Smoking Cessation and Readmission Rates
Molly Cooper, Emily Dill, Tiffanie Hoover, Alison Risk, Sean White

Venous Thromboembolism: Treatment Options
Briana Belisle, Bobbi Hall, Daniel Mirshamsi, Jesusita Tafoya, Spencer Waller

Platelet-Rich Plasma Therapy
Amanda Anderson, Marissa Cassio, Brendon Madrid

A Novel Approach to Identifying Carbon Monoxide Poisoning
Lindsey Fox, Toloa Pearl, Sarah Mitchell, Danielle Riker

Mobile Stroke Units vs. Traditional Emergency Room Treatment
Bree Bacalis, Kim Eisenbach, Andrea Good, Natalia Menert

Electroconvulsive Therapy vs. Repetitive Transcranial Magnetic Stimulation treatment for Major Depressive Disorder
Cheryl Hines, Niesa Parmelee Caroline Schulof, Brian Wood

ORAL PRESENTATION SESSIONS (10:00 am - 11:15 am)

Oral Session 1 – MS Nursing Ballroom A

Contraception in the Adolescent Latina Population
Tracy L. Richardson, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

ORAL PRESENTATION SESSIONS (10:00 am - 11:15 am)

Dronedaron - Dual Therapy Potential for Atrial Fibrillation

Beth Hedstrom, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

The Most Effective Treatment Option for Patients with High Risk Clarithromycin Resistant Helicobacter Pylori Infection

Katie Bui, BSN, RN (Adult/Gerontology Nurse Practitioner program)

Oral Session 2 – MS Nursing

Ballroom B

Comparison of Levetiracetam and Phenytoin for Seizure Prophylaxis in a Severe Traumatic Brain Injury Patient
Kayla LaPorte, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

Coconut Oil for Treatment of Alzheimer's Disease

Allison Wagstaff, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

Improved Functional Outcome with Stroke Treatment: Implementing Standard of Care with Endovascular Therapy

Estrella Caddali, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

Oral Session 3 – MS Nursing

LARC 108

Probiotics for Adjustment Disorder with Depressed Mood

Jessica Johnson, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

Reducing the Risk for Esophageal Adenocarcinoma with the Use of Proton Pump Inhibitors in Patients with Barrett's Esophagus

Nicolas Steffen, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

Oral Session 4– MS Nursing

LARC 109

The Role of Non-invasive Blood Pressure Monitoring and Venipuncture in Ipsilateral Upper Extremity Secondary Lymphedema Post-Mastectomy

Cassandra Archer, BSN, RN (Adult/Gerontology Nurse Practitioner program)

Sodium Bicarbonate Therapy in Acidosis

Sarah Kate Roark, BSN, RN (Adult/Gerontology Nurse Practitioner program)

Efficacy of Cinnamon on Glycemic Control in Prediabetic Patients

Kelsey L. Markenson, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

MUSIC

Ballroom C (9:30 am – 10:30 am & 1:30 pm - 2:30 pm)

Musical performances by CSU-Pueblo music students selected by the Department of Music faculty

KEYNOTE SESSION

Ballroom C (12:00 pm -1:15 pm)

Research and Creativity in the 21st Century

Opening Remarks:

Dr. Rick Kreminski, CSU-Pueblo Provost

Keynote presenters:

Dr. Karen Yescavage, Psychology

Ms. Meral Sarper, Engineering

Ms. Rebecca Aragon, Music

Moderator:

Dr. Gayle Berardi, Political Science

AFTERNOON POSTER PRESENTATION SESSIONS (1:15pm - 3:15pm)

POSTER SESSION 2 Hearthwell Lounge

Note: All posters must be set-up before 9:30 am (both am and pm sessions)

Biology

Investigation of diminished cell cycle regulation in Saccharomyces cerevisiae putative Metallo-aminopeptidase 1 gene disruption strain
Andrea Vyas

Evaluation of critical host cell metabolism alterations that influence alphavirus replication
Jessica Costlow & Erika Krow

Seasonal trends in mercury concentration in southern Colorado songbirds
Ivonne Colin

Development of a chromogenic reporter alphavirus for use in virology research and diagnostic development
Nate Grabill & Tim Ballard

Biochemistry

Correlative Effects of Iron and Zinc Supplementation on Phosphohydrolase Activities in Penicillium spinulosum
Brent Schofield

Chemistry

Models for predicting atmospheric mercury concentrations using meteorological data and mercury concentrations in Salix (Willow) leaves
Lauren Bartolo & Kelsey Wager

Reactions of 3,6-bis(2-pyridyl)-1,2,4,5-tetrazine and metal(II) chlorides
Jillian N. Manikoff

Nursing- BS

Intramuscular Injection Techniques Associated with Pain
Amber DeHerrera, Kayla Martinez, Josie Salas, Jordan Waller

Nursing- MS

PTSD: Animal Assisted Therapy as an Adjunct to Clinical Practice Guidelines
Jessi Lamb, Katherine Searl, RosaAnna Armstrong, Suzanne Cobleigh, April Chamberlin

Psychology

Facial Recognition
Jinessa Downing

Self-deception, social desirability, and shame in an experimental task
Rian D. Razo

The History of Ancient Athenian Government
Bridgett Moore

ORAL PRESENTATION SESSIONS (1:45pm-3:00 pm)

Oral Session 5 – Fine Arts, Art-Ceramics, Music Ballroom A

So you think you can live without clay?
Suzi Reaves (Fine Arts)

Volcanic Clay
Sara Cox (Art-Ceramics)

The Janissary Sound in Western European Art Music 1400-18
Linda Densmore (Music)

ORAL PRESENTATION SESSIONS (1:45pm-3:00 pm)

Oral Session 6 – Political Science & History Ballroom B

Invisible Chains
Magdalena Contreras Gomez (Political Science)

Aristotle's Contributions to Biology and Sexism
Shelby Kissell (History)

What is Truth?
William Finley (History)

Oral Session 7 – MS Nursing, Engineering LARC 108

Pain Control for Infant Immunizations
Cheyenne Quinn, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner)

Characterization and Applications of Conductive Filament in 3D-Printers
Pratik D. Desai (Engineering/Mechatronics)

Selecting Between Warfarin and Apixaban (Eliquis) for Thromboembolic Prophylaxis in Atrial Fibrillation
Melissa Morris, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner)

Hypertension Guidelines: Impact on Cardiovascular Health in the Geriatric Population
Sondra Ware, BSN, RN (Dual: Adult/Gerontology & Family Nurse Practitioner program)

Oral Session 8 – MS Nursing LARC 109

Anticoagulation Therapy in Elderly Patients with Atrial Fibrillation
Xiaoyan Zhang, BSN, RN (Dual: Adult/Gerontological & Family Nurse Practitioner)

Wireless Pulmonary Pressure Monitoring in Heart Failure Patients
Kelly Webster, BSN, RN (Adult/Gerontological Nurse Practitioner)

Hyperbaric Oxygen Therapy
Ginger Beck, BSN, RN (Adult/Gerontological & Family Nurse Practitioner)

ORAL PRESENTATION SESSIONS (3:30 – 4:45pm)

Oral Session 9 – Engineering & Biology Ballroom A

Algorithms for Integrating Hemp Bio-Energy into the Power Grid and Hemp as Phytoremediator for Pollution
Meral Sarper (Engineering)

The Right of Life, Liberty, and the Pursuit of Mental Health Happiness
Anna Horton-Symons (Engineering)

Explaining the variation in songbird mercury using trophic level, phylogeny and foraging guild
Carley Knutsen (MS: Biology)

Oral Session 10 – MS Nursing Ballroom B

Mannitol vs. Hypertonic Saline in the Treatment of Elevated Intracranial Pressure
Kelsey Aliabadi, BSN, RN (Dual: Adult/Gerontological & Family Nurse Practitioner)

Corticosteroid Use in Treatment of Community Acquired Pneumonia
Maria Kelley, BSN, RN (Dual: Adult/Gerontological & Family Nurse Practitioner)

ORAL PRESENTATION SESSIONS (3:30 – 4:45pm)

Oral Session 11– MS Nursing LARC 109

Venous Thromboembolism Prevention in Total Knee Arthroplasty
Damian Gradisar BSN, RN (Adult/Gerontological Nurse Practitioner)

Correlation of BMI and Kidney Transplant Complications
Priscilla Williams, BSN, RN (Dual: Adult/Gerontological & Family Nurse Practitioner)

Proning: A second look - Does proning reduce mortality rates in patients with severe acute respiratory distress syndrome?
Annette Rice, BSN, RN (Adult/Gerontological Nurse Practitioner)

Oral Session 12 –Communication & Rhetoric Ballroom C

The Application of Experiential Education at the University Level
Edward Kusi-Mensah, Rick Quintana, Eliana Taylor, Adrian Torres (COMR)

ORAL PRESENTATION SESSIONS (5:00-6:15pm)

Oral Session 13 – History & Business Ballroom A

Herodotus: Historian or Storyteller?
Tabitha Martin (History)

Prolonged Parental Investment
Austin Rahskopf (MBA)

Oral Session 14 – Art Ballroom B

Native American Women With the Spirit of Clay in Their Hands
Joyce Pretzer (Art)

Death through the Ages
Blanca Davis (Art-History)

Oral Session 15 – Communication & Rhetoric Ballroom C

Tempered Voices
Briana Heifner, Makayla Miller, Tyrone Parks, Katy Barnes, & Eliana Taylor, Directed by Nicole Grider (COMR)

ABSTRACTS

POSTER SESSION 1: 9:30 am-11:30 am

Hearthwell Lounge

Biology/Chemistry/Math

Synthesis and Antimicrobial Activity of Benzohydrazides Substituted at the Aryl and N' Positions

Alisha Mason & Sarah Thompson
Hometown: Pueblo/ Program: Biology & Chemistry

Abstract: Benzohydrazides are derivatives of the parent compound, 1. Benzohydrazides substituted at the aryl and N' positions, 2, have previously been shown to have antibacterial and antifungal properties and are also suggested to have antimicrobial and antitumor activity. This class of antibiotics is hypothesized to bind to DNA giving the antibiotic properties. Their antimicrobial effectiveness can be tuned by adjustment of the substituent groups. This work describes the synthesis and antimicrobial evaluation of several aryl- and N'-substituted benzohydrazides in a multidisciplinary approach involving organic synthesis and microbiological studies. Synthesis of 2a and 2b has been completed in the organic chemistry lab, and antimicrobial activity has been evaluated using the Kirby-Bauer antibiotic susceptibility method in the microbiology lab. Preliminary results have shown antimicrobial activity against Gram negative bacillus, Escherichia coli, and Gram positive bacillus Bacillus megaterium.

Investigation of the relative migratory aptitude of phenyl and substituted phenyl groups in the Baeyer-Villiger Reaction

Megan Bissell (Mathematics), Jackie Killen (Biology), & Beth Withrow (Chemistry)
Hometown: Walsenburg (Withrow)/ Program: Biology, Chemistry, and Mathematics

Abstract: The Baeyer-Villiger (B-V) oxidation of ketones is an important reaction for synthesis of esters that may be difficult to obtain by other synthetic routes, but it is not covered in many laboratory textbooks and may even receive less attention in the lecture course. While B-V oxidation of aldehydes typically yields carboxylic acids, benzaldehydes substituted with certain highly electron-donating groups (EDGs) give formate esters, often undergoing hydrolysis under the reaction conditions to substituted phenols. We have used the B-V oxidation of benzaldehyde and acetophenone in the undergraduate organic chemistry laboratory to explore the known relative migratory aptitude of groups, and also to explore the well-documented anomalous migration of p-methoxyphenyl groups. We explore this effect in our undergraduate laboratories as an application of the effect of EDGs on aromatic systems, and present our students with an extended ranking for B-V migratory aptitude. Traditional relative migratory aptitude: hydrogen > tertiary alkyl > phenyl ~ secondary alkyl > primary alkyl > methyl. Extended relative migratory aptitude: p-methoxyphenyl > hydrogen > tertiary alkyl > phenyl ~ secondary alkyl > primary alkyl > methyl. As part of enrichment efforts for our undergraduate laboratory curriculum, we are investigating the outcome of B-V reactions on p-anisaldehyde, p-tolualdehyde, benzaldehyde, acetophenone, and p-nitroacetophenone using Oxone(R) and mCPBA as oxidants. We continue to explore the effect of other EDGs and other oxidants.

EXPH

Partnership to Explore Mindfulness Training in Pueblo City Schools to Prevent School Violence and Empower Health Decisions

Bailey Bair, Cynthia Carmichael, Reggie Figgs, Catie Gregorich, Ashton Lujon, Jasmine Matthew, Alexis Romero, & Andrea Tuck
Hometown: Denver & Pueblo/ Program: EXHPR (Health Promotion Wellness)

Abstract: In 2010, there were approximately 828,000 nonfatal victimizations at school among students 12 to 18 years of age. About 7% of teachers report that they have been threatened with injury or physically attacked by a

student from their school. In 2009, about 20% of students ages 12-18 reported that gangs were present at their school during the school year. Violence and fear of violence can exacerbate health disparities and worsen health outcomes. Addressing school violence can make a significant impact in the school environment, student success and in creating better health equity among disadvantaged students. This partnership will help to identify the best intervention strategies for Pueblo and collect baseline data that will assist in measuring the success of school-based interventions for the health disparity. Several factors have been identified in collaboration with the community partner. We have decided to collect the following data at Baca Elementary each year to measure the success of the intervention: Student absenteeism, STOP sign data (when the child is removed from the classroom for problem behavior), number of school counselor and principal visits, student suspensions, and student test scores. We will consider additional data collection after engaging in the partnership meetings. The one year development grant will provide the time and resources needed to collect the baseline data in preparation for a full pilot program.

Nursing-BSN

Effectiveness of Incentive Spirometry Use

Brian Murray, Travis Krull, Justin Cobler, & Jasmine Smith
Hometown: Pueblo/ Program: BS Nursing- Accelerated

Abstract: With any surgical procedure, there exist potential dangers and complications for patients in their postoperative recovery period. Many of the post-operative complications interfere with pulmonary function, causing postoperative pulmonary complications (PPCs). Extensive research has been conducted evaluating the techniques used to enhance the recovery period and decrease the incidence of PPCs in surgical patients. In major abdominal and thoracic surgeries, PPCs are a leading cause of morbidity and mortality affecting a significant percentage of patients (25-50%). The purpose of this literature review is to compile available data regarding incentive spirometry use to gauge its actual efficacy at decreasing the incidence of postoperative pulmonary complications. Multiple databases (CINAHL, Ovid, The Cochrane Library, PubMed, EMBASE, Medline Plus) were utilized to locate studies performed on the topic of incentive spirometry use. Based on this literature review, there is a lack of empirical evidence to support the claim that incentive spirometry alone decreases the occurrence of postoperative pulmonary complications. While a direct causal relationship between incentive spirometry use and the mitigation of pulmonary complications has yet to be definitively established, incentive spirometry used in combination with other therapies does continue to decrease the incidence of pulmonary complications. Furthermore, incentive spirometry use has not been shown to be either dangerous or deleterious to patients. Although there is no evidence suggesting the use of incentive spirometry is in any way superior to another form of therapy, IS use should continue to be utilized and promoted in the best interest of the patient. Incentive spirometry alone, when compared to other forms of therapy, shows no statistically significant benefit.

Dual vs. Mono Therapy in Prevention of Secondary Strokes

Dennie Brady, Justin Grissom, Erin Medina, & Eric Sanchez
Hometown: Pueblo and Colorado Springs/ Program: BS Nursing- Accelerated

Abstract: Every year more than 795,000 people in the United States have a stroke. Of those, 185,000 are secondary strokes, strokes that occurred after an initial stroke. Overall, 130,000 Americans die each year from stroke. This literature review addressed the question “Which is more effective in preventing secondary stroke, dual or mono therapy?” To find information on this topic, searches were conducted in Ebscohost, ScienceDirect, and Google Scholar, using the key words: ischemic stroke, secondary stroke, and dual antiplatelet therapy, mono anti platelet therapy, TIA, and effectiveness. Filters were also set to include dates from 2007 to 2016, peer reviewed articles, and articles appearing in academic journals. Using those parameters, a total of 34,805 research articles were generated. Of those, eight articles were chosen. They included five meta-analysis studies, two quasi-experimental studies, one quantitative-correlational analysis, and one systematic review and meta-analysis. The literature strongly suggested that dual antiplatelet therapy is more effective in preventing secondary ischemic stroke, but came with the risk of a hemorrhagic episode; and that co-morbidities needed to be evaluated to determine the most effective and safe treatment for prevention of secondary stroke.

Mother Infant Bonding: The Effects of Early Postpartum Breastfeeding

Elva Harsch, Ariel Allee-Jumbo, Meghan Miller, & Sonja Nelson
Hometown: Pueblo, Woodland Park, Dolores/ Program: BS Nursing- Accelerated

Abstract: Attachment can be described as an establishment of an emotionally positive and mutually rewarding relationship between an infant and its mother. The purpose of the present study was to examine evidence in the existing literature to determine if maternal bonding is more effective when mothers breastfeed in the early postpartum period than mothers who do not breastfeed at all. “Bonding through maternal-infant attachment: Attachment is the bond of affection formed between a mother and her infant that originates during pregnancy and is characterized as an intense physical, emotional, and spiritual connection that endures over time. Research databases CINAHL, Elsevier, Science Direct, EBSCO Host, NCBI, Proquest, and Google Scholar were searched and key words included “breastfeeding,” “bonding,” “nursing,” “lactation,” “effective/ineffective bonding,” “lactation,” “mothers,” “postpartum,” and “mother-infant relationship”. Fourteen articles met the criteria for research on maternal infant bonding through breastfeeding. All but one of the studies supported a positive correlation between breastfeeding and maternal infant attachment.

Comparison of Community Stroke and Inpatient Stroke Outcomes

Erin Arnebeck, Nichole Gonzales, Stephen Mascarenas, & Jenny Perich
Hometown: Pueblo/ Program: BS Nursing

Abstract: Nursing a landmark study, Characteristics of in-hospital onset ischemic stroke reports that 4% to 16% of all strokes occur in hospitalized patients and these patients have a risk of in-hospital mortality of 14% to 60%. Recent studies find that in-hospital stroke patients receive delayed recognition and assessment of stroke symptoms, lower administration of thrombolysis, and are at greater risk for disability or death when compared to patients admitted from the community. Delayed response to stroke symptoms leads to more severe physical and cognitive impairment in the stroke patient due to ischemic brain conditions. These significant impairments affect the patient as well as family and caregivers and may be preventable. The aim of this research review is to determine whether patients experiencing a stroke while hospitalized have less physical and cognitive impairment than patients experiencing a stroke outside the hospital. A database search of CINAHL Plus, Science Direct, Journal of American Medical Association, and the American Heart Association Journal and key words are: “in hospital stroke,” “out of hospital stroke,” “inpatient stroke outcomes,” “tPA,” “stroke education,” “inpatient and outpatient stroke over time,” and “comparison of inpatient and outpatient stroke” generates approximately 20 applicable articles between 2006-2016, nine of which are used. The articles include a landmark study and peer-reviewed articles. Each of the four researchers worked independently to find relevant articles. The literature review determined in-hospital patients who experience stroke have more severe strokes, longer wait times to receiving treatment, receive tPA less often, have access to less stroke care components such as brain imaging and admission to a stroke unit, and have higher mortality than community stroke patients. One study also determined that in-hospital stroke patients suffer from incontinence, dysphasia, motor deficits and lower levels of consciousness more often than community stroke patients.

Breastfeeding and Bonding

Margaret LaRock, Nhi Tran, Sabra Perdue, & Lance Cox
Hometown: Pueblo/ Program: BS Nursing

Abstract: Nursing Breastfeeding has been the foundation of infant nutrition and wellbeing since life was created. Over time, for either convenience or inability to breastfeed, bottle and formula feeding has been on the rise. Breastfeeding sets the framework for the mother-infant relationship and can increase the bonding needed throughout the first year of life. The purpose of this analysis was to examine an increase in bonding between

mother-infant relationships when the babies were breastfed. Databases used include: Google Scholar, CINAHL, and key words include; “mother-infant bonding,” “mother-infant relationship with breastfeeding,” “breastfeeding and bonding,” “Formula v.s. breastfeeding,” “infant bonding while breastfeeding,” emotional status while breastfeeding.” Search parameters included articles within the last ten years, landmark articles, and peer reviewed journals. The study group consisted of four individuals who all did their own review and compiled the description and results. Within the studies, the literature suggests that there was significant bonding between all mothers and babies regardless of feeding methods. Some mothers who entered the studies attempted breastfeeding as long as they could, and some mothers dropped out of the studies so their results were inconclusive. For the mothers who did complete the studies, breastfeeding increased sensitivity to the infant needs.

Aromatherapy for Pain and Anxiety during Childbirth

Elizabeth Anderson, Wendy Gates, Clara Long, Joy Ownbey, & Annabelle Yoo
Hometown: Denver, Fayetteville, Arkansas, Grand Junction, New York City/ Program: BS Nursing

Abstract: The purpose of this inquiry is to assess the effectiveness of aromatherapy on pain and anxiety in women during childbirth. Databases used were CINAHL, Ovid, ScienceDirect, the Cochrane Library, PubMed, MedlinePlus, Google Scholar, and the CSU-Pueblo Library Catalog using the Keywords “aromatherapy,” “labor pain,” “anxiety during labor,” “pain management in labor.” Based on content and relevance to the proposed research question, eight articles were selected for review. Study results supported a positive impact on pain and anxiety during labor for women who used aromatherapy with essential oils rather than traditional pharmaceutical interventions. Further studies are needed to provide a stronger relationship between the effect of aromatherapy on pain and anxiety in childbirth and the effects of aromatherapy in childbirth outcomes.

Educational Gaps Related to Menstrual Hygiene Nursing Program

Rachel Moore, Ellen Skay, Victoria Barrett, & Yamile Ingles
Hometown: Pueblo/ Program: BS Nursing

Abstract: An increased rate of infection during menstruation has led to questions regarding the relationship between menstrual hygiene education and infection. The study group asked the question: Will implementing more education for adolescent females, decrease the likeliness of menstrual infection? The group searched two different Databases (CINAHL and PubMed) searching keywords such as,” Menstrual Hygiene, “education,” “lack of education,” and “Sanitary pads,” further pinpointing the results by selecting options within the last 5-10 years with full text, peer review available. The search resulted in a few hundred articles from which to choose. From there, selection was based on relevance to the PICO topic. This literature review included 8 studies consisting of qualitative, quantitative, correlational, cross sectional, and systematic reviews. The limited research in this area suggests that a relationship between menstrual education and incidence of infection exists.

Art Therapy, Stress and Anxiety

Samantha Yoder, Tammy Freeman, Jordan McDonough, Yamili Serne-Green, & Kayla Archuleta
Hometown: Arvada, Burlington, CO; Rome City, Indiana; Keeseville, New York; El Paso, Texas/
Program: BS Nursing

Abstract: A current trend among adults is art therapy, such as coloring, drawing, and painting. It is considered a form of psychotherapy that encourages creativity and self-expression. The purpose of this paper is to identify the relationship between art therapy and the relief of anxiety and stress in adults. The Colorado State University-Pueblo library was utilized to search for information related to this purpose. The keywords used in finding this research were: “art therapy”, “anxiety”, “stress”, “adult coloring”, “art psychology”, “adults”, “reduce stress”, and “reduce anxiety”. The literature review was accomplished by initially reading the abstract, conclusion, and if the article pertained to the topic, it was further investigated. The literature in the review suggests the following: art therapy has been proven to aid in the reduction of stress and anxiety levels in adults. It is implemented in a variety of occupational settings such as behavioral health, end-of-life care, and psychology. In addition, the process of finding information showed that there was not a plethora of research

studies available, and therefore, it is recommended that art therapy be integrated into high anxiety and high stress occupations, creating the opportunity for further research.

The Relationship of Prenatal Care and Birth Outcomes

Amanda Salazar, Jamie Wells, Li'ana Martinez & Megan Deverich

Hometown: Pueblo/ Program: BS Nursing

Abstract: Can increasing a mother's prenatal education decrease newborn complications? The purpose of this analysis was to determine if there was a relationship between prenatal education and the reduction in newborn complications. Databases that were utilized for the research project included CINAHL, Medline, EBSCO, ScienceDirect, and Google Scholar. Keywords included "prenatal visits," "education," "newborn complications," "newborn", and "birth outcomes". Search limiters included articles within the last 10 years, landmark articles, and peer-reviewed articles. The group studying this question consisted of 4 members, each of whom searched the literature independently. Ten, relevant quantitative articles were reviewed for this project. This literature review supported a positive relationship between prenatal care and birth outcomes.

Comparison of Sunlight vs Bili-light Therapy in treating Hyperbilirubinemia in Newborns

Amber Farrell, John Langston, & Adrian Tillery

Hometown: Pueblo, Durango, CO; Omaha, Nebraska/ Program: BS Nursing

Abstract: Hyperbilirubinemia is a common occurrence in many newborns. While some elevation of bilirubin is normal, a prolonged or significantly high level can have significant consequences on the health of the newborn. The medical model for treating Hyperbilirubinemia primarily relies on the use of phototherapy in the form of special blue lights that break down bilirubin into smaller compounds the body can excrete. While this may be efficacious for a hospital setting, many parts of the world do not have access to these devices. The alternative practice of using sunlight is a more traditional and time honored approach. This research project seeks to determine if sunlight is as effective in treating Hyperbilirubinemia as phototherapy. Multiple databases were used when researching this topic such as: The Cochrane library, PubMed, Science Direct, Ovid, and Medline plus. Keywords were determined to help others search the topic: phototherapy, newborn jaundice, hyperbilirubinemia, and sunlight therapy. After discovering 8 articles related to the topic and discerning their content, it was determined that sunlight was just as effective and in many cases more effective at treating elevated bilirubin levels in newborns. The recommendation is that the medical model allow for the inclusion of natural sunlight in treatment for Hyperbilirubinemia.

Is aromatherapy effective for pain relief in adult patients compared with conventional treatment?

Amy Taylor, Arianna Cordova, Brianna Kuch, & Carla Paredes Diaz

Hometown: Pueblo/ Program: BS Nursing

Abstract: The purpose of this study was to prove that aromatherapy is effective for pain relief in adult patients compared with conventional therapy. The use of opioids and other conventional therapies for pain relief have been shown to have many adverse effects, whereas complementary therapies, such as aromatherapy, have shown to have less adverse effects. A literature review of qualitative and quantitative studies related to acute pain was conducted using keywords "aromatherapy," "pain," "essential oils," "pain relief for adults," and "complementary therapy." Databases utilized were CINALH, Science direct, Ebsco, and iMedPub. The results of this literature review were that aromatherapy provides effective relief for acute pain, but more research is necessary to prove that aromatherapy is effective in treating all types of acute pain. These findings suggest that the use of aromatherapy has been proven effective as adjunct therapy with pharmacological measures and also when used as the primary therapy for pain relief.

Call Light Usage Related to Nursing Presence

Brianna Mason, Kristin Wrobel, Olivia Seipel, & Bridgette Dreier
Hometown: Pueblo & Colorado Springs/ Program: BS Nursing

Abstract: A safe patient environment, timing of care and patient satisfaction all depend on the frequent presence of a nurse. It was suspected that patient satisfaction and call light usage were closely related, and this led to the inquiry, “In an acute care setting, does the presence and care implemented by the nurse decrease call light usage?” A literature review was conducted using databases from CINAHL. Various search parameters were used which included: peer-reviewed journals, four quantitative and four qualitative articles, and publications within the last ten years. Some of the keywords used were call light button usage, patient satisfaction, call light satisfaction, and nurse-patient relationship. The study group consisted of four individual students who did their own literature review, and compiled the description and results. Frequent nursing care was found to increase patient satisfaction that resulted in reducing call light usage.

Do parents being present during pediatric procedures reduce psychosocial needs, compared to pediatric patients whose parents are not present?

Kenya Shavers, Jessica Metts, Samina Fitch, & Trennea Harrod
Hometown: Denver, Pueblo, CO; Killdeer, North Dakota; Hampton, Georgia/ Program: BS Nursing

Abstract: "Evidence shows that pediatric patients recover better when parents are present during pediatric procedures. When parents are not present pediatric patients are more anxious making invasive procedures lengthier than usual. When the child is reassured by the parent's presence it creates an improved environment for treatment, healing, and overall care. The purpose of this literature review was to determine if there is a relationship between anxiety and parental presence during pediatric procedures. Various databases from the CSU-Pueblo library were used to obtain full text articles from the following: CINAHL, PUB MED, and ELSEVIER. The following keywords were used to extract data from the various previous listed databases: “Child anxiety”, “parental presence”, “invasive procedure”, “cpr”, “pediatrics”, “pediatric anesthetic induction”. The keyword search did produce a plethora of documents; however the four team members did intense filtering to choose what articles were a seamless match for the PICOT question. Search limits were all articles written within the past 10 years, peer reviewed articles, landmark articles, case studies, and research articles. The four team members searched separately to locate articles from various databases that would serve as credible sources. The literature review used 12 articles covering the presence of anxiety in pediatric patients undergoing procedures with their parents present. The 12 studies referenced represented the 12 following designs: 2 quantitative quasi-experimental, 2 quantitative descriptive, 2 quantitative correlations, 2 were quantitative experimental, also included in the review were quantitative cross sectional descriptive and qualitative descriptive. The literature review utilized a combination of quantitative and qualitative analysis to support parental presence as a pediatric anxiety reduction strategy during procedures."

Hand Hygiene

Shelby Hockett, Amy Bardessona, Ellysha Siegwarth, & Anayancy Molina
Hometown: Pueblo/ Program: BS Nursing

Abstract: Fox et al. found that in the United States, there are 2.5 million hospital-acquired infections (HAIs) every year. This results in 90,000 preventable deaths and costs hospitals \$4.5 billion annually. “Improving health care workers' (HCWs) hand-washing practices is an effective method to reduce the prevalence of nosocomial infections.” The purpose of this analysis is to determine if high compliance of hand hygiene yields fewer nosocomial infections than low compliance of hand hygiene. Databases searched were Cinahl, PubMed, Science-Direct, and Elsevier using EBSCOhost. Keywords used to search included “low compliance”, “compliance”, “hand hygiene”, “patient safety”, “nosocomial infections”, “hospital-acquired infections”, “device-associated infections”, “hospital design”, “standard precautions”, “nursing”, “cross-infection”, “guidelines”, and “quality improvement”. Search parameters included articles less than ten years old, qualitative and quantitative research studies, and mixed-method design studies. Articles excluded are those that lacked detailed review of study results, expert opinion, and literature reviews. Each of the eight articles were

independently reviewed by the four members of the group and then combined for group review. The findings indicate a strong correlation between high compliance of hand hygiene and patient safety as well as a relationship between low compliance of hand hygiene and nosocomial infections.

The Effect of a Healthy Lifestyle on Type 2 Diabetes in the USA, Canada, and UK

Alexandria Davis, Kayla Lemons, Lindsey Walker, & Sonia Ridley
Hometown: Pueblo/ Program: BS Nursing

Abstract: The purpose of this analysis is to determine the relationship between a healthy lifestyle and the risk of developing Type 2 Diabetes. Does a healthy lifestyle help decrease the risk of developing type 2 diabetes in the US, Canada and UK, compared with those who don't lead a healthy lifestyle, which can be defined as following the Myplate guidelines and exercising at least 30 minutes, five times per week. Databases used to search for articles consisted of CINAHL Plus with Full Text, EBSCO and Google Scholar. Search parameters included articles within the last ten years, landmark studies, and locations only in the US, UK, and Canada. This excluded all data that was not relevant for our literature review. The group considering this question consisted of four individuals who did independent searches, which resulted in nine relevant qualitative and quantitative studies reviewed in this project. The literature suggested that improvements in lifestyle, including a combined diet and exercise program can have a large and beneficial impact on the risk of diabetes.

Effect of ITV/ITD on Return of Spontaneous Circulation in CPR

Olivia Cisneros, Sherri Kidner, Danielle Novak, & Kourtney Stroud
Hometown: Breckenridge, Pueblo, Swink, CO; Visalia, CA/ Program: BS Nursing

Abstract: This article is a review of the literature examining the effect of Impedance Threshold Valves (ITV) or Impedance Threshold Device (ITD) on return of spontaneous circulation (ROSC). Population of interest was cardiac arrest patients receiving cardiopulmonary resuscitation (CPR). Search words used in this review were ITV or ITD, Resqpod, CPR, and ROSC using the data bases Pubmed, Cinahl, Ovid, and Supersearch. Search filters were applied to narrow relevant information into nine studies that are of quantitative design. The evidence comparing the use of ITV/ITD in CPR to traditional CPR methods was inconclusive. Five articles stated ITV/ITD is beneficial in increasing rates of ROSC; however, the side effect of this method is pulmonary edema. Four articles found no added benefit in the use of ITV/ITD. Due to the inconclusive evidence, further in-depth research is needed to clarify whether or not ITV or ITD are useful in increasing ROSC in CPR.

Kangaroo Mother Care and Infant Thriving

Megan Komma, Morgan Cockrum, Mikaela Sullivan, & Felicia Ortiz
Hometown: Pueblo/ Program: BS Nursing

Abstract: Throughout obstetrical education and clinical experience, nursing students noticed that many hospitals are implementing and advocating for an inexpensive, beneficial intervention called Kangaroo Mother Care. Kangaroo Mother Care (KMC) is skin-to-skin contact between a mother and newborn infant. This literature review examines how KMC helps newborns thrive. Thriving is defined as appropriate growth and development, temperature regulation, bonding with parent, decreased pain and stress, and adequate nutrition. Does Kangaroo Mother Care (I) positively affect thriving (O) in infants (P) compared to infants who did not receive KMC (C)? Eight relevant Quantitative and Qualitative research studies that fit the stated definition of thriving and were written within the last 10 years were used. Databases included: CINAHL Plus, PubMed Central, and ScienceDirect. During the review process, eight articles discussed the advantages and positive effects of Kangaroo Mother Care. One article explained how skin-to-skin contact directly after a cesarean section affected the relationship between mother and baby due to voice interaction. KMC is proven to aid in the growth and development of newborns and leads to increased bonding and interaction. As a result it promotes breastfeeding directly after birth. KMC also helps infants regain lost birth weight and increases daily weight gain. Nurses and midwives viewpoints' of KMC suggested that infant's show more affectionate behavior and

the caretaking actions of mothers also increased. An additional advantage of skin-to-skin contact is a decrease in pain experienced by newborns during routine procedures. Preterm babies who experience KMC get discharged earlier from NICU than those who stay in an incubator. In conclusion these articles supported that Kangaroo Mother Care positively affected thriving in infants. Keywords: KMC, skin-to-skin contact, bonding, decreased pain, newborns, nutrition, thriving, growth and development, breastfeeding, cesarean section, preterm, NICU (Neonatal Intensive Care Unit).

The Effectiveness of Oral Sucrose

Jamee Baumlein, Erin Kears, Oriana Muasau, & Sarah Steinhauer
Hometown: Pueblo, Colorado Springs, Denver, CO; Memphis TN/ Program: BS Nursing

Abstract: Nursing Infants undergo many painful procedures during the first year of life. All infants are exposed to heel sticks for testing and various immunizations. Preterm infants may undergo many more painful procedures because they require more time and treatment in hospitals. Infant pain has often been under treated because infants are nonverbal and also because health care providers are weary of drug side effects. Oral sucrose is currently being used as a nonpharmacological analgesic for infants undergoing painful procedures. The purpose of this literature review is to examine oral sucrose and its ability to relieve pain in infants. CINAHL, OVID, and Science Direct Journals were the databases searched for this literature review. The keywords used in the search included “oral sucrose,” “infant,” and “pain.” The average searches with those keywords revealed 100-200 articles. Parameters for the search included limiting articles to the last ten years. Overall, research reviewed indicates that oral sucrose is an effective analgesic for infants.

The Effects of Isolation Precautions on Patient Care

Alexis Lebron-Frank, Taylin Trujillo, Briann Cumro, & Alisa Proffer
Hometown: Alamosa, Colorado Springs, Pueblo/ Program: BS Nursing

Abstract: The prevalence of antibiotic resistant infections has been increasing in U.S. hospitals for years. The CDC advises contact precautions to combat the spread of these microorganisms. Contact precautions are necessary to reduce the spread of these communicable organisms but have also been shown to decrease the amount of time that care workers spend with patients who are in contact isolation. The purpose of this summary of studies is to determine if there is a measurable difference in the care that patients receive while in isolation contact versus the care patients receive with no isolation precautions. Databases that were utilized for this review included: Ebscohost, OVID, Elsevier, The American Journal of Infection Control, and Science Direct. The keywords used to find the data were “MRSA and contact precautions” “contact precautions and patient care” “contact precaution studies” “contact precautions” “effect of patient care on contact precautions”. “The initial search resulted in 20,000 articles. After applying the following search parameters, peer-reviewed academic journal entries published within the last 10 years, 3,000 articles remained. This literature review utilized two observational studies, a semi structured interview process, a quasi-experimental design, a case controlled study, a descriptive correlational design, a cross-sectional study, a systematic review, a correlational study, and two literature reviews to suggest that contact precautions negatively affect patient care when patients are isolated for MRSA and other communicable diseases.

Nursing-MSN

Implementation of Sepsis Bundles and Impact on Patient Mortality

Angela Allen, Amanda Fiegel, & Taylor Sederberg
Hometown: Alamosa, Sterling, Littleton/ Program: MS Nursing Adult/Gerontological Acute Care & Family Nurse Practitioner

Abstract: Aim: To demonstrate how the implementation of sepsis bundles in the management of inpatient sepsis effects mortality rates. Background: Septicemia is global health problem that contributes to millions of inpatient hospitalizations every year and is the most expensive illness to treat. More concerning are inpatient mortality rates for sepsis, which range from 16% to 35.3%. The Surviving Sepsis Campaign (SSC), an international collaboration, was developed out of the need to address this worldwide epidemic. The SSC has identified the major factors that impact mortality rates and have created “bundles” based on such findings.

Conceptual Framework: Through the application of Donabedian's Quality Framework, which focuses on patient outcome improvement, providers can facilitate successful implementation of sepsis-based protocols. **Methods:** Using the search terms sepsis, mortality, and bundles, the CINAHL, Pubmed, and Ovid databases were searched for information related to the implementation of sepsis bundles and their effect on mortality. Ten articles were reviewed: a quasi-experimental study (1), prospective cohort studies (4), an observational study (1) and observational prospective cohort studies (4). **Results:** Implementation of sepsis bundles has a significant impact on decreasing mortality rates among inpatients with the diagnosis of sepsis. One study showed a mortality reduction from 57.3% to 37.5% when sepsis bundles were implemented. **Implications:** Due to initiatives driven by the Centers for Medicaid and Medicare Services, sepsis bundles are being widely implemented, yet gaps in practice remain. Advanced Practice Nurses are able to close these gaps by fulfilling their role and competencies of leadership and implementing evidence into practice.

Chronic Obstructive Pulmonary Disease: The Impact of Smoking Cessation and Readmission Rates

Molly Cooper, Emily Dill, Tiffanie Hoover, Alison Risk, & Sean White

Hometown: Denver, Colorado Springs, Alamosa/ Program: MS Nursing Adult/Gerontological Acute Care & Family Nurse Practitioner

Abstract: Chronic Obstructive Pulmonary Disease (COPD) is one of the leading causes of disability and mortality around the world and is expected to become the third leading cause of death by 2020. Smoking is a major risk factor for COPD, causing a higher rate of exacerbations and hospital admissions. In 2016, the Centers for Disease Control reported that cigarette smoking accounts for 8 out of 10 COPD-related deaths and is the most common cause of COPD. In African American males, the cost of medical care from readmissions for COPD exacerbations is increased with tobacco users compared with non-tobacco users. After performing a literature review, this poster discusses the high cost of medical care for COPD exacerbations for African American males that use tobacco compared to those that do not use tobacco. Comparison of several studies found that smoking cessation rates are substantially higher in COPD patients receiving smoking cessation interventions. Furthermore, studies indicate that smoking cessation interventions reduce hospitalizations and lifetime healthcare costs. Discussed here will be the implications for APRN practice, interventions to assist patients in tobacco cessation and practice guidelines for caring for this population in an attempt to reduce hospital readmissions for acute exacerbations.

Venous Thromboembolism: Treatment Options

Briana Belisle, Bobbi Hall, Daniel Mirshamsi, Jesusita Tafoya, Spencer Waller

Hometown: Pueblo/ Program: MS Nursing

Abstract: Background: Oral anticoagulants are the mainstay for management of patients diagnosed with a venous thromboembolism (VTE). Coumadin (Warfarin) has long been the standard of treatment and prevention of VTEs but has significant dietary restrictions and requires frequent laboratory monitoring. With new federal drug administration (FDA) approval direct factor Xa inhibitors, such as Xeralto (Rivaroxaban), provide new prescribing options for long term anticoagulation therapy. Aim: To show that the use of Xeralto and Coumadin are proven to be equally effective. Method: A literature review of current practice guidelines, randomized control trials, as well as a meta-analysis was conducted to evaluate the efficacy of Coumadin compared to Xeralto in preventing recurrent VTEs. Conclusion: Xeralto has the potential to increase patient adherence and has been proven to have less incidence of non-major bleeding complications as compared to Coumadin. Xeralto is also readily bio-available for use with a peak onset of four hours. Thus eliminating the need to bridge low molecular weight heparin (LMWH) with Coumadin for therapeutic effect. Keywords: Venous thromboembolism (VTE), deep vein thrombosis (DVT), Coumadin (Warfarin), Xeralto (Rivaroxaban).

Platelet-Rich Plasma Therapy

Amanda Anderson, Marissa Cassio, & Brendon Madrid
Hometown: Pueblo/ Program: MS Nursing

Abstract: Background: In 2003, the World Health Organization found that osteoarthritis affects 9.6% of men and 18% of women. With increased life expectancy, it is predicted that osteoarthritis will become the fourth leading cause of disability by 2020. Musculoskeletal conditions are a burden for patients and health systems. Currently, many people suffering from pain rely on surgery and pharmaceutical interventions that can be very costly and or addictive. Aim: To evaluate the Mayo Clinics osteoarthritis treatment guidelines for using hyaluronic acid injections on management of knee osteoarthritis compared to platelet-rich plasma (PRP) injections. Method: A review of one meta analysis and two systematic reviews on use of platelet-rich plasma injections in management of knee osteoarthritis with a focus on comparison with hyaluronic acid, with a minimum of 6 months of follow-up and a maximum of 12 months of follow-up. Conclusion: In patients with symptomatic osteoarthritis of the knee, evidence concludes that patients were more satisfied with the overall outcomes of platelet-rich plasma in managing symptoms of pain and function. Evidence revealed an increase in nonspecific localized adverse reactions among patients treated with PRP but were described as self-limiting. Keywords platelet-rich plasma, nurse practitioner, hyaluronic acid, osteoarthritis.

A Novel Approach to Identifying Carbon Monoxide Poisoning

Lindsey Fox, Toloa Pearl, Sarah Mitchell, Danielle Riker
Hometown: Pueblo/ Program: MS Nursing

Abstract: The purpose of this review is to determine if there is a non-invasive method that is as accurate as serum carboxyhemoglobin blood gases, in determining if carbon monoxide is the cause of altered mental status of unknown etiology in the emergency department. According to the Centers for Disease Control (2015), carbon monoxide accounts for over 15,000 visits to emergency departments, and is responsible for over 500 deaths annually. A literature review was conducted using Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed and the Cochran Library. Keywords included: carbon monoxide poisoning, Masimo Rad 57, adults, carboxyhemoglobin, co-oximeter, and non-invasive pulse co-oximeter. Research journals from 2006 to 2016 were reviewed. After analyzing the research articles, the Masimo Rad 57 portable co-oximeter consistently had low sensitivity for elevated carboxyhemoglobin levels when compared to serum carboxyhemoglobin blood gases. Research by Touger et al. (2010) demonstrated that in Masimo Rad 57 co-oximeter readings of 15% or greater, there is a 48% sensitivity in accurately diagnosing carbon monoxide poisoning. The results show the Masimo Rad 57 portable co-oximeter is not as accurate as the serum carboxyhemoglobin blood gas in detecting carbon monoxide poisoning. Therefore, the evidence demonstrates the Masimo Rad 57 portable co-oximeter cannot replace the current American Thoracic Society practice guideline for serum carboxyhemoglobin blood gases on adults with altered mental status of unknown etiology in the emergency department.

Mobile Stroke Units vs. Traditional Emergency Room Treatment

Bree Bacalis, Kim Eisenbach, Andrea Good, & Natalia Menert
Hometown: Fort Collins, Loveland, Greeley, CO/ Program: ACNP and FNP

Abstract: The purpose of this evidence-based presentation is to compare the cost and benefit of prehospital mobile stroke units to traditional emergency room response in older patients experiencing ischemic stroke over a period of one year. This presentation uses a literature review through CINAHL and PubMed databases utilizing the keywords mobile stroke unit, tPA, cost, stroke response, and stroke treatment guidelines. According to the Centers for Disease Control, stroke is the fifth leading cause of death and is a major factor in disability and socioeconomic strain in the U.S. Up to 34 billion dollars is spent annually in the U.S. due to stroke, including missed workdays and health care costs. The majority of stroke care costs are generated from inpatient care, rehabilitation for deficits, and any follow-up care needed. Based on a literature search, studies suggest that distance is a factor in the cost-benefit ratios when comparing mobile stroke units to emergency room ischemic stroke treatment. Evidence demonstrates that mobile stroke units decrease the alarm-to-treatment time as well as improve thrombolysis rates in comparison to control

groups. Numerous studies have shown that faster tissue plasminogen activator administration in ischemic stroke patients improves patient outcomes, thereby lowering the costs of follow-up care. Therefore, with the right variables of distance and population, evidence suggests that mobile stroke units are cost effective compared to traditional emergency room treatment in older patients with ischemic stroke over an interval of one year.

Electroconvulsive Therapy vs. Repetitive Transcranial Magnetic Stimulation in the treatment of Major Depressive Disorder

Cheryl Hines, Niesa Parmelee Caroline Schulof, & Brian Wood
Hometown: Pueblo/ Program: MS Nursing

Abstract: Objective: To compare the effectiveness of electroconvulsive therapy versus repetitive transcranial magnetic stimulation in the treatment of patients with pharmacologically-unresponsive major depressive disorder. Background: Major depressive disorder practice guidelines recommend electroconvulsive therapy as the first-line treatment after pharmacological measures have failed. Repetitive transcranial magnetic stimulation is another treatment option for major depression with fewer reported side effects than electroconvulsive therapy, but is not currently recommended as first-line treatment in practice guidelines. Methods: A literature review was performed using two meta-analyses summarizing research findings that compare electroconvulsive therapy and repetitive transcranial magnetic stimulation. The Hamilton Depression Scale, a primary assessment scoring system, is a highly specific tool used to measure outcomes. Results: Available evidence conclusively favors electroconvulsive therapy as having greater efficacy than repetitive transcranial magnetic stimulation in the treatment of patients with major depressive disorder. Evidence suggest that the benefits of electroconvulsive therapy outweigh the risks of the cognitive side effects. Implications: Providers should recommend electroconvulsive therapy for patients with major depression disorder who have failed to respond to pharmacologic treatment.

MORNING ORAL PRESENTATION SESSIONS (10:00 am - 11:15 am)

Oral Session 1 – MS Nursing Ballroom A

Contraception in the Adolescent Latina Population

Tracy L. Richardson, RN, BSN
Hometown: Rye/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: The purpose of this presentation is to discuss the use of long-acting reversible contraception (LARC) in sexually active adolescent Latina females compared to short-acting contraception and the affects of pregnancy rates over two years. Unintended pregnancy rates in the adolescent Latina population (ages 15 to 19 years) continue to remain high at 41.7 per 1,000 (Ghobadzadeh, Sieving, & Gloppen, 2015). A case study of a 16 year-old sexually active Latina female will be presented. Translational research was conducted using a literature review design. The Centers for Disease Control and Prevention's (CDC) (2013) practice guideline for contraceptive use identify the LARC as highly effective as they do not require standard compliance by the client. Both the American Academy of Pediatrics (AAP) and the American College of Obstetricians and Gynecologists (ACOG) support the use of LARCs in the sexually active adolescent. Barriers to contraceptive use include the lack of knowledge to access, parental consent, provider reluctance, and inconsistent use. Advanced Practice Nurse Implications include providing education at local high schools regarding adolescent sexual health topics, researching and participating in cost avoidance and/or reduction for Food and Drug Administration (FDA) approved contraceptive methods, reassuring adolescents of the Minors' Consent Law which allows minors (12 and older) to consent to contraceptive services, and dispelling myths of contraceptive methods. Maintaining client trust and partnering with them will allow the best outcomes for their overall health.

Dronedaron - Dual Therapy Potential for Atrial Fibrillation

Beth Hedstrom, BSN, RN

Hometown: Peyton/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Atrial fibrillation is an abnormal heart rhythm caused by disorganized electrical activity in the atria of the heart resulting in unpredictable and erratic contraction of the ventricles (Linker & Nelson, 2011). Atrial fibrillation is the most common sustained cardiac rhythm disturbance affecting 2.4 million persons in the United States that will increase in prevalence with advancing age (Lee & Kim, 2014; Adlan & Lip, 2013; January et al., 2014). Atrial fibrillation leads to increased mortality and morbidity due to thromboembolism, stroke, and heart failure (Lee & Kim, 2014; Adlan & Lip, 2013). Treatment guidelines for atrial fibrillation with stand-alone medications are directed toward either controlling the heart rate or the aberrant heart rhythm (January et al., 2014). Both foci of treatment are equal in outcomes affecting morbidity and mortality (January et al., 2014). Dronedaron is a safe and well-established medication for first-line therapy for rhythm control in certain types of atrial fibrillation (January et al., 2014). The purpose of this research is to explore the effectiveness of Dronedaron on rate control in persons with paroxysmal or persistent atrial fibrillation without new onset heart failure or acute decompensated heart failure. Translational research was conducted using a literature review design searching databases CINAHL, MedLine Plus, and Cochrane Library. Studies included systematic reviews, meta-analyses, randomized control trials, literature reviews, and retrospective cohort studies. Findings indicate Dronedaron significantly caused ventricular rate-slowness of 13.2, 19.2, and 17.8 beats per minute (Adlan & Lip, 2013) in persons with atrial fibrillation and with fewer adverse events (Sullivan, Orme, Morais, & Mitchell, 2013). Implications include consideration and further study for dual use of Dronedaron for rate control in addition to rhythm control in the treatment of certain types of atrial fibrillation due to its better safety profile and resulting reductions in hospitalizations and death (Adlan & Lip, 2013).

The Most Effective Treatment Option for Patients with High Risk Clarithromycin Resistant Helicobacter Pylori Infection

Katie Bui, BSN, RN

Hometown: Colorado Springs/ Program: MS Nursing- Adult/ Gerontological Acute Care Nurse Practitioner

Abstract: The purpose of this literature review is to examine the use of sequential therapy (ST) in disease eradication compared to the quadruple therapy (QT) in adult patients with H. pylori with high risk for clarithromycin resistant infection. QT includes bismuth subsalicylate, clarithromycin, amoxicillin, and a PPI each taken twice day for 14 days. ST includes a PPI and amoxicillin for 5 days, followed by a PPI, metronidazole, and clarithromycin for 5 days, taken twice daily. H. pylori infection is one of the world's most widespread infections that can lead to morbidity and mortality. H. pylori can be completely eradicated with treatment; however, eradication rates are decreasing due to the rise in antibiotic resistance. This literature review is a translational research design through the CSU-P library database. Over 100 articles were retrieved within the last five years. Research shows ST has no difference in occurrence of adverse effects, treatment was for a shorter duration with fewer drug required than QT. Eradication rates were higher in sequential therapy groups when compared to quadruple therapy groups. Current practice guideline recommends QT and ST as treatments for at risk populations living in area with clarithromycin resistant rate over 15 percent. Limitations of the research studies include: variables in treatment duration and antimicrobial choices. In conclusion, an APRN determines the best treatment plan for patients through evidence, research and theory.

Oral Session 2 – MS Nursing Ballroom B

Comparison of Levetiracetam and Phenytoin for Seizure Prophylaxis in a Severe Traumatic Brain Injury Patient

Kayla LaPorte, BSN, RN

Hometown: Colorado Springs/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: The incidence of early post-traumatic seizures is approximately 6-7%, but might be as high as 30% in patients with severe traumatic brain injury (Hemphill & Phan, 2015). The purpose of this study was to

determine if seizure prophylaxis using levetiracetam versus phenytoin is preferred while looking at the likelihood of developing post-traumatic seizures in adult traumatic brain injury patients between ages 17-75 years. Translational research using a literature review design was used to compile a case study for this topic. Practice guidelines from the Brain Trauma Foundation and the American Academy of Neurology were utilized for recommendations. Further evidence and more recent studies have found that levetiracetam can be used as an alternative. The study evaluated a meta-analysis consisting of two randomized control trials and six observational studies. It also included a prospective randomized single blinded comparative trial along with a cost-effectiveness analysis. Results favor levetiracetam to phenytoin due to its potential for less side effects, efficacy rate and minimal drug to drug interactions. These results suggest initiating levetiracetam for seizure prophylaxis in adult traumatic brain injury patients within the first 24 hours of injury and to continue during the first seven days. It is not recommended to continue this medication past seven days. There was no significant difference between the medications at preventing the occurrence of a seizure within the first week ($p=0.056$). The Nursing Synergy Model can be applied to this research as it demonstrates how the role of the nurse practitioner, recent evidence and the patient case study contribute in properly managing and avoiding post-traumatic seizures within the first week after a traumatic brain injury

Coconut Oil for Treatment of Alzheimer's Disease

Allison Wagstaff, BSN, RN

Hometown: Centennial/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Alzheimer's Disease (AD) is the most common cause of dementia in the United States (U.S.), with 5.3 million people afflicted in 2015. The illness is also costly, with \$226 billion in payments in 2015, plus an additional \$9.7 billion in physical and emotional costs for caregivers (Alzheimer's Association, 2015). Despite the prevalence and burden of disease, there are few treatment options for AD and the drugs available lack substantial benefit (Casey, Antimisiaris, & O'Brien, 2015). This presentation introduces a case-study utilizing translational research using a literature review design to examine the following question: In elderly patients aged 60-85 years old with moderate-severe AD, does supplementation with coconut oil in addition to approved AD drugs, versus no supplementation, show improved memory and cognitive function over a period of 4-6 weeks? Research is preliminary but the theory is that the oil can easily be broken down into ketones and used for fuel by damaged neurons that are no longer able to utilize glucose, therefore preventing cell death and improving cognition (Baby & Johnson, 2015; Doty, 2012; Kappally, Shirwaiker & Shirwaiker, 2016; Newport, 2008). Gandotra, Kour & Van der Waag (2014) tested this theory when comparing ADAS-cog scoring from baseline tests, after daily administration of 20g extra virgin coconut oil, with scores at 2, 4, & 6 weeks and saw significant improvements (i.e. 6 weeks: mean difference=4.1, $p=0.00$, C.I= 1.0-7.2). This study, among others to be reviewed, yields hope that coconut oil supplementation may improve memory and cognitive functioning for those afflicted with AD.

Improved Functional Outcome with Stroke Treatment: Implementing Standard of Care with Endovascular Therapy

Estrella Caddali, BSN, RN

Hometown: Colorado Springs/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: "Stroke is the 5th leading cause of death and the 1st leading cause of adult disability in the United States. Nearly 800,000 people experience a stroke annually which equates to one person every 40 seconds. If survived, stroke leaves people with debilitating physical damages resulting in decreased functionality. Intravenous recombinant tissue-type plasminogen activator (r-tPA), is the standard of care for acute ischemic stroke and the only pharmacologic therapy approved by the Food and Drug Administration (FDA). However, r-tPA has been found to reverse stroke damages only by one-third in patients with proximal large vessel occlusions. Therefore, warranting further interventions such as endovascular therapy for improved functional outcomes. A translational research utilizing a literature review design was performed and examined outcomes of individuals who experienced an acute ischemic stroke. A patient case study was incorporated in this presentation which discussed the advance practice nurse' (APN) role in the rapid evaluation, collaborative intervention, and implementation of evidence-based practice. The research reviewed outcomes of patients who received r-tPA in conjunction with endovascular therapy compared to patients who received r-tPA alone.

Studies analyzed demonstrated that administration of r-tPA in conjunction with endovascular therapy improved functional outcomes in a 90-day period measured by the modified Rankin Scale (mRS). Levine's Conservation Model was applied to the presentation case study, which assisted the APN in guiding the patient during this process of change to embrace wholeness and promote quality of life. Keywords: stroke, r-tPA, endovascular therapy, advanced practice nurse.

**Oral Session 3 – MS Nursing
LARC 108**

Probiotics for Adjustment Disorder with Depressed Mood

Jessica Johnson, BSN, RN

Hometown: Highlands Ranch/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: As many as three to five percent of the population is suffering from depression at any point in time and the lifetime risk for developing depression is as high as 17 percent. It is the leading cause of disability worldwide, significantly increases the overall global burden of disease and at its worst can lead to suicide. The American Psychiatric Association currently recommends treating patients suffering from mild depression with either psychotherapy or antidepressants but unfortunately most antidepressants have numerous unwanted side effects. Through the use of a case study presentation, evidence will be used to explore the effectiveness of probiotics for patients with adjustment disorder with depressed mood. The method of research design is translational research using a literature review design. Furthermore, the Theory of Goal Attainment by Imogene King will be implored to guide both the advanced practice nurse and patient to develop a wellness plan for the treatment of depression with probiotics.

Reducing the Risk for Esophageal Adenocarcinoma with the Use of Proton Pump Inhibitors in Patients with Barrett's Esophagus

Nicolas Steffen, BSN, RN

Hometown: Loveland/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Acute Care Nurse Practitioner and Family Nurse Practitioner Barrett Esophagus (BE) affects nearly 3 million people in the United States, according to Medscape (2016), and is thought to be the consequence of prolonged gastroesophageal reflux. The continual erosive exposure of refluxate results in the replacement of epithelium cells with metaplastic columnar cells, ultimately increasing the risk for esophageal adenocarcinoma (EAC) (Medscape, 2016). Through the development of a PICOT question and patient case study, this presentation will evaluate the latest research on the use of proton pump inhibitors (PPIs) in patients with BE. Information was obtained through translational research using a literature review design. King's Theory of Goal Attainment will be used to guide the patient's treatment approach, and uses the process of assessment, diagnoses, plan for intervention, implementation, and evaluation (King, 2015). Ultimately, the American College of Gastroenterology recommends the use of proton pump inhibitors (PPIs) in patients with BE in order to curtail the erosive, and potentially, cancerous process associated with BE (Shaheen, Falk, Iyer, and Gerson, 2015).

**Oral Session 4– MS Nursing
LARC 109**

The Role of Non-invasive Blood Pressure Monitoring and Venipuncture in Ipsilateral Upper Extremity Secondary Lymphedema Post-Mastectomy

Cassandra Archer, BSN, RN

Hometown: Lakewood/ Program: MS Nursing- Adult/ Gerontological Acute Care Nurse Practitioner

Abstract: Secondary upper extremity lymphedema in post-mastectomy women who had surgery for breast cancer is often a painful, anxiety inducing, and disfiguring ailment. There are numerous risks attributed to the development of secondary lymphedema. Diagnostic procedures such as venipuncture and non-invasive blood pressure measurement in the ipsilateral limb where the mastectomy occurred have been postulated to increase risk of secondary lymphedema. Health care professionals and national organizations recommend against these

procedures post-mastectomy. In fact, these procedures are stigmatized and vilified to the extent that many post-mastectomy patients have significant fear and anxiety at the thought of these procedures. However, evidence-based research correlating increased risk of lymphedema with these diagnostic procedures is limited. This translational research project using a literature review aimed to examine the paucity of research and evidence-based data regarding the recommendations against venipuncture and blood pressure measurements in the ipsilateral limb of post-mastectomy patients. Specifically, in female patients post-mastectomy for breast cancer, do venipuncture and non-invasive blood pressure monitoring in the ipsilateral limb increase the risk of secondary lymphedema development compared with not performing these diagnostic procedures in the ipsilateral limb. A literature review was conducted for studies assessing the effects of venipuncture and non-invasive blood pressure monitoring in the ipsilateral limb of female post-mastectomy patients on development of secondary lymphedema. The findings suggest that there is not enough evidence-based support for increased risk of lymphedema with venipuncture and non-invasive blood pressure monitoring in the ipsilateral limb. Further research should be conducted regarding this matter.

Sodium Bicarbonate Therapy in Acidosis

Sarah Kate Roark, BSN, RN (MS Nursing: Adult/Gerontology Nurse Practitioner program)

Hometown: Muskogee, Oklahoma / Program: MS Nursing- Adult/ Gerontological Acute Care Nurse Practitioner

Abstract: The purpose of this literature review is to examine the risks versus benefits of the use of sodium bicarbonate in non-renal patients who are experiencing acidosis. In a healthy person, pH is carefully controlled by the renal and respiratory systems. Acidosis is defined as a pH <7.35, and is primarily categorized as either respiratory or metabolic in nature (Forsythe & Schmidt, 2000). “Standard treatment involves evaluating and correcting the underlying cause or causes of the acidosis, maintaining adequate tissue oxygenation, reducing oxygen demand, and (controversially) alkalinizing the blood with sodium bicarbonate infusions (Forsythe & Schmidt, 2000, p.260).” Literature for review of the use of sodium bicarbonate in the treatment of acidosis was gathered through the Colorado State University of Pueblo library database, CINAHL, database, Google search engine, and various text books. The literature retrieved through these sources has been published in the English language over the last 5 years. The research design for this study is translational research, using a literature review design. Traditional literature and treatment suggests that acidosis is harmful to the body, and that sodium bicarbonate is extremely useful in restoring proper pH. Additionally, raising pH improves cardiovascular function, and so it is commonly thought that the benefits outweigh the risks. However, “data is now available that shows patients who are permissively hypoventilated, show few systemic hemodynamic effects even as the pH falls to 7.15 (Forsythe & Schmidt, 2000, p.261).” The limitations of this review include the inability to conclusively test the effects of acidosis on patient outcome as a result of potential threat to life and limb. Additionally, sample sizes for many of the studies used were relatively small, and were retrospectively designed. Therefore, continuation of these types of studies will be necessary in order to change future protocols and guidelines.

Efficacy of Cinnamon on Glycemic Control in Pre-diabetic Patients

Kelsey L. Markenson, BSN, RN

Hometown: Pueblo / Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Type II diabetes is the seventh leading cause of death in the United States and one of the fastest growing diseases whose prevalence is a major cause of morbidity and mortality worldwide. Lifestyle modifications are critical in the management of type II diabetes, but studies have consistently shown that diabetic patient adherence to conventional treatment is poor. Due to the decreased adherence to conventional treatment, multiple providers are turning to complementary and alternative medicines (CAMs) as evidenced by an increase of the use of herbal remedies in the United States by 380%. Translational research using a literature review design was utilized in the compilation of a case study reviewing the efficacy of cinnamon as an alternative treatment for glycemic control in adult prediabetic patients. The Standards of Medical Care in Diabetes Guideline, namely through Epocrates, was referenced for conventional treatment. A literature review was conducted utilizing The Cochrane Library, CINAHL, and Science Direct, using a variety of key words

including "cinnamon", "glycemic control", "prediabetes", and "diabetes". Articles were reviewed for publication within the last five years, relevance, and efficacy. Upon completion of this review, a Cochrane review, four systematic reviews and meta-analysis, and four randomized controlled trials were utilized to show the benefit of cinnamon on glycemic control through reduction in fasting blood glucose. Imogene King's Theory of Goal Attainment, namely the Interaction-Transaction Process, will be implemented into the case study as it facilitates a trusting relationship between the provider and the patient as mutual goals and strategies for attainment increase the adherence to the decided upon treatment.

POSTER SESSION 2 Hearthwell Lounge

AFTERNOON SESSION (1:15-3:15 pm)

Note: All posters must be set-up before 9:30 am (both am and pm sessions)

Biology

Investigation of diminished cell cycle regulation in *Saccharomyces cerevisiae* putative Metallo-aminopeptidase 1 gene disruption strain

Andrea Vyas

Hometown: Pueblo / Program: Biology

Abstract: Four Metallo-Aminopeptidase family 1 (M1AP) genes are present in *Saccharomyces cerevisiae* with multiple analogous genes found in higher eukaryotes. Alterations in some aminopeptidase activities have been correlated to human disorders such as ankylosing spondylitis and preeclampsia, as well as cervical and liver cancers. Hyperplasia, or increased cell numbers, can be a precursor step in the development of cancer cells. Deletion of the yeast ORF YIL137C elicits an analogous response of increased cell numbers in culture, suggesting an alteration in cell cycle regulation. Initial data has shown that a YIL137C disruption strain reaches not only a greater culture density but reaches that higher density more rapidly than wild type. It is hypothesized that the loss of YIL137C ORF affects cell cycle regulation in that the deficient strain has a decreased recognition of signals for growth cessation compared to wild type strain. To test this hypothesis, differences in tolerance to stressors (hydrogen peroxide, tert-butyl hydroperoxide, heat shock at 52°C) were assessed between YIL137C disrupted and wild type strains. In all cases, the disruption strain demonstrated higher viability than the wild type strain. Preliminary analysis of stationary phase data exhibited a higher viability in the YIL137C disruption strain compared to the wild type. Further analysis will include additional stationary phase cultures, peptidase activity from the YIL137C disruption strain, and GFP fusion localization of YIL137C.

Evaluation of critical host cell metabolism alterations that influence alphavirus replication

Jessica Costlow & Erika Krow

Hometown: Fountain & Pueblo / Program: Biology

Abstract: Viruses are completely dependent on the host cell for nutrients, metabolism, and energy to successfully replicate. As a result, many viruses manipulate the host cell metabolism to enhance the viral replication capacity. Alphaviruses are plus strand RNA viruses that replicate in the cytoplasm of the host cell. Alphaviruses cause significant disease in animals and humans and there are currently no specific treatment options that are available to reduce the suffering and mortality due to infection. Sindbis virus (SINV) is an alphavirus that causes mild symptoms and is the prototype alphavirus used in research settings. SINV has a similar genome and replication mechanism as some of the more virulent Alphaviruses (Chikungunya, western equine encephalitis, Venezuelan equine encephalitis, etc.), but it is safe to work with in BSL2 labs and is regularly used as the model virus system. Alphaviruses have been shown to be dependent on host cell glycolysis, but the direct mechanisms are unknown. We are working with SINV to better understand the alteration in host cell metabolism that occurs during alphavirus infection. We hypothesize that Alphaviruses induce a specific change in metabolism that may lead to novel treatment options or therapeutic mechanisms to regulate host cell metabolism. We are monitoring glucose uptake in SINV- infected baby hamster kidney

(BHK) cells and evaluating the viral dependence on glucose through viral replication assays with varying amounts of glucose. We are also investigating the use of metabolic inhibiting compounds as potential drugs that can be used to reduce viral replication. Specific results and directions will be discussed at the poster.

Seasonal trends in mercury concentration in southern Colorado songbirds

Ivonne Colin

Hometown: San Marcos, CA / Program: Biology

Abstract: Mercury is a dangerous pollutant that is harmful to both humans and animals. There are increasing levels of mercury contamination in the food chain that pose a threat to songbirds. High levels of mercury can cause serious health issues among the bird populations, such as reduced immune response and altered behavior. Migratory birds are at risk of exposure to mercury both on their wintering grounds and their breeding grounds. Seasonal patterns in mercury contamination could reveal where migratory birds have a greater risk of exposure. Mercury in songbird blood was measured multiple times during the breeding season in southern Colorado. If mercury levels decrease over the course of the breeding season, this suggests that the birds are at higher risk of contamination on the wintering grounds. In contrast, if mercury levels increase over the course of the breeding season, this would suggest that the risk is higher on the breeding grounds. Results will be discussed.

Development of a Chromogenic Reporter alphavirus for use in Virology Research and Diagnostic Development

Nate Grabill & Tim Ballard

Hometown: Beulah; Los Angeles, CA / Program: Biology

Abstract: Alphaviruses transmitted via arthropod vectors represent serious global health concerns. Global expansion of mosquito species into new regions has created emerging vector-borne viral diseases. Chikungunya virus (CHIKV) is a recent example of an alphavirus that is spreading due to vector expansion. A simple and accurate method to detect alphaviruses would be a valuable tool for virology research and clinical diagnostics. We propose a novel method to detect viral infection using a chromogenic protein that is expressed during active alphavirus infection. Recombinant alphavirus expression systems have been well characterized. We are working to further their utility by using a chromogenic reporter that does not require the use of a fluorescent microscope to detect expression. Sindbis virus (SINV) is an alphavirus very similar to CHIKV but safer to work with in a BSL2 lab. All experiments were performed with SINV as a model system for CHIKV. Donnan Magenta (DM) is a chromogenic protein that expresses a magenta color that is visible to the unaided eye. PCR primers were designed and used to amplify the DM gene from a plasmid (DNA2.0). The DM fragment was cleaved and ligated into the pBG167 SINV plasmid at SpeI and XbaI restriction sites. The resulting SINV/DM plasmids were transformed into competent *Escherichia coli*. Successfully transformed colonies are being subjected to "colony PCR" to determine which colonies have the DM DNA fragments inserted in the proper direction. Clones with the correct orientation and sequence will be used to generate recombinant SINV/DM virus. Successful creation of the SINV/DM chromogenic reporter virus will be used to develop methods for detecting active virus infection in basic virology research and clinical diagnostics. Research is ongoing with this project. The first attempt to insert DM into the pBG167 SINV plasmid is complete and the resulting transformed colonies are being screened by colony PCR.

Biochemistry

Correlative Effects of Iron and Zinc Supplementation on Phosphohydrolase Activities in *Penicillium spinulosum*

Brent Schofield (Biochemistry)

Hometown: Pueblo [Elizabeth, CO] / Program: BS / MS Biochemistry (3 + 2)

Abstract: Correlative Effects of Iron and Zinc Supplementation on Phosphohydrolase Activities in *Penicillium spinulosum*. *Penicillium* species, like other ascomycetes, when grown in liquid shake cultures produce extracellular hydrolytic enzymes that are easily detected in media filtrates. Notable among them are the

phosphohydrolases, which serve to liberate inorganic or organic phosphates from their substrates. Within this enzyme class are the acid phosphatases (AP), which through protein dephosphorylation serve to regulate proteins and metabolism. Of particular interest are the tartrate resistant acid phosphatases or TRAPs that participate in many processes including bone remodeling and iron transport. Bonetti et al. had reported that a putative TRAP isolated from *P. fellutanum* showed a high degree of homology with both prokaryotic and eukaryotic phosphatases. Given that most TRAPs contain divalent ferrous complexes in their active sites, adding tenfold the normal amount of iron, $[\text{Fe}^{2+}]$, to the phosphate-limited standard growth media (LPSG) was found to enhance AP activity in the media. Investigations to optimize this enzyme activity in *Penicillium spinulosum* employed a modified Raulin-Thom medium instead of LPSG. *P. spinulosum* was grown in various mRT media containing different amounts of Fe and Zn to test the effect of the divalent metals on AP activity. *P. spinulosum* cultures were grown in control mRT, and low phosphate mRT media containing tenfold iron or zinc or tenfold of both metals versus the control. Phosphohydrolase activities and protein content were determined in media filtrates up to eight days post inoculation. In addition to AP, two other phosphohydrolases were assayed; these were bis-phosphodiesterase (bis-PD) and phosphocholine phosphodiesterase (PCPD). Comparisons of the different media showed that AP achieved its highest activity in the iron- and zinc-supplemented media and peaked at Day 4. Bis-PD and PCPD activities were highest in low phosphate mRT media containing tenfold iron with control zinc levels, however these activities were an order of magnitude lower than AP activities.

Chemistry

Models for predicting atmospheric mercury concentrations using meteorological data and mercury concentrations in *Salix* (Willow) leaves

Lauren Bartolo, Kelsey Wager

Hometown: Pueblo / Program: Chemistry

Abstract: Atmospheric mercury can be a significant source of mercury to water and land areas relatively uncontaminated by the heavy metal, yet it can be difficult and expensive to determine. The concentration of mercury ($[\text{Hg}]$) was determined in *Salix* (Willow) leaves during the 2014 growing season as well as in the air at various points throughout the year. Corresponding meteorological data was also collected. In the air, $[\text{Hg}]$ correlated linearly with air temperature with an R^2 value of 0.84. Some dependence on wind direction and speed was also found. The measured $[\text{Hg}]$ in Willow leaves indicated two distinct regions that were evident; an accumulation phase during the active growing season (18April14-18June14), and a steady state phase once the leaf had matured (01July14-04October14). During the active growing season Willow leaf concentrations ranged from $9.4 \pm 0.1 \mu\text{g kg}^{-1}$ to $18.7 \pm \mu\text{g kg}^{-1}$. The range of the $[\text{Hg}]$ in the mature leaves was $23.0 \pm 0.3 \mu\text{g kg}^{-1}$ to $29.5 \pm 0.6 \mu\text{g kg}^{-1}$. Models that include temperature and progression into the growing season only, and temperature with corrections applied for corresponding meteorological data are now being applied to a new set of data collected during the 2015 growing season. Willow leaf samples, and meteorological data were collected at the same locations as the samples collected in 2014 and that data is fed into the models to predict the $[\text{Hg}]$ in air. Corresponding measurements of actual atmospheric $[\text{Hg}]$ is being used to assess the validity and robustness of the models developed, and facilitate the discussion of the applicability and limits of the models to actual $[\text{Hg}]$ in air.

Reactions of 3,6-bis(2-pyridyl)-1,2,4,5-tetrazine and metal(II) chlorides

Jillian N. Manikoff

Hometown: Pueblo / Program: Chemistry

Abstract: Inorganic chemistry is the branch of chemistry that focuses on the synthesis and behavior of inorganic molecules and organometallic compounds. In collaboration with Drs. Mel Druelinger and David Dillon of the Chemistry Department we are investigating the formation of metal complexes in which at least one ligand is derived from 3,6-bis(2-pyridyl)-1,2,4,5-tetrazine (bptz). Our initial studies have focused on reacting first-row transition metal (II) chlorides (MCl_2) with bptz in acetonitrile in a 1:1 and 2:1 MCl_2 :bptz ratio. The reactions of $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$ and anhydrous MnCl_2 with bptz have been investigated. These reactions yielded very different colored solutions, dark blue and plum, respectively. The initial characterization of the crude solids isolated from these reactions will be presented.

Nursing- BSN

Intramuscular Injection Techniques Associated with Pain

Amber DeHerrera, Kayla Martinez, Josie Salas, Jordan Waller

Hometown: Pueblo / Program: BS Nursing

Abstract: Pain during intramuscular (IM) injections can cause a traumatic experience in newborns and young children resulting in fear of the doctors. The purpose of this project is to determine what IM injection techniques are least painful in newborns and children under 12. The methods used for this project included reviewing research articles with studies that show the impact of different IM injection techniques. The group looked for articles in Ebscohost, CINAHL, and MEDLIN. The terms that were searched were IM injection techniques, IM injections, Immunizations, and pain management for IM injections. The literature reviewed examined the effects of aspirating prior to injection, needle length, location, and the position of the newborn or child prior to administering an IM injection, distraction, and the effects of giving the child sucrose. The goal is to find the most effective methods inflicting the least amount of pain. After reviewing the research, a good majority of the studies agreed the small needle size, fast injection, use of the vastus lateralis in newborns and deltoid in children, having the child sit instead or lay, the use of sucrose only for newborns, and distraction decreased the pain when receiving IM injections.

Nursing- MSN

PTSD: Animal Assisted Therapy as an Adjunct to Clinical Practice Guidelines

Jessi Lamb, Katherine Searl, RosaAnna Armstrong, Suzanne Cobleigh, April Chamberlin

Hometown: Pueblo / Program: MS Adult/ Gerontology Acute Care, Family, and Psychiatric Mental Health Nurse Practitioner

Abstract: When treating adult combat veterans, advanced practice nurses focus on minimizing the debilitating effects of Post-traumatic Stress Disorder such as hyper-vigilance, insomnia, and detachment. Clinical practice guidelines indicate Cognitive Behavioral Therapy and Selective Serotonin Reuptake Inhibitors are used to treat Post-traumatic Stress Disorder. However, many combat veterans are in need of a triad of therapies due to refractory to standard treatments. Evidence supports that Cognitive Behavioral Therapy, Selective Serotonin Reuptake Inhibitors and Animal Assisted Therapy will improve Post-traumatic Stress Disorder symptoms. Advanced practice nurses need to recognize that additional evidence based treatment modalities may be needed to improve patient outcomes.

Psychology

Facial Recognition

Jinessa Downing

Hometown: Slatington PA and Pueblo/ Program: Psychology

Abstract: Other studies suggest that young adults have a better memory than older adults when it comes to face recognition (Anastasi, 2005). With the amount of time young adults' use on/with technology, maybe this concept has changed. Using ten black and white portraits of historical figures and ten black and white portraits of current celebrities, this study was intended to test to see if an age difference exists in reference to facial recognition. This experiment was an attempt to see if an age difference exists between younger people and older people, where we theorized that the younger the participant, the more celebrities they will recognize and the older the participant, the more historical figures they will recognize. After conducting this research, it was found that the statistical significance of this study was .419, which was lower than the calculated F value of .891. Since realizing this, the null hypothesis was accepted since there was not a significance in the results. It was noticed, however, that there was a trend between the percentage correct in the first age group compared to the percentage correct in the third age group. Also, it was noted that the third age group were more likely to recognize the historical figures over the current celebrities. The opposite was true for the first age group, where they were more likely to recognize the current celebrities over the historical figures.

Self-deception, Social Desirability, and Shame in an Experimental Task

Rian D. Razo

Hometown: Pueblo / Program: Psychology

Abstract: Regarding morality and ethics, Tembrunsel (2007) addressed the notion that people believe they behave more ethically than they actually do. Self-presentation and social desirability impact how ethically an individual behaves (Hren, 2006), while Machiavellianism addresses a person's indifference for traditional morality in interpersonal interactions and social manipulation (Dussault, 2013). Our study assessed why people lie to themselves and say they will commit to do something but not follow through. Our goal was to examine individual differences involving social desirability, guilt and shame, and Machiavellianism using standardized metrics. Participants from a cross-section of campus were recruited for a study involving environmental values and attitudes. Those who showed up for their session were sampled and then sent home. Those who signed up but failed to appear were recontacted and offered additional incentives to persuade them to attend another appointment. Upon arrival they completed three tasks; the Mach IV measuring Machiavellianism, GASP measuring guilt and shame, and the BIDR measuring social desirability. Preliminary analysis with sex/year-matched controls revealed a marginal effect on one Mach subscale and one GASP subscale. Most sensitive was the overall score on the BIDR. Results partially support our initial hypotheses. Individuals make commitments with the intent to follow through driven by what they believed was socially desirable. This presentation will expand on the results and integrate them with the hypothesized role of self-deception, as well as the weight that guilt appears to play when individuals make such commitments but fail to follow through. On the basis of this limited sample we tentatively surmise that some people possess a stronger resistance to the social importance of guilt and shame. Moreover, a strong self-image, sensitive to what is socially desirable, may help mitigate the effects of guilt and shame by bolstering the use of self-deception in order to insulate the individual.

The History of Ancient Athenian Government

Bridgett Moore

Hometown: Paris, TX/ Program: Psychology (major), Philosophy (minor)

Abstract: This research discusses the politics and government in the ancient Greek city of Athens. Although Athens is seen as the city that best formed a true democracy, the history of Athenian government is much more complicated than it seems. This started with Solon, who was asked by the Athenians to produce a better constitution for the people to live by. He did as requested, giving the Athenians more humanistic regulations, ending the practice of slavery for debt, and limiting aristocratic rule of Athens, believing merit was more important than birth for rulers. Solon presented this new constitution to the Athenians, and then left Athens in order to let the people decide how best to utilize it within their society, thus, allowing them to interpret the best way to use it for the people. The Athenians eventually tried to form a true democracy using Solon's constitution as its basis, but they had limited success due to many powerful leaders who wished to take control of Athens, and its people, through tyrannies and oligarchies. These new leaders greatly influenced the formation of Athens political and social ideals of the city's different social and political classes. They made many changes to laws and the formation of new political institutions throughout Athens history, sometimes straying very far from the intended true democracy of the people, and yet the citizens gained power through great insistence, allowing them to have a voice in the decision-making processes of Athens.

ORAL SESSIONS

1:45pm-3:00 pm

Oral Session 5 – Fine Arts, Art-Ceramics, Music Ballroom A

So you think you can live without clay?

Suzi Reaves (Fine Arts)

Hometown: Colorado Springs/ Program: Fine Arts

Abstract: The majority of Americans go through their day unconsciously using clay. We use toilets, sinks, dishes and our favorite coffee mug. Our household waste is carried away in ceramic sewer pipes if we are in older neighborhoods. Electronics have ceramic insulators. Our bathrooms, kitchens and fireplaces have ceramic tile. Plants and flowers are planted in ceramic pots. Bricks are made of clay. Clay is all around us but few people stop to acknowledge it. What if clay could save your life? What if you were a veteran who served in war and saw atrocities that changed your life? What if your legs were blown off by an Individual Explosive Device, known as an IED? What if Post Traumatic Stress Disorder, PTSD, kept you from functioning in your daily life? The G.I. Bill started at the end of World War II giving veterans who served in U.S. military service benefits to attend college. They went to college and found ceramic arts. From the moment they put their hands on the clay their lives changed. As the legacy continues, there are veterans from all military services attending college, taking up pottery and healing their lives. How do I know? I am a veteran using my G.I. Bill, working on attaining a Bachelor of Fine Arts with an emphasis in ceramics. I am not alone. My veteran classmates know what I am talking about. We can't live without clay. My oral and power point presentation will show how the G.I. Bill changed the lives of many noted ceramic artists here in the United States. These artists changed American ceramics and continue to influence today's potters.

Volcanic Clay

Sara Cox

Hometown: Pueblo/ Program Art-Ceramics

Abstract: Clay can be used and found in the most interesting of places. It is the oldest building material on Earth and still used for building today. Clay is also used for utilitarian purposes, medicinal, decorative, dental, and countless other uses. One unusual place clay can be found, is under the aftermath of the world's most dangerous natural disasters, Volcanos. Volcanos are manifestations of the fiery power contained deep within the Earth. But, from this dangerous natural phenomenon come healing properties. After volcanic ash has weathered and aged in the presence of water, a clay can be mined and formed, this clay is called Bentonite. Bentonite, also referred to as Montmorillonite, is one of the most effective and powerful healing clays. Bentonite clay carries a strong negative charge which bonds to the positive charge in many toxins. When it comes in contact with a toxin, chemical, or heavy metal, the clay will absorb the toxin and release its minerals for the body to use.

The Janissary Sound in Western European Art Music 1400-18

Linda Densmore (Music)

Hometown: Colorado Springs/ Program: Music

Abstract: Beginning in the early 14th century, the Ottoman Turks launched military attacks from their small territory in Asia Minor into Europe. At the height of its power in the mid-17th century, the Ottoman Empire comprised the lands of southeastern Europe from the Adriatic to the Black Sea. Elite soldiers of the Ottoman Turks, the "Janissaries", formed the core of the early Ottoman mounted infantry. Portions of this army were military marching bands, ensembles of wind and percussion instruments, unknown to Western Europeans. Their function was to play on the battlefield and to provide ceremonial music. By 1670, because of their diplomatic relations and newly created trading routes with the Ottomans, the French aristocracy was well acquainted with various cultural practices of the Turkish Sultans, especially the harem, and with their exotic material artifacts--textiles, tobacco, food, spices, architecture and furnishings, and musical instruments. This use and imitation of Turkish material items in the late 16th century is known as "Turquerie", a form of "exoticism" that was developing then as an alluring awareness of an alien culture. While Europeans accepted Turkish material items, visual arts and literature, they found its music unappealing and "offensive to the ears".

Composers borrowed the percussion and shrill wind instrumentation, rhythms and the martial style of the mehter bands, while maintaining Western European rules of functional harmony. For nearly 200 years, Western European music incorporated Janissary effects in ballet, opera, symphonic and ultimately solo piano music. The fascination with the institution of the harem became a theatrical topic in numerous operas and plays, the most famous being Mozart's "The Abduction from the Serail". In my presentation, we will listen to a few short of examples of the mehter sound and some of the above genres by Lully, Mozart and others.

Oral Session 6 – Political Science & History Ballroom B

Invisible Chains

Magdalena Contreras Gomez (Political Science)
Hometown: San Luis Potosí, México/ Program: Political Science

Abstract: To solve any problem there must first be recognition of its causes. The silent cry of women in forced marriages is not an issue outside of US borders, and though multiple Inter-Governmental and Non-Governmental Organizations have established anti-trafficking policies, they are rarely enforced (see Brown, 2010). Ghayeb (2015) argued that it is urgent and necessary to intervene in every community with education in family planning and child health intervention programs (p. 291-294). Therefore, this study grew from a persuasive speech assignment with a specific purpose to demonstrate how contemporary young women are forced into marriage, as well as determine what the general population could do to assist persons in need. Through a literature review consisting of academic and ethical general internet sources examining several cultural aspects of forced marriage, multiple possible solutions were identified that could provide relief to women and infants. It was found that by recognizing and treating the health consequences of enslavement, persons' social benefits increased.

Aristotle's Contributions to Biology and Sexism

Shelby Kissell
Hometown: Pueblo/ Program: Political Science

Abstract: Aristotle has made many contributions to the discipline of Biology including *The History of Animals*, *Parts of Animals*, and *Generations of Animals*. This presentation means to dissect the aspects of his works on human biology and to argue that many of the interpretations of his studies portray Aristotle as a misogynist in his research. It cannot be said that no gender bias exists in his work, however for the purpose of science; Aristotle managed to minimize bias cognitively. An example of this limiting of bias would be his explanation of souls and that men and women have the same souls. Aristotle also delineates male and female in his attempt to explain why two sexes exist in nature for most animals. However, in my research I have been led to believe that Aristotle was not the common misogynist of his era, but a genuine scientist in his research methods insofar that he attempted to avoid bias for the sake of research. In his books on observation, Aristotle explains his research methods and how to appropriately do meaningful research. Aristotle elaborates that he applies these methods to all fields as stated in his methods of research in *Generation of Animals*, *Posterior Analytics*, and many other works in his observations; including women. Women in the time of Aristotle were more objects than humans and were treated accordingly. I believe that Aristotle's desire to do justice to his definition of proper research outweighed the social pressure to define women as something other than equal to men.

What is Truth?

William Finley
Hometown: Pueblo/ Program: History

Abstract: I will research the Greek philosophers known as the Sophists and compare and contrast their philosophy with that of the Post-Modernist philosophy. Protagoras, of the Sophists, reasoned that "The Human being is the measure of all things." At a glance, this statement appears to coincide with that of the Post-modernist view of reality being an independent judgement for each individual. This research will highlight the similarities and differences between the ancient school of thought and the concepts originating from the modern generation of philosophers and perhaps the influence of the former upon the latter.

Oral Session 7 – Nursing, Mechatronics LARC 108

Pain Control for Infant Immunizations

Cheyenne Quinn, BSN Registered Nurse

Hometown: Colorado Springs / Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Pain experienced and expressed by infants is often underestimated and poorly understood. Repeated exposure to painful procedures without adequate pain control can have lasting negative effects on how pain is processed throughout childhood and well into adulthood. This translational research using a literature review design is intended to discuss the effectiveness of sucrose compared to water for pain control during and after immunization of infants' age 2-6 months. Sucrose has demonstrated a significant decrease in pain response during and in the two minutes immediately following immunizations, as evidenced by decreased cry. Sucrose acts by triggering endogenous endorphin release similar to that of opioids, thus decreasing pain response. The literature identifies sucrose having very little risk for adverse effects or unwanted sedation lasting longer than the procedure. The advanced practice nurse utilizing sucrose and health promotion based on Denham's Family Health Model can provide effective pain control for infants receiving immunizations, further encouraging compliance with Centers for Disease Control and Prevention recommendations. The advanced practice nurse, administering sucrose for pain control during immunizations, will minimize lasting impact on infants undergoing painful procedures. Current research and practice guidelines make clear recommendations for use of sucrose for pain control over water, in infants' ages 2-6 months receiving immunizations. Keywords: infants, immunizations, pain control, sucrose, water

Characterization and Applications of Conductive Filament in 3D-Printers

Pratik D. Desai

Hometown: Pueblo/ Program: Mechatronics

Abstract: Rapid prototyping, more commonly known as 3D-Printing has come a long way in the past few decades since its inception. As design patents pertaining to expensive commercial 3D-Printers expire, more affordable 3D-Printers are emerging with widespread adoption from private consumers, hacker-space, and businesses. One particular 3D-Printing technology that has become very popular amongst consumers is called Fused Deposition Modelling (FDM). FDM printers use various types of plastic filaments as the raw material to create prints. The widespread availability of 3D-Printers has boosted the demand for new types of filaments with different properties. Filaments infused with various types of materials such as metals, natural fibers, and with properties such as magnetic and conductive are readily available. These advancements in 3D-Printing are encouraging. However, there is a need to characterize new filaments and to develop suitable applications that will further push the boundary of this technology. This research explores the use and characterization of conductive plastic filaments in conjunction with consumer desktop FDM printers.

Selecting Between Warfarin and Apixaban (Eliquis) for Thromboembolic Prophylaxis in Atrial Fibrillation

Melissa Morris

Hometown: Golden / Program: MS Nursing Adult/Gerontology Acute Care & Family Nurse Practitioner

Abstract: Atrial fibrillation (AF) is a supraventricular tachyarrhythmia that arises from disorganized atrial activation with uncoordinated atrial contraction (Ferri, 2016). AF affects 2.7 million people in the United States, and prevalence increases with age (Ferri, 2016). The disturbance in normal atrial electromechanical function that occurs in AF can lead to blood stasis and an increased risk of thrombus (Rosenthal, 2016). Thromboembolic stroke is the most common and most debilitating complication of AF (Ferri, 2016). Clinicians treating patients with AF should assess each patient's risk for ischemic stroke using a standardized scoring system, such as the CHA2DS2-VASc (January et al., 2014). This translational research using a literature review

design compares the efficacy (as defined by any stroke or systemic embolism) of warfarin and apixaban (Eliquis) for patients with CHA₂DS₂-VASc ≥ 2 . Based on systematic reviews of phase III clinical trials of novel oral anticoagulants (NOACs), apixaban was found to demonstrate noninferiority ($P < 0.001$) and superiority ($P = 0.01$) when compared to warfarin in the prevention of stroke and systemic embolism (Albert, 2014; Rosanio, Keyhani, D'Agostino, DeLaughter, & Vitarelli, 2014; Shields & Lip, 2015). Evidence gathered through this literature review will be applied to the care of a case study patient, T.G., who is newly diagnosed with AF. A holistic approach to T.G.'s care by the Advanced Practice Registered Nurse (APRN) will apply Callista Roy's Adaptation Model, synthesize information gathered through the literature review, and consider implications for APRN practice in the care of patient T.G.

Hypertension Guidelines: Impact on Cardiovascular Health in the Geriatric Population

Sondra Ware, BSN, RN

Hometown: Pueblo/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Hypertension, or elevated blood pressure, can have devastating multi-organ effects on the body if not controlled. In the US, 28.6% of adults over 18 years old have hypertension with this number projected to rise to 41.4% by 2030 (Caboral-Stevens & Rosario-Sim, 2014). Over the past several years, the range of an optimal or target blood pressure has been fluctuating and is a topic of debate for many experts that provide cardiovascular care to patients. The new Eighth Joint National Committee, JNC8, guidelines have increased the upper limits for blood pressure control in comparison with the previous Seventh Joint National Committee, JNC7, guidelines. This change has many wondering the long term impact on patients and their cardiovascular health. A grade A recommendation according to the JNC8 is that in patients 60 years of age and older, it is recommended that treatment is not indicated until the systolic blood pressure is ≥ 150 mm Hg and/or diastolic BP of ≥ 90 with the assertion that a systolic BP lower than 140 mm Hg provides no additional cardiovascular benefit (Mahvan & Miodinow, 2014). The JNC8 guidelines would decrease the number of adults eligible for antihypertensive treatment therapy from 65.8%, according to the JNC7 guidelines, to 61.2% eligible in those over 60 years of age (Ko et al., 2015; Navar-Boggan et al., 2014). The research design is translational research using a literature review design. The interpretation of the evidence remains a challenge with varying results and further randomized clinical trials are needed to assess the impact on cardiovascular health (Peterson, 2015). Clinicians must continue to assess and treat patients on an individualized basis considering their history and risk factors when deciding to start antihypertensive treatment. Keywords: hypertension, blood pressure, JNC7, JNC8, cardiovascular health.

Oral Session 8 – Nursing LARC 109

Anticoagulation Therapy in Elderly Patients with Atrial Fibrillation

Xiaoyan Zhang, BSN,

Hometown: Denver/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: More than two million Individuals in the United States of America (USA) are affected by symptomatic atrial fibrillation (AF), with an estimated increase to 5.6 million in 2050. Prevalence of AF escalates with age and 70% of AF patients are among those of 65 and 85 years old. Mortality is high, not from AF itself, but its complications such as stroke, heart failure (HF), and systemic thromboembolism. American Heart Association (AHA), American College of Cardiology (ACC), and the Heart Rhythm Society (HRS) recommend antithrombotic therapy for all AF patients for thromboembolism prevention, except for those with lone AF or contradicted. However, anticoagulation treatment is often underused among geriatric AF patients because of comorbidities, comedications, low treatment adherence, or fear of bleeding events. Translational research using a literature review design is used which find that, compared with warfarin, Dabigatran has a lesser risk of intracranial hemorrhage, including traumatic intracranial bleeding. The results recommend the use of direct oral anticoagulants (DOAC) over vitamin K anticoagulants (VKA) in patients with a high risk of falls,

or low adherence. For patients whose International Normalized Ratio (INR) tests are stable on a VKA, switch to a DOAC is not routinely recommended. Case study and health belief model are utilized for effective illustration.

Wireless Pulmonary Pressure Monitoring in Heart Failure Patients

Kelly Webster, BSN, RN

Hometown: Denver / Program: MS Nursing- Adult/ Gerontological Acute Care Nurse Practitioner

Abstract: The purpose of this presentation is to evaluate a population of patients with moderate to severe heart failure (class III), by exploring the potential implications of implantable pulmonary artery pressure monitoring devices to decrease patient symptoms therefore avoiding expensive hospitalizations and increasing quality of life. Dunlay, et al. (2016) establishes in 2008, heart failure (HF) consumed more Medicare funds than any other diagnosis in the United States (US) at a staggering \$34.8 billion and studies have estimated that hospitalizations require 65-70% of total healthcare costs after the initial diagnosis of heart failure. High morbidity and mortality is associated with HF and new implantable pulmonary artery devices allow for advanced insight into the management of the disease (Adamson, Abraham, Aaron, et al., 2011). Krahne, et al, (2015) found within 550 class III HF patients, heart failure hospitalizations were decreased by 37% and respiratory hospitalizations reduced by 49%. Data gathered as translational research using a literature review design identified many conclusions determining that late stage heart failure is improved with frequent assessment of pulmonary pressures using this implantable device to manage medications and treatments. By following practice guidelines and Kolcaba's theory of comfort as a framework, a model of patient care is created for the Advanced Practice Nurse (APN). The implications for the APN are research, quality of care and practice (NONPF, 2012), where the APN monitors daily data for symptom management based on evidence based practice; therefore, providing the patient with the most comfortable outcome.

Hyperbaric Oxygen Therapy

Ginger Beck, BSN, RN

Hometown: Fountain / **Program:** MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: We live in an amazing country where men and women fight for our freedom every day. They are taken away from their families for extended periods of time, and asked to do and see unspeakable things to protect the freedoms we enjoy. Many of these soldiers suffer from Post-traumatic stress disorder, and traumatic brain injuries. It is estimated that more than 360,000 veterans are suffering from PTSD and TBI. The suicide rate for veterans with PTSD and TBI is around 18 soldiers a day according to the Department of Veteran Affairs. Many of these service men and women are young when they are exposed to trauma and develop Post Traumatic Stress Disorder or have a Traumatic Brain Injury, and this becomes a chronic issue, and a significant problem for our veterans. The purpose of this study is to compare the adjunct use of hyperbaric oxygen therapy along with traditional treatment to improve the outcomes and limit the severity of the symptoms these veterans experience. The approach used was a transitional research using a literature review design. The literature reviewed showed that hyperbaric oxygen therapy is useful as an adjunct therapy in treating Post Traumatic Stress Disorder and Traumatic Brain injuries."

3:30 – 4:45pm

Oral Session 9 – Engineering & Biology Ballroom A

Algorithms for Integrating Hemp Bio-Energy into the Power Grid and Hemp as Phytoremediator for Pollution

Meral Sarper (Engineering)

Hometown: Pueblo/ Program: MS Engineering

Abstract: My research will involve a total economic and optimization analysis of the hemp plant for the United States and Pueblo. The hemp plant has over 50,000 uses for food, fuel, fiber and medicine and simply due to

poor policy, has not been allowed for cultivation or research in the last several decades in the US. Now, we have an opportunity to utilize the new laws within the federal U.S. Farm Bill of 2014 to research hemp in legal states like Colorado. Hemp is one of the best phytoremediators as it can clean the soil and water table of toxicities like metal sludge, sewage waste and even radiation. My research will be regarding optimization of planting to clean soil and water, then the hemp can still be used to biofuel and biodiesel and other industrial purposes like hempcrete. There will be physical indoor and outdoor test plots to collect data. Then, I plan to use my data as well as data from other hemp research and compile it into a website. Then, policy makers worldwide can access this website such that they can see the powerful sustainable uses of hemp which can transform the planet. Potential partners are the non-profits Hemp Cleans and Industrial Hemp Research Foundation.

The Right of Life, Liberty, and the Pursuit of Mental Health Happiness

Anna Horton-Symons

Hometown: / Program: Engineering

Abstract: The treatments for mental illness inhibit the ability to live a normal life. The current lack of research about non-medicated therapies for mental illness creates an injustice that could be fixed immediately. Thus, this research grew from a persuasive speech assignment that required me to tackle a passionate cause and present potential solutions that the public could participate in. Continued research after the assignment ended found that the prescription pads of big pharmacy cannot fully treat persons, however, research dollars and reduced costs could place therapy into the hands of those that need it most. Mental issues create homelessness, drug and alcohol dependencies, suicides, and more, and they can no longer fit conveniently under a rug. Involuntary hospitalization does not treat the issue as effectively as voluntary therapy, yet therapy can be excessively expensive, which places our mental health in the hands of a bank account. The answer and results are simple and up to the general population: we must bring mental illness treatments out of the shadows of comedy or hasty generalizations.

Explaining the variation in songbird mercury using trophic level, phylogeny and foraging guild

Carley Knutsen

Hometown: San Marcos, California/ Program: MS: Biology

Abstract: Seasonal trends in mercury concentration in southern Colorado songbirds. Mercury is a dangerous pollutant that is harmful to both humans and animals. There are increasing levels of mercury contamination in the food chain that pose a threat to songbirds. High levels of mercury can cause serious health issues among the bird populations, such as reduced immune response and altered behavior. Migratory birds are at risk of exposure to mercury both on their wintering grounds and their breeding grounds. Seasonal patterns in mercury contamination could reveal where migratory birds have a greater risk of exposure. Mercury in songbird blood was measured multiple times during the breeding season in southern Colorado. If mercury levels decrease over the course of the breeding season, this suggests that the birds are at higher risk of contamination on the wintering grounds. In contrast, if mercury levels increase over the course of the breeding season, this would suggest that the risk is higher on the breeding grounds. Results will be discussed.

Oral Session 10 – Nursing Ballroom B

Mannitol vs. Hypertonic Saline in the Treatment of Elevated Intracranial Pressure

Kelsey Aliabadi, BSN, RN

Hometown: Fort Collins/ Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Traumatic brain injury (TBI) occurs when the brain sustains an insult from an external force, resulting in potential physical, cognitive, and psychosocial deficits (Dawodu, 2015). According to the Centers for Disease Control and Prevention, in 2010, 2.5 million people in the United States sustained a TBI (2016). The impact of a severe TBI may be significant and result in permanent disability. In the United States alone,

52,000 deaths occur annually as a result of TBI (Dawodu, 2015). Though the treatment of TBI is multifaceted, the purpose of this presentation is to explore the efficacy of mannitol versus hypertonic saline in the treatment of acute TBI in those with an intracranial pressure (ICP) sustained at twenty mm Hg or greater. The method used for this comparison is a translational research design using literature review. The literature compilation includes resources from CINHAL plus, EbscoHost, Cochrane library, Google Scholar as well as the clinical guideline from the Brain Trauma Foundation (2007). Both the literature review and Guideline for the Management of Severe Traumatic Brain Injury reveal that mannitol and hypertonic saline are equally efficacious in the treatment of increased intracranial pressure (Brain Trauma Foundation, 2007; Fracony et al., 2008; Kamel, Navi, Nakagawa, Hemphill & Ko, 2011;). Hypertonic saline, however, has been shown to be superior to mannitol in the acute management of increased ICP (Fracony et al., 2008; Kamel et al., 2011). This finding warrants further research and randomized control trials, as the side effects of both medications and baseline disposition of the patients are not addressed. Furthermore, patients should be treated on an individual basis. The treatment modality selected will be in consideration of K.M., who sustained a TBI in a motor vehicle collision. Callista Roy's Theory of Adaptation will be utilized to guide the care, management and treatment of K.M.

Corticosteroid Use in Treatment of Community Acquired Pneumonia

Maria Kelley, BSN, RN

Hometown: Wellington / Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: Each year pneumonia in conjunction with influenza ranks among the 8th leading causes of death in the U.S. (Leading Causes of Death, 2015). 18.2 per 1000 adults 65-69 years of age were affected by community acquired pneumonia (CAP) in a 3-year period (Cunha, & Bronze, 2015). CAP patients have prolonged hospital stays due to pre-existing barriers. (Cunha, & Bronze, 2015). Populations at increased risk of complications are male patients of advanced age >60, with multiple comorbidities (Cunha, & Bronze, 2015; Siemieniuk, Meade, Alonso-Coello, Briel, Evaniew, Prasad, ...Guyatt, 2015). The research design is "translational research using a literature review design" (Howard, 2016 sect 2). Introduced in this presentation is a 67-year-old male with a history of advanced lung disease that is diagnosed with severe CAP. Traditional management of CAP includes decision-making regarding inpatient or outpatient treatment and specific antibiotic therapy (Mandell, Wunderink, Anzueto, Bartlett, Campbell, Dean, ...Whitney, 2007). Patients with CAP with a history of pre-existing lung disease are at greater risk of increased complications and prolonged hospital length of stay (Cunha, & Bronze, 2015). Current research demonstrates the effectiveness of adding systemic corticosteroids to treat CAP (Blum, Nigro, Briel, Schuetz, Ullmer, Widmer, ...Crain, 2015; Nafae, Ragab, Amany, & Rashed, 2013; Siemieniuk et al., 2015; Wan, Sun, Liu, Zhang, Wang, & Kan, 2015). A primary benefit of using systemic corticosteroids in CAP patients is to decrease hospital length of stay (Siemieniuk et al., 2015). The AACN synergy model which incorporates nurse competencies with patient needs will be utilized to demonstrate the APN's role in utilizing corticosteroids to achieve positive outcomes in a CAP patient (AACN Synergy Model for Patient Care, 2016). Primarily, this presentation will demonstrate the effectiveness of using corticosteroids to decrease hospital length of stay in a 67-year-old man with a history of lung disease diagnosed with CAP.

Oral Session 11– Nursing LARC 109

Venous Thromboembolism Prevention in Total Knee Arthroplasty

Damian Gradisar BSN, RN

Hometown: Pueblo / Program: MS Nursing- Adult/ Gerontological Acute Care Practitioner

Abstract: Lower extremity total joint arthroplasty are the most commonly performed joint replacement procedures performed in the United States. More than 500,000 knees are replaced annually. These procedures do much to improve mobility and quality of life for those who receive them; however, these patients are at a significant risk for development of venous thromboembolism (VTE). These events may lead to stroke, pulmonary embolism, or myocardial infarction and have devastating effects on quality of life. They also dramatically increase economic burden. Prevention of VTE has become a crusade and strategies to mitigate

these complications continue to be developed. This presentation will utilize translational research using a literature review and includes a case study to illuminate implementation of the factor Xa inhibitor rivaroxaban as the preferred method of VTE prophylaxis for its effectiveness and high adherence rate as compared to enoxaparin

Correlation of BMI and Kidney Transplant Complications

Priscilla Williams, RN, BSN

Hometown: Colorado Springs / Program: MS Nursing- Adult/ Gerontological Acute Care & Family Nurse Practitioner

Abstract: The purpose of this study is to determine whether adult patients who exceed the recommended BMI and have kidney transplant are at a higher risk of post-operative complications over one year than patients that meet the recommended BMI and have kidney transplant. The method used for this project was translational research using a literature review design. Over the last two decades there has been a rise in the incidence of chronic kidney disease (CKD). There are approximately 450,000 people in the United States that require hemodialysis to manage their CKD (Garcin, 2015). This is pertinent to improve the quality of living for CKD and decrease healthcare cost of hemodialysis. Using data from 37 outcomes with more than 205,000 kidney transplant recipients and 20 meta-analysis. Results show obesity is not considered an absolute contra-indication for a kidney transplant. However, patients with a BMI of greater than 40 should no be considered for kidney transplant. In addition to this, the largest mortality and morbidity with post-transplant regardless of BMI is due to cardiovascular complications (Lafranca, IJermans, Betjes, & Dor, 2015). These results may play a role in assisting patients in Colorado with CKD and a BMI >30 and <39 receive kidney transplants.

Proning: A second look - Does proning reduce mortality rates in patients with severe acute respiratory distress syndrome?

Annette Rice, RN, BSN

Hometown: Avondale / Program: MS Nursing- Adult/ Gerontological Acute Care Nurse Practitioner

Abstract: Intensive care providers find it challenging to effectively treat mechanically ventilated patients with acute respiratory distress syndrome (ARDS). Acute respiratory distress syndrome is a failure of the respiratory system in which multiple disease processes and injuries contribute to the complexity and high mortality rates of ARDS patients varying from 20% - 40% (Drahnak & Custer, 2015). Prone positioning is known to improve oxygenation in most patients with acute respiratory distress syndrome (Fessler & Talmor, 2013). However, many randomized controlled trials (RCTs) have failed to show improvements in clinical outcomes for these patients. Therefore, prone positioning has been defined as a rescue or salvage therapy for patients with ARDS (Fessler & Talmor, 2013). The purpose of this presentation is to explore the effectiveness of early and prolonged prone positioning compared with late or salvage prone positioning on mortality rates of ARDS patients. A translational research using a literature review design was conducted through CSU-Pueblo library database. A RCT of 466 patients with ARDS investigated the impact of early and prolonged application of prone positioning. Patients were placed prone within 12-24 hours of diagnosis and for at least 16 hours. Mortality at 28 days was 16% for the prone group compared to 32.8% for the supine group ($p < 0.001$). Mortality at 90 days among the prone group was 23.6% compared to 41% for the supine group. Complications did not differ significantly between the two groups. Limitations included the technical aspects of prone positioning requiring an experienced team effort. The findings indicate patients with ARDS have a decrease in mortality rates with application of early and prolonged prone positioning. This knowledge is transferable as the Advanced Practice Nurse combines evidence based medicine and action at the bedside to improve the quality of outcomes for the patient as well as effecting practice protocols.

**Oral Session 12 –Communication & Rhetoric
Ballroom C**

The Application of Experiential Education at the University Level

Edward Kusi-Mensah, Rick Quintana, Eliana Taylor, Adrian Torres

Hometowns: Golden, Longmont, Pueblo/ Programs: Mass Communications, English, Communication & Rhetoric

This panel details and explores various elements of experiential education using the renovation process of a university preschool center's playground area and concrete entryway as a course project. Said process incorporated collaborative elements among research students, center staff, and our professor. This research aims to analyze the context and effectiveness of experiential education at the CSU-Pueblo campus based on a case study of one course. The first presenter will analyze our argument contextualized through the presentation of a historical framework of experiential education that informs the outcomes of the research. The second presenter will present on aspects of small group communication examined through the correspondence and experiences of research participants. Third, active experimentation will be discussed as a vital role in the renovation process based on Kolb's model of experiential education. Lastly, there will be an overview of the analysis and interpretation of reflective journal entries. Each presentation focuses on the role experiential education played in the project and the lived experiences of student participants.

EVENING SESSION

5:00-6:15pm

**Oral Session 13 – History & Business
Ballroom A**

Herodotus: Historian or Storyteller?

Tabitha Martin

Hometown: Pueblo / Program: History

Abstract: This research delves into the writings and provided sources of Greek Historian Herodotus in his Histories in order to compare and contrast his rhetorical and investigative practices to those of poets in antiquity, such as Homer, and contemporary historians. Herodotus is known widely as the Father of History, being the first man to document events that can still be read to this day, and has also earned the nickname "Father of Lies," as some of the information he presents in Histories is questionable or downright incorrect. Despite this, he is still a source utilized frequently by historians, professors, and teachers when studying the Persian Wars, which occurred in Greece in the early to mid-400s BCE. In order to compare and contrast Herodotus with the chosen groups, citations were pulled from Herodotus' Histories, as well as arguments from historians analyzing the text. The focus will ultimately argue that Herodotus does not record history in commonly accepted terms, but would be considered a storyteller, admittedly unusual for his times.

Prolonged Parental Investment

Austin Rahskopf

Hometown: Pueblo / Program: MBA

Abstract: Parental Investment theory has been consistently researched since Robert Trivers developed the theory in the 1970's. The research has primarily focused on parents' income and educational levels, having a direct correlation to their offspring's development and educational success (Conger & Dogan, 2007; Guo & Harris, 2000). However, little research has been done looking at the effects of an increase in the length of Parental Investment (Trivers, 1972) which has become apparent in the Western world, as more eighteen to thirty year olds are still living at home. Historical results have demonstrated the importance of SES and parental investments for the development of young children (Martin, Neppel, Scaramella, Sohr-Preston, 2013). This study is unique in that the test subjects will be adults not children, looking at social, economic, and educational

success, to evaluate the effects of prolonged parental investment. The results of this study will have theoretical and practical implications for marketers. If prolonged parental investment leads to increased SES scores then the population will have an increased purchasing power. Marketers should therefore look at further segmenting the eighteen to thirty year old demographic between those with prolonged parental investment and those without. Furthermore the housing market should see a boom in the next ten years as millennials finally leave home. Having received increased parental investment they will be in a position to buy a home rather than rent.

Oral Session 14 – Art Ballroom B

Native American Women with the Spirit Clay in Their Hands

Joyce Pretzer

Hometown: Pueblo / Program: Art

Abstract: My presentation is about the Native American Women and how they have kept the ceramic pottery alive from the times of the Anasazi to the present pueblo communities. The main group of potters are six American Indian matriarchs who are deemed to have made the largest contribution in the field of pottery in the Southwest part of America, so I will mainly focus on them. Thousands of years into this craft makes each piece represents wisdom, roots and values of each tribe. It is the clay work that has made the Native American women able to express their selves without the men in the tribes opposing. It provides a way for the women to become involved in the tribes essential roles and ceremonies with the physical handling of the vessels. Just as they made pots for cooking, jars, bowls, pitchers, utensils, storage and miniature figures for decoration. Some women have handed down their legacy to their family members, before they passed away, some are still, to this day, going strong with their style and teachings of different techniques. . One of the most important traditions in Native American woman's life is pottery making.

Death through the Ages

Blanca Davis

Hometown: Pueblo / Program: Art-History

Abstract: Death is a macabre reminder of our own mortality, some embrace it and many deny it till the very end. My research will be covering the ceramic funerary vessels that our ancestors used to try make sense of the afterlife and what happened to us after we die. I will begin with the earliest civilization the Sumerians and go into present day, I will look at the burial rituals that each culture has and what role clay played in the journey to the afterlife. Clay has played pivotal role in shaping human existence, and the understanding of the world around us.

Oral Session 15 –Communication & Rhetoric Ballroom C

Tempered Voices

Briana Heifner, Makayla Miller, Tyrone Parks, Katy Barnes, & Eliana Taylor, Directed by Nicole Grider
Hometowns: Pueblo/Programs: Biology, Mass Communication, Political Science, Communication & Rhetoric

Tempered Voices is an oral interpretation of literary selections taken from CSU-Pueblo's Tempered Steel. This powerful performance focuses on the metamorphosis of the self by examining life through the many lenses of race, ethnicity, culture, gender, emotion, remembrance, and the inability to forget. Tempered Voices will be performed by members of the CSU-Pueblo Forensics Team, and will be followed by a short discussion regarding the impact of performance on personal, professional and academic scholarship.

About the Student Works Symposium

The mission of the Symposium is to be a forum for dissemination and discussion of scholarship and creativity, and to foster interaction among students, faculty, and the local community. This fourth annual Symposium showcases the scholarly works of select students from the Art, Art History, Biology, Biochemistry, Business Administration, Chemistry, Communication & Rhetoric, Engineering, English, Exercise Sports Science, History, Honors, Mass Communications, Mathematics, Music, Nursing, Political Science, and Psychology programs.

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