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ACCESS TO PREVENTIVE HEALTH SERVICES AMONG HOMELESS WOMEN
Breast cancer remains the most common malignancy, and the second leading cause of death among American Women. Paclitaxel is one of the most effective single agents used to treat breast cancer, however, after a variable period of time following treatment initiation, the cancer progresses in most patients due to the development of drug resistance. Toll-like receptors, which are a key component of the innate immune system, are emerging as key mediators of progression of several types of cancers. The role of toll-like receptor 2 (TLR2) in breast cancer sensitivity and resistance to paclitaxel therapy has not been previously investigated. Previous studies reported an increase in the expression level of TLR2 in taxane-resistant breast cancer cells. In this study, we hypothesize that TLR2 targeting could enhance paclitaxel efficacy in breast cancer cells. The results of preliminary cell viability experiments, in which treatment of MDA-MB-231 breast cancer cells with paclitaxel in the presence of Pam₃CSK₄, a known TLR2 ligand, showed a significant reduction in paclitaxel efficacy. A similar response was not observed in MCF7 breast cancer cells which have been shown to express reduced TLR2 levels. In addition, Pam₃CSK₄ reduced the efficacy of paclitaxel in MDA-MB-231 cells in a dose-dependent fashion. Collectively, our data suggest a potential involvement of TLR2 in the development of chemo-resistance and provides a rationale to further investigate the molecular mechanisms involved.
DETERMINING WHETHER MIDWIFERY PATIENTS ADVISED, TARGET, AND ACTUAL PREGNATAL WEIGHT GAIN MEET THE 2009 INSTITUTE OF MEDICINE RECOMMENDATIONS

Erin Alaimo

(Committee members: E. H. Weiss (chair), C. Baumgart, L. A. Georger)

Dietetics Program
School of Health Professions

Multiple research studies have found that only 30-40% of women gain weight during pregnancy within the Institute of Medicine (IOM) recommended ranges. The purpose of this study was to interview postpartum patients to determine if pregnancy weight gain advice, women’s target weight gain, and actual weight gain were in accordance with the 2009 Institute of Medicine recommendations. Data for this study were collected using a semi-structured questionnaire adapted from the Infant Feeding Practices Survey. A total of 21 postpartum participants, age 22 to 36 years, completed the questionnaires. A chi-square analysis compared the weight gain categories (i.e., advised, target, and actual) with the Institute of Medicine recommendations. From the 21 postpartum women surveyed at the midwifery practice, only 43% (n=9) received advice on prenatal weight gain, of which 56% received appropriate advice. Forty-eight percent of the women in the sample had target weight gain goals in accordance with the IOM. Only 33% (n=7) of the women gained weight within the IOM recommendations based on BMI. There were no significant differences between the weight categories. The findings of this study suggest that health professionals (midwives) are not consistently giving advice pertaining to pregnancy weight gain during their prenatal care. The majority of women are not gaining weight in accordance with the IOM’s prenatal recommendations.
AN ASSESSMENT OF DIABETES EDUCATION MATERIALS AVAILABLE TO NATIVE AMERICANS

Jennifer Arce

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Dietetics Program
School of Health Professions

The study evaluated the reading grade level, suitability, and cultural sensitivity of type 2 diabetes education materials available to Native Americans (NA). The PEN-3 model, developed for planning and evaluating culturally appropriate health interventions, served as the conceptual framework. Only materials that met the inclusion criteria were evaluated: (a) written in English and from nationally recognized organizations; (b) designed for NA adults or the general population (excluding materials designed for other races); (c) addressed the topic of type 2 diabetes management, including diet and nutrition (excluding prevention and complications); (d) >250 words in sentence format, < 350 pages; and (e) no cost to the researcher. The materials were given scores based on the SMOG readability formula, the Suitability Assessment of Materials (SAM), and the Cultural Sensitivity Assessment Tool (CSAT). The researcher evaluated 12 materials. Using the SMOG formula, the mean reading grade level was 8.8 (SD±2.00). The mean SAM score was 73.5% (superior rating). The CSAT score was not calculated due to problems obtaining subjects. Overall, the materials were written at a higher reading grade level than recommended. These results suggest that existing diabetes educational materials do not match many patients’ reading abilities. This may affect an individual’s ability to understand written instructions in diabetes educational materials given by health care professionals.
Reduced D₂ receptor availability is a neurological underpinning associated with high impulsivity. High impulsive rats tend to exhibit decreased D₂ receptor availability in striatal areas. D₂ receptors are found on both pre- and post-synaptic sites in the nigrostriatal pathway. We have created a way to manipulate D₂ receptor populations in the brain using a viral vector to deliver short interfering RNAs targeting the D₂ receptor in rats. By injecting the virus directly into the substantia nigra, only the cell bodies will receive the shRNA, resulting in knockdown of the presynaptic D₂ autoreceptor. When the D₂ autoreceptor is knocked down only in the dorsal striatum (leaving post-synaptic D₂R intact), the rats become hyperactive and have altered responses to dopaminergic agents. We hypothesized that enhanced dopaminergic tone will produce a similar hyperactive state and enhance impulsivity. In this study, we have used the 5 choice serial reaction time task (5-CSRTT) as a model of impulsivity. This task provides information on the animal’s attention, and the ability to withhold a prepotent response. In the task, rats are trained to respond to a light stimulus by nose-poking under one of the 5 possible holes under an illuminated light. Correct responding results in a food reward, whereas incorrect trials result in a time-out period. Correct performance of the aforementioned task is used as a measure of attention. When rats make anticipatory responses before presentation of the stimulus light, the response is considered impulsive. Performance on the task was compared between control animals and D₂ knockdown animals. Results suggest that the rats who received the virus were not significantly different on measures of impulsivity and attention. However, rats in the virus group were more sensitive to dopaminergic agonists, and showed an increase in impulsive responding relative to controls.
EFFECTS OF A STRUCTURED GROUP EXERCISE PROGRAM ON BALANCE AND HABITUAL PHYSICAL ACTIVITY IN COMMUNITY-DWELLING OLDER ACTIVE ADULTS

Hannah Bleichfeld, William Cheehan, Golsa Lotfioff, Ryan Peeters, Tahmineh Kamza, Michael Sardo, Lynn Rivers, PT, PhD, and James Karnes, PT, PhD

Department of Physical Therapy
School of Health Professions

BACKGROUND: About one third of adults over the age of 65 experience at least one fall each year that may lead to serious injury and require hospitalization. Decreasing falls incidences is important in lowering the rates of morbidity and improving quality of life for older active adults. Impaired muscle strength and balance, and decreased levels of habitual physical activity are risk factors for falls. Group exercise programs that focus on improving strength, balance, and habitual physical activity may reduce falls risks in community-dwelling older active adults.

OBJECTIVES: To investigate the effectiveness of a 12-week group-based exercise intervention on strength and balance and habitual physical activity in community-dwelling older active adults

METHODS: Intervention consisted of weekly group-based exercise sessions conducted over 12 weeks. Fullerton Advanced Balance Scale (FAB) and Timed Up & Go (TUG) were used to assess subject upright balance whereas the Physical Activity Scale for the Elderly (PASE) was used to assess levels of habitual physical activity In a quasi-experimental design, 23 subjects were initially recruited. Of these, 13 subjects (2 males, 11 females) completed the structured group exercise intervention and all phases of testing. Subjects underwent TUG, FAB, and PASE assessments before and after the 12-week group exercise program.

RESULTS: Following intervention, significant decreases were found with TUG times (p=.000) and significant increases were found with FAB scores (p=.000). No significant change was found in PASE scores (p=0.283) however, the majority of subjects (69%) increased their habitual physical activity.

CONCLUSION: Structured group-based exercise programs can be successful in improving upright balance in community-dwelling older active adults. However, further research should assess its effectiveness over the long-term for change in habitual physical activity.
STUDENT EDUCATIONAL BENEFIT, PROFESSIONAL DEVELOPMENT, AND SATISFACTION WHEN PARTICIPATING IN AN INTERNATIONAL MEDICAL BRIGADE

Greg Blette, Lindsey Zawierucha, Kirsten Butterfoss, and Michelle Lewis
School of Pharmacy

PURPOSE: Student development both in and out of the classroom, didactic as well as real-world experience is paramount to the projected success of these future practitioners. The objective of this study is to determine if there is a benefit of participation in an international medical brigade on a student’s education and professional growth in the field of pharmacy as well as to assess their personal satisfaction with the experience. Students participated voluntarily and performed many different duties while on the brigade. Impact on the students’ professional development was measured in order to determine usefulness as an APPE and IPPE rotation activity.

METHODS: Students attending the D’Youville College School of Pharmacy (DYCSSoP) were invited to apply for an international medical brigade IPPE or APPE, depending on professional class year, to Tena, Ecuador. Selected students traveled on a ten day brigade that visited six underserved villages with little or no access to healthcare. The brigade was made up of volunteers primarily from two different colleges and included physicians, nurses, pharmacists, translators, student pharmacists, nursing students, and general volunteers. Upon completion of the brigade, students were asked to complete a survey assessing their perceived benefit to their education and professional development as well as their personal satisfaction with the experience. There was also a section for student input regarding the strengths and weaknesses of such experiences and how they could be improved upon. The results, once compiled, are to be used in assessing and improving the current medical brigade as well as for evaluating the implementation of new international interdisciplinary brigade rotations into the IPPE/APPE curriculum at the DYCSSoP. The proposal for this project is exempt from IRB approval based on its intent for quality control purposes.
CONFUSION WITH SUBSTITUTING EPINEPHRINE AUTO-INJECTORS: A FOCUS ON MEDICATION COUNSELING, DISPENSING, AND PATIENT EDUCATION

Sonia Dhanjal and Stacie Lampkin

School of Pharmacy

RATIONALE: Proper usage of epinephrine auto-injectors (EAIs) is critical during a potentially life threatening event. Four EAIs are currently marketed in the United States: EpiPen® EAI, Auvi-Q® EAI, Adrenaclick® EAI, and a generic product that may only be interchanged with Adrenaclick EAI. The US Food and Drug Administration (FDA) has assigned BX ratings to EAIs, indicating a lack of sufficient data available to make a determination of bioequivalence. The objective of this analysis was to assess healthcare professionals’, pharmacists’, and patients’ knowledge regarding the impact of unique designs and operating instructions for EAIs.

METHODS: A literature search was conducted focusing on the use of epinephrine in anaphylaxis, patients’ attitudes toward EAIs, and comprehension of use of EAIs among healthcare professionals. Differences between the EAIs were assessed by researching the FDA’s Orange Book, products’ websites, and products’ package inserts.

RESULTS: Differences in shape, color, number of safety caps, packaging, dispensing, and instructions for use were observed between the different EAIs. Under certain conditions, pharmacists may substitute EAIs in 21 states despite a BX rating. Several studies were also identified that indicated a lack of patient training and education on the use of EAIs. In addition, studies indicated that healthcare professionals could not properly demonstrate correct technique.

CONCLUSION: Currently, EAIs can be substituted in 21 states despite their BX rating. Healthcare professionals, pharmacists, and patients should be aware of the numerous differences among EAIs and the negative impact substitution and inadequate education may have on adherence and proper usage during an anaphylactic event.
BACKGROUND: In the United States, one in three adults over 65 years of age will fall every year. Among those who fall, 20-30% will sustain moderate to serious injuries. Approximately 45-50 adults who live in Erie County die from falls annually.

AIM: Faculty from nursing, occupational therapy and physical therapy at D’Youville College secured funding from the Health Foundation of Western and Central New York to develop an interdisciplinary program focused on educating future health professionals about the serious nature of falls in the community.

METHODS: After completing online modules and in-class training, students participated in community falls prevention programs at senior centers and residential facilities located in Erie County. Pretest and post-test surveys were used to determine the effect of course participation on student knowledge regarding falls.

RESULTS: On average, students had higher scores on post-test items compared with pretest assessments related to the epidemiology of falls, medical conditions associated with falls, and home hazards that are linked with falls in older adults.
Rab proteins constitute the largest class of the Ras superfamily of monomeric guanine nucleotide-binding (G) proteins, with over 60 members identified so far. They function as molecular switches, cycling between an active GTP-bound and an inactive GDP-bound state, and controlling all the major steps in membrane trafficking. Their activity is regulated by guanine nucleotide exchange factors (GEFs), which mediate their activation, and by GTPase-activating proteins (GAPs), which terminate their activity. Recent studies suggested that Evi5 is a potent GAP for RAB11, and has a critical role in the late stages of mitosis.

Bioinformatics analyses revealed a new Evi5-like protein (Evi5L), possessing a putative Rab-GAP domain similar to Evi5. In addition, Evi5 and Evi5L conservation among the Eukarya was evaluated. Fluorescence microscopy was used for the subcellular localization of Evi5L in both interphase and mitotic Hep G2 cells. Furthermore, immunocytchemical studies confirmed that Evi5 and Evi5L have similar dynamic localizations during the last stages of mitosis and suggested that both proteins may be involved in targeting different subpopulations of endocytic vesicles to the midbody during cytokinesis.
Recent shifts in policies by accrediting bodies related to conversions from not-for-profit to for-profit control of postsecondary institutions in the US suggest a new sensitivity to the potential effects of these changes. However, no studies to date analyze the effects of these changes. This study uses Delta Cost Project Data to compare a group of institutions that converted to a group that remained not-for-profit. Our findings suggest that institutions that convert from not-for-profit to for-profit experience greater enrollment growth, a decline in fulltime employment levels per FTE student, no change in average expenses per FTE student (although these levels are lower than at the institutions that did not convert), a decrease in total revenue, a long term increase in public funding received to a level much higher than the comparison group, changes in operating margin (which remain lower than comparison group totals), and a decline in average subsidy per student post conversion. These findings are critical to the creation of informed policy decisions regarding institutional conversions in the future.
ADEQUACY OF VEGETARIAN DIETS IN ADULT COLLEGE STUDENTS

Courtney Frost

(Committee members: E. H. Weiss (chair), C. Baumgart, L. A. Georger)

Dietetics Program
School of Health Professions

The purpose of this study was to determine if collegiate vegetarians in western New York were meeting their Dietary Reference Intakes (DRIs) for vitamin B12, vitamin D, calcium, zinc, iron, and protein through their diets. A convenience sample of 23 vegetarian college students, aged 19 to 31, was recruited from a local college. Subjects were contacted by telephone and were given a 24-hour recall multiple-pass interview to examine the nutrient intake of their diet. The researcher determined the subject's dietary adequacy based on their anthropometric measurements. The 24-hour recall data were analyzed by the computer software, Food Processor 10.8.0. The results were then compared to the DRIs. The number of subjects who met 100% and/or 75% of their Recommended Dietary Allowances (RDAs)/Estimated Average Requirements (EARs) for vitamin B12, vitamin D, calcium, zinc, iron, and protein was calculated. Confidence intervals were calculated for each of the percentages. Results from the study revealed that the majority of vegetarian college students were not meeting at least 75% of their EAR for vitamin D, and they were also not meeting at least 75% of their RDA for iron and vitamin D. Protein was not a concern; 96% of participants' diets contained more than 75% of their EAR with 61% consuming more than 75% of their RDA for protein. More than half of the participants met at least 75% of their RDA for vitamin B12, calcium, zinc, and protein. Although the nutrient needs were met for a majority of the sample, other members of the group may require nutrition education to correctly follow their vegetarian diet, ensure that they meet their nutrient needs, and reduce the risk of deficiencies.
ONLINE AACP PUBLIC HEALTH SIG QUESTIONNAIRE UTILIZING
THE CLINICAL PREVENTION AND POPULATION HEALTH
CURRICULUM FRAMEWORK

David A. Gettman, D’Youville College, Mark Eckstein, D’Youville College
James D. Nash, Sullivan University
Sharon E. Connor, University of Pittsburgh
Justine Gortney, Wayne State University
Anandi V. Law, Western University of Health Sciences

School of Pharmacy

OBJECTIVE 1: assess existing Doctor of Pharmacy curricula that teach public health utilizing the Clinical Prevention and Population Health Curriculum Framework. OBJECTIVE 2: perform a baseline assessment of Public Health SIG members regarding the areas of public health practice and APHA membership. METHOD: A pre-tested on-line questionnaire was administered to volunteers via qualtrics.com. Reminder emails were then sent to all non-respondents twice over a one month period. Subjects were asked to answer whether or not their Doctor of Pharmacy program addresses any of a total of 19 domains under the four components of the Framework. Subjects were also asked to provide information related to their public health-related coursework including use of service learning and problem-based learning as well as more traditional educational approaches. MAJOR RESULTS: 1.) only 1 school didn’t teach immunization, 2.) 18 schools didn’t teach occupational health, 3.) 13 schools didn’t teach environmental health, 4.) Didactic learning was utilized more than twice as much as the experiential learning for almost every domain, 5.) 26 schools of pharmacy s teach about underserved populations, and 6.) < 15 schools specifically differentiate material taught covering urban and rural populations. IMPLICATIONS: The framework provides a structure for organizing monitoring, and communicating within and among professions. It was designed to provide guidelines for student education in the clinical health professions represented on the Healthy People Curriculum Task Force, but can be adapted by pharmacy educators to continuously improve their curricula.
A MODIFIED IN VITRO INVASION ASSAY TO DETERMINE THE POTENTIAL ROLE OF HORMONES, CYTOKINES AND/OR GROWTH FACTORS IN MEDIATING CANCER CELL INVASION

Haneesha Goli*, Zethan Koch*, Diane Bofinger*, Rosie Dau*, Megha Thomas*, Archis Bagati# and Shoshanna N. Zucker*

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School of Pharmacy

Blood serum serves as a chemoattractant towards which cancer cells migrate and invade, facilitating their intravasation into microvessels. However, the exact molecules involved in cell migration remain elusive. In order to identify specific targets which drive cell migration and invasion, a modified invasion assay has been developed. This technique compares the ability of cancer cells to migrate and invade through a layer of collagen toward a chemoattractant present in blood serum. The migration/invasion assay is then repeated in the presence of charcoal-stripped serum which specifically removes the hormones, growth factors, and cytokines from serum. The assay is designed to systematically add back specific factors in order to identify what molecules may be responsible for driving tumor cell invasion. Since gap junctions are regulated during tumor cell invasion, the role of gap junctions in mediating melanoma invasive potential was investigated. The assay tested metastatic melanoma cells that were modified to express three different levels of gap junctions: endogenous low levels, increased levels, or an absence of gap junctions due to transfection with a dominant negative mutant connexin protein. The results demonstrate that blocking gap junction communication increases the extent to which these melanoma cells invade towards media with normal serum, whereas the removal of hormones, growth factors, and cytokines inhibits this invasion. Ongoing experiments are designed to identify specific components that increase tumor cell invasion. Ultimately, the goal of this project is to identify both positive and negative mediators of tumor metastasis which may have potential as pharmaceutical targets.
HUMAN RIGHTS AND CHILDREN ON THE MARGINS
IN THE UNITED STATES

Julia Hall

Sociology - Department of Liberal Arts
School of Arts, Sciences and Education

Against the backdrop of economic expansion, through policy analysis and ethnographic data collection I investigate how growing human rights violations are taking place among children in the US. Here I focus on violations such as the deepening of poverty, continued elaborations of institutional racism, and gendered violence. Policy makers, community leaders, and teachers need to be aware of these escalating realities confronting students. The definition of “children’s human rights” as understood here is taken directly from the United Nations Convention on the Rights of the Child [CRC]. Unfortunately the US has a peculiar relationship with the CRC. In 1989, more countries ratified the CRC than any other human rights treaty in history. However, only Somalia and the US have yet to ratify this agreement. Many in the US arguably do not know this and this reality must change. Here I place emphasis on this and ways in which the CRC could be used to serve the needs of the most vulnerable populations of school-age children in the US and elsewhere. Schools could be the very place where children come to understand they have rights. All children require the knowledge they are the subject of particular rights and assurances. Instead the protections stated in the CRC and the realities of the lives of so many are often worlds apart.

*This research draws upon research from my most recent book, Children’s Human Rights and Public Schools in the United States. This book was awarded the AESA Critics’ Choice of the Year Book Award in 2013. AESA is my national scholarly association.
METALLOPHTHALOCYANINE-CATALYZED WITTIG OLEFINATION

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The Wittig reaction to synthesize olefins is a very attractive method in organic synthesis. Recently, this methodology has been achieved utilizing simple metal catalysts and diazo compounds in addition to a phosphine and an aldehyde. We report, for the first time, this chemistry being catalyzed by metallophthalocyanines. The following work investigates the use of a variety of these organometallic complexes to catalyze Wittig-like reactions from ethyldiazoacetate. We also examine the influence of substitution on the aromatic ring of the aldehyde as well as various phosphines, arsines and antimony complexes. We have been able to exclusively synthesize the trans-olefins in excellent yields in short periods of time (1 hour).

\[
\begin{align*}
\text{R} \quad \text{O} & \quad + \quad \text{H} \quad \text{OEt} \quad \text{N}_2 \quad 1 \text{ mol} \% \text{MPc} \\
\text{1.1 equiv.} & \quad \rightarrow \\
\text{XPh}_3 (1.1 \text{ equiv.}), & \quad \text{PhCF}_3, \text{ reflux, 1h} \\
\text{MPc} & \quad (X = P, As, Sb)
\end{align*}
\]

\[
\begin{align*}
\text{R} & \quad \text{R} \quad \text{trans} & \quad \text{cis} \\
\text{CO}_2 \text{Et} & \quad \text{CO}_2 \text{Et} & \quad \text{R} \quad \text{R}
\end{align*}
\]

>20:1 ratio trans: cis

\[
\text{MPc} = \begin{array}{c}
\text{M} = \text{Ag, Co, Cu, Fe, Ni, Zn}
\end{array}
\]

\[
\text{R} = \text{H, Me, OMe, Ph, Cl, F, Br, CF}_3, \text{ NO}_2
\]
The “complex geriatric condition” of falling by older adults often leads to devastating injury and disability. This poster presentation will highlight an evidence based fall prevention program, created and delivered by Learning Partners, a local continuing education company that was part of The Western and Central New York Community Health Foundation’s “Step up to Stop Falls” program. Designed for and delivered to physical and occupational therapists, the program helped to increase awareness and skills for identifying fall risk factors, developing and providing strategies for reducing the risks for falls, and improving documentation on the activities that can lead to either preventing a first fall or subsequent fall with injury. This reproducible program can help organizations and programs develop their own Falls Prevention Program.
PREVALENCE OF EATING DISORDERS IN COLLEGIATE ATHLETES

Lois K. Kennaley

Committee Members: C. Baumgart (chair), E. H. Weiss, R. Cadzow

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The purpose of this study was to determine the prevalence of eating disorders and the most common eating disorder behaviors among female collegiate athletes, using the diagnosing criteria of eating disorders according to DSM-III standards. The target population was female college athletes at Division I and Division III universities in WNY. Of the 109 participants, 13 played two or more sports and were counted as a frequency in each sport played, increasing the total number of athletes (n=122). Of the 109 participants, 10% were found to be at risk for an eating disorder. When looking at each sport, 0% of basketball athletes, 16% of crew/rowing athletes, 8% of cross country athletes, 0% of soccer athletes, 3% of softball athletes, 25% of swim/dive athletes, 25% of tennis athletes, 27% of track and field athletes, and 11% of volleyball athletes were found to be at risk for an eating disorder. However, the differences among the sports were not statistically significant (p = .110). Just under 45% of athletes reported eating disorder behaviors within the last 6 months, identifying a risk for developing eating disorders. Although there was no statistical significance between the sports, there were individuals among each sport that were at risk or having eating disorders, showing there is a potential problem among this population. Further research is needed to examine the relationship between eating disorders and athletes and to provide an effective intervention for these athletes.
GAP JUNCTIONS INCREASE THE AREA OF MELANOMA CELL DEATH INDUCED BY COMBINATION THERAPY WITH NON-THERMAL PLASMA AND TIRAPAZAMINE

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Peter Casey# Diane Bofinger*, Rosie Dau*, Megha Thomas*,
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Melanoma is the most rapidly progressing malignancy in the United States, accounting for 75% of all skin cancer-associated deaths. We have recently demonstrated that selective cell death of melanoma by apoptosis could be achieved using a non-thermal plasma torch (NTP). This selective killing is likely induced by the greater susceptibility of melanoma cells to the multiple reactive oxygen species (ROS) produced by the NTP. The goal of these studies was to enhance the selective killing of melanoma cells by NTP and to increase the surface area affected. Since tumors flourish under low oxygen (hypoxic) conditions, we utilized the experimental anticancer drug, tirapazamine, which has been demonstrated to induce cell toxicity only under hypoxic conditions. Our previous results showed that gap junction intercellular communication expanded the area targeted by NTP. These experiments utilized metastatic melanoma cells that were modified to express three different levels of gap junctions: endogenous low levels, increased levels, or an absence of gap junctions due to transfection with a dominant negative mutant connexin protein. The combination of NTP + tirapazamine treatment enhanced cell death under hypoxic conditions. Furthermore, the overexpression of functional gap junctions extended the area affected by the plasma torch and significantly decreased the total number of viable cells. Our results suggest that cell-death-inducing molecules such as ROS can pass through gap junctions to spread the effects of NTP. Experiments are ongoing to elucidate the mechanism for this combination therapy and, ultimately, to pursue the potential for clinical applications.
ACTIVE LEARNING THROUGH A DEBATE SERIES IN A FIRST YEAR PHARMACY SELF-CARE COURSE

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School of Pharmacy

OBJECTIVES/INTENT: This study is aimed to determine if including formal debates in coordination with classroom lectures aids students in learning Self-Care concepts and improving skills such as critical thinking, communication, public speaking, research methods and teamwork.

METHODS/PROCESS: Pre- and post-debate surveys were administered to students to assess their opinion on debates and their associated effect on skill development. On debate day, students would take a quiz testing knowledge on the previously provided debate topic. The debate then ensued with opening arguments, rebuttals, the formal debate, and closing remarks. The quiz was then re-administered to determine if there was improvement in understanding of the material, and if their opinion was altered.

RESULTS/OUTCOMES: Pre and post-class data showed that students believed participating in a debate assisted them in learning material, but observing the debates did not. We found that 92% of students felt preparing for the debate was at least slightly effective in helping them improve skills. Also, students evaluated themselves as more competent in these skills after participating in the class.

IMPLICATIONS: We conclude that active participation is crucial in student’s perception of their ability to retain and comprehend information, and that observation was not effective in facilitating learning. Most students said participating in debates was at least slightly effective in improving crucial skills. We observed that debates facilitate student’s personal perception of competency with regard to these crucial skills, and therefore believe that debates may be a useful classroom tool, in conjunction with didactic learning, to improve overall education.

* – this was presented at AACP last summer
DEVELOPMENT OF A HIGH-THROUGHPUT ASSAY TO PREDICT BIOLOGICAL PHOSPHORYLATING ACTIVITY OF 2,2-DIMETHYLPHOSPHOAZIRIDINE – TYPE ANTICANCER DRUGS

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The goal of this research project is to establish a 96-well, high throughput assay to determine the dose limiting anticholinesterase activity of experimental phosphate containing antineoplastic agents. This high throughput assay is needed for the purpose of reducing assay costs, increasing sample size, and improving research safety. Some of the anticancer agents we are investigating belong to the 2,2-dimethylphosphoraziridine class, of which the prototype AB-132 has shown to have potent anticholinesterase activity \textit{in vitro} and in humans. We intend to use this high throughput screen to evaluate a large number of related 2, 2-dimethyl and unsubstituted phosphoraziridines in our effort to identify compounds with improved efficacy and safety profiles. Initially, we mapped the activity of butrylcholinesterase (BCHE) employing standard UV/vis spectroscopy to establish the ideal baseline characteristics for the assay. Subsequently we determined the relative anticholinesterase activity of AB-132 versus its unsubstituted analog AB-100 employing the same UV/vis spectroscopy mapping methods. Upon completion, the assay was down-sized to a 96-well plate format. Michaelis-Menten and Lineweaver-Burk plots were used to compare the activity of BCHE when measured with the standard UV/vis spectrophotometer versus a plate reading spectrophotometer. The initial rate of inhibition of BCHE by each compound was determined and used as a comparator. The results from the plate reader correlated well to the results from the UV/vis spectrophotometer. Thus, the high throughput/plate reader assay can be used to demonstrate the relative anticholinesterase activity of AB-132, AB-100 and their related compounds. The ultimate goal of this research project is to find a compound belonging to the 2,2-dimethylphosphoaziridine class with limited anticholinesterase activity that can undergo further investigation as a potential anticancer agent.
ULTRASOUND FINDINGS OF FRACTURES ABOUT THE ANKLE: A PICTORIAL ESSAY WITH CADAVERIC, RADIOGRAPHIC AND ULTRASONOGRAPHIC CORRELATION

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OBJECTIVE: The objective of this pictorial review is to depict various ultrasound appearances of fractures about the ankle and provide radiographic and gross anatomic correlation. In addition to the appearances of fractures on diagnostic ultrasound, common findings simulating fractures about the ankle will also be depicted.

METHODS: Ultrasound evaluations of fractures secondary to inversion or eversion stress in cadaveric ankles were utilized to provide pictorial demonstrations of common findings of fractures on diagnostic ultrasound and are depicted with radiographic and anatomic correlation. IRB approval was sought and obtained.

DISCUSSION: Ultrasound evaluation is becoming increasingly utilized in the field of musculoskeletal imaging because of its ability to simultaneously evaluate the soft tissues, osseous structures, and dynamic function. The ankle is one of the most frequently traumatized regions; the two most common injuries being sprains and fractures. Much of the current literature focuses on the ultrasonographic appearance of soft tissue injury and does not fully address osseous injury. This essay focuses on the appearances of osseous injuries about the ankle.

CONCLUSION: Accurate utilization of diagnostic ultrasound examination for evaluation of fractures about the ankle requires intimate knowledge of the true positive appearances of fractures, as well as common confounders.
OUT OF THE IVORY TOWER:
DOES EDUCATION CONNECT TO THE CLINICAL EXPERIENCE?

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This exploratory study presents the outcomes of quantitative research regarding students’ perceptions of occupational therapy (OT) following the level I fieldwork experience. Often, students return from level I fieldwork with questions relating to the OT scope of practice and procedural norms in the clinic. These questions are usually focused on an apparent disconnect between educational expectations of clinical practice and the norms of such practice. Are educators teaching for the real world, or is classroom education falling short, leading to the experience many perceive as teaching from the “Ivory Tower”? This study reviewed positive and negative aspects of the level I fieldwork experience that impacted students’ perceptions of the profession of occupational therapy.

Data for this study were collected via online survey from 120 students in OT schools in New York State who had completed two level I fieldwork rotations between 2012 and 2014. Results of the study indicated that students’ perceptions of occupational therapy moved in a negative direction following level I fieldwork. Supervisor skills relative to student growth and development and the amount of hands-on therapy students’ experienced were identified as important to the students’ perceptions of a good clinical learning experience. Overall, it was found that there does seem to be a disconnect between what is taught in the classroom and what students see on level I fieldwork. Implications of the study focus on identifying ways to teach best practices in occupational therapy, acknowledging current clinical techniques, and integrating the two.
Interprofessional education (IPE) in health profession training is recognized as a key to improving patient care in practice settings. Though recognized as extremely important, implementation of IPE remains a challenge for many health profession programs. Despite challenges, the seven health profession (HP) programs at D’Youville College initiated IPE using healthcare simulation with professional actors serving as simulated patients. Faculty from chiropractic, dietetics, nursing, occupational therapy, pharmacy, physical therapy and physician assistant programs collaborated in this year-long implementation process. This presentation provides a description of the planning, delivery and assessment of this innovative interprofessional simulation and the creation of the campus Interprofessional Clinical Advancement Center. Students reported enhanced understanding and respect of professional roles and responsibilities and ability to communicate effectively. Faculty reported an ability to encourage interaction and collaboration among HP students. Suggestions for curricular improvements and program sustainability included professional development and compensation. This research should assist other health professional programs seeking guidance to implement and evaluate interprofessional education in academic institutions.
SYSTEMATIC REVIEW OF NATURAL PRODUCT AND COMPLEMENTARY AND ALTERNATIVE MEDICINE EDUCATION IN U.S. DOCTOR OF PHARMACY PROGRAMS

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OBJECTIVE: To review current literature pertaining to natural product and complementary and alternative medicine (CAM) education in U.S. Doctor of Pharmacy programs.

METHODS: A systematic search was conducted using Medline, Embase, and International Pharmaceutical Abstracts to identify primary research literature. Key terms included permutations of natural product, CAM, herbal, botanical, supplement, pharmacognosy, pharmacy, and education. Articles were selected for inclusion if they were primary in nature and described or evaluated CAM curriculum in one or more U.S. Doctor of Pharmacy programs.

RESULTS: A survey conducted in 2003 of 81 U.S. Doctor of Pharmacy programs reported that 51 (63%) programs offered some exposure to CAM topics, with 40 (49%) offering stand-alone didactic courses (generally in the third professional year) and 12 (15%) offering experiential rotations. Two surveys (2004 and 2006) reported that many pedagogical approaches were used in the delivery of CAM coursework. Two surveys (2006 and 2011) reported that faculty and students value CAM programing, both in the curriculum and as professionals who may recommend CAM products to their patients.

CONCLUSIONS: The extent and variety of CAM coursework among U.S. Doctor of Pharmacy programs varies considerably, although the value of the content is widely recognized. The D’Youville College School of Pharmacy Natural Product Therapeutics course addresses a recognized curricular need for student pharmacists and utilizes an applied, active-learning approach to CAM education.
THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND WEIGHT STATUS IN 5TH GRADE STUDENTS

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The purpose of this study was to determine if there is a relationship between physical activity (MET) and weight status (BMI percentile) of 5th grade students. This study took place at an inner city school within the western New York school district. The population for this study was a convenience sample of 17, 5th grade students who were 10-11 years old within this school district. Based on MET levels and BMI percentiles, physical activity showed a weak negative correlation with weight status (r = -0.27, p = 0.1473) in 5th grade students. The most common types of physical activity the students participated in during a 3-day period were basketball (49), trampoline (48), cheerleading (15), bicycling (12), dancing (11), and use of an exercise machine (11).
Access to a laboratory for science education exposes students to tools which enable them to reinforce critical concepts, develop skills in graphical analysis, and apply mathematics to problem solving. Some students enter college level chemistry classes who have had very little exposure to experimentation in science, which could manifest as an inability to be successful in their coursework. Furthermore, chemistry courses required in a particular curriculum may be offered without a concurrent laboratory component, potentially exacerbating a difficult situation. Over the past several years microprocessor based devices have been increasingly incorporated into laboratory exercises. This Microprocessor Based Laboratory (MBL) technology allows students to observe real-time graphical representations of experiments, purportedly enhancing conceptual understanding and retention of material. While earlier versions of MBL technology required a computer interface for graphing and data analysis, there are currently hand-held MBLs that can collect and graph data without the aid of a computer. These devices can collect data from dozens of sensors and project graphs to a compatible projection device, facilitating the presentation of laboratory experiments in a lecture environment. Using a Vernier LabQuest 2 to collect and display data, several experiments were performed as demonstrations during a 1-semester, 3-credit course at D'Youville College, Chemistry for Life Sciences required for students in the Exercise and Nutrition Science program. The laboratory demonstrations were short so as to not take away from lecture time, and were chosen to illustrate concepts that were traditionally difficult for students to grasp. Experiments were performed and graphed in real time. The graphs were analyzed during the lecture to illustrate concepts and/or calculations. Post hoc analysis of test scores indicated that the weakest students entering the course improved their grade by 13.8% (p = 0.02) when the lecture incorporated MBL demonstrations. Several experiments are presented that can be performed simply and inexpensively in a classroom, along with the rationale for incorporating them into a chemistry lecture.
EDUCATION FOR HEALTHCARE PROVIDERS ON MANAGING BEHAVIORAL AND PSYCHOLOGICAL SYMPTOMS OF DEMENTIA

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More than 90% of individuals affected by dementia will exhibit Behavioral and Psychological Symptoms of Dementia (BPSD) during the course of their illness (Alzheimer’s Society, 2011). BPSD has been associated with increased caregiver burden, decreased quality of life for residents, and considerable contribution to the overall costs of dementia care. The purpose of this project was to create a ‘lunch-and-learn’ PowerPoint presentation for healthcare providers working in nursing homes, to help them better manage residents with dementia experiencing BPSD. Faye Glenn Abdellah’s (1960) Patient-Centered Approach theory and Algase's (1996) Need-Driven Dementia-Compromised Behavioral (NDB) model were utilized as the theoretical frameworks. Five content experts voluntarily participated in the review of the Education for Healthcare Providers on Managing BPSD for content readability, usefulness, applicability, clarity and validity.
DEATH AND THE WORLD RELIGIONS

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Given our large population that is aging, death, dying, bereavement and end-of-life care are very important topics today. My research that will be published in my book *Death and the World Religions* addresses these topics from the perspectives of the most visible world religions in North America that include Buddhism, Hinduism, Judaism, Islam, and Christianity. Using Charles Corr’s task-based model for coping with death, I examine how religious people cope with death, how their religion informs their healthcare decisions, and how healthcare professionals can be more sensitive to members of these traditions. I argue that these religions address the four major tasks of human life that help the dying cope with death. My research gives a better explanation for the growing amount of studies that demonstrate that religious people who are terminally-ill are less stressed, anxious, and depressed about their death than non-religious people. For these reasons, I argue that effective end-of-life care for the dying members of these religious traditions must be informed about their patient’s religious tradition and customs.

Although my research primarily employs textual analysis of sacred texts and secondary scholarship, my research also includes qualitative interviews with the death professionals from the representative religious traditions in Western New York. For example, I interview the former rector of Christ the King Seminary and the Buddhist Master at the Chinese Buddhist Temple in Niagara Falls. These interviews reveal how exactly religious teaching on end-of-life care is transmitted to the terminally-ill and the content of this teaching.

I will adopt my text into my course *RS/PHL 214 Challenges of Death* in order to provide my students with an accessible introduction to the major world religions’ beliefs, funerary and mourning rituals that will help them to be more educated about how religious people in Western New York cope with death so as to be more sensitive and effective healthcare professionals.
COMPARISON OF THE KNOWLEDGE OF OBESITY AS A RISK FACTOR FOR HEART DISEASE BETWEEN ELEMENTARY SCHOOL CHILDREN AND OLDER ADULTS.

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BACKGROUND: The epidemic increase of the prevalence of obesity can be considered one of the most important social health problems. Obesity is a known risk factor of cardiovascular disease (CVD). Due to the high incidence of CVD, it was important to assess whether there was any difference in the knowledge level of children and adults regarding obesity as a risk factor for CVD.

PURPOSE: The purpose of the study was to assess the knowledge of elementary school aged children and older adults regarding obesity as a risk factor for heart disease.

METHODS: By using a short survey, this knowledge was evaluated between the two age groups. School aged subjects were recruited via their schools. Adults were recruited at various locations including churches, places of employment, and other public locations. All subjects had to have completed informed consents in order for data analysis.

RESULTS: The average survey score for adults was 47.1. The average survey score for children was 42.5. Adults demonstrated a statistically significant greater knowledge of obesity as a risk factor for CVD than children.

CONCLUSIONS: Children did demonstrate a high level of knowledge of CVD risk factors, but adults had an even higher level of knowledge of risk factors compared with children.
STUDENT PARTICIPATION IN LEARNING ACTIVITIES IN A PHARMACOTHERAPEUTICS COURSE USING THE LEARNER-CENTERED TEACHING MODEL

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BACKGROUND: The learner-centered teaching model emphasizes the actions of students, rather than instructors, in achieving student learning outcomes. Students are given the option of participating in as many learning activities as they feel are necessary to achieve their desired learning outcomes. This pharmacotherapeutics course was designed using this model and included optional care plans, exams, in-class active learning exercises, and papers.

OBJECTIVES: To identify student participation in optional learning activities, and to determine if participation in optional learning activities resulted in improved course outcomes

METHODS: Data was analyzed from two cohorts of students taking the course in two consecutive academic years. Participation in learning activities was measured as percentage of student involvement in each activity. Achievement of learning outcomes was determined using final course grade as well as student scores on the one required course assignment, a final pharmaceutical care plan. Options for analyzing student achievement include descriptive statistics and correlation between participation and final scores.

RESULTS: Results are pending completion of course.

CONCLUSIONS: Conclusions are pending results.
THE USE OF ADVANCED SCREENCASTING WITH EMBEDDED ASSESSMENTS TO CREATE HYBRID PATHOPHYSIOLOGY AND THERAPEUTICS MODULES

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Megan Jensen, Johns Hopkins Hospital,
William Loeffler, D’Youville College,
Lisa Avery, St. John Fisher College

School of Pharmacy

OBJECTIVE: To assess the implementation of a hybrid learning model utilizing advanced screencasting with embedded assessments in Pathophysiology and Therapeutics (P&T) modules.

DESIGN: Two P&T modules, viral hepatitis and clinical pharmacokinetics of aminoglycosides were chosen for study. The pre-class portion of the hybrid model involved student completion of interactive e-lectures that were created with the use of advanced screencasting with embedded assessments. Students viewed the e-lectures and completed the embedded assessment questions prior to in class lecture.

ASSESSMENT: Test scores pre and post implementation of the hybrid model utilizing advanced screencasting with embedded assessments were compared and student survey data was analyzed. Test scores improved significantly and student’s perceptions were very favorable. Test scores improved most significantly on higher level Bloom’s taxonomy questions.

CONCLUSION: A hybrid model that utilizes advanced screencasting with embedded assessments offers a novel method to afford students active learning opportunities to progress to higher cognitive domains of learning.
A DESCRIPTIVE ANALYSIS OF THE JMPT, 1997-2007

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INTRODUCTION: Since its initial publication in 1978, the *Journal of Manipulative and Physiological Therapeutics (JMPT)* has become the leading journal in chiropractic. The goal of this study was to provide a descriptive analysis of the contents of the *JMPT* from 1997 to 2007.

METHODS: Every issue published from 1997-2007 was reviewed by the primary author. Articles were classified as data reports or non data reports and then were subclassified. Academic background, affiliation, funding sources, gender, and nation(s) of origin were also recorded. Percentages were calculated for each category and compared with previous studies to assess the trends in publication.

RESULTS/DISCUSSION: The analysis showed an increase in the number of published data reports. More chiropractic institutions have been mentioned as author affiliations. While degrees in chiropractic are still the majority, non chiropractic degrees have become more prevalent in the *JMPT*. More articles are listing the funding source, and female authorship has increased. The United States continues to be the leading nation of origin in publication, however there has been a trend for an increase in international and collaborative publications.

CONCLUSION: It’s important to assess the trends of *JMPT*’s content.
MODELING INSECT POPULATION GROWTH WITH CARRYING CAPACITY THAT VARIES SINUSOIDALLY

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In modeling population changes we take into account several parameters such as fecundity, death rate, population density and such. One of the important parameters is carrying capacity which represents the maximum number of individuals that can be supported over a long period of time.

For an insect population with generation time significantly shorter than one year it might not be appropriate for a carrying capacity to be a constant. Under certain circumstances it is reasonable to believe that carrying capacity varying sinusoidally is biologically justifiable.

In our work we investigate insect population growth model described by the equation:

\[ P_{t+1} = P_t + rP_t \left( 1 - \frac{P_t}{K(i)} \right) \]

where \( P_t \) represents the population at time \( t \), \( r \) is finite intrinsic growth rate (dependent on birth and death rates) and \( K(i) = 5 + \sin(\frac{2\pi}{N}i) \) is carrying capacity with frequency \( N \).

In this project we study the significance of finite intrinsic growth rate, carrying capacity, frequency and initial size of the population on the population’s behavior, under what conditions the model exhibits chaotic behavior and/or bifurcation.
DAIRY INTAKE AND WEIGHT CHANGE IN CHILDREN PARTICIPATING IN FAMILY-BASED BEHAVIORAL OBESITY TREATMENT

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BACKGROUND: There has been increasing interest in the role of dairy intake in obesity prevention and treatment. Cross-sectional studies in youth support a beneficial or neutral effect of dairy product consumption on body weight or body fat. But research on the role of dairy in obesity treatment in children completing family-based behavioral programs is lacking.

METHODS: To assess the impact of dairy consumption on weight-for-height change in youth participating in a family-based behavioral intervention for the treatment of obesity. We hypothesized that children who consumed greater amounts of dairy products at the beginning of the intervention and that children who have a greater increase in dairy consumption during the program would be more successful in weight loss and weight maintenance than children who consume less dairy products. We also assessed associations with weight change by type of dairy product (milk, yogurt, cheese) and amount of dairy fat.

RESULTS: A total of 91 children completing family-based behavioral treatment were studied. Energy-adjusted total dairy intake was significantly associated with BMI z-score change through 12-months in both simple (p < 0.01) and intermediate (p < 0.01) mixed-effects regression models. By dairy product, unflavored milk but not flavored milk, cheese or yogurt was significantly (p<0.05) associated with BMI z-score change through 12-months. By type of dairy fat, reduced fat and low fat/fat-free dairy but not full fat was associated with BMI z-score change through 12-months. Similar results were found for separate models in which we used BMI and then weight in place of BMI z-score for the dependent variable.

CONCLUSIONS: The results from this study provide new scientific knowledge about the role of dairy intake in weight management for children, and support the use of positive reinforcement for unflavored milk and reduced-fat dairy intake in pediatric obesity treatment programs.
THE RELATIONSHIP BETWEEN GESTATIONAL WEIGHT GAIN AND WHAT WOMEN ARE TOLD ABOUT WEIGHT GAIN GUIDELINES DURING PREGNANCY

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BACKGROUND: The purpose of this study was to investigate the percentage of postpartum women informed about how much weight to gain during pregnancy, the accuracy of the weight gain recommendations provided and whether being informed was associated with greater likelihood of meeting the gestational weight gain (GWG) recommendations.

METHODS: Cross-sectional study of postpartum women interviewed in maternity rooms at two large hospitals. Body mass index was obtained from medical records, and adherence to GWG guidelines was determined based on the 2009 Institute of Medicine (IOM) recommendations.

RESULTS: 134 women were studied. Sixty-seven percent of participants reported receiving weight gain recommendations from their practitioner. More healthy weight women (78.6%) reported being informed of a GWG recommendation than underweight (50.0%), overweight (53.8%), or obese women (64.9%) (χ² = 6.8, p = 0.08). Of the women given information about gestational weight gain, 41 (55.4%) received GWG recommendations consistent with the IOM and 33 (44.6%) received discrepant information. Accuracy of the GWG recommendation varied based on weight status. Women of healthy weight were more likely to be given information in accordance with the IOM recommendations (87.2%) than women who were overweight (12.5%) or obese (26.3%) (χ² = 34.4, p < 0.001). The rates of meeting the IOM recommendations did not differ depending on whether women were told how much weight to gain during pregnancy.

CONCLUSIONS: One-third of women reported not receiving any GWG information and women with overweight/obesity were less likely to be informed. The majority reported receiving information inconsistent with IOM recommendations. Further practitioner education on GWG recommendations and increased patient counseling to promote healthy GWG may be needed.
ACCESS TO PREVENTIVE HEALTH SERVICES AMONG HOMELESS WOMEN

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BACKGROUND: Homelessness has been a chronic social problem in the United States for decades. Women account for about 40% of the homeless population in the U.S.

METHODS: An interviewer-administered questionnaire was utilized to examine homeless women’s access and barriers to preventive healthcare services. Women between ages 21 and 74 years old, fluent in English, and homeless for one night in the past 3 months, were eligible. Participants (n=19) were recruited through two soup kitchens between May 14th, 2013 to October 3rd, 2013 in Buffalo, NY.

RESULTS: Of the 19 homeless women interviewed, 68.4% reported they had completed high school, 32% had completed some high school education. The mean age of participants was 36 ± 12.3 (SD). Forty-two percent of participants reported having no place to go for care. More than half (63.2%) of the participants reported they never had a mammogram and 53% reported they had not had clinical breast examination in the past 12 months. Forty-seven percent reported they had not had a pap smear in the past 12 months. Common barriers to healthcare reported were lack of transportation, lack of insurance, inability to locate a doctor, cost, fear of finding results, and concerns about what others might think if they sought help. Homeless women believed getting 24/7 services, ability to see the same provider, bus or car services, a closer doctor, and having all services in one place would make it easier for them to get access to healthcare services.

CONCLUSION: Future studies should examine a larger, more representative sample about homeless women and explore feasible ways to increase screening, and improve strategies to deliver healthcare among this population.