2006 - 2007
University of Detroit Mercy
Faculty and Student Research Symposium & Poster Fair
Tuesday April 17, 2007
UDM Faculty & Student Research Symposium & Poster Fair

Tuesday, April 17, 2007
12:45 to 6:00 pm
Fountain Lounge, McNichols Campus
University of Detroit Mercy

Organized by the Faculty Development Team:

Mary Bee, Barry Dauphin, Russ Davidson, Judy Kwapis-Jaeger, Sheryl McGriff, Matt Mio, Liz Roberts-Kirchhoff

Posters will be presented from 12:45 to 6:00pm

Discussion Tables:

12:00 noon

SERVICE LEARNING AS A COMPONENT OF PHYSICIAN ASSISTANT EDUCATION; THE DEVELOPMENT OF A COMPASSIONATE PRACTITIONER. Debra Knight, M.S., PA-C, Sharon Moser, M.S., PA-C, LLP and Carla Groh, PhD, RN

1:00 pm

USING COMMUNITY-BASED ACTION RESEARCH TO LIVE THE UDM MISSION. Kathleen Zimmerman-Oster, PhD, Associate Professor and Director Industrial/Organizational Psychology
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Abstracts
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In colder climates, the low income inner city population finds itself in a precarious position. Often, this subset of the overall population lives in older housing units that are not energy efficient. This is also the subset of the population that cannot afford to pay high heating bills. There are some non-profit organizations that are set up to educate and train people in easy and low cost techniques to slow the hemorrhaging of thermal energy. Working with one such center in Detroit, this team of students developed a virtual computer-based interactive energy conservation guide that supplements an actual physical model showing the energy loss in a house. These were termed the Virtual Fully Interactive Trainer House (or Virtual FIT House) and the Scale FIT House, respectively. The Virtual FIT House is an internet (or CD-ROM) based guided discovery tour of a typical house with dialogue boxes and pop-ups that convey hints and easy tricks to save energy. The Scale FIT House is an actual four square feet model of a house covered with thermally reactive paper. Each of the four sides has varying levels of insulation. As the house is heated, the thermal paper indicates the areas of heat loss and then the audience is asked to assess the reasons. The team will show both Virtual and Scale FIT Houses.
Human behavior is rather complicated and transcends levels of knowledge and education. Left unmotivated, the human psyche is able to justify all manners of behavior. One motivation for "good behavior" is the continual reinforcement of a short feedback loop. One example is the instantaneous fuel consumption gauge on the dashboard of some vehicles. That constitute a short feedback loop and leads to behavioral change as the driver sees the immediate results of his/her actions behind the wheel. The long feedback loop of going to the gas pump and filling up with gas has proven ineffective for most people. There are very few if any short feedback mechanisms to help people make the right decisions about heating their house. Part of a pilot Product Entrepreneurship class, this team of students is developing ways to give people instantaneous feedback about things such as projected energy bill, projected carbon footprint, etc... The aim is to balance the built-in feedback mechanism of body temperature, thus countervailing the tendency of turning the thermostat up versus putting on a sweater. Besides the psychological motivation behind this work, the team will present a market and feasibility analyses for potential products and services that will help people make better household everyday decisions. In particular, the team will present the design plans for one such system.
ANALYSIS OF A SERIES OF MEDIEVAL JAPANESE COINS VIA ENERGY DISPERSIVE X-RAY FLUORESCENCE SPECTROMETRY

Hana Attar, Jennifer Shango, and Mark Benvenuto
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Chemistry

Two hundred thirty nine Japanese coins were analyzed via Energy Dispersive X-Ray Fluorescence (EXDRF) Spectrometry for the following elemental components: iron (Fe), cobalt (Co), nickel (Ni), copper (Cu), zinc (Zn), arsenic (As), platinum (Pt), gold (Au), bismuth (Bi), lead (Pb), palladium (Pd), silver (Ag), tin (Sn), and antimony (Sb). The compositions of the Japanese coins were high in copper, lead, and tin. Various other metals were detected in the Japanese coins in a small percentage. The implications of these compositions will be discussed.
PROGRAM EVALUATION OF USING THE ‘REAL WORLD’ EXPERIENCE OF ROLE TRANSITION TO REFINE CURRICULUM

Janet M. Baiardi, PhD, APRN, BC
Patricia Rouen, PhD (c), APRN, BC
Carla Groh, PhD, APRN, BC

Nursing

Program evaluation data is critical to continuous quality improvement in educational programs. NP program evaluation data is traditionally collected by conventional survey methodology at the conclusion of the program. This self report data reflects student perceptions and satisfaction regarding the quality of faculty, courses and clinical experiences, student services, and physical resources to achieve terminal program objectives.

In the first year of professional practice, we observed graduates seeking continued mentoring from faculty on a wide variety of issues. This prompted graduate faculty to reconsider the timing and methodology of program evaluation in the interest of obtaining more sensitive and specific data. A focus group with previous graduates was piloted as a program evaluation strategy. This presentation discusses the findings and implications of this novel approach.

Program alumni from 1-3 years post graduation were invited to discuss issues of professional practice, role transition and curriculum. The qualitative data from this program evaluation strategy provided opportunity for curriculum refinement. For example, issues related to reimbursement and scope of practice, have been integrated earlier in the clinical sequence. Additional strategies, such as reflective analysis of professional practice behaviors from observations of NP providers, and participation in professional networking opportunities have also been incorporated to build connections prior to graduation. The data also provided insight into the importance of the faculty-student role relationship which may be unique to NP programs.
The United States faces a serious nurse workforce shortage, with estimates of a 20% shortfall by the year 2010. This shortage is thought to be the result of an aging nurse workforce and the movement of women into professions previously dominated by men. There is also a growing dissatisfaction with work conditions that has resulted in nurses leaving the profession. It is critical that professional concerns of nurses are understood. Articles about professional issues are often written by administrators and educators who are removed from the day-to-day issues of practicing nurses. Letters to editors of nursing journals provide a forum for rank-and-file nurses to express their experiences and concerns. The purpose of this qualitative study was to broaden the context for understanding nurses’ professional concerns as voiced through letters to the editor of the American Journal of Nursing from 1900 to 2005. Two issues from each year were randomly selected. Line-by-line analysis was used to code, categorize and analyze the data. Five themes emerged: self-care versus self-sacrifice, nursing’s emphasis on holistic care; educational and professional preparation; nurse-physician relationships; and the image of the nurse. The recurrent nature of these themes has important implications for nursing education, clinical practice, leadership and research.
VARIABILITY IN THE LOCATION OF THE MANDIBULAR FORAMEN IN AFRICAN-AMERICAN AND CAUCASIAN POPULATIONS OF MALE AND FEMALE SKULLS

Bee, Mary; Rabban, Milad; Sethi, Herpreet; Baker, Chad; Forbes, William.
University of Detroit Mercy, Biology Department and School of Dentistry

The mandibular foramen is a hole on the medial surface of the mandible of humans, through which the inferior alveolar nerve passes. This nerve is targeted when anesthetizing the lower jaw, as required in many dental procedures. Our research investigated variability in the position of the mandibular foramen in male and female populations, as well as in Caucasian and African-American populations. One hundred skulls from the Hamaan-Todd collection at the Cleveland Museum of Natural History were digitally photographed and analyzed. Preliminary results do not identify a significant difference in the position of the foramen between males and females (p>0.05). However, a significant difference in the antero-posterior position of the foramen in Caucasian and African-American populations was identified (p<0.01). This has great clinical relevance as it may result in variable treatment and positioning of anesthesia needles in patients of different races.
Variation in mastoid process morphology related to sex, age, and race was investigated in modern human skulls from Caucasian and African-American populations from United States. While the age and race exhibited little to no significant difference associated with mastoid process dimensions, sex differed significantly for nearly all of the mastoid measurements conducted. Males exhibit longer and wider mastoid processes. Other soft tissue and general skull morphology measurements were larger in males relative to females as well. While other studies conducted on earlier humans and modern humans of different races identified a difference in size and shape of mastoid process dimensions, our results provide insight into the similarity or convergence of this trait occurring in both races. Directional asymmetry exists in all mastoid process measurements. A left-sided dominance was found to occur when using measurements related to the Zoja technique, while a right-sided dominance was identified when taking measurements using the Frankfurt horizontal or when applying Broca’s technique. This provides insight into the variability of different methods used when measuring the mastoid process.
DIALECTICS OF ETHNIC IDENTITY

Blume, Libby Balter, Psychology and Women’s Studies
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Assar, Iren and Hadied, Leena, Clinical Psychology Doctoral Students
University of Detroit Mercy
De Reus, Lee Ann, Human Development & Family Studies and Women’s Studies, Penn State University Altoona
Psychology and Women’s Studies

The meaning of racial/ethnic identity is complicated for transnational immigrant families who often maintain family ties in two very different cultures. This poster summarizes identity themes from the pilot interviews of two mother-daughter pairs of Middle Eastern ethnicity. Using dialectical methods, qualitative data are juxtaposed to reveal three conflictual themes with respect to racial/ethnic identity formation as well as co-constructed assumptions, meanings, and practices in families and ethnic communities. Underlying tensions, ambiguities, and contextual choices are discussed with respect to nationality and White racial/ethnic identity formation. Implications for our ongoing research project are suggested.
Dental

Purpose
To compare and contrast the various types of radiography used in the dental office. Digital radiography has been introduced in many offices, replacing traditional film based radiography. By using computer technology, digital imaging has advanced the dental profession by facilitating the acquisition, storage and transfer of radiographic images using sensors in a totally different format than film based radiography.

Summary
The two different mechanisms in digital image formation are the solid state sensors systems, which use CCD (charge-coupled device) or CMOS (complementary metal oxide semiconductor) sensors, and the PSP (photostimulable phosphor, or storage phosphor) system. The CCD- or CMOS-based solid state imaging system captures the image by using a chip as a sensor for the radiation. A cable connects the sensor to the computer, although a wireless CMOS sensor is also available. After x-ray exposure, the altered electron pattern on the sensor is sent into the computer through the cable and the image is portrayed within seconds on a computer screen. The PSP sensor is not connected to the computer by a cable. It is positioned intraorally and exposed to form the latent image. The information contained on the sensor is made visible on the monitor after the plate is scanned by a laser.

Solid state digital radiography has a 90% dose reduction compared to D-film speed, and approximately 50% dose reduction compared to F-speed film. Dose reduction with PSP sensors is not as great. Image manipulation, such as magnification and contrast enhancement can be performed. Digital radiography increases speed and eliminates chemical processing. The cost to the dental office for digital imaging is almost double the cost of conventional radiography to purchase. Therefore, the office staff must be committed to the change and must be trained to use the systems. The training will help eliminate cross contamination which is an issue since the sensors are reused.

Conclusion
There are advantages and disadvantages of using the different types of radiography. There are several types and styles that can be chosen to suit each individual office. It must not be forgotten that the diagnostic qualities of digital radiography and film based radiography have little differences but convenience and manipulation change drastically.
THE GENETIC BACKGROUND OF (Na\(^+\), K\(^+\))-ATPase, \(\alpha 2\) KNOCKOUT MICE AFFECTS THE DISTRIBUTION OF \(\alpha 2\) AND \(\alpha 3\) ISOFORMS OF THIS ENZYME IN BRAIN AND THE SURVIVAL TIME OF HOMOZYGOUS NEWBORNS

Baran, A.M., Spranger, T.M., MOSELEY, A.E., LINGREL, J.B., CASPERS, M.L.
1. Dept. Chemistry and Biochemistry. University of Detroit Mercy, Detroit, MI 48219, USA
2. Dept. Molecular Genetics, Biochemistry and Microbiology, Univ. of Cincinnati School of Medicine, Cincinnati, OH 45267, USA

Biochemistry

The (Na\(^+\), K\(^+\))-ATPase maintains Na\(^+\) and K\(^+\) gradients in cells through the active transport of these ions across the plasma membrane. \([^{3}H]\)Ouabain, which binds with high affinity to the \(\alpha-2\) and \(\alpha-3\) isoforms of the (Na\(^+\)+K\(^+\))-ATPase, was used to study the distribution of these isoforms in the brains of adult wild type and heterozygous \(\alpha-2\) knockout mice of FVBN genetic background. Frozen, coronal brain sections (24 micron) were prepared and were assayed in a 100 mM Tris-HCl buffer containing 10 mM NaCl, 10 mM MgCl\(_2\), 5 mM ATP and 29 nM \([^{3}H]\)ouabain. The sections were exposed to Kodak BioMax Scientific Imaging film and the images were subjected to computer-assisted densitometry. In \(\alpha-2\) heterozygotes, significant decreases in the relative density of \([^{3}H]\)ouabain binding sites were observed in the cerebral cortex (5.1%) and hippocampus (4.4%) compared to wild-type mice. These findings are similar to results obtained with C57BL6 mice where small decreases in \([^{3}H]\)ouabain binding sites were observed in the cerebral cortex, hippocampus and thalamus of heterozygous \(\alpha-2\) knockout mice but are dissimilar to results using \(\alpha-2\) heterozygous 129/Black Swiss (mixed) mice where larger decreases in \([^{3}H]\)ouabain binding, relative to wild-type animals, were seen in all brain regions tested (Program #517.10, 2004 Abstract Viewer/Itinerary Planner, Washington, DC: Society for Neuroscience, CD-ROM). Strain differences also are seen in the survival time of homozygous \(\alpha-2\) knockout mice; FVBN knockout mice live approximately 1 day whereas the mixed and C57BL6 knockout mice die at birth. (Supported by NIH grants HL28573 and HL66062 and a gift from J.D. Rose.)

Presented at the 2005 Society for Neuroscience meeting, Washington, D.C. and 2007 spring American Chemical Society meeting, Chicago, IL.
Manufacturing processes involve complex interaction of physical phenomena such as fluid flow, heat transfer, elasto-plastic deformation and stresses, and solid- and liquid-state transformation of materials. One way to understand the complex interaction of all these phenomena is to develop mathematical models of these processes. Developing these multi-physics process models is not very easy. But once developed, such models are extremely valuable for manufacturing process design, product development, and process parameter optimization. Using these models one can predict the possibilities of part defects and failure, determine production cycle time, and perform process and product planning without spending a lot of money on physical prototypes.

Over the past fifteen years I have worked on modeling a variety of manufacturing processes such as casting, welding, heat treatment, laser forming, electro-chemical and electro-discharge machining, etc. These models were developed using a finite element based numerical approach. The results predicted from these models were validated using experimental data. In this poster presentation I plan to use some of the examples from my work to provide an overview of my efforts to understand the complex physical phenomena that occur in manufacturing processes.
This is based upon my book *Tantalizing Times: Excitements, Disconnects, and Discontents in Contemporary American Society*. Tantalizing Times refers to aspects of and experiences in our culture and of our people which encourage our wishes to live forever, to possess godlike powers and to be perpetually satisfied. And with near simultaneity to disappoint these desires, to present illusions, to make it appear as if we can achieve this, only to see it withdrawn or evaporate. These are the experiences of excitement-to-despair and back again, the tempo of our high-low cycles, our hyperboles in both directions, the almost grand before the pain of loss. The endurance of this could only take place in a society which has achieved marvels and envisions more.

This analysis uses a myth as a springboard from which to consider the allures and angst of modern America. Tantalus was a mythical earthly king. His father was Zeus, the king of the gods, who had great powers to appear anywhere, to smite his enemies, to possess whatever he desired, to exist indefinitely. His mother was the Titaness Pluto whose name means “wealth.” Tantalus had much, if not all, that any mortal at that time could want. Despite his favorable position and being very well off, he commits various crimes and is punished. The punishment(s) involve various forms of *tantalization*, or feeling tortured by having desired objects just out of reach.

The book addresses the psychology of tantalization and explores the variety of allures contained in the American experience. These excitements began with our founding and extend to our bodies, minds, technological developments, economy, entertainment, etc. With the excitements of America comes the promise, if not the actualization, of possessing all that we see.
The development of a variety of processes for producing metal foam at lower cost, with yet improved properties, has increased their applications. Aluminum has emerged as the prime metal for producing foam due to its low density, high conductivities and its relatively good strength and low price. In numerous applications of metal foam, there is a critical need for characterizing the internal structure of the foam, in order to understand and correlate the effect of such structure on the fluid flow and heat and mass transport inside the foam. The porous matrix of metal foam consists of ligaments of various lengths, widths, orientation and cross-sectional areas. This web forms tortuous irregularly-shaped passages for any transport through the metal foam. Current modeling relies on some geometric idealization of the foam structure such as two-dimensional arrays of hexagonal cells and the tetrakaidecahedron shape. This paper seeks to characterize the actual three-dimensional structure and the internal architecture of open-cell aluminum foam using microscopy. Average values of key parameters such as the cell size, ligament diameter, pore size, ligament length and number of closed cells per unit area, were obtained for a considerable spectrum of commercially-available aluminum foam over a range of pore densities. The results of this paper will certainly enhance the data bank for characterizing this class of porous materials, and can be used to correlate the pressure drop, heat transfer and mechanical properties of metal foam to the internal structure of the foam.
ORAL MANIFESTATIONS OF EHLERS DANLOS SYNDROME

M. Gadwa, C. Silk, P. Sitto, B. Yousif

Dental

Purpose
Ehlers Danlos Syndrome (EDS) is the name given to over ten different phenotypes of an inherited disorder, all involving a genetic defect in collagen and connective tissue synthesis and structure. The purpose of this table clinic is to make dental professionals aware of this rare and intriguing disorder, specifically EDS Type VIII and its relationship to the oral cavity.

Summary
EDS can have many different clinical manifestations and levels of severity, depending on which type is diagnosed. Examples of clinical manifestations include joint hypermobility, skin extensibility, and scarring tendency. Overlap of clinical manifestations are common; one third of cases of patients with EDS do not exactly fit into a single type.

Although rare, EDS Type VIII is of specific interest to dental professionals from its association to the destruction of the periodontium. It is considered the periodontal form due to the specific clinical feature of severe early-onset or aggressive periodontitis, which distinguishes EDS Type VIII from other forms. For patients with this type of EDS, periodontal involvement may appear as early as puberty and can lead to tooth loss or extensive mobility before the age of thirty, which may cause patients to become edentulous early in life. EDS Type VIII can also present more subtly, as in a case of a 48-year old Caucasian female who was misdiagnosed with persistent hyperplastic gingivitis, but in fact was later diagnosed with EDS Type VIII. EDS Type VIII can be a devastating disorder to both the patient and dental professional, and is best treated when diagnosed early.

Conclusion
Continuously gaining knowledge of various disorders, such as Ehlers-Danlos Syndrome, opens the practice of dental hygiene to better serve our patients. EDS Type VIII presents as yet another example of how periodontal involvement may lead to an underlying systemic condition, and as dental professionals we are many times the first to detect these conditions, regardless of how rare.
IS VISUAL SELECTIVE ATTENTION BIASED TOWARDS THE TOPS OF OBJECTS?

Masserang, Kathleen; Mucci, Nicola; Greene, Harold H; Dauphin, V. Barry; Ford, Remy
Presenter: Harold H. Greene, greenehh@udmercy.edu 313 578 0456

Psychology

The fundamental problem of vision is that the retinal image has countless possible interpretations in 2D and 3D space. Despite this, humans usually tend to agree on visual interpretations. In some instances, it is likely that we use heuristics that stem from regularities in our perceptual environment to constrain our interpretations. For instance, faces, which are important for identification, and for judging intentionality are usually near the top of animals. As well, the tops of objects are usually better illuminated (given the regularity of overhead light sources), and therefore, more informative than the bottoms. Finally, the slope of the visual world away from the observer places objects in extra-personal space towards the upper visual field.

Given environmental regularities, do we learn to weight attention more heavily towards object tops than bottoms? In the preliminary experiment we report here, Rorschach cards were digitized and presented with initial eye position centred on the digitized images. Rorschach images are particularly useful for the present experiment because they are initially ambiguous, and become less ambiguous as the observer imposes form. We hypothesized that if subjects have a bias to attend more to object tops than bottoms, then eye fixation patterns would be weighted towards the top. The data were subjected to a 2 (Image orientation: Standard, Inverted) X 3 (Scan phase: Early, Late, Very late) X 2 (Exposure: First, Second) X 2 (Region of interest: Top, Bottom) ANOVA, and the results supported our hypothesis. This work provides evidence of a top bias in overt allocation of attention irrespective of scan phase, exposure, and image orientation.
XYLITOL: HOW SWEET IT IS…

M. Harvath, L. Munoz, J. Orel, M. Vecore

Dental

Purpose
Xylitol is a sugar substitute with sweetness equal to that of table sugar and belongs to a group of compounds called sugar alcohols. Data from recent studies have shown that xylitol can reduce the occurrence of dental caries in children, mothers and in children via their mothers. The purpose of this table clinic is to educate and bring awareness to the benefits of xylitol on preventing tooth decay and give recommendations for the use in clinical practice.

Summary
Early transmission of mutans streptococci (MS) from parents to their children is thought to play an important part in early childhood caries. Clinical trials to suppress the maternal MS levels as a means to reduce MS levels in their children have been done. Xylitol is not metabolized by MS and is inhibitory to them. Chewing xylitol gum or foods containing xylitol can stop the return of oral MS after chemotherapeutic suppression of this cariogenic organism.

In children at high risk for dental caries, xylitol-containing products have the potential to control the problem of rampant decay in the primary dentition. A study conducted among school-aged children in Belize with high rates of dental caries showed that the consumption of xylitol gum was associated with arrest of carious lesions and that the highest dose has the greatest effect.

Recommendations for the frequency and amount needed of xylitol-containing products in the diet to receive optimal therapeutic benefits are also discussed.

Conclusion
Using xylitol-containing products, such as gum, has been shown to be an effective means of decreasing caries risk in young children and in suppressing MS levels in maternal transmission. Literature review presented will discuss the effectiveness and importance of xylitol for the prevention and control of dental caries.
GRIEF AND THE WORKPLACE

Hazen, Mary Ann, College of Business Administration

Business

The purpose of this paper is to increase understanding about grief and its effects in the workplace. I outline several approaches that psychologists and social scientists take to understand the grieving process; list ways that individual and collective mourning can affect workplace relationships; show how work and work organizations collude in the denial of grief or support healing from loss; and suggest ways that managers can respond to grieving employees while organization policies and practices support them in doing so.
NURSING STUDENTS’ PERCEPTION OF ACADEMIC INTEGRITY

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Nursing

Background: Academic dishonesty on college campuses is believed to be a common occurrence. Faculty members within the nursing profession are especially concerned because of its potential effect on present and future professional practice.

Purpose: The primary purpose of this study was to determine the culture of academic integrity among nursing students prior to instituting an honor code. This study is the first phase of a longitudinal study to determine the effect of an honor code on academic integrity.

Methods: This descriptive study surveyed nursing students from the University of Detroit Mercy (UDM) Nursing Program, located on the Aquinas College Campus in Grand Rapids. Volunteers were approached during the fall of 2006 and winter of 2007. Participants were asked to completed the 66-item Academic Integrity Survey© developed by Don McCabe, PhD. The study received IRB approval from UDM.

Findings and Discussion: Analysis is underway and completion is anticipated prior to presentation of poster.
Environmental effects on behaviors related to ‘anxiety’ or fear have been consistently demonstrated for many species, including laboratory mice. In addition, fear responses have been shown to vary between inbred strains of mice. In this study, we subjected mice from two commonly-used laboratory strains to an early environmental intervention. In one condition, mouse pups were separated from the mother on five occasions and exposed to predator cues (fox odor and recorded owl calls), while in a control condition, pups were exposed only to home cage bedding. After maturation, the mice were observed in an open field test (n=35). As expected, strain differences emerged. Compared to the C57BL/6 mice, BALB/c mice spent more time in the sheltered areas of the apparatus, rather than the open center area (center seconds, C57B: 18.5±7.3s, BALB: 6.9±6.4s, p<.001). Seconds spent in a shelter were higher for the BALB mice in the first and second parts of the observation period, but a third fear measure, defecation pellets deposited, did not differ by strain. Group differences (predator cue condition) were not statistically significant, but a trend was seen. Surprisingly, the predator-exposed group tended to spend less time in the shelter during the test (HC: 167.7±116.7s, PE: 98.8±86.2s; p<.08). The two strains did not differ in measures of behavioral development (day 10) nor in growth before weaning (weights days 4, 10, and 21). Future research will examine whether the impact of this early environmental intervention varies by strain, and also how the intervention affects other behavioral dimensions.
A new series of ligands, all with methylene dianiline as a common starting material, have been synthesized. All are bis-bidentate moieties containing nitrogen or sulfur donor atoms. The stability of these ligands as free molecules and as hydrochloride salts will be presented, as will their aqueous and organic solubility. Characterization has been primarily by nuclear magnetic resonance spectroscopy. This, as well as their metal binding abilities, will be discussed.
BIOFILM IN DENTAL UNIT WATERLINES

Sean D. Jackson, Valerie Fearn, Muhammed Farhan

Dental

Purpose
To explain the different kinds of Biofilm found in dental unit waterlines and ways to effectively eliminate Biofilm found in dental unit waterlines.

Summary
Biofilms are microbes that adhere to solid surfaces wherever there is moisture. They consist mostly of bacteria, and are usually heterogeneous. They are enclosed in a protective slime layer called a glycocalyx. The potential hazardous pathogens that are found in Biofilm and in waterlines are Pseudomonas aeruginosa which can cause pneumonia, Legionella pneumophila which causes Legionnaires’ disease and Pontiac fever, and nontuberculous Mycobacterium which is associated with pulmonary disease and wound infection. In order to prevent the exposure of Pseudomonas, Legionella, and nontuberculous mycobacterium the waterlines should be cleaned daily. The Centers for Diseases Control recommends flushing waterlines daily for several minutes and flushing waterlines 20 to 30 seconds between patients. Along with flushing the waterlines daily there must be other methods to reduces harmful bacteria in waterlines. One method recommended is the use of Dentapure, which is used at the University of Detroit-Mercy and is ADA approved to reduce Biofilm in the waterline of less than 200 CFU. Another method recommended is the use of the waterclave. The waterclave is FDA approved with the claim of reducing Biofilms to 0 CFU.

Conclusion
Understanding what Biofilm is how Biofilm forms in dental unit waterlines and ways to effectively eliminate Biofilm in water unit waterlines is very important in dental hygiene practice. Every hygienist and dentist should understand the relevance of Biofilm in waterline and ways to prevent the potential spread of hazardous pathogens to themselves and patients.
INNOVATION AND DEVELOPMENTAL ENTREPRENEURSHIP: THE DOREO MODEL

Ram Kesavan, University of Detroit Mercy
Oswald Mascarenhas, University of Detroit Mercy
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Business

We present the DOREO model in the context of innovation and development. The DOREO model is developed by a) Defining Social Entrepreneurship, b) Establishing need for SE, c) Justifying Innovation for SE, d) Analyzing opportunities for innovation and SE and e) investigating resources for innovation and SE, and f) by describing current organizations that promote innovation for SE. Our concluding remarks focus on innovation and SE that create wealth for the poor of the world. We cite a variety of cases to underscore the nature and viability of mass rural development through innovation and entrepreneurship. DOREO Development; Opportunity; Resources; Entrepreneur; Organization
SE Social Entrepreneurship (DE, Developmental Entrepreneurship, a special case of SE)

After centuries of private enterprise and large corporations, the world of developing nations is still poor, will remain poor, and the global inequalities of income, wealth, health and opportunity will increase, even more than ever before. The world now is increasingly turning to "entrepreneurs" to solve the problems related to unequal development, gaping income inequalities and consequently, burgeoning social injustices.

What is the DOREO model?

DOREO is an acronym for Development, Opportunity, Resources, Entrepreneur and Organization. The basic theory and assumptions of the DOREO framework for Social Entrepreneurship (SE) is as follows: We need innovative approaches to the pursuit of social developmental opportunities that are dovetailed to eradicate structural flaws in the global economic and opportunity systems. When backed by relevant committed resources and directed by able socially conscious entrepreneurs capable of creating the necessary human-centered organizations, there will arise macro forces of equitable economic growth and distribution.

Kesavan, Mascarenhas and Bernacchi (2006) report a variety of successful Social Entrepreneurship cases that fit and reinforce the OREO model of entrepreneurship. In this paper, we extend the OREO model directly to incorporate in it the role of Innovation in Developmental Entrepreneurship. We label the extension as DOREO (Development; Opportunity; Resources; Entrepreneur; Organization) model of Social Entrepreneurship.
DEVELOPMENT OF A NEW TECHNIQUE FOR FAULT IDENTIFICATION OF ASSEMBLY SYSTEMS USING FUZZY SET THEORY

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Engineering

Presented in this poster is development of a new methodology for fault identification and root-cause analysis of complex assembly systems. A combination of a knowledge-based system and fuzzy set theory is used to develop this new technique which in essence is an intelligent system that mimics the behavior of an expert in the field and therefore can trace back the source(s) of the fault to the relevant station.

Presented are the concepts of faults; their detection in an assembly line (as an example); and their generic characteristics. Study of their fundamental properties reveals that there are certain levels of uncertainty involved in describing them. This has led us to the adoption of fuzzy sets theory as a fundamental tool for development of this new technique. Examples from live assembly operations are provided to show the effectiveness of the approach.

Keywords: Robust process, Faulty process, Diagnosis, Fuzzy set theory, Decision making, Assembly systems.
SERVICE LEARNING AS A COMPONENT OF PHYSICIAN ASSISTANT EDUCATION; THE DEVELOPMENT OF A COMPASSIONATE PRACTITIONER

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Health Care

Purpose: In an effort to provide students with an awareness of urban concerns and to develop their leadership skills and awareness of social justice, a service learning experience was offered to physician assistant students at an urban university in the Midwest.

Method: A descriptive study was conducted to measure the impact of this service learning project, using a non-random sample of 68 PA student participants who completed 10 hours of service learning during the semester at various inner city helping organizations such as shelters, rescue missions and soup kitchens. The students ranked their level of competence in various leadership areas, and rated their interests in a variety of social justice concerns on a Likert-type scale ranging from 1 to 5. Paired t-tests were computed to identify differences in self-perception of leadership competencies and social justice interests between pre-service and post-service learning.

Results: The results showed a significant increase in 7 out of 10 self-perception ratings of leadership competencies after the experience and an increase in 6 of 7 social justice interest parameters.

Conclusion: A brief community based service learning exercise can make a difference. Hands on activities can significantly increase self-perception of student competencies in leadership and interest in social justice. This is a valuable step in the development of an empathic, compassionate practitioner.
Purpose
Grillz are oral jewelry that is growing in popularity because of the hip-hop generation. The insertion of dental grillz into the intra-oral and peri-oral sites may cause recession, periodontal disease, caries, and halitosis.

Summary
Wearing oral jewelry has gained increasing popularity as an expression of body art. Making “grillz” is generally an unregulated practice occurring in a multitude of diverse settings and is usually performed by unlicensed individuals. Clinical findings in patients wearing grillz have illustrated the risk of periodontal injuries. The most common dental problems registered with the use of grillz are the attrition and or fractured incisal edge on the mandibular anteriors. Some degree of recession and mucogingival defects in the proximity of the oral jewelry is also associated with the wear of grillz. Food and other debris may become trapped between the teeth and grillz, which provides a breeding ground for the bacteria. The acid produced by bacteria can cause periodontal disease and halitosis.

Conclusion
In conclusion, even though grillz are just a fad, but it might leave behind serious dental problems. It is urged that clinicians educate and inform patients about potential complications associated with wearing grillz.
PRESSURE DROP IN AND EQUIVALENT PARTICLE DIAMETER FOR ALUMINUM FOAM

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Mechanical Engineering

Metal foam is a relatively new class of porous media. Its internal architecture is significantly different than traditional porous media. This aspect provides a set of challenges for researchers trying to understand the fluid flow in this material. This paper proposes that despite the geometrical differences between the metal foam and more traditional porous media, the Ergun correlation is a good fit for the pressure drop data as a function of the Darcian velocity. This is especially true for the porosity dependence of the linear pressure drop. The paper also investigates appropriate effective particle diameters derived from some of the parameters of the foam, and considering the physics of the energy dissipation that contributes to the pressure drop. The above is supported by wind-tunnel steady-state unidirectional pressure-drop measurements for airflow through several compressed and uncompressed isotropic open-cell aluminum foam samples, having different porosities and pore densities. For each foam, the particle diameters are correlated with the surface area density.
ESR SPECTRA AND \textit{AB INITIO} CALCULATIONS OF THE DMPO/•OH ADDUCT

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Chemistry

Previous work by Bosnjakovic and Schlick examined the potential of the spin trap 5,5-dimethylpyrroline-N-oxide (DMPO) for the detection of short-lived radicals in Fenton media in a system of Nafion perfluorinated ionomers. Of interest to this work was a magnetic range of 94 G measured at 240 K, and a hyperfine splitting of 6.2 G from the H, of the DMPO/•OH adduct measured at 160 K, which disappeared at higher temperatures, in the system Nafion/Fe(II)/H₂O₂/DMPO/H₂O. The magnetic range of 94 G was attributed to a carbon-centered radical adduct derived from Nafion, and the 6.2 G hyperfine splitting was thought to be due to conformational differences at lower versus higher temperatures. Studies of the DMPO/•OH adduct in the absence of Nafion were carried out to either support or refute the previous conclusions. \textit{Ab initio} molecular orbital studies were performed to investigate the different conformations of the DMPO/•OH adduct and to obtain magnetic parameters. The 94 G magnetic range was measured in the temperature range of 100 – 180 K in the absence of Nafion, and thus must be due to the DMPO/•OH and not the capture of a carbon-centered adduct derived from Nafion. The magnetic parameters calculated for the two DMPO/•OH adducts did not indicate a H, hyperfine splitting of 6.2 G. This hyperfine splitting may be due to a conformation of the DMPO/•OH adduct found only in the presence of Nafion.
Chemistry

The complexation between several metal ions and ethylenediaminetetraacetic acid were carried out using UV/visible absorption and FTIR spectroscopy. *In situ* IR studies were done using attenuated total reflectance-infrared spectroscopy (ATR-FTIR) to examine the effects of pH, metal ion presence, and the presence of titanium dioxide particles on the complexation. Finally, irradiation of these complexes adsorbed to titanium dioxide particles was performed in order to investigate the photodegradation of metal-EDTA complexes by photocatalytic oxidation over titanium dioxide particles.
MENOPAUSE EFFECTS ON ADIPOKINES AND INSULIN RESISTANCE (IR) IN AGE- AND BMI-MATCHED VOLUNTEERS

Rouen, Patricia; Reame, Nancy E; Lukacs, Jane L.

Health Care

Purpose:
To distinguish the effects of menopause versus aging on adipokine concentrations and IR in healthy women

Theoretical/Conceptual Framework:
Midlife women are at risk for increased central fat distribution and insulin resistance (IR), but the role of aging or menopause as contributors to these conditions has been inconclusive. Adiponectin (AD), an adipocyte-secreted peptide may be a biomarker and early signal of IR, a central feature in the metabolic syndrome and type 2 diabetes. AD concentrations are sexually dimorphic, implying a role for the sex steroids in its secretion. The few studies of AD in women report increased, decreased or unchanged levels with menopause.

Methods:
Using parent study data, a cross-sectional comparative group design was employed to analyze new data from archived blood samples of three groups of BMI-matched volunteers: 21 young cycling (CY), 19 older cycling (CO) and 19 postmenopausal (PM; 2.8±0.5 years postmenopause) women. CO women had similar estradiol levels as CY women and were age-matched to PM women. By ANOVA, measures of AD, leptin, insulin and IR (calculated by HOMA-IR) were compared.

Results:
IR and leptin values were similar in all three groups. AD was higher in PM women (p = 0.05). When stratified by BMI and menopause status, AD was highest in normal weight PM women and lowest in overweight premenopausal women. High BMI had opposing effects on AD and leptin regardless of reproductive status.

Conclusions:
Estrogen in the reproductive years may act to suppress AD. In early postmenopause, a rise in AD may deter IR in non-obese women. Further research with larger samples and adiposity measures are needed to clarify how reproductive status influences IR and AD concentrations in normal weight and obese women.
A novel series of bis-bidentate ligands, all incorporating 2,6-diaminotoluene, has been synthesized. All contain heteroatom donor Lewis bases that are nitrogen, oxygen, or sulfur. The stability of this series of ligands as free molecules and as hydrochloride salts will be presented, as will their aqueous and organic solubility. Characterization has been primarily by proton and carbon NMR. This, as well as their metal binding potentials, will be discussed.
The number of elderly patients suffering with chronic heart failure (HF) is at epidemic proportions. Family caregivers provide the necessary care and support patients require at home. This study is the first to explore both caregiver and patient variables as they relate to caregiver burden, caregiver health-related quality of life (HRQL) and patient hospitalizations.

A structured interview approach was utilized with 50 primary HF caregivers to gain perceptions of caregiving related to caregiver burden and caregiver HRQL. Patient data were collected using medical records. Data were explored using standard multiple regression models to explain variance in caregiver burden, caregiver HRQL and patient hospitalizations.

Several caregiver characteristics and elements within the caregiving environment explained 51% of the variance in caregiver burden ($p < .01$). Caregiver age, multiple caregiver health problems, caregiver depressive symptoms, greater caregiver hours per week and multiple patient comorbidities were significant contributors. Caregiver burden explained 62% of the variance in caregiver HRQL ($p < .01$). Caregiver depression, multiple caregiver health problems and higher levels of patient disease severity contributed an additional 2% of variance to the caregiver HRQL model ($p < .01$). Caregiver family burden, increased care hours and levels of patient disease severity explained 27% of variance in patient hospitalizations ($p < .01$). Caregiver family burden alone explained 13% of the variance in the number of hospital days ($p < .05$). Caregivers who shared the role, respite caregivers, had significantly lower levels of caregiver family burden ($p < .01$) than sole caregivers.

A strong relationship between HF caregiver burden and caregiver HRQL is suggested by this study’s findings. It is critical that nurses assess and intervene to improve the lives of HF caregivers to protect and preserve the caregiver’s health. The importance of including caregiver outcomes in HF-related research is recommended by these findings, particularly, lack of perceived family support as it affects patient hospitalizations.
ODOR IN THE COURT!

Ashleigh Scherer, Kathleen Jachcik, Jessica George

Dental

Purpose
To inform individuals about the cause, prevention and management for Halitosis.

Procedures such as scaling, root planning, tongue scraping, and good oral hygiene all can lower concentrations of volatile sulfur compounds.

Summary
The origin of halitosis is related to both systemic and oral conditions. More than 90% of cases of halitosis originate from the oral cavity. The bacteria involved are located in stagnant areas in the oral cavity, such as dorsal surface of the tongue, periodontal pockets, and the gingival crevices. These bacteria proteolyses protein substrates (amino acids) which then release volatile sulfur compounds.

Halitosis can first be managed by measuring its severity by a portable sulphide monitor (halitometer). However, other management procedures such as, improving oral hygiene, eating regularly, avoiding odiferous foods or drugs, chewing sugar-free gum on a regular basis, over-the-counter oral deodorants, and mouthwashes have been proven to be most reliable in managing halitosis.

Depending on the severity of halitosis, different conditions can be prevented. Prevention of halitosis begins with effective, daily oral hygiene care. Brushing three times a day with toothpaste aimed to reduce plaque bacteria is essential. Flossing once a day, and/or the use of interdental cleaning aids also reduces odor causing bacteria. Tongue scrapers clean the posterior two-thirds of the dorsal tongue which is important in reducing sulfur-containing compounds that contribute greatly to halitosis. Regular dental visits for a professional cleaning should be scheduled at least twice a year.

Conclusion
Halitosis impacts individual’s quality of life. This further enhances in those who smoke, take certain medications, and have poor oral hygiene. There are ways to manage Halitosis when the cause is correctly identified and measurements are taken to prevent, decrease or eliminate its effects.
The purpose of this investigation was to compare standards for educational research developed by five national organizations (AERA, Council for Exceptional Children’s Division for Research, Division 16 of the APA/Society for the Study of School Psychology, AACTE, and What Works Clearinghouse of the Institute for Education Sciences) in order to determine the extent to which these five sets of standards overlap and, therefore, define quality research similarly. The investigation was designed to answer the following questions: (1) Do the standards for educational research as developed and articulated by five national organizations address all key research elements? (2) What are the differences and similarities between the five sets of standards? (3) Do any of the organizations provide evidence that use of the standards improves the quality of published and/or funded research? The mode of inquiry was an analysis of each set of standards to determine which indicators of quality each addressed and then to compare and contrast these quality indicators to determine overlaps and gaps. We developed an a priori scheme of major characteristics that educational research routinely addresses. For each set of standards, we first parsed them by research design with categories for all designs. We then parsed the standard by taking the verbatim language and assigning it to the appropriate characteristic. This analysis resulted in a rubric in which we could compare each set of standards by design and characteristic. Results offer information on overlaps and gaps that can be used in moving toward a set of standards that are broad and deep enough to cover the critical dimensions of quality research yet provide a manageable tool for researchers and practitioners.
FACTORS AFFECTING SELF-REPORTED PHYSICAL ACTIVITY IN CHILDREN AGES 10-12

Shirley Sherrick-Escamilla

Physical Activity, Pediatrics, Pender, and Sallis

This study examined the relationship between the current level of physical activity in older school-age children and their self-perception of what promotes and hinders their participation in physical activity.

One hundred fifty one (54%) 10, 11, and 12 year old children from 7 Roman Catholic K-8th grade and 1 Charter K-8th grade schools in a urban southwest portion of Michigan participated in the study during the academic year 2005/2006.

The study revealed no significant positive relationship existed between gender and Total MET score. A difference existed between males and females with Total, In-School and Out-of-School MET scores, with males reporting higher levels of physical activity overall than females.

Although 39% of the students had BMI’s over the 95th percentile and were considered to be obese, no statistical inverse relationship existed between BMI and Total MET score. In-School MET scores and BMI produced a statistically significant inverse relationship that revealed when the BMI was > 95th percentile, the level of in-school participation in physical activity was less than those students whose BMI was < 95th percentile.

The study revealed that the self-reported perceived benefits to participate in physical activity accounted for 5.8% (p < .01) of the variance explained in self-reported current level of physical activity in older school-age children (Total MET Score). Significant relationships also existed between perceived benefits to participate in physical activity and In-School and Out-of-School MET scores. These results indicate that students who had more positive perceptions of the benefits of physical activity were more likely to be more physically active both in and out of school.

The study also revealed that the self-reported perceived barriers to participate in physical activity accounted for 4.9% of the variance (p < .01) explained in self-reported total current level of physical activity in older school-age children (Total MET Score). The negative relation between variables indicates that students who perceive fewer barriers to physical activity are more likely to participate in physical activity, than the students who perceive more barriers. Further, significant differences existed between males and females in the study and their perceived barriers to participate in physical activity with females reporting more barriers. However, no significant differences existed between males and females and the perceived benefits to participate in physical activity and perceived physical activity self-efficacy.
OPPORTUNISTIC BACTERIA FROM SINKS AND ANTIBIOTIC RESISTANCE

Sobh, Caroleen; Isso, Farrah; Namou, Andrew; Marion, Miranda; Graves, James

Biology

Assessment of the potential health risk of bacteria from sinks was performed. Bacteria in samples from swabs were inoculated onto MacConkey agar and separated by the streak plate method. After incubation at 37°C, plates demonstrated colony counts that ranged from 15 to several hundred per plate. Gram stains of cultures purified by serial streak plates showed gram-negative bacilli. Isolates were initially examined by standard biochemical tests (glucose, lactose, sucrose, citrate and urea). Selected strains were further characterized by the Biolog automated redox-based system which assays the ability of a microorganism to oxidize an array of 95 carbon sources in a 96-well microplate. Test results indicated that lactose-nonfermenting and lactose-fermenting bacteria resembled Pseudomonas and klebsiella respectively. No Escherichia coli was found. Isolates were screened by the antibiotic disc procedure against carbenicillin, chloramphenicol, kanamycin and tetracycline. Resistance was found to exist to each of the antibiotics. Some bacteria were multiply antibiotic resistant (MAR). The minimum inhibitory concentration (MIC) of tetracycline for one MAR strain of Pseudomonas was 2.5 mcg/ml at 24 hours of incubation but increased to 20 mcg/ml after 48 hours. None of the isolates were sensitive to a genetically engineered bacterial virus (λNK1098) when tested by the cross-streak method.

Opportunistic bacteria that carry antibiotic resistance appear common in sinks. Sinks should be regularly scrubbed and disinfected to decrease the likelihood of infection.
NURSING INTERVENTIONS IN CARDIAC HOME HEALTHCARE

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Nursing

Purpose:
The purpose of this research was to describe home health nursing care provided to cardiac patients using the Nursing Interventions Classification (NIC).

Methods:
NIC intervention data were collected on a convenience sample of 106 patients admitted to home healthcare for treatment of a cardiac condition. At each home visit, home healthcare nurses identified the NIC interventions they performed for seven Nursing Outcome Classification (NOC) outcomes deemed important for cardiac patients receiving home healthcare. Top NIC interventions were identified for each NOC outcome. NIC intervention frequency was contrasted among patients with coronary artery disease (CAD) and those with congestive heart failure (CHF).

Findings:
Top NIC interventions performed to improve cardiac pump effectiveness included vital signs monitoring, medication management, and cardiac care. The NIC interventions medication management, teaching: individual, and teaching disease process were important across several NOC outcomes for the cardiac patients, including treatment behavior: illness or injury, knowledge: illness care, and medication response. The most NIC interventions were provided to improve NOC outcomes including cardiac pump effectiveness, treatment behavior: illness or injury, medication response, and knowledge: illness care.

Discussion:
The home healthcare nurses' interventions were most frequently focused on improving cardiac status, self-care management abilities, medication response, and knowledge of illness care. These outcomes are in stark contrast to those contained in the Outcome and Assessment Information Set (OASIS) that home healthcare nurses are routinely required to gather, which predominantly address ADLs and IADLs. Conclusions: Some of the most frequent interventions provided to cardiac patients by home healthcare include patient education and monitoring interventions. Yet the outcomes resulting from these interventions are not a focus of the OASIS. The inclusion of NANDA diagnoses, NIC interventions, and NOC outcomes in information systems is an important step towards more accurately identifying the care provided by home healthcare nurses and the resultant changes in patient outcomes.
CARE MANAGEMENT DELIVERY MODELS: CAN THEY IMPROVE ORGANIZATIONAL OUTCOMES?

Patricia L. Thomas PhD, RN

Management

As the complexity of health care delivery systems evolves, and the variables to determine organizational success are modified, there is a need to change our health care delivery paradigm to ensure organizational success. The problem addressed in this study is the relationship between payment denials and length of stay (LOS) using the full immersion and traditional models of care management. The purpose of this study was to gain a greater understanding of how the structure and definition of care management functions impact organizational success measure of LOS and reimbursement denials.

The researcher examined two different care management delivery models and the roles of the care coordinators. This research included adult patients on medical, surgical, and cardiac units receiving general, intermediate, and intensive care in a major hospital. The primary research question focused on what was the relationship between the full immersion and traditional models of care management on LOS and payment denials.

The results of this causal-comparative study demonstrated that the full immersion model of care management delivery had a statistically significant and positive impact on LOS and denials management across clinical specialty, units, and levels of care when compared to the traditional model of care management.

The positive social impact of this study is the demonstration that changes in care delivery models are possible and that changing our care delivery models can have a positive impact reducing healthcare costs. New paradigms for the delivery of health care services will be necessary in organizations as leaders are confronted with conflicting pressures surrounding the need to reduce the cost of care while maintaining expected practices for high quality care.
FATTY ACID ETHYL ESTERS AS BIOLOGICAL MARKERS FOR THE DIAGNOSIS OF FETAL ALCOHOL SYNDROME

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Chemistry

Fetal alcohol syndrome can affect children born to mothers who have consumed alcohol during their pregnancy. Children with this disorder may have altered fatty acid metabolism. 13-Hydroxyoctadec-9,11-dienoic acid (13-HODE) was converted to an ethyl ester with lipase acrylic resin and ethanol. The ethyl ester was converted to a succinate derivative via its C13 hydroxyl group. Identification of products was achieved with GC/MS. The succinate was conjugated to keyhole limpet hemocyanin (KLH), bovine serum albumin (BSA), and horseradish peroxidase (HRP). IgG was isolated from the KLH-immunized goat serum and used in immunoassays with the BSA-conjugate. The isolated IgG recognized the BSA conjugate as determined by ELISA. Western blot analysis revealed that, whereas the IgG did not bind to BSA or HRP, the IgG strongly bound to BSA- and HRP-conjugated with ethanol-esterified 13-HODE. The conjugated proteins were analyzed by immunoblot analysis after limited trypsin digestion. (Supported in part by NIAAA SBIR R43 AA014535).
EXAMINING THE EFFECTIVENESS OF TWO SOLUTIONS USED TO FLUSH CAPPED PEDIATRIC PERIPHERAL IV LINES AT CHILDREN'S HOSPITAL OF MICHIGAN

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Purpose:  
This study was constructed to provide the evidence needed to assess “Best Practice” related to maintenance of capped peripheral intravenous (IV) lines in children. The purpose is to examine the relative effectiveness of two solutions, heparin and normal saline, used to flush capped pediatric peripheral IV lines at the Children's Hospital of Michigan (CHM).

Background:  
Current research supports using saline rather than heparin in capped pediatric peripheral IV lines. Reasons cited include decreased self-reported pain; decreased nursing time in flushing the lines; fewer side effects; and lower cost. An international phone, e-mail, and web-based survey of 36 hospitals found that 28 hospitals use saline (77.7\%) in capped peripheral pediatric IV lines. Registered nurses at the Children's Hospital of Michigan currently use heparin but would like to switch to normal saline.

Methods:  
This random, quasi-experimental study will be implemented in March of 2007. A quasi-experimental 4 X 3 X 2 factorial design (4 units at CHM, times 3 needle gauges, times 2 solutions) is planned, which consists of a combination of 6 main and interaction effects. The capped peripheral IV line will be assessed 3 times per day while the capped peripheral IV line remains patent or until it is discontinued based on physician’s order. A data collection sheet will be used to record redness; swelling; clotting; bruising; leakage; and patient complaint or reaction to pain (i.e., FLACC scale or FACES scale) of the capped peripheral pediatric IV line. IRB approval, HIPPA, informed consent, informed assent and oral assent will be obtained.

Sample/Setting:  
A convenience sample of 96 pediatric patients will be enrolled from 1 of 4 pediatric hospital units and randomly assigned to either heparin or saline IV flush groups. The inclusion criteria are: children between the ages of 4 weeks and 17 years that have a capped pediatric peripheral IV or an IV that has the potential to be converted to a capped pediatric peripheral IV.

Results:  
Data collection is underway. Descriptive statistics will be used to analyze the frequencies and means of variables. To compare differences of means, analysis of variance (ANOVA) and post hoc analysis will be utilized. For all tests, significance will be set at alpha $\leq .05$. 

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DEPRESSION AND QUALITY OF LIFE ISSUES IN WOMEN POST-MI: A PILOT STUDY

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Purpose:
The purpose of this triangulated pilot study was to describe the relationship between depression and quality of life in women following a myocardial infarction (MI) (N=27).

Background:
Empirical evidence supports that depression is a common occurrence following MI, and is associated with increased mortality and morbidity, poor physiological adjustment, and poor health outcomes. Although a limited number of studies have examined quality of life post-MI, the majority of these have focused on men. Women are more likely to survive an MI than die, yet little is known about their recovery, especially in relation to depression and quality of life.

Methods:
A non-random convenience sample of 27 females who had experienced a first MI was enrolled in the study (response rate 81%). Subjects were recruited from 4 major cardiac clinics in the metropolitan Detroit area. Criteria for inclusion were: (1) females over the age of 21; (2) minimum 1 week post-first MI; and (3) English-speaking and able to give informed consent. Those willing to participate were given a survey to be returned to the researcher in a self-addressed stamped envelope. Depression was measured using the Beck’s Depression Inventory (BDI) and quality of life was measured using the Short Form 36 (SF-36). Additionally, 5 women participated in an in-depth qualitative interview about their experiences following their MI. Frequency, descriptive statistics and a Pearson’s r correlation were used to analyze the quantitative data. Qualitative data were analyzed using content analysis.

Results:
The mean score on the BDI was 9.4 (SD = 5.5) with a range of 0 to 24. Subjects reported lower scores on 6 of the 8 SF-36 subscales (Role Physical, Vitality, Role Emotional, Physical Functioning, Bodily Pain, and Mental Health) when compared to national norms of healthy women aged 55-64. Depression was significantly correlated with the mental component summary of the SF-36 (r = -0.72, p <.0005), but not the physical component summary.

Discussion:
Nurses who work with women who have suffered an MI need to be aware of the depressive symptoms and quality of life issues that may affect them. Nurses need to educate women after an MI about the expectations of their recovery, with the understanding that some depression may be experienced, and some aspects of the quality of the patients’ lives may be affected. Further longitudinal research is needed to provide options to improve women’s physical and mental outcomes post-MI.
The UDM Mission calls students, faculty, and staff to lead and serve the urban community. Conducting research that informs the decision making of human service organizations, communities, and local leaders is an avenue for UDM to live its mission. This research can be categorized as Community-Based Research ("A collaborative inquiry that is dedicated primarily to the research or information needs of community organizations", Paul, 2006) and Action Research ("A comparative research on the conditions and effects of various forms of social action and research leading to social action that uses a spiral of steps, each of which is composed of a circle of planning, action, and fact-finding about the result of the action"), Lewin, 1946).

This type of research is occurring in many places across UDM. Please join in a discussion to highlight some of this type of research and how it has had an impact. Examples of research conducted by the discussion table leader will be summarized briefly. These include the following: 1) Key leader survey research regarding community-based perceptions and approaches to reducing substance abuse; 2) Student survey research to determine the impact of substance abuse prevention efforts; 3) UDM service learning outcomes and process research; and 4) Processes and outcomes of leadership development initiatives in U.S. colleges and universities.

Additional points of discussion may include how this type of research informs faculty teaching and service.
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