

RESÚMENES

XXVII Foro Anual de Investigación y Educación

RESUMENES SESIONES

I. Presentaciones de Carteles

The Synthesis and Development of Novel Inhibitors of Plasmodium falciparum

R-001 Dihydroorotate Dehydrogenase. A. B. Villalobos; C. Vlaar. UPR-Medical Sciences Campus, School of Pharmacy, Department of Pharmaceutical Sciences, San Juan, PR.

Justification: The proliferation of microorganisms such as bacteria, fungi and parasites in human hosts causes infectious diseases. Plasmodium falciparum, the parasite of malaria, has developed widespread resistance against available chemotherapeutic agents and therefore there is an urgent need for new drugs that inhibit this parasite. Objectives: To develop novel PfDHODH inhibitors of the class of 4-aryloxyquinolines, known inhibitors of Dihydroorotate Dehydrogenase of Aspergillus nidulans. Methods: These new inhibitors are designed such that they can form covalent bonds with the cysteine residues in the ubiquinone (co-factor) binding site of Plasmodium falciparum Dihydroorotate Dehydrogenase by either containing a disulfide or an aldehyde group. Results: New aryloxyquinolines have been prepared via general synthetic procedures, monitored by TLC methods and purified by crystallization or column chromatography. Conclusions: A set of 4-aryloxyquinolines derivatives were synthesized using 4,7-dichloroquinoline and 4-chloro-6-methylquinoline as starting materials.

Analysis of Pharmaceutical Cream: Novel Method to Determine Non-Steroidal Anti Inflammatory Drug by NIR Spectroscopy.

R-002 Concepción-Cruz; E. S. Ghaly. UPR-Medical Sciences Campus, School of Pharmacy, Department of Pharmaceutical Sciences, San Juan, PR.

Most of the methods and analytical techniques actually used in quality control for the analysis of pharmaceutical creams are time consuming; require sample preparation and the use of organic solvents. During the last years the pharmaceutical industry has been working toward the development of new analytical techniques that could overcome these drawbacks. The purpose of this research was to demonstrate the efficiency of near infrared (NIR) spectroscopy in determination of the amount of active

ingredient in cream formulations. Six pharmaceutical cream batches were prepared containing ibuprofen (a non-steroidal anti inflammatory drug) concentration of 0.5%, 1.0%, 1.5%, 2.0%, 2.5% and 3%. The resultant spectrum of each 15 samples of each cream batch was calculated by OPUS software by averaging sixteen scans taken from 0.7 to 2.5 μm (700 to 2500 nm). A reference laboratory technique (UV spectroscopy) was used to compare NIR data. Partial least squares regression technique was used to determine the relationship between amount of ibuprofen and NIR spectra. An increase in concentration produced an upward shift (increase of absorbance) in the NIR spectra. A series of equations were developed by calibrating the amount of drug in pharmaceutical cream against NIR response for each formulation. The results of the NIR spectroscopy in the quantification of ibuprofen in cream were at least as precise as the reference laboratory technique. NIR spectroscopy was able to determine the amount of ibuprofen in pharmaceutical cream formulations in a faster, precise and flexible manner than conventional technique.

Physical Activity vs Inactivity: Statistical Findings Upon the Differences in the Flexibility, Agility, Tolerance Cardiovascular and Muscular in Elderly.

R-003 O. J. Hernández Soto 1; E. Lorenzo González 2. UIPR-San Germán, 1 Departamento de Educación y Educación Física y 2 UPR-Recinto Universitario de Mayagüez, Departamento de Matemáticas

The research studied the effect of inactivity after an intervention with physical exercise in a group of 10 female's participants of the HOPE Program in San German. The participants were evaluated three months after completing a Program of Scientifically Structured Exercises (PSSE) that lasted 12 weeks. The purpose of the study was to evaluate the effect of the inactivity in the agility, flexibility, cardiovascular and muscular tolerance. The effect of inactivity was evaluated utilizing the "American Alliance for Health, Physical Education, Recreation and Dance", which is a Battery of Tests validated in Puerto Rico. A t test paired was applied to determine possible differences. The results demonstrated that inactivity did not have any effect on flexibility nor agility. On the other hand, the results showed statistical significant changes in muscular and cardiovascular tolerance in the participants.

R-004 Design and Development of Novel Specific Inhibitors for Plasmodium Falciparum Dihydroorotate Dehydrogenase. M. Solivan, C. Vlaar. UPR- Medical Sciences Campus, School of Pharmacy, Department of Pharmaceutical Sciences, San Juan, PR.

Malaria is a serious endemic disease, which affects approximately 273 million people, with a reported annual death rate of 1.09 million, most of them children under five years. The responsible parasite, Plasmodium falciparum has developed widespread resistance against available chemotherapeutic agents and therefore there is an urgent need for new drugs. Dihydroorotate Dehydrogenase (DHODH) is a key enzyme in the biosynthesis of pyrimidines, and it has been shown that its inhibition can halt cell proliferation. Therefore, specific inhibition of P. falciparum DHODH, but not human DHODH could provide selective and relatively non-toxic drugs as a potential new treatment for malaria. In the present research, new derivatives of the class of pyrazoles (known to inhibit H Pylori-DHODH) are being synthesized. These new derivatives potentially bind covalently to two cysteine residues that are present in the active binding site of PfDHODH, but not in human DHODH. As potential groups that can react with the cysteine residues, pyrazoles with either disulfide or aldehydic groups have been synthesized. The development and optimization of a six-step synthesis for these new pyrazole derivatives is being presented. Supported by NIH Grant 3-S06-GM08224-21, MBRS-SCORE program.

R-005 Quality Assurance and Stability Studies on Lupinus Termis Seeds and Ointment Formulation. L. Flores, M. Antoun. UPR- Medical Sciences Campus, School of Pharmacy, Department of Pharmaceutical Sciences, San Juan, PR.

Atopic dermatitis or Eczema, as it is sometimes called, is a condition that can affect all age groups. Currently, there is no cure for atopic dermatitis, and corticosteroids are the primary drugs used to relieve the symptoms of the disease. Based on what is known in traditional medicine, and the published literature, the alcoholic extract of Lupinus seeds appears to have potential as an alternative treatment for this condition. The present thesis describes a preliminary Quality Assurance study done on the seeds of Lupinus termis, as well as a study done on the stability of a formulation of the alcoholic extract in an ointment

base. Stability of the alcoholic extract in an ointment base evaluated during a period months under accelerated conditions and a period of 12 months for Long Term Conditions (i.e. Control Temperature, CRT). Two isolation methods to monitor the stability of a marker compound were used, Methanol extraction and Dichloromethanol/ Isopropanol (3:1) extraction. There appears to be no significant difference between both methods. This work has been sponsored by a grant from the National Center for Complementary and Alternative Medicine (1R21 AT 00961-01) and by a Research Resources, National Institutes of Health.

R-006 Inhibitory Effect of Simvastatin on Calcium Release in Smooth Muscle Cells. J. Bernstein. UPR- Medical Sciences Campus, School of Medicine, Department of Physiology, San Juan, PR.

Ca⁺⁺ mobilizing hormones transiently increase cytosolic calcium. Data by Escobales et al (J Cardiovasc Physiol 27: 383, 1996) show that Angiotensin II (ANG) and Simvastatin (SV) increased cytosolic calcium in rat vascular smooth muscle cells (SMC). SV also blocked the effect of ANG. Ca⁺⁺ increases have been implicated in the development of atherosclerosis. Peaks were transformed into data points by UnScan (Silk) and analyzed by PeakFit v3 (Systat) using an Asymmetric Double Sigmoid model (ADS). 100 nM ANG produced a peak which is the result of 2 component peaks: amplitudes of 322.25 and 220.53 nM Ca and rates of entry of 81.75 and 51.21 nM Ca/sec, respectively. Addition of 20 uM SV resulted in 1 peak with amplitude of 51.09 nM and rate of rise of 6.83 nM Ca/sec. In the presence of ANG rates of Ca exit were 38.74 and 5.52 nM Ca/sec for the 1st and 2nd peak respectively and SV reduced this rate to 1.34 nM/sec. Because sigmoidal rates are influenced by peak size, data were normalized with respect to the SV peak. Rates of Ca entry into the cytosol were then 255.5 and 247.5 nM Ca/sec for the 1st and 2nd components, whereas exit rates were 185.8 and 26.52 nM Ca/sec, respectively. This shows that after ANG the 2 components are different. Furthermore, since rates in the presence of SV also remain different, this indicates that although both ANG and SV act on the same intracellular Ca⁺⁺ pool, they do so by different mechanisms, a fact also concluded by Escobales et al. These facts demonstrate that Peak Analysis can be used to obtain information that is not apparent from a simple analysis of data in the form of peaks.

R-007 **Cerebrospinal Fluid Biomarker Proteins Predict Cognitive Impairment in Human Immunodeficiency Virus-1 Infected Hispanic Women** J. Pérez Laspiur¹; E. R. Anderson¹; P. Ciborowski^{5,6}; H. E. Gendelman^{5,6,7,8}; V. Wojna^{1,4}; J. Rodríguez-Orengo^{1,3}; E. Rodríguez¹; J. Anderson⁹; and L. M. Meléndez-Guerrero^{1,2}

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Cognitive, motor and/or behavioral impairments are commonly a result of continuous human immunodeficiency virus (HIV) infection and immune activation of brain mononuclear phagocytes (MP). MP-induced inflammatory neurotoxic molecules present commonly in cerebrospinal fluid (CSF) can induce neurodegeneration and, in measure, predict the onset and progression of dementia in HIV infected patients. In the current report, a proteomics platform combining surface enhanced laser desorption ionization time of flight (SELDI-TOF), reverse-phase high performance liquid chromatography (RP-HPLC), one dimensional SDS-PAGE electrophoresis (1DE) and liquid chromatography tandem mass spectrometry (LC-MS/MS) was used to assess whether a unique biomarker signature is indicative of HIV-1-associated dementia (HAD). CSF was collected from 10 HIV-1 infected Hispanic women with HAD (n=6) or nondemented (ND; n=4). Differentially expressed proteins were identified by SELDI-TOF followed by RP-HPLC fractionation and rigorous statistical analysis. Subsequently, 1DE revealed bands corresponding to proteins of similar mass and these were identified by LC-MS/MS. Of most interest, three proteins unique to HAD were familial ALS mutant of Cu+2, Zn+2 superoxide dismutase, apolipoprotein E, and osteopontin. Normal superoxide dismutase was present in ND. Osteopontin and apolipoprotein E were present in HAD. These macrophage proteins contribute to inflammation and neurodegeneration. The results of this study demonstrate that important macrophage proteins potentially contribute to HAD development in Hispanic women.

R-008 **Melatonin Content Determination Using HPLC with UV/VIS Detection.** J. Vega, J. Morreno, V. Lopez, J. Bloom, Ph.D. UPR-Department of Chemical, Natural Sciences Faculty, Río Piedras, PR.

A new method for the determination and quantization of melatonin in dietary supplements was developed using HPLC with UV/VIS detection. The sample was extracted from the matrices (capsules, tablets, capsules with herbs) using methanol as an extraction solvent after sonication and centrifugation of the sample solution. The assay of the samples showed 87.7-108.5% concordance with that of the label claim in the different matrices studied. Results obtained from the method showed a LOD of 40ng/mL and a LOQ of 80ng/mL within the linearity range determined (0.040 µg/mL–25.0µg/mL). The method procedure was tested for roughness/robustness, with addition stability studies for standard solutions. The calibration curve range used during the analysis was between 1.60 - 25.00µg/mL. The spiked recovery results for the active ingredient from the different matrices were between 99.8-105.7% with an RSD of 2.1%. The standard solution showed an adequate stability for analysis one week after its preparation. No significant degradation in the melatonin peak at 4.4min was observed when the samples were submitted to different degrading conditions such as acid, base, and oxidative environment at room temperature. Minimum degradation was observed when sample containing 30% hydrogen peroxide is heated above 90°C.

R-009 **The Adjuvants Polyethyleneimine and GM-CSF Enhance the Immunogenicity of a Dengue-4 Env DNA Vaccine Candidate.** M. Rodríguez-González; I. Martínez. Department of Microbiology and Medical Zoology, UPR School of Medicine, San Juan, PR.

Dengue (DEN) is an RNA virus that is endemic in about 100 countries in the tropical area. There is no licensed vaccine for prevention of illnesses caused by this virus. In our laboratory, we have developed a DEN-4 DNA vaccine candidate that is immunogenic and protective in mice. In the present studies, we tested two adjuvants to improve the immunogenicity of this vector. One is the polymer polyethyleneimine (PEI) that has the capacity to bind DNA through electrostatic interactions, and facilitates endosomal lysis. The other adjuvant tested, GM-CSF, is a cytokine that has the ability to recruit dendritic cells, which are professional antigen presenting

cells. Western Blot and immunofluorescence assays data demonstrated that the DEN-4 Env vector complexed with PEI can be expressed in mouse myoblast cells. We also found that intramuscular injection of either the DEN-4 Env vector complexed with PEI, or coinjected with a plasmid that expresses GM-CSF, induced significant total antibodies in Balb/c mice. Lower, but significant, total antibody titers were induced by our vaccine candidate administered in combination with PEI and GM-CSF. The results obtained in these experiments will contribute to the knowledge and development of vaccines against DEN viruses.

Identification of Genes that Suppress Nikkomycin Z (NZ)-induced Lethality when

R-010 Overexpressed in *Saccharomyces cerevisiae* Lacking the Myosin Type II Gene MYO1. N.L. Díaz-Blanco, José R. Rodríguez-Medina. UPR-Medical Sciences Campus, School of Medicine, Department of Biochemistry, San Juan, PR.

Cell wall biogenesis in type II myosin deficient (*myo1*) strains of the budding yeast *Saccharomyces cerevisiae* is significantly affected. These strains require chitin synthase III for survival and hence are hypersensitive to Nikkomycin Z (NZ), a competitive inhibitor of the enzyme catalytic subunit (Chs3p). *myo1* strains are highly dependent on de novo synthesis of Chs3p suggesting that its normal recycling pathway may be deficient. To clarify the mechanism for NZ-hypersensitivity in *myo1* strains and determine if Chs3p traffic is modified, a haploid *myo1* strain was transformed with a yeast cDNA library and transformants were positively selected for growth on media containing an inhibitory dose of NZ (30 g/ml). Selected colonies were confirmed for NZ-resistance in a liquid culture assay format: resistant strains were scored as those with growth ratio greater than 40% relative to untreated cultures. We have sequenced cDNA clones that confer NZ-resistance between 40–100%, compared to untransformed *myo1* cells which typically exhibit 10-15% NZ-resistance. To date, most genes are related to four major pathways: the ubiquitin mediated proteolytic pathway, transcription initiation and control, the lipid, fatty-acid and sterol metabolism pathway and protein synthesis. The restoration of cell wall function by the overexpression of specific genes supports the hypothesis that certain proteins involved in cell wall biogenesis may become depleted in *myo1* cells. The cDNA clones are being analyzed to establish a detailed NZ-resistance pathway.

Induction of Male-Typical Sexual Behaviors in AAS-Exposed Females.

R-011 J. Parrilla¹; V. Rundle-González²; J.L. Barreto-Estrada³; J.C. Jorge³ Department of Sciences, Mathematics and Technology, UNE¹; UPR-Río Piedras²; UPR-RCM Department of Anatomy³, San Juan, PR.

Anabolic androgenic steroids (AAS) have been misused by athletes for more than four decades. Unfortunately, a growing number of females and adolescents are becoming AAS users at alarming rates. Previous immunohistochemistry data have shown that modulation of GABA-IR in female mice was observed in endocrine-related regions (mPOA and VMN) after AAS exposure. For this reason, we have investigated the effects of anabolic steroids in sexual behaviors between control and AAS treated females. The AAS, 17α-methyltestosterone (17α-meT; 7.5 mg/kg) or saline were administered for a two-week period through an osmotic pump. Parameters such as frequency of mounts, fights and escapes, in addition to pelvic thrust and lordosis were measured. Interestingly, we have found that AAS-treated females (F/AAS) showed a low number of mounts when paired with an intact male (P<0.005). This behavior was accompanied by an increased number of fights with the male (P<0.01) and escapes from the male (P<0.05). However, F/AAS showed a strong significant tendency to mount a female control (F/C) (P<0.001) in a male-like pattern. When compared mounts and pelvic thrust to F/C, there was no difference between a male and F/AAS. Finally, lordosis strength (LS) was greater when a male and a F/C where paired (P<0.05). The behavioral results presented in this study correlates with the GABAergic modulation observed in endocrine-related regions of the brain, suggesting that it mediates some of the effects induced upon androgen exposure. Supported by MBRS-RISE to UNE (1R25-GM066250-01A1) and to MSC-UPR (GM61838), NIH COBRE (RR15565), RCM I (G12RR03051)

Differential Expression of Biogenic Amines in the CNS of *Macrobrachium rosenbergii* and cDNA Library Construction.

R-012 N. Vázquez-Acevedo^{1,2}; D. Reyes-Colón^{1,2}; A.B. Kohn³; N.M. Riveral¹; M.A. Sosa^{1,2}. UPR 1 Institute of Neurobiology; UPR 2 School of Medicine, Department of Anatomy; and 3 Whitney Laboratory, University of Florida, St. Augustine, Florida, USA

The giant prawn *Macrobrachium rosenbergii* is a freshwater shrimp whose adult males develop through three morphological types (small [SC], yellow [YC], and

blue [BC] claws) that differ in their claw-to-body-length ratio, claw color, and morphology. Each morphotype represents a level in a dominance hierarchy, BC males being most dominant. We are using this model to study the mechanisms involved in modulation of aggression, focusing on the role played by biogenic amines. One possible mechanism is differences in expression or function of aminergic receptors. We cloned one tyramine (Tyrcrust1) and two serotonin (5-HTcrust1 and 5-HTcrust 2) receptors in the prawn and have preliminary evidence suggesting they may be differentially expressed in different areas of the prawn's central nervous system (CNS). Results from quantitative RT-PCR experiments indicate that the 5-HTcrust1 receptor is expressed in lower amounts in the brain and thoracic ganglia, and 5-HTcrust2 receptor is expressed in lower amounts in the abdominal ganglia of the SC prawn. Tyrcrust1 is expressed in higher amounts in most areas of the ventral nerve cord of the SC prawn. Real-time PCR experiments are being conducted to confirm these results. We have constructed an amplified cDNA library for expressed sequence tags (ESTs) collection from the CNS of the SC male. We plan to also construct cDNA libraries from the CNS of the other prawn morphotypes, hoping to identify other aminergic receptors and other members of the pathway involved in aggressive behavior in the prawn. Supported by: NIH/MBRS S06GM008224, NIMH/MRISP MH48190, NIH/RCMI G12RR03051; NIH R01NS39103.

R-013 **Characterization of HIV-1 Primary Isolates and Effects on Macrophage Protein Expression.** D. Toro-Nieves¹; M. Plaud^{1, 2}; J. Pérez¹; V. Wojna², H. Gendelman³; L. Meléndez-Guerrero^{1, 2}. 1UPR Medical Sciences Campus Department of Microbiology, San Juan PR. 2UPR Medical Sciences Campus NeuroAIDS Program. 3University of Nebraska Medical Center, Omaha NE.

HIV invades the central nervous system early after viral infection and induces cognitive damage known as HIV associated dementia (HAD). HIV infected monocytes and lymphocytes cross the blood-brain barrier releasing virus and toxins into the brain that impact disease neuropathogenesis. We hypothesize that replication of HIV variants will influence macrophage proteome and HAD. HIV primary isolates from peripheral blood of women with HAD were compared for tropism to isolates from women with normal cognition. For macrophage tropism, HIV isolates were inoculated and propagated on monocyte-derived-macrophages (MDM) and tested for HIV p24 antigen. For lymphocyte tropism, the T cell line, MT2 was inoculated with isolates and monitored for syncytia formation. HIV inoculated MDM were lysed and

analyzed by SELDI-TOF proteomics studies. Some MDM showed initial abortive infections with isolates. Three isolates showed increased but low viral replication and two showed high levels of infection. Protein profiles of MDM lysates from uninfected and abortive infections showed intensity differences at 11, 13, and 15kD. The peak at 11kD was decreased in lysates from MDM inoculated with HIV from demented patients as compared with isolates from patients with normal cognition and uninfected ($p < 0.05$). HIV primary isolates showed different replication kinetics on MDM. The MDM profiles changed with HIV replication levels. The decrease of the peak at 11kD in MDM inoculated with isolates from patients with HAD that showed abortive infections may be produced in response to endocytosed HIV particles.

R-014 **Inhibitory Activity and Protein Profile Characterization of Supernatant from Placental Macrophages.** K. Garcia-Crespo¹; V. Garcia¹; L. Meléndez-Guerrero¹. 1UPR, School of Medicine, Department of Microbiology, San Juan, PR.

It is well documented that soluble factors secreted in the placenta are able to inhibit viral replication. Studies done recently in our laboratory have shown that supernatant from placental macrophages (PM) is capable of reducing viral replication in monocyte derived macrophages (MDM). In this study we further characterize the antiviral effects and protein content of this supernatant. To determine if the factors found in the supernatant are produced constitutively PM were isolated from term placenta and cultured for collection of supernatants at days 3,6,9 and 12. MDM were infected with HIV-BAL and cultured with the collected supernatant or with medium alone as a positive control. Viral replication was determined by p24 antigen assays. We also characterized the protein profiles of PM supernatant by comparing them to protein profiles from MDM. PM and MDM were cultured and supernatant was collected at days 6 and 12. This supernatant was then, analyzed using SELDI-TOF technology from Ciphergen to obtain a protein profile. We found a reduction in HIV-1 replication in MDM cultured with PM supernatant from days 6, 9 and 12 as compared with the positive control. We compared the protein profiles from MDM and PM supernatants and found that there were four significantly different peaks between the two profiles. Two of the peaks were found to be over-expressed in MDM and two of the peaks were over-expressed in PM. We hypothesize that at least one of the proteins secreted by PM could be a factor associated with the antiviral activity of the supernatant.

R-015 Three DNA Regions Required for Cointegration during Conjugal Transfer of the Gonococcal 5.2 kb Beta-Lactamase Plasmid pSJ790. R. Scharbaai; A. González; L.J. Torres-Bauzá. UPR- Medical Sciences Campus, Department of Microbiology, San Juan, PR.

The gonococcal 5.2 kb beta-lactamase plasmid pSJ790 is mobilized to *Escherichia coli* by conjugative plasmids R64, N3 and tetM. Previous restriction map and Southern Blot analysis of randomly selected transconjugants revealed that pSJ790 fused (cointegrate) with the conjugative plasmids by more than one mechanism. In order to locate the DNA regions required for pSJ790 mobilization, the R-plasmid was digested with BamHI and HindIII into three fragments of 2.4 kb, 1.8 kb and 1.0 kb and cloned to pACYC184 vector. The clones (pACYC2.4, pACYC1.8 and pACYC1.0) were then subjected to mobilization assays in the presence of conjugative tetM to recipient *E. coli* HMS174. Mating experiments showed that the 2.4 kb BamHI-BamHI fragment (pACYC2.4) is required for mobilization with the help of tetM (mobilization frequency of 2.2×10^{-2} transconjugants / donor cell). Mating assays of the recombinants were repeated using the conjugative plasmids R64 and N3. However, since pACYC184 was observed to mobilize at a low frequency; the three BamHI-HindIII fragments were cloned to pUC19 vector. Mobilization assays of the resultant clones (pUC2.4, pUC1.8 and pUC1.0) showed that both R64 and N3 were able to mobilize pUC1.0 at almost the same frequency (1.9×10^{-7} and 2.2×10^{-7} transconjugants / donor cells; respectively). The clone pUC1.8 was mobilized at a moderate to low frequency by N3 and R64 (1.4×10^{-4} and 4.9×10^{-8} transconjugants / donor cells; respectively). Conclusions: The three BamHI-HindIII fragments of 2.4 kb 1.8 kb and 1.0 kb of pSJ790 contain active DNA sites for pSJ790 mobilization by cointegration with conjugative plasmids.

R-016 Partial Characterization of the Insulin Receptor Gene From Pink Convict Cichlids. L. Del Valle; Y. Gerena; L. Serra; A. Schwartz, E. Fernandez-Repollet. University of Puerto Rico, Medical Sciences Campus, School of Medicine, Pharmacology Department.

The insulin receptor (IR) is a cell surface integral membrane protein which plays an essential physiological role in glucose metabolism. The origin of the glucose regulation system is believed to have accompanied early evolution of vertebrates. Although the IR sequence has been identified in most organisms including a partial cDNA sequence of a nonmammalian vertebrate zebrafish

(*Danio rerio*), there have been no reports of its identification and characterization in the vertebrate pink convict cichlid (*Cryptoheros nigrofasciatus*). In an attempt to characterize the IR sequence from pink convict cichlids, we have compared the IR gene sequences of several organisms including zebrafish. We also isolated total RNA and amplify a partial cDNA sequence of the IR gene from pink convict cichlids. IR sequences of several species including, human, turbot fish, and *Danio rerio* were identified and aligned using GeneDoc Software. Total RNA was isolated from pink convict cichlids using RNStat 60 reagent. cDNA synthesis was performed from total RNA in a reaction primed with oligo(dT) primers. Bioinformatic analysis revealed a highly conservative pattern (>89%) of the IR sequence among *D. rerio*, *H. sapiens*, *M. musculus* and *R. norvegicus*. Total RNA was successfully isolated from pink convict cichlids and RNA gel electrophoresis revealed a 4.7kb and 1.9kb fragments corresponding to the 28S and 18S rRNA. Studies are in progress to amplify a 399bp fragment, corresponding to the partial cDNA sequence of the pink convict cichlid IR gene and generate an IR-EGFP fusion protein to visualize the localization of this receptor during development.

R-017 Senger's Disease: An Association of Bilateral Cataracts, Mitochondrial Myopathy of the Heart and Skeletal Muscle and Lactic Acidosis. Case Report with Electron Microscopy Findings. M. Torrellas, M. S. Correa-Rivas MD, A. González-Pesante MD; L. Colón-Castillo MD. Department of Pathology and Laboratory Medicine, Medical Sciences Campus, UPR, San Juan, PR.

Senger's disease is a rare inherited disorder characterized by congenital cataracts, hypertrophic cardiomyopathy, mitochondrial myopathy of the heart and skeletal muscle, and lactic acidosis. The pattern of inheritance is autosomal recessive, although an X-linked dominant inheritance with variable expression has also been described. The disease was first described by Senger et al. in 1975, and since then very few cases have been reported in the medical literature. We present a 5 month old male patient with bilateral congenital cataracts, hypertrophic cardiomyopathy, and lactic acidosis who during an evaluation at the Emergency Room rapidly deteriorated developing cardiac failure and death. Senger's disease was clinically considered. The autopsy revealed an infant with anasarca, bilateral congenital cataracts, hypertrophic cardiomyopathy, and skeletal myopathy. Microscopy of the heart muscle revealed clearing of the myocytes, and sections of the skeletal muscle revealed chronic infiltrates including lymphocytes, histiocytes and

plasma cells, degenerated fibers, and basophilic fibers with nuclei of regeneration. At the ultrastructural level, skeletal muscle fibers were well preserved with increased number of normal and abnormal mitochondria with bizarre shapes, varying sizes, and with the presence of longitudinal electron dense inclusions. The autopsy findings of bilateral cataracts, hypertrophic cardiomyopathy, skeletal myopathy and the electron microscopy findings along with lactic acidosis and metabolic work up supported the clinical diagnosis of Senger's disease.

R-018 Ruptured Abdominal Aortic Aneurysm in an Infant: Case Report. M. García-Maldonado 1, María S. Correa-Rivas, E. Márquez-Grau 2. 1Department of Pathology and Laboratory Medicine, and 2Department of Surgery, Medical Sciences Campus, School of Medicine, UPR, San Juan, PR.

Aneurysms of the aorta are rare in children and young adults. Among the described conditions associated with aneurysm are coarctation of the aorta, cardiac valvular disease, umbilical artery catheterization, trauma, infection, arteritis, tuberous sclerosis, and connective tissue diseases. Some cases have no distinguishable cause and are thus idiopathic. We present a one month old infant who during a hospitalization due to a *Staphylococcus aureus* infection at two weeks old, was found with an abdominal aortic aneurysm on radiologic images. The patient was transferred to our Institution for further management, but died before any surgical intervention. Autopsy revealed a 6 cm abdominal aortic aneurysm located at the diaphragmatic hiatus above the celiac trunk, displaced superiorly to the right hemithorax, and ruptured to the right pleural cavity with a thrombus formation. Another 1.5 cm aneurysm was noted at the bifurcation of the iliac artery; this one not ruptured. Microscopic sections of the aorta stained with hematoxylin and eosin, and elastin stains revealed disruption of the elastic layer and calcifications within the thrombus, aortic wall, and diaphragm, adjacent to the aneurysmal sac. The presence of these calcifications and well organized thrombus with fibrin deposition suggested a chronic ongoing process, probably congenital, though in our case, the predisposing factor to the aneurysm development remained undetermined. We discuss this unusual disease in children and the different proposed causes of abdominal aorta aneurysm recently reviewed in the medical literature.

R-019 Acute Myelogenous leukemia/ Transient Myeloproliferative Disorder in Down Syndrome. Report of a Case. M. Rosa-Gallardo; R. Velez-Rosario. Department of Pathology and Laboratory Medicine. University of Puerto Rico. Medical Sciences Campus.

Individuals with Down Syndrome (DS) have an increased predisposition to develop acute leukemia. In approximately 50% of cases it appears to be acute megakaryoblastic leukemia. In some cases the disease undergoes spontaneous remission during the first one to three months of life. This process has been referred to as transient myeloproliferative disorder or transient leukemia. We report the case of a female newborn with DS associated with acute myelogenous leukemia consistent with Megakaryoblastic origin. This patient also had severe cardiac malformations and suffered other perinatal complications that caused her death at 19 days after birth. We will review the clinical and pathological characteristics of this interesting entity

R-020 Association of Extensive Brain Calcifications, Myelofibrosis and Retinopathy in a 12 Year Old Child. D. Negrón, L. Colón-Castillo, I. Morales-Melecio, M. S. Correa-Rivas. Department of Pathology and Laboratory Medicine, Medical Sciences Campus, School of Medicine, UPR, San Juan, PR.

Intracerebral calcifications associated with retinopathy have been described in association with several rare syndromes as well as familial cases of idiopathic brain calcifications with autosomal dominant inheritance. In 1992, T. Revesz published a case report describing a 6 month old male infant who was found to have bilateral exudative retinopathy and subsequently developed severe aplastic anemia, leading to his death. Additional clinical findings included intrauterine growth retardation, cerebral calcifications, cerebellar hypoplasia, and progressive psychomotor retardation. We report a 12 year old male child with similar findings. The developmental history of this boy was otherwise unremarkable with an above average intelligence. He was well at home, but unexpectedly presented acute neurological deterioration and death. The postmortem neuropathologic examination revealed multiple intraventricular and intraparenchymal coarse calcifications as well as intraparenchymal hemorrhages, cerebral edema and bilateral subarachnoid hemorrhages in the occipital

lobes and cerebellum. We discuss several conditions associated with intracerebral calcifications such as dyskeratosis congenita, Coats' disease, Fanconi anemia and Revesz syndrome, which were considered in the differential diagnosis of this difficult case. The presence of exudative retinopathy and bone marrow abnormalities should alert clinicians to pursue further findings associated with these conditions.

Metanephric Adenoma in a 16 Year Old Child: Case Report. L. Rivera¹, M. S. Correa-Rivas¹, S. Gutierrez¹, A. Ramírez², P. Collazo³.

R-021

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Metanephric adenoma is a rare epithelial renal neoplasm with characteristic histology and no malignant potential. It occurs at all ages most commonly in the fifth and sixth decades, with a 2:1 female to male ratio. They ranged widely in size and are located mostly in the renal cortex. Etiology is unknown, but they may be associated with smoke, tubular nephrosclerosis, and dialysis. Approximately 50% are incidental findings while others present with polycythemia, abdominal or flank pain, mass, hematuria or hypertension. We report a 16 year old girl found with a metanephric adenoma of the left kidney, which showed typical clinical, microscopic and immunohistochemical findings. It is important to differentiate metanephric adenoma from other more aggressive renal tumors such as renal cell carcinoma and Wilm's tumor, since metanephric adenoma has a benign course and should be treated in a conservative manner.

Exposure to Television in a Group of Children living in San Juan. I. Matías¹, I. Ancalle¹, L. García².

R-022

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Media communication influences children perception of their environment, interpersonal relations, and their behavior. The American Academy of Pediatrics (AAP) recommends that children TV exposure be limited and under supervision. Objective: To assess the time of exposure to TV among children and its supervision. Methods: A survey was answered by 42 caretakers of children between the ages of 1 to 10 years who visited a primary care clinic in San Juan or who were admitted at the San Juan City Hospital. The Institutional Review Board approved the study. Results: The mean age of children was 5 y/o, 40% were females and 60% males. All of them

had exposure to TV for a mean of 4 hours during school days and 6 hours on weekends. Seventy-four had a TV in their bedroom. Thirty-three percent of children chose the programs to be watched. Ninety-eight percent of caretakers referred to supervise the children while watching TV at least most of the time with 67% acknowledging the TV programs' classification. Eating in front of the TV was associated to a higher prevalence of obesity (54% vs 21%, $p=0.0472$). Conclusions: Children in this sample are exposed to TV for more hours than recommended by the AAP. Although most of the caretakers referred to supervise the children while watching TV, there is lack of knowledge about the chosen programs classification. As previously reported in the literature, children who ate in front of the TV had a higher prevalence of obesity. Education of caretakers is warranted in order to decrease the negative effects associated to excessive exposure to TV and to decrease the morbidity associated to obesity.

Serous Surface Papillary Carcinoma of Peritoneum: An Autopsy Case Report. M.L. Rivera Zengotita, C. Climent Peris.

R-023

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Serous surface papillary carcinoma of peritoneum is a rare primary tumor of the peritoneum that diffusely involves the peritoneal surface but spares or superficially invades the ovaries. We report the case of a 69 year old female without history of systemic illness who died a few hours after hospital admission due to respiratory failure secondary to massive right pleural effusion. Post-mortem cytologic examination of the effusion fluid revealed adenocarcinoma cells. Autopsy demonstrated yellow-white small (0.3 cm) nodularities located on the right parietal pelvic peritoneum and massive right pleural effusion (1,350 ml of bloody fluid). Microscopic examination of the peritoneal nodularities revealed serous surface papillary carcinoma of the peritoneum. The tumor was also present on the surface of one ovary without cortical invasion and in one breast. This patient had an unusual and catastrophic clinical presentation of serous surface papillary carcinoma of the peritoneum.

Evidence Based Management of a Glioblastoma Multiforme in an Infant. M. Torres-Serrant, M.E. Echevarría, M.S. Correa-Rivas, L. Colón-Castillo, F. Montalvo.

R-024

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Glioblastoma multiforme (GBM) is one of the most

common and aggressive primary brain tumors. It is a high grade astrocytoma most commonly seen in adults. In children it is less common, accounting for approximately 10% of all pediatric central nervous system tumors. Despite multi-modality treatment with gross tumor resection, radiation therapy and chemotherapy, survival rates remain poor for children, ranging from 20-30% two years after diagnosis. We present the case of an infant girl born without perinatal complications that developed status epilepticus at 6 months old. Head CT scan showed a supratentorial cortical lesion within the right parieto-occipital lobe with both solid and cystic components. MRI confirmed these findings showing an enhancing lesion in the right parietal lobe. Patient underwent gross total resection of the tumor. On microscopy, the tumor revealed marked nuclear atypia, proliferation of hyperplastic vessels, and necrosis surrounded by a palisade of anaplastic cells; all features characteristic of glioblastoma. No radiation therapy was given at that time since she was less than 3 years old, but she received chemotherapy with carboplatin, vincristine and cyclophosphamide for a two year period. Despite the dismal prognosis of this neoplasm, especially without multi-modality treatment, our patient has survived with minimal neurologic deficits, and continues without evidence of tumor recurrence five years after diagnosis. This case supports the idea that glioblastomas in early childhood can be managed successfully with gross total resection and appropriate adjuvant chemotherapy.

R-025 Treatment Response to Peg-Interferon and Ribavirin in Hispanics with Hepatitis C. J. Iturrino, C.J. Romero-Marrero, C.J. Sanchez, G. Nogueras, A. Ortiz, P.J. Costas, E.A. Torres. UPR-Medical Sciences Campus, Department of Medicine, San Juan, PR.

Response to hepatitis C (HCV) therapy is influenced by ethnic/racial factors. We performed a retrospective analysis to describe the end of treatment response (ETR) and sustained viral response (SVR) to Peg-interferon and Ribavirin in treatment-naïve chronic HCV Puerto Rican patients in a government-sponsored pilot clinic. 156 (106 M:50 F, mean age 41.9) patients were started in treatment. Genotype 1 was found in 72.4%. Treatment was discontinued in 47 (30%): 24 (51%) were non-responders, 16 (34%) had adverse effects, 5 (10.7%) developed comorbidities during treatment, 2 (4.3%) had unrelated deaths. Another 46 patients (29.5%) were lost to follow-up after having started treatment. 63 patients (40.4%) completed treatment. When patients with an early discontinuation are excluded, 37/63 (58.7%) had ETR, while the ETR on those intended to treat was 23.7%.

Recurrence of viremia was observed in 5/37 (13.5%) of those with ETR. SVR was seen in 16/63 (25.4%) patients who completed treatment, while the SVR on those intended to treat was 16/156 (10.3%). Sixteen of 37 (43.2%) patients were lost to follow up to assess SVR. No correlation was found between ETR and age, gender, viral genotype, initial HCV RNA, early virological response, or degree of fibrosis ($p>0.05$). Although insufficient patients completed follow-up to achieve statistical significance, SVR to pegylated interferon and ribavirin seems to be lower in Hispanics than reported in other populations. The high rate of discontinuation of treatment in our population surpasses the previously reported rates in U.S. Latinos and Caucasians.

R-026 Obesity Risk Factors for Puerto Rican Type 2 Diabetes Patients. J. Rodríguez, R. J. Rodríguez. UPR, Medical Sciences Campus, Department of Gerontology, School Graduate of Public Health, San Juan, PR.

The prevalence of Diabetes mellitus type 2 (DMT2) is high in the Puerto Rican population as compared to other metabolic diseases in the island (CDC, 2002; Perez, Perez, & Suarez, 2001). Diabetes have been identified as the third reason of mortality in PR (PR Health Department, 1999-2001). Phenotypic components of human obesity, such as anormal body weight (BW) and body mass index (BMI) are related to a higher risk in the develop of DMT2. Research at the CDPR explored the relation between DMT2 patients an risk behaviors that affect their life-expectancy. Objective: To explore risk factors for DMT2 (i.e., obesity) in a patients sample at the CDPR. Method: A valid clinical and socio-demographic health information questionnaire to screen patient's need, clinical variables, behaviors and attitudes related to DMT2 was used with 100 patients in a 6 months period at the CDPR. Descriptive statistics and ANOVA was performed. Results: Descriptive statistics included 66% female vs. 34% male with a mean age of 58.9 years. Of the total sample, 64.4% subjects report significant body weight changes, 59.6% gaining weight, and 50% reporting physical inactivity. Adjustment by age and gender was done, statistical differences was found between Diabetes knowledge and risk behaviors prevention (i.e., vaccines ($r = .41, p = .000$), avoid hypoglycemia ($r = .34, p = .001$), avoid smoking ($r = .25, p = .012$), and changes in body weight ($r = .30, p = .003$). Conclusions: It is imperative to develop preventive lifestyle educational behavioral programs that help DMT2 Hispanic patients to improve their quality of life via the identification, and prevention, of risk behaviors

Current Role of Protocols in Obstetrical Patient Care at University Hospitals. V. Tamayo

R-027 Agrait, K. Adamsons. UPR- Medical Sciences Campus, Department of OB-GYN, School of Medicine, San Juan, PR.

In the past, protocols guiding patient care were mostly used at community hospitals, where a large portion of residents were foreign graduates. These tools served as education resources to ensure better compliance with local and national standards. In our specialty, this use of protocols has been largely replaced by educational materials, as the Compendium, an annual publication of the American College of Obstetricians and Gynecologists. This volume contains the most relevant topics to the practitioner and is often considered a source of present standards of care in patient management for medical and medico-legal purposes. The purpose of our study was to determine whether leading university hospitals in our specialty use protocols, and if they do, what are their purposes. We selected 34 institutions for mailing our questionnaires, including six of outstanding reputation (Harvard, Columbia, Johns Hopkins, Stanford, University of Pennsylvania and Yale). Thirty of them replied. Sixty percent of them were users, while 40 percent were non-users (although two of them mention use of “standarized approaches or “guidelines”). Of particular interest was that only one institution of “outstanding” reputation did not use protocols. All users agreed that use of protocols improves patient care. Forty percent of them considered revision and updating of the protocols burdensome. We are proposing that protocols, usually derived from textbooks, are essential to promote patient management according to standards of care, as evidenced by its use on most of the leading University Hospitals covered by our study.

El Impacto del Practicum de Servicio y Aprendizaje de la Escuela de Farmacia en la Península de Cantera y Barrio Obrero. S.

R-028 Rivera-Sárate, M. L. González-Cordero. Práctica en Farmacia, Escuela de Farmacia, UPR

Objetivos: Exponer al estudiante a los asuntos de salud de la comunidad mediante su colaboración en cuatro organizaciones comunitarias. Ofrecer un servicio a la comunidad de acuerdo a las necesidades identificadas por las organizaciones y contextualizadas a la profesión de farmacia. Contribuir al desarrollo de las competencias de los estudiantes del Programa de Doctorado en Farmacia. Estrategias: Los estudiantes se asignan a una organización y se familiarizan con la misión, metas, objetivos y operación de ésta. La organización identifica la necesidad de salud de la comunidad y los estudiantes

en colaboración con la organización desarrollan un plan de trabajo para atender la misma. Este plan se discute con los miembros de la organización, se revisa, se implanta y evalúa. Los estudiantes ofrecen recomendaciones a las organizaciones con el fin de mejorar su impacto en la comunidad. Este Practicum incluye la realización de un diario reflexivo donde se describen las experiencias de los estudiantes, una evaluación de la organización y una evaluación de los estudiantes. La población impactada incluye: niños, jóvenes, adultos y pacientes de edad avanzada. Algunas de las necesidades identificadas son: desconocimiento de la manufactura de medicamentos y educación sobre medicamentos u condiciones. Las actividades realizadas incluyen: desarrollo de material educativo, charlas, visitas al hogar y a la industria farmacéutica. Logros: La evaluación de este Practicum sugiere que los objetivos han sido alcanzados. Proyecciones: Continuar ofreciendo servicio a las organizaciones participantes y expandir el Practicum.

A Novel Teaching Strategy in the UPR School of Dentistry, Graduate Postdoctoral Residency Program: Use of Objective Structured Clinical Examinations. N. Ortiz I.

R-029 Office for the Development of Clinical Skills, University of Puerto Rico School of Medicine. San Juan, Puerto Rico.

Current and projected approaches to dental education have created a wide interest in learning tools that imitate real life conditions. Standardized patients (SPs) are the gold standard to measure the competence of health professionals. SPs are used as part of the objective structured clinical examination (OSCE). The use of OSCEs in training dental professionals is core for history taking, physical exam and in decision making process to establish a treatment plan. It was not until three years ago that the General Practice Residency Program (GPR) in Dentistry School began to use them. Objective: Use OSCEs to assess competency in history, physical exam, and decision making skills in the Physical Diagnosis Course of the GPR Program. Strategies: Residents were taught to gather history and physical exam. Were encouraged to develop a diagnostic, treatment, and educational plan. Outcome was measured using OSCEs. Outcomes: The average in history taking skills was 90%; physical exam, 88%; in critical thinking, 86%. Projections: OSCEs will continue to be used in the Physical Diagnosis Course for dental students. Immediate feedback given by the faculty physician will be established as part of the examination. Supported in part by the GPR Program, UPR School of Dentistry and the Office of Clinical Skills, UPR School of Medicine.

R-030 **Cesarean Delivery as a Barrier for Breastfeeding Initiation and Duration: The Puerto Rican Experience.** N. Pérez-Ríos¹, A.P. Ortiz¹, and G Ramos-Valencia¹. UPR ¹School of Public Health, Department of Biostatistics and Epidemiology, San Juan, PR.

During 1990-1996, 30 to 37% of all births in Puerto Rico were performed through cesarean section. This represents a public health concern, as studies performed in other populations suggest that cesarean section is a barrier for breastfeeding initiation and duration. Our study pretend to examine the association between cesarean section delivery and the initiation and duration of breastfeeding in a representative sample of 1,958 Puerto Rican women aged 15-49 years. Bivariate and multivariate logistic regression analysis was used to examine the association between birth type and initiation of breastfeeding. We also used Survival analysis and Cox Regression to observe the effect of birth type on the duration of breastfeeding. The proportion of cesarean section was 36.1%. In covariate adjusted multivariable logistic regression models, cesarean section was negatively related to breastfeeding initiation (OR=.61; IC 95%; .49, .75), but no association was found with breastfeeding duration (HR=.99, IC 95%: 0.83-1.18). This is the first population based study to confirm that cesarean section is a barrier for initiation of breastfeeding in PR. Health education campaigns targeting hospital personnel and women who have cesarean sections should be developed, in order to increase breast feeding initiation among these women.

R-031 **Colorectal Cancer Risk Index and Physical Activity in Hispanic Adults Living in a Rural Area of Puerto Rico** M. Torres-Cintrón¹, F. A. Ramirez-Marrero, FACSM², C. M. Nazario¹, E. Suarez¹. ¹University of Puerto Rico - Medical Sciences Campus, San Juan, Puerto Rico. ²University of Puerto Rico - Río Piedras Campus, San Juan, Puerto Rico.

Colorectal cancer is the second leading cause of cancer mortality in Puerto Rico. The purpose of this study was to estimate the association between physical activity and colorectal cancer risk in a group of Hispanic adults living in Barranquitas, Puerto Rico. A colorectal cancer risk index was developed based on the presence of known risk factors. Risk points were assigned according to the strength of the causal association of the risk factors and summed. Population average of colorectal cancer risk was obtained from the prevalence of risk factors using the PR-BRFSS and the prevalence of risk factors of the study population. Physical activity level was determined using

the International Physical Activity Questionnaire. Participants were classified as highly active (>1500 MET-min/wk) and not highly active (<1500 MET-min/wk). Personal interviews were performed on 126 participants [females=83 (66%), males=43 (40%); mean age = 58.7 yrs] living in a rural municipality of Puerto Rico. A logistic regression model was used to estimate the magnitude of the association between the colorectal cancer risk index and the physical activity. The average risk index for men was 20.17, and for women 20.84. Forty-two percent had a high colorectal cancer risk index, and 71% were classified as highly active. When the model was adjusted by sex, education level, medical insurance and calcium use, the risk of colorectal cancer was twice for those with an activity level <1500 MET-min/wk compared with those with an activity level >1500 MET-min/wk (POR= 2.14; IC 95%: 0.84, 5.42), however, this association was not statistically significant.

R-032 **Risk Factors Associated with Youth Violence Among 5th and 6th Grade Students in Puerto Rico, 2001: a Cross-sectional Study.** M. C. Mercado-Crespo¹, C. N. Vélez-Santori¹, G. Ramos-Valencia¹, M. R. Moscoso². ¹UPR – Graduate School of Public Health, Medical Sciences Campus, San Juan, PR; ²UPR - Río Piedras Campus, San Juan, PR.

In Puerto Rico, violence is the fourth cause of death among children aged 10-14. Although there are many surveys of 7th-12th grade violence, data on younger children is scarce. The purpose of this investigation was to estimate the prevalence of youth violence risk factors among school-children ages 9 to 13. A secondary analysis of data from an island-wide representative sample of all 5th and 6th grade students in public and private schools in PR was carried out, with approval of UPR-RCM's IRB. "Consulta Juvenil: V" project selected the sample through a multistage stratified cluster sampling design, sponsored by Puerto Rico's Mental Health and Addiction Services Administration. Risk factors were classified as individual, family, school, peer, situational or community related factors, and analyzed in relation to the reported violent behavior. The prevalence of at least one violent incident among preadolescents in PR was 43%, school-violence being most common. Contrary to previous 7th-12th grade studies, individual, family and school risk factors were responsible of the most variability in violent behavior, whereas peer, situational and community risk factors contributed the least. Being male and of higher grade level was responsible of the greatest change of units in the violence index. Church-attendance was identified as a protective factor. Findings were consistent in stating

violent behavior varies according to the type of risk factors present in the individual. Further, longitudinal studies and the development of a violence surveillance system in PR are recommended.

El Impacto de la Diabetes y la Obesidad en la Población de Adultos Mayores en Puerto Rico.

R-033

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Los adultos mayores en Puerto Rico tienden a tener una mayor prevalencia de diabetes, especialmente entre las mujeres. En este trabajo se destacan algunos hallazgos sobre diabetes y obesidad obtenidos en el estudio PREHCO que recogió información de 5,336 personas de 60 años o más seleccionadas en un muestra representativa de esta la población en Puerto Rico. La prevalencia global de diabetes fue de 28 por ciento, probablemente subestimada ya que es autoreportada. Se estima que los residentes en Puerto Rico tienen 1.8 veces más probabilidad de padecer de diabetes que los blancos no hispanos en los Estados Unidos. La diabetes es mayor entre las mujeres. Las personas diabéticas padecen más de enfermedades crónicas y tienen más limitaciones en las actividades de la vida diaria. Los diabéticos y las diabéticas consumen más medicamentos y usan más los servicios de salud que las personas que no son diabéticas. La obesidad es un conocido factor de riesgo para la diabetes, razón por la cual no sea sorprendente que estos datos demuestren una relativamente alta prevalencia de obesidad. Las personas obesas tienen una mayor prevalencia de diabetes que las personas no obesas. Evidencia creciente parece indicar que condiciones adversas en la niñez incrementan el riesgo de morbimortalidad en la vejez y pueden conllevar riesgos de obesidad y diabetes. Las personas con una altura de rodilla baja, indicador de atrofia en el desarrollo, tienen una probabilidad mayor de desarrollar diabetes.

Detection of Nuclear and Mitochondrial DNA Damage in Base Excision Repair Deficient Mice.

R-034

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Evidence indicates that oxidative lesions to the DNA increase during the process of aging. These lesions are mainly repaired by the base excision repair (BER) pathway. It has been suggested that BER activity declines with aging, however, the role of the enzymes

involved in BER during aging is not known. Apurinic/apyrimidinic (AP) endonucleases are enzymes that participate in the repair of intermediate lesions that occur during BER. Two AP endonucleases have been characterized in mouse: APEX1 and APE2. We hypothesize that deficiency in the Apex gene will lead to an increase in DNA lesions during aging. To test our hypothesis, we isolated DNA from brain and germ cells obtained from 6, 16, and 28 months-old Apex heterozygous knockout mice (Apex +/-). We determined the optimal conditions for the amplification of 10.0Kb and 6.9Kb nuclear and mitochondrial fragments using a quantitative polymerase chain reaction (QPCR) assay. After performing cycle and template tests using DNA from germ cells, we have determined that 25 cycles and 10 ng of initial DNA concentration are the optimal conditions for amplification for the mitochondrial DNA fragment. We determined that the optimal conditions for amplification of the nuclear DNA fragment are 26 cycles for hippocampus and 28 cycles for cortex, striatum, and cerebellum. The initial DNA concentration for all brain regions was 10 ng. In conclusion, we have effectively established the QPCR conditions for germ cells and the selected brain regions in Apex +/- mice. We are now in the process of determining whether levels of DNA lesions increase with age in this mouse model.

Partial Characterization of the Plasmodium yoelii Breast Cancer Resistance Protein Gene Homologue (pybcrp) in Drug Sensitive and Resistant Lines.

R-035

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The problem of drug resistance in malaria is increasing worldwide. Different members of the ATP-Binding Cassette (ABC) superfamily of transporter proteins are capable of conferring drug resistance to a variety of chemotherapeutic agents. One of such transporters is the breast cancer resistance protein (bcrp), which confers resistance to mammalian tumor cell lines by mediating transport. We have previously identified the P. yoelii breast cancer resistance protein gene homologue (pybcrp) in PlasmoDB 5X coverage (Contig 56) and shown expression in intraerythrocytic stages of the parasite by RT-PCR. Computed transmembrane topology predictions revealed that the gene contains an ABC and a membrane spanning domains (MSD), typical of half transporters. Multiple sequence alignments revealed amino acid conservation of the Walker A, glutamine loop, ABC signature, Walker B, and histidine loop motifs. The pybcrp

gene shares 94% and 63% identity at the amino acid level with the homologue genes in *P. berghei* (pbbcrp) and *P. falciparum* (pfbcpr), respectively. To ascertain if point mutations were present in the drug resistance lines of *P. yoelii*, the complete open reading frame of the gene was amplified by PCR and sequenced in *P. yoelii* NS (chloroquine selected), NS/1100 (mefloquine selected) and ART (artemisinin selected) lines. We are currently amplifying, cloning and sequencing the upstream region of the gene to study the regulation of expression in the collection of drug sensitive and resistant lines of the parasite.

R-036 **Effect of Analgesics on the Genetic Expression After a Spinal Cord Injury.** J. M. Santiago Santana¹; A. I. Torado Tapias¹; J.D. Miranda¹. UPR 1 School of Medicine Department of Physiology.

Several studies claimed that after injury to the nervous system some types of analgesics were neuroprotective and others reported differential gene expression profile. This generated a debate about the post-operative treatment that must be given to the experimental rats after experimental spinal cord injury (SCI). For these reasons, most scientists do not treat the rats with analgesic after trauma to the nervous system because there are not studies that shows what effects the administration of these compounds have on gene expression. Therefore, in this study we used the microarray technique to study the effect of Buprenex in the gene expression profile of rats with SCI at 2 and 4 days post-injury (DPI). The microarrays (n=3) were analyzed using the genetraffic software, and the genes were assessed by fold change. Genes studied were grouped in four categories of functions: regeneration, apoptosis, second messengers, and pain related genes. The results demonstrated that rats treated with Buprenex showed no significant difference in the gene profile when compared to the control group at any of the timepoints tested (for any genes that were studied). These results suggests that spinal cord injured rats can receive Buprenex to reduce pain as part of the post-operative care without affecting the profile of genes related to regeneration, apoptosis, second messengers, or nociception. This work was supported by the MBRS-RISE program (68138), NIH/NINDS (NS39405), MBRS-SCORE (2SO66M8224), and RCMI program (G12RR03051).

R-037 **ER Stress-induced Apoptosis Signal Transduction in Endothelial Cells.** L. Echevarría, G.Madera, L.Colón y Juan Martínez. UPR-Recinto de Ciencias Médicas, Departamento Ciencias y Tecnología, Colegio de Profesiones Relacionadas con la Salud, San Juan, PR.

Intrinsic apoptotic mechanisms arising from endoplasmic reticulum (ER) stress have been recently described. Short-term disruption of ER homeostasis by the N-glycosylation inhibitor tunicamycin (TM) has been shown to induce the unfolded protein response (UPR) in proliferating endothelial cells. But prolonged dysfunction of the ER machinery results in the induction of apoptosis. Quantitative immunoblot, flow cytometry and enzymatic analyses were used to propose a signal transduction pathway that describes apoptotic induction by ER stress in endothelial cells. Results showed that short-term exposure to TM (<24 hrs) induced the UPR and an early activation of caspase-12, caspase-7 and a biphasic (cytochrome c-independent followed by cytochrome c-dependent) activation of caspase-9. After prolonged ER-stress (>24 hrs), activation of the executioner caspase-3 and irreversible apoptotic induction were observed. Early activation of caspase-7 resulted from caspase-9 cleavage. Increased expression in apoptosis inducing factor (AIF), SMAC/Diablo and Bcl-2 was detected after 24 hours. These results suggest that caspase-12 activation results in early (cytochrome-c independent) caspase-9 activation and subsequent caspase-7 activation. ER-stress then signals to mitochondria to activate the mitochondria-mediated apoptosis pathway. If TM was removed before 24 hours, cells would show ER stress but no apoptosis. These results suggest that the ER stress-induced apoptosis signalling mechanisms depend on the activation of the mitochondria-mediated apoptosis pathway. Supported by MBRS-RISE, NIH (USA): 1R25 GM066250-01A1.

R-038 **Cytosolic Protein Profiling Reveal Key Differences Between Placental Macrophages and Peripheral Macrophages.** C. Luciano-Montalvo and L. Meléndez. University of Puerto Rico, Medical Sciences Campus, Department of Microbiology, San Juan, PR.

Background: HIV infection is a global threat. HIV has been detected in several tissues including the placenta, mostly within placental macrophages (PM). PM present low viral HIV replication when compared with Monocytes derived Macrophages (MDM). To understand the

mechanisms of HIV restriction in PM, we propose to study the cytosolic factors present naturally in PM or after HIV infection. We hypothesize that such factors could be associated low viral replication. Methods: PM and MDM were culture until maturation then infected with 25ng per 2X10⁵ cells of the macrophage-tropic isolate HIV-BAL. Supernatant were removed every 2 days to monitor course of infection by p24 antigen immunoassay. Cell lysates of 6 independent PM and 6 MDM cell cultures were analyzed by Surface Enhanced Laser Desorption Ionization Time of Flight (SELDI-TOF) to obtain the profiles expressed prior and after HIV infection using 2 types of chips: CM10 and Q-10. These study the cationic and anionic proteins, respectively. Results: A distinct profile was observed in both uninfected and infected PM when compared with MDM profiles. To our surprise HIV does not induce any protein expression change in PM after infection when compared to uninfected PM cell lysates. Conclusions: Different macrophages types differ in their permissiveness to HIV and their protein expression. The factor(s) that is (are) limiting HIV infection in PM is not induced by the virus per se and rather is innate to these cells. This work was supported by the Dean of Biomedical Sciences, the MBRS-RISE Program, GM61838, the NIH-NMGS S06GM0822, and the RCMi Grant (NIH-NCRR G12RR-03051).

Expression Profile of P2Y6 Nucleotide Receptor During C6 Glioma Cell Differentiation. Y.I. Angleró¹; J.O. García⁴; A.

R-039 Cruz⁴; I. Salgado⁴; M. Rubio-Dávila⁴; E.E. Aquino²; J.D. Miranda⁴; F. González³; and W.I. Silva⁴. ¹Microbiology Department, Humacao Campus, UPR; ²Microbiology Department, Medical Sciences Campus, UPR; ³Chemistry Department, Río Piedras Campus, UPR; and ⁴Physiology Department, School of Medicine, Medical Sciences Campus, UPR

ATP role as an energy source for living organisms is well-known, yet another physiological function is its role as neurotransmitter, which can interact with cellular membrane receptors. The expressions of nucleotide receptors in glial cell function have gained an increased importance, because of its role as inductors of astrogliosis and its relevance to the process of reactive astrogliosis seen during brain and spinal cord injury, aging, and senescence. P2Y6 is a P2Y nucleotide receptor subtype which is coupled to a Gq protein, leading the mobilization of intracellular Ca²⁺. A time course analysis of P2Y6 expression during the differentiation of C6 glioma cells,

induced by db-cAMP, was undertaken using real-time RT-PCR. The integrity of the extracted RNA was evaluated using a denaturing gel electrophoresis, and RT-PCR demonstrated the absence of genomic contamination. The melt curve graph of P2Y6 real-time reaction products showed there is no primer-dimer and only a single product was amplified in the expected position. Preliminary results of real-time RT-PCR suggest C6 glioma cells express P2Y6 nucleotide receptor subtype. This analysis allude that P2Y6 receptors were slightly up-regulated at late stages of C6 glioma cells phenotype differentiation. In the future, to confirm the identity of the band obtained for the P2Y6 gene, a sequencing analysis is recommended. Moreover, a Western Blot analysis to evaluate the P2Y6 protein expression will be performed during C6 glioma differentiation. This work was supported in part by NIH SCORE (GM08224) and NIH MBRS-RISE (GM61838).

R-040 Plasmodium berghei: Partial Characterization of the Gamma-Glutamylcysteine Synthetase (GGCS) mRNA in Drug Sensitive and Resistant Lines. Vega-Rodriguez J, Garcia MI, and Serrano AE. Department of Microbiology and Medical Zoology, University of Puerto Rico, School of Medicine, San Juan, P.R.

Glutathione (GSH) modifications or co-transport of drugs with GSH is a common detoxification mechanism in drug resistant cancer cells. In malaria it has been proposed that GSH detoxification is one of the mechanisms involved in drug resistance. An increase in GSH levels has been demonstrated in chloroquine resistant strains of *P. berghei* and *P. falciparum*. Overexpression of *P. berghei* *ggcs* (*pbggcs*) mRNA in the chloroquine (RC) and mefloquine (N/1100) resistant lines as compared to the sensitive N clone was previously reported. This augmented expression was shown not to be due to an increase in gene copy number. Our goal is to study the regulation of expression of *pbggcs* in sensitive and drug resistant lines. The *pbggcs* upstream region and the 3'UTR of N clone, RC and N/1100 were sequenced and aligned to the *P. berghei* ANKA strain. A total of 21 nucleotide substitutions were identified at the upstream region between N clone and RC, and 15 between N clone and N/1100. Six substitutions were shared between RC and N/1100 as compared to the sensitive N clone. A putative promoter containing seven TFIID binding sites was identified in the 5' UTR. The 3' UTR remains conserved between the *P. berghei* lines, including the pyrimidine tracks and polyadenylation signal reported in the ANKA

strain. PCR analysis on cDNA and sequence comparison suggests a conservation of the transcription start site between the ANKA, N clone, RC and N/1100. RACE and Northern blot analysis are currently underway to confirm the transcription start site and the pbpgcs transcript size, respectively.

First Identification and Characterization of an ABCG Gene in Plasmodium berghei.

R-041 R. González-Méndez, R. Cintrón-Moret, J. Vega-Rodríguez, HB. Nicholas Jr. and A. Serrano-Brizuela. Department of Radiology Sciences, School of Medicine, University of Puerto Rico, Medical Sciences Campus

Plasmodia ATP-binding cassette (ABC) superfamily includes genes associated to the multidrug resistance phenomena in these parasites. The MDR (ABCB) and MRP (ABCC) subfamilies contain members described to function as drug exporters in human cancer cell. Homologues of these proteins have been characterized in the human parasite *Plasmodium falciparum* and the rodent models *P. berghei* and *P. yoelii*. We have characterized an ABCG gene in drug sensitive and resistant lines of *Plasmodium berghei*. Human ABCG proteins have been correlated with methotrexate resistance and prevention of porphyrin-related toxicities. The ABCG gene has been fully sequenced in the *P. berghei* drug sensitive line N clone and partial sequences of the chloroquine (RC) and mefloquine (N1100) resistant lines have also been obtained. The coding region of the *P. berghei* ABCG gene is 1.9 Kb with a predicted protein of 656 residues. Membrane topology analyses showed that the *P. berghei* ABCG homologue has a nucleotide-binding domain preceding a transmembrane region. Bioinformatics analyses support the hypothesis that the Plasmodia ABCG gene product is homologous to ABCG genes from other species. Sequences from the white-brown complex (WBC) of *Arabidopsis thaliana*, *Dictyostelium discoideum* and human ABCG half-transporters were added to putative Plasmodia ABCG sequences revealing that these are members of the ABCG subfamily. The *P. berghei* ABCG gene mapped in chromosome 8 in the three lines studied. Southern blot analysis showed that there is no difference in ABCG gene copy number and locus organization between drug sensitive and resistant lines.

The mGluR1/5 Receptor Agonist, DHPG, Produces an Anxiogenic Effect in the Rat Basolateral Amygdale.

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Metabotropic glutamate receptors (mGluRs) are widely expressed throughout the Central Nervous System (CNS), and may modulate neural activities such as fine-tuning the glutamatergic system. Comparisons of ovariectomized (OVX) female and intact male rats were performed to determine if observed differences in anxiety-related behaviors and emotional memory are due to hormonal changes. To assess anxiety-related behaviors we used the Elevated Plus Maze (EPM), and the Vogel Conflict test (VCT). Bilateral infusions of either DHPG, or LCCG-I, a group I and II mGluR agonist, respectively, has no significant effect in male and female rats when tested in the EPM when compared to control animals. However, activation of group I mGluR, produces an anxiogenic response in a sex specific manner when tested in the VCT unlike LCCG-I-treated rats which does not express any significant response. The Passive Avoidance Task (PAT) was used to test if the mGluRs, within the basolateral amygdala (BLA), could modulate memory through emotion in a sex specific manner. Infusions of DHPG into the BLA prior to receive the shock did not significantly change the latency of entrance to the dark compartment on the PAT. However, the latency to enter the dark compartment is greater in control animals that received estrogen replacement, suggesting that estrogen might improve acquisition in the passive avoidance situation. Because mGluRs are coupled to G-proteins, the mGluR can be used as a "target" to develop better drugs for to treat CNS disorders related to anxiety-related behaviors, such as Post-traumatic Stress Disorder, anxiety, and depression.

Immunogenicity of Synthetic Peptides Derived from a Novel *Fasciola hepatica* Vaccine Candidate.

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The protein termed FhSAP is a novel *F. hepatica* antigen expressed at early stage of infection. It exhibits a potent lytic activity against human erythrocytes and PBMC. A

previous vaccination study demonstrated that FhSAP induce in rabbits a protection >80% to a challenge infection with *F. hepatica* metacercariae. A structural analysis of FhSAP has shown that it contains 6 conserved cysteine residues arranged within 5 amphipathic α -helical domains and 7 hydrophobic residues in strictly conserved positions that might form T-cell epitopes. Consistent with this prediction, our previous immunization study in mice has shown that when FhSAP is injected by subcutaneous route induces high Ab response characterized by high levels of IgG1, IgG2a and IgG2b. These results suggest that FhSAP possesses functional epitopes inducing both Th1 and Th2 response. In the present study we studied the immunogenicity of a panel of peptides representing the sequence of FhSAP and defined which are restricted to the Th1 or Th2 phenotype. A cell proliferation assay was performed in which the spleen cells from mice immunized with protein were stimulated with single peptides. Cytokines profile and the isotyping of Ab in serum of mice led us to identify 3 T-epitopes, 2 of which were clustered together around the hydrophobic conserved residues. Because it has been hypothesized that the develop of resistance against a *F. hepatica* infection is depending of a proper development of Th1 immune response, the immunization of animals with peptides that favors the induction of an strong Th1 could be useful for develop of complete immunity in experimental animals

R-044 *Fasciola Hepatica: Molecular Cloning, Expression and Characterization of a Recombinant Excretory Secretory Antigen Expressed at Early Stage of Infection.* J. Quetel, D. Torres, A.M. Espino. Department of Microbiology, School of Medicine, University of Puerto Rico Puerto Rico, San Juan, Puerto Rico.

F. hepatica is the causative agent of liver fluke disease or fascioliasis. The disease, which primarily infects sheep and cattle, results in a global annual economic loss of approximately 3billion dollars. Recent reports indicate that fascioliasis is also an important emerging pathogen of humans; with approximately 2-5 million people infected worldwide. The TBZ is the most effective drug for controlling *Fasciola*; however, resistance to drug has been reported in sheep infected with *F. hepatica*, suggesting that selection of resistance parasites may eventually compromise the use of this drug. Vaccines represent the most attractive long-term alternative to invert this scenario. We are dedicated to search novel *Fasciola* genes Ags with protective potential. For this a cDNA library from adult worms was constructed. A rabbit antibody against *Fasciola* ES antigens was used for screening

of the cDNA library. A cDNA encoding a 43kDa polypeptide was identified. Analysis of its primary structure suggests that this novel antigen is potentially a *Fasciola* / *Paragonimus* cross-reactive antigen that could be involved in iron metabolism. Because during its migration through liver parenchyma *F. hepatica* feed of blood, this molecule may be essential for parasite's metabolism and its survival into the mammalian host. A vaccine directed to block Fe-transporter protein could kill the parasite before establishment in the bile ducts. Therefore, it could constitute an important target for developing of a vaccine against *F. hepatica*. In the present study we reported the molecular cloning and partial characterization of this novel *Fasciola* antigen

R-045 *Immunogenicity of a 20kDa Recombinant Fasciola/Schistosoma Cross-reactive Antigen Delivered as Immune-stimulating Complex (ISCOM) in Mice.* J. Gaudier¹; C. Jimenez¹; D. Torres¹, A. Osuna²; A.M. Espino¹. UPR 1 School of Medicine, Department of Microbiology; and 2University of Granada, Institute of Biotechnology, Spain

F. hepatica and *S. mansoni* are helminth parasite phylogenetically related. *Fasciola* affects sheep and cattle worldwide resulting in a global annual economic loss of approximately 3billion dollars. Schistosomiasis is the second major parasitic disease in the world after malaria. No vaccine against fascioliasis or schistosomiasis exists. Previous studies have demonstrated that is possible to induce heterologous resistance between both parasite infections in mice. But for this it is necessary to identify molecules expressed by both parasites that could be target for vaccine. To date only a 15kDa cross-protective antigen had been identified and characterized. In the present study we described the identification of a cDNA encoding a novel molecule of approximately 20kDa (Fh4.26) that is expressed during developmental stage of *F. hepatica* and that react either with sera from animals infected with *F. hepatica* or *S. mansoni*. We described the molecular cloning and the immunological characterization of this protein and demonstrated that it is highly immunogenic when it is delivered as immunostimulating complex (ISCOM) in mice. Compared with classical adjuvant, ISCOM induce a higher and long lasting immune response characterized by high levels of IgG2, an IgG subclass typical of a cellular response Th1-type. Because it has been hypothesized that the develop of resistance against a *Fasciola* or *Schistosoma* is depending of a proper development of Th1 immune response, the immunization of animals with this antigen will favors the induction of an strong Th1 which could be useful for develop of complete immunity in experimental animals

The Neuroprotective Role of Estrogen after Spinal Cord Injury.

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Estrogen hormones are proteins that mediate transcriptional activation after binding to its intracellular receptors. Its neuroprotective role has been evident in vivo and in vitro, in numerous studies of brain trauma and neurodegenerative diseases. However, the role of estrogen and its receptors as neuroprotective agents in adult injured spinal cord is not well characterized. Standardized RT-PCR analysis of the estrogen receptors was performed using adult Sprague Dawley rats' spinal cord tissue. Results showed that the estrogen receptor alfa and beta mRNAs were expressed in the adult spinal cord from female rats. We will examine changes in gene expression of these receptors after a contusion to the thoracic vertebra (T10) using the NYU Impactor device. The expression profile will be monitored at 2, 4, 7, 14, and 28 days post-injury using standardized RT-PCR. In addition, immunohistochemical studies demonstrated the presence of these receptors in sham and injured spinal cord. ER-alfa was expressed in neurons of the gray matter and in astrocyte-like cells of the white matter, while ER-beta was observed exclusively in motor neurons of the gray matter. ER-alfa expression at the gray matter decreased after trauma, probably related to the neural cell death at the injury site. These results suggest that these receptors may play a role in the pathophysiology generated after SCI. Additional experiments are necessary to determine the spatio-temporal profile of these receptors, the cells' phenotype expressing them, and their possible role in neuroprotection. This study is sponsored by RISE, SNRP, MBRS-SCORE and RCMI.

Urease Activity Levels and Dental Caries Status in Children.

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Urea is normally present in saliva at concentrations up to 10mM. A number of oral bacteria produce urease enzymes, which catalyze the hydrolysis of urea into ammonia and CO₂ causing significant increases in the plaque pH. It is, therefore, believed that urease activity in the oral cavity may inhibit the development of dental caries. **OBJECTIVE:** To determine if there is a difference in plaque and/or saliva urease levels among caries-free vs caries-experienced children. **METHODS:** Pooled supragingival plaque and

whole un-stimulated saliva samples were obtained from 19 CF (d3mfs+D3MFS=0) and 16 CE (mean d3mfs+D3MFS=10.9±9.57) children 3-12 years of age. A second plaque and saliva sample were obtained in 20 of the children one week following the first sample collection. Dental caries were scored using the Fiber-Optic Trans-Illumination method with Ekstrand's criteria. Generalized Linear Latent and Mixed Models were used to examine the association between urease levels and dental caries. **RESULTS:** Plaque urease levels in the CF group ranged from 1630 to 24626 nmoles urea hydrolyzed/min/mg and in the CE group from 450 to 10164. Salivary urease levels in the CF group ranged from 0 to 1571 nmoles urea hydrolyzed/min/mg and in the CE group from 0 to 991. The GLLAMM results revealed a significant difference in log-transformed mean plaque urease levels between CF and CE groups. No significant difference was found in saliva urease levels. **CONCLUSIONS:** The results of this study demonstrate that CF children have significantly higher levels of urease activity in their plaque compared to CE children.

Survival Prediction in a Multidisciplinary Pediatric Intensive Care Unit.

R-048 I. Mercedes; S. Santana; A. Fernández; A. González; R. García. Pediatric Critical Care Section UPR School of Medicine; and University Pediatric Hospital.

Pediatric intensive care units (PICU) concentrate sophisticated technology and trained personnel to monitor and treat physiologic instability in infants and children with life threatening disorders. The measure of quality of care through rigorous assessment tools is a dynamic instrument to determine outcome. The purpose of our study is to evaluate and asses the quality of care and outcome prediction at our PICU based on the PRISM III score. PICUEs program was used to analyze Risk of mortality, efficiency and mortality. **Study Design:** Prospective Study. **SETTING:** Level I PICU at the University Pediatric Hospital (UPH). **METHODS:** During the study period of 12/2004 to 12/2005, all the data from the admissions to the PICU was entered in to the PICUEs program. 421 patients were enrolled. PRISM III score was calculated for each patient, expected mortality calculated, and resource utilization recorded. The observed mortality was also recorded. **RESULTS:** Of all admissions to PICU, 392 survived, for a mortality rate of 7.88% (n=29) with a mortality risk for each admission of approximately 10.3%. The mean PRISM III score was 6.73(range 1-19). Predicted mortality was 8.50%. The average LOS was 6.1 days, and adequate therapeutic interventions were evidenced. **CONCLUSION:** During the study period, the mortality rate was 7.88%, with a probability to be discharged and/

or transferred outside the PICU of 92.12%. The UPH PICU had an outcome that correlated with the predicted by the PICUEs program. The results obtained from the collected data positively compares with the results of other pediatric intensive care units of the nation.

R-049 Plasma Cell Leukemia, a Plasma Cell Myeloma variant: Case Report. R. Vélez, M. García. Department of Pathology, School of Medicine, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Plasma cell leukemia is an aggressive disease that occurs rarely in plasma cell myeloma (2%), and the neoplastic hierarchy in the classification of malignant hematological disorders is not clearly defined. This disorder is diagnosed based on the Kyle's criteria by the presence of more than 2 X 10⁹/liter, circulating peripheral blood plasma cells or 20% of peripheral blood white cells. The morphological and immunological criteria indicate that the cells are in end stage of B cell maturation pathway. It may occur as primary plasma cell leukemia or evolve as a terminal event in patients with long standing course of plasma cell myeloma. We report a case of a 56-year-old female with history of bone pain, hypercalcemia, Ca: 13.1 (N: 8.5-10.5mg/dL), BUN: 41 (N: 7-20mg/dL), CREATININE (CREAT): 0.9 (N: 0.4-1.1mg/dL) BUN/CREAT 45.6 (N: 6.0-19.0), proteinuria 8.9 (N: 6.0-8.0g/dL), high white blood cell count, 13.6 (N: 4.8-10.8 10³/microL with 17% (2.31X10⁹/ liter) of plasma cells with "rouleau" formation, which is consistent with plasma cell leukemia. A protein electrophoresis performed shows elevated total serum protein (8.7; N: 6-8.5 g/dL) with associated high levels of gamma globulin (3.1 N: 0.5-1.6 g/dL) and M-spike (3.1g/dL). The morphological diagnostic criteria and the clinical course are reviewed for this rare variant of plasma cell myeloma.

R-050 Descriptive Study of Osteomyelitis in Pediatric Patients. W. Maldonado-Dávila¹; L.M. Reyes¹; D. Bonano¹; H. García². UPR ¹Department of Pharmacy Practice, School of Pharmacy; and ²Department of Pediatrics, School of Medicine.

In Puerto Rico there is a need for epidemiological data on bone infections in the pediatric population that can assist in the optimization of the treatment of osteomyelitis. The purpose of this study is to describe the cases of osteomyelitis in patients treated at the University Pediatric Hospital in San Juan, P.R. A prospective and retrospective chart review was performed from October 2004 to February 2005. Sixty medical records were identified and reviewed during the study period. The data suggests that there is a greater incidence of

osteomyelitis in patients older than 12 years, mostly boys, and involving the lower extremities. The length of therapy with antibiotics ranged from 3 to 111 days with a mean of 42 days. The average length of hospitalization was 34 days, and twenty four patients (40%) were discharged on home antibiotic therapy. *Staphylococcus aureus* was the most common isolated pathogen in the studied population, followed by *Klebsiella* sp. and *Proteus* sp. Four methicillin resistant *Staphylococcus aureus* were identified, and 3 of these were susceptible to clindamycin. The most common drug therapy problems identified were inappropriate dosing frequency (20%), subtherapeutic dosing (28.3%) and supratherapeutic dosing (21.6%). In conclusion, osteomyelitis was more common in; boys older than 12 years, and in the lower extremities. Most patients described in this study population received antimicrobial therapy on an empirical basis, and for those who had the pathogen isolated, *Staphylococcus aureus* remains the most common causative agent of osteomyelitis.

R-051 Prevalence of Adverse Outcomes in Infants of Diabetic Mothers that Required Admission to the Neonatal Intensive Care Unit (NICU). M. Campos*; L. García*; M. Valcárcel*,* Neonatology-Perinatology Section, Department of Pediatrics, School of Medicine University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Infants of diabetic mothers are at high risk of developing multiple complications including hypoglycemia, macrosomia, hyperbilirubinemia, and respiratory distress syndrome (RDS). Mothers with pre-existing and gestational diabetes also have a high risk of complications during pregnancy and delivery including: pre-eclampsia, cesarean delivery, and shoulder dystocia. Objective: We will compare the prevalence of complications in a group of infants that required admission to the NICU with what has been reported in the literature. Methods: All the infants of diabetic mothers that were admitted to the University Pediatric Hospital NICU during the years 2003 and 2004 were included in the study. We extracted all the information regarding the infant's and maternal adverse outcomes by medical record review. Descriptive and summary statistics analysis was performed. The IRB and Privacy Committees approved the protocol. Results: Ninety one infants were included in the study. The distribution per maternal diabetes type was Type I 24 %, Type II 31 %, and Gestational diabetics 45 %. The rate of cesarean delivery was 75 %, and of pre-eclampsia was 24 %. The mean gestational age of the infants at birth was 34.6 weeks with a mean birth weight of 2520 grams. The

rate of hypoglycemia was 51 %, hyperbilirubinemia 49 %, RDS 12 %, prematurity 53 %, macrosomia 16.5 %, and congenital anomalies 35 %. Conclusions: When compared to the literature, we found that infants in our center have a higher rate of prematurity and cesarean delivery. Elements of maternal morbidity or obstetric care should be evaluated to determine the cause of the difference.

Impact of Intrauterine Growth Restriction (IUGR) on the Incidence and Severity of Retinopathy of Prematurity (ROP). N. Vélez¹,

R-052

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Retinopathy of Prematurity (ROP) is a neovascularizing disease that can lead to retinal detachment and blindness. It is predominantly a disease of premature and low birth weight infants. The incidence of ROP increases with decreasing gestation and birth weight. IUGR is associated with higher perinatal mortality and morbidity, but no clear association has been made between IUGR and ROP. Objective: To evaluate if patients with IUGR have a higher incidence and severity of ROP. Methods: A total of 216 very low birth weight infants (cases and controls) were included in the study. Appropriate for gestational age (AGA) and small for gestational age (SGA) infants were paired for year of birth, sex, and birth weight within a 100 grams range. Statistical analysis was performed using Statistix 8.0. Results: The mean gestational age was 30 weeks and the mean birth weight of the sample was 1105 grams. AGA infants were more likely than the SGA's to have any stage of ROP, severe ROP, and to require laser therapy. Conclusions: Premature infants with IUGR have a higher mortality and morbidity when compared to AGA infants of similar gestational age. Contrary to what the literature reports, our patients with IUGR had lower incidence and severity of ROP than infants of comparable birth weight.

Prevalence of Obesity and its Complications in Women with Preterm Deliveries.

R-053

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High pre-pregnancy weight has been associated with an increased risk of pregnancy complications such as hypertension, gestational diabetes, urinary tract infection,

cesarean section and toxemia. Objective: To assess the prevalence of overweight and obesity as well as pregnancy complications in a group of women who had delivered prematurely. Methods: The study included 172 women, participants of a parental educational program, whose babies were born premature and required admission to the Neonatal Intensive Care Unit. Data was obtained from revision of medical records and maternal interview. Results: The mean age of mothers was 27 y/o and the mean gestational age of their babies was 30 weeks. The mean BMI of the mothers was 26 (overweight). Forty-six percent (46%) of mothers were either overweight (20%) or obese (26%). High blood pressure during pregnancy was more common in overweight and obese mothers (40% vs. 18%, $p=0.0124$). Overweight and obese mothers were more likely to be on antidepressants ($p=0.0422$), use illegal drugs during pregnancy ($p=0.0140$), and to state feeling sad ($p=0.0036$) and disoriented ($p=0.0133$) during the first weeks after delivery. Conclusions: There is a high prevalence of overweight and obesity in this group of mothers who gave birth to preterm babies. This may reflect the national trend towards obesity and the higher risk of complications associated to pregnancy. The higher prevalence of mood disorders is of concern and warrants further evaluation.

Anaplastic Thyroid Carcinoma Evaluated by Fine-Needle Aspiration Biopsy. J.C. Santa-

R-054

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Anaplastic carcinoma of the thyroid gland (ATC) comprises 5% to 15% of all thyroid carcinomas. According to the Thyroid Cancer Survivor's Association, thyroid cancer is one of the few cancers that are becoming more common in the past several years, with a growth rate of 3% per 100,000 people each year. It is found in older individuals (7th decade or older) and is more common in women than in men. It is one of the most aggressive solid tumors in humans and is rapidly fatal with a mean survival of 6 months after diagnosis. Spread of ATC to the lungs has already occurred in as many as 50% of patients at the time they are diagnosed. We used fine-needle aspiration (FNA) to diagnose an ATC with epithelioid and sarcomatoid patterns in an 80-year-old woman with history of hypothyroidism, and vitiligo, who presented with rapidly enlarging neck masses and lung metastasis. The hypercellular aspirates were comprised predominantly of cell clusters and individual tumor cells. The tumor cells presented a spindle shape with pleomorphic and hyperchromatic nuclei. A necrotic

background could also be appreciated. The differential diagnosis included anaplastic thyroid carcinoma, medullary carcinoma of the thyroid, necrotic squamous cell carcinoma, or an inflamed keratinous cyst. Immunocytochemical staining was used for the diagnosis. The purpose of this case report is to review the cytopathologic criteria for ATC and its variants. Familiarity with the cytomorphic features, a high index of suspicion, and consideration of appropriate differential diagnoses can greatly aid in reaching a definitive preoperative diagnosis.

R-055 **Acute Leukemia Associated with Chronic use of Valproic Acid.** M. Torres Serrant¹, M. Echevarría Escudero¹, F. Montalvo¹, Roman Velez², Consuelo Climent². UPR School of Medicine. ¹ Department of Pediatrics ² Department of Pathology, San Juan PR.

We present the case of a 13 year old male born at term from an 18 year old mother primigravid who referred no complications in perinatal period. He was diagnosed with cerebral palsy, agenesis of corpus callosum and seizure disorder shortly after birth, and treated since then with Valproic acid (VA). The patient came to our ER dehydrated, with respiratory distress, fever, and chills of two weeks evolution. On physical examination, he presented pallor, petechiae on extremities, ronchi, crackles and otitis externa. CBC showed WBC count of $10.9 \times 10^9/L$ with 90% blast cells, severe anemia (6.3 g/dL; MCV 104 fL), and thrombocytopenia ($98 \times 10^9/L$). A bone marrow aspirate showed marrow infiltration by blasts. The diagnosis of B-cell precursor acute lymphoblastic leukemia was established by flow cytometry, and marrow cytogenetics yielded a normal male karyotype (46 X,Y). We are proposing that chronic VA use may be associated to acute leukemia with and without cytogenetic abnormalities. The use of VA has been associated to well known hematologic toxicities such as macrocytosis and cytopenias. As a result of direct bone marrow suppression, bone marrow failure and myelodysplasia have been described with chronic use of this medication. Recently, the role of VA in leukemogenesis has been proposed in a report of several cases of secondary leukemia affecting myeloid and lymphoid cell lines which were associated with cytogenetic abnormalities. The mechanism of action seems to be related with VA's ability to inhibit histone deacetylase, causing a relaxation of chromatin structure and increasing susceptibility to DNA damage.

R-056 **Adverse Pulmonary Outcomes Related to Intrauterine Growth Restriction among Very Low Birth Weight Infants.** G. Leavitt; M. Campos; S. Arce; I. García; L. García; M. Valcárcel. UPR School of Medicine Department of Pediatrics Neonatology Section.

Preterm infants with intrauterine growth restriction (IUGR) have an increased risk for the development of pulmonary disorders such as bronchopulmonary dysplasia (BPD) and chronic lung disease (CLD). The incidence of both conditions is inversely related to birth weight and gestational age. Extensive research documents an increased risk for the development of BPD and CLD in infants that are preterm small for gestational age. Objective: To determine the prevalence of CLD and BPD in a group of small for gestational age preterm infants in comparison with appropriately grown preterm infants. Methods: A group of very low birth weight (VLBW) infants admitted to the Neonatal Intensive Care Unit from 1999-2003 was included in our study (n=216). Preterm adequate for gestational age (AGA) and preterm small for gestational age infants (SGA) were paired for birth weight, year of birth, and sex. Data was collected from the Vermont Oxford Network database and statistical analysis was done using Statistix 8.0. Results: The mean gestational age of the infants was 30 weeks and the mean birth weight was 1105 grams. The prevalence of both BPD and CLD was found predominantly among AGA infants. Incidence of BPD: SGA 19%, AGA 43% (p=0.0002); CLD: SGA 12%, AGA 22% (p=0.0470). Conclusions: The incidence of BPD and CLD in this group of preterm infants is higher among AGA infants which is not consistent with what has been previously reported in the literature. Inclusion of other variables which may affect the development of these pulmonary complications is required in order to analyze the preliminary findings of this study.

R-057 **Correlations and Strengths of the Scales for HIV Dementia in a Cohort of HIV positive Women.** V. Wojna, R. Mayo, R. Skolasky, R. Hechavarria, J.C. McArthur, M. Fernandez, L. Melendez, H. Garcia, C. Zorrilla, E. Kraiselburd, A. Nath. Department of Neurology, School of Medicine, Unniversity of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Changes in the severity and character of HIV Cognitive Impairment (CI) are occurring in the HAART era, appearing to be milder with features of cortical and subcortical dysfunction. There's a need to evaluate the available scales for HIV CI diagnosis and staging. For

this purpose, we analyzed available scales in 70 Hispanic HIV+ women. Evaluations included history, neurological exam, Beck Depression Inventory (BDI), neuropsychological tests (NPT), mini mental score (MMS), and quality of life questionnaire. Cognitive domains and z-scores were calculated (NPZ). Scales evaluated included Memorial Sloan Kettering Scale (MSK) (neurological and ADL), HIV Dementia Scale (HDS), American Academy of Neurology (AAN) criteria, and modified AAN criteria adding a criterion for asymptomatic CI defined as abnormal NPT only (M-AAN). ANOVA and correlations were used. Normal cognition prevalence varied according to scales, 17.4% with MSK, 46.4% with HDS, 55% with AAN, and 27% with M-AAN. A 0.5 score on the MSK was 42%. The M-AAN identified 28% as asymptomatic CI. Minor CI was observed using the MSK in 29%, HDS in 33.3%, and AAN and M-AAN (MCMD) in 15%. HAD was present in 11.6% using MKS, 20.3% using HDS, and 30% using AAN and M-AAN. As expected, the AAN and M-AAN correlated with NPZ and cognitive domains dysfunction. Similarly, CI defined by MSK and HDS correlated with NPZ and 3 cognitive domains. MSK, AAN, and M-AAN correlated with BDI. In conclusion: All scales identified similar percentages of HIV CI but only the M-AAN identified an early asymptomatic CI group. MSK was least sensitive in 'identifying' HAD in this cohort.

R-058 Response to Treatment of Patent Ductus Arteriosus (PDA) on Infants with Intrauterine Growth Restriction (IUGR) A. Rivera; M. Campos; S. Arce. UPR School of Medicine Department of Pediatrics, Neonatology Section

The persistence of a normal fetal structure between the left pulmonary artery and the descending aorta or patent ductus arteriosus (PDA), represents 5-10% of all congenital heart diseases. It is a common problem in premature infants and is less likely to be present as gestational age increases to full term. Morbidity and mortality rates are directly related to the flow volume through the ductus arteriosus. Intrauterine growth retardation (IUGR) is diagnosed in a neonate with a reduction in an expected growth pattern, caused by multiple adverse effects. IUGR is associated with higher perinatal mortality and morbidity, but no association has been made between IUGR and PDA, since the limited number of studies comparing premature AGA and SGA infants of similar gestational age show inconclusive outcomes. Objective: To evaluate the incidence of PDA and response to therapy on patients with IUGR. Methods:

A total of 216 very low birth weight infants were included in the study. Appropriate for gestational age (AGA) and small for gestational age (SGA) infants were paired for year of birth, sex, and birth weight within a 100 grams range. Results: The mean birth weight of the infants was 1105 grams and the mean gestational age was 30 weeks. SGA infants were less likely to have PDA and to require indomethacin therapy. Conclusions: Despite a higher incidence of mortality and morbidity in patients with IUGR, they show a lower incidence of PDA and less probability of being treated with indomethacin for PDA closure. No difference was identified in the requirement of PDA ligation between both groups.

Reaching Out to Researchers : Impact on the Quality of IRB Submissions. M.Irizarry-Ramírez. College of Health Related Professions, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

We present the results of an initiative which has as a goal, the improvement of the awareness in the academic community of the ethical principles and regulatory requirements of research involving human participants and how are these regulations and principles applied by the Institutional Review Board (IRB). Methods: Undergraduate and graduate students that apply to research positions, post doctoral trainees and faculty members were provided with workshops, training and courses on the above mentioned topics. Data for the years 2003-2005 were obtained from the Office of Compliance and the Post Doctoral Master in Clinical Research and RISE programs. Results: 1. Eighty (80) undergraduate and graduate students received training on human subjects' protection and ethics of research sponsored by the RISE program. 2. Nineteen (19) Post Doctoral students enrolled and approved a course in Ethics and Regulations in Clinical Research. Three (3) became members of the IRB. Twelve (12) submitted their proposal to the IRB. 3. Twenty (20) research coordinators and program directors from the CHRP received training 4. In 2004 there were 211 submissions to the IRB. Seventy eight (37%) were approved on the first review, 32(15%) were returned for minor revisions (Pending) and 101 (48%) were disapproved. In 2005 there were 173 submissions. Fifty six (32%) were approved, ninety six (56%) were pending and twenty one (12%) were disapproved. Conclusion: Although there is an improvement in the quality of submissions to the IRB there is a need for an aggressive and compulsory training.

R-060 **Pacientes Estandarizados como Evaluadores: Adiestramiento y Validación.** A. Méndez, B.López y L. García. Programa Paciente Estandarizado, Escuela de Medicina, Universidad de Puerto Rico, Recinto de Ciencias Médicas, San Juan, Puerto Rico.

Justificación/Problema:El diseño e implantación de pruebas estandarizadas de competencia clínica(CPX)se ha convertido en un estándar de acreditación Problemas subyacentes: La implantación de una prueba de destrezas clínicas CPX para estudiantes de medicina requiere de una masa crítica de observadores/evaluadores durante largos periodos.La disponibilidad de la facultad médica para fungir como observadores/evaluadores durante pruebas de destrezas clínicas es cada vez más limitada tiempo y costo.Solución propuesta: Establecer un programa de adiestramiento y validación de Pacientes Estandarizados PE para fungir como evaluadores. Objetivos:Desarrollar un programa de adiestramiento para PE como evaluador.Demostrar la confiabilidad del PE como evaluador.Metodología:Proceso por Etapas Etapa 1 Selección de candidatos N=12.Etapa2 Conceptos básicos, OSCE, CPX, Observación vs interpretación Confiabilidad Entre-Observador Etapa 3 Interpretación de la escala de destrezas,Examen físico correcto,Premisas compuestas Y, O, Terminología médica y Escala de Proceso;Etapa4 Sesión de práctica general y Discusión abierta de resultados discrepancias.Etapa5 Análisis detallado de lista de cotejo y Confiabilidad entre-observadores.Etapa6 Sesión "Expert/Novice" N=10.Etapa7 Análisis de datos: Concordancia Entre Observadores % de concordancia Concordancia con Expertos (% en escala destrezas y Promedio en escala procesos).Conclusiones: Se demostró que los PE pueden realizar la función como evaluador con un alto grado de confiabilidad.Se demostró que se puede obtener un alto grado de concordancia entre lo observado por los PE y los expertos.

R-061 **Marital Satisfaction of Resident Physicians at the University of Puerto Rico System.** V. Aponte, MD1; G. A. Franco, MD1; M.C. Vicente, MD1, V. McCarthy, MD1; J. Guzman, PhD. IUPR School of Medicine Department of Psychiatry Studies regarding marital satisfaction suggest that the demands of the medical profession affect couple relationships. Physicians who report higher levels of marital satisfaction also report higher levels of work satisfaction and fewer psychiatric symptoms. The purpose of this study was to describe the marital satisfaction of resident physicians at the University of

Puerto Rico and determine differences, if any, in marital satisfaction based on gender, specialty, and other demographic data. The Dyadic Adjustment Scale was administered along with a demographic information form. Ninety one percent of possible subjects (n=179) participated. The group's mean scale value for marital satisfaction was average. Residents scored highest in the dyadic cohesion subscale (common interests and shared activities) and lowest in the dyadic satisfaction subscale (tension and present state of the relationship). No correlation was found between the degree of marital satisfaction and age, number of children, ethnicity, religious affiliation, years of marriage, previous marriages, post- graduate year, or marriage to another physician. No statistically significant difference was found between surgical and non-surgical residents or between genders. Despite the fact that our subjects obtained an average score on marital satisfaction, their score on the dyadic satisfaction subscale was lower than on the other subscales. Attention should be placed on diminishing tension and improving current state of the marital relationship if we are interested in increasing the well being of resident physicians. Supported by: Graduate Medical Education Office.

R-062 **Los Universitarios en los Esfuerzos de Salud Sexual y Reproductiva.** R.E. Sánchez Rodríguez, MD, MPH y B. Díaz López, MPHE, BHE. Programa Planificación Familiar Título X, Escuela Graduada en Salud Pública, Universidad de Puerto Rico, Recinto de Ciencias Médicas, San Juan, Puerto Rico.

El Programa de Planificación Familiar Título X (PPFTX) del Recinto de Ciencias Médicas de la Universidad de Puerto Rico ofrece servicios comprensivos e integrales de salud sexual y reproductiva a la población en general dirigido a la planificación de la familia. Los esfuerzos de educación y prevención del PPFTX han tenido que re - enfocarse en la integración de estrategias innovadoras no tradicionales que respondan a las características socio - culturales de nuestro Puerto Rico donde se trabajen los niveles cognoscitivos, afectivos y psicomotores. Estudios realizados con la población de jóvenes han evidenciado la necesidad de integrar y apoderar a los jóvenes en los esfuerzos de prevención y educación. Dada a estas realidades, en el 1997, el PPFTX integra la estrategia de promotores pares en los escenarios universitarios con el propósito de desarrollar y fortalecer el apoderamiento de los/as jóvenes en los esfuerzos de prevención de un embarazo no deseado y las infecciones

de transmisión sexual, incluyendo el VIH. Actualmente, contamos con 16 jóvenes universitarios, quienes se desempeñan como promotores pares. Entre sus funciones y responsabilidades se destacan: la promoción de los servicios del PPFTX y en la educación sobre temas relacionados a la salud sexual y reproductiva a través de actividades innovadoras tales como: cumbres de jóvenes, teatro - foro, conversatorios, paneles educativos, talleres participativos, y las artes: (ej. música, baile, pantomima, bandas de rock en español, juego de roles, etc.) como parte de los esfuerzos de prevención encaminados a mejorar su calidad de vida.

R-063 **Avalúo de la Destreza de Pensamiento Crítico en el Estudiante del Programa de Doctorado en Farmacia.** G. Miró; E. Ríos Orlandi; R. García. Práctica en Farmacia, Ciencias Farmacéuticas, Escuela de Farmacia, UPR

La habilidad de pensar críticamente es un componente integral en la misión de la Escuela de Farmacia que se traduce en el perfil del egresado del programa profesional. Los instrumentos California Critical Thinking Disposition Inventory (CCTDI) y The Test of Everyday Reasoning (TER) se utilizan a nivel nacional en una gran variedad de escenarios para el avalúo de diagnóstico o de resultados de la destreza de pensamiento crítico (PC). Con el propósito de determinar si hay cambios significativos en la destreza de PC de los estudiantes de farmacia, se inició la administración de ambas pruebas en el primer semestre del primer año profesional y en el cuarto año (pre y post prueba), comenzando con la clase Farmacia 2006 (N=43). La puntuación total promedio de CCTDI (pre-prueba) fue 318.98 (DE = 22.90). El 14% de los estudiantes obtuvieron puntuaciones mayores de 350 y el 4% obtuvieron puntuaciones menores de 280. La puntuación total de 350 o más puede usarse como un indicador general de fortaleza en la disposición hacia el PC; menos de 280 puntos es un indicador de deficiencia en la disposición. De un posible total de 35 en la pre-prueba TER, la puntuación promedio fue 22.2 (DE = 5.5). Cuando se comparan los resultados de la pre y post prueba se evidencia un aumento significativo en los resultados de CCTDI, no así en la prueba TER. Estos resultados apuntan a una mejor disposición del estudiante de cuarto año a pensar críticamente. Se recomienda continuar el estudio para determinar si existe relación entre los resultados de estas pruebas y otras medidas como el promedio de admisión y el promedio profesional.

Secuelas de Hospitalización en Adultos Mayores con Fractura de la Cadera Atendidos en Puerto Rico Durante el 2002.

R-064 O.D. Lorenzi; L. Rodríguez; J. Guzmán. Departamento de Bioestadística y Epidemiología, Escuela Graduada de Salud Pública, UPR.

El objetivo de este estudio era determinar si existía asociación estadística entre osteoporosis y varias secuelas de hospitalización (mortalidad intrahospitalaria, readmisión por fracturas, hospitalización por cualquier causa y cambios en funcionalidad) entre pacientes de 65 años o más hospitalizados debido a una fractura de la cadera. Se revisaron los expedientes médicos y se llevó a cabo una entrevista telefónica. Se compararon las características generales de los pacientes por sexo y edad usando la prueba de Ji-cuadrada. Se hizo un análisis de sobrevivencia para determinar si existía diferencias en el largo de la estadía hospitalaria por sexo o por edad. La muestra constó de 37 pacientes. La edad promedio fue de 77.5 ± 8.0 años. La mayoría pertenecía al grupo de edad de 75-84 años (42.3%) y al sexo femenino (72.9%). Las condiciones médicas más comunes fueron: hipertensión (54.1%), Diabetes mellitus (27.0%), enfermedad cardiovascular (18.9%) y Alzheimer (18.9%). La estadía hospitalaria promedio fue de 6.0 ± 4.1 días. Un 44.4% de los pacientes tuvieron que volver a ser admitidos al Hospital, mientras que 13.9% de éstos hicieron visitas a la sala de emergencia. En conclusión, en este grupo de pacientes con fractura de la cadera, tanto los hombres como aquellos entre las edades de 65 y 74 años tenían mayor probabilidad de permanecer más días en el hospital. Estos hallazgos no fueron estadísticamente significativos. Es necesario llevar a cabo estudios posteriormente para determinar el impacto de las fracturas de la cadera en pacientes con osteoporosis para desarrollar estrategias de prevención y rehabilitación.

R-065 **Herbs and Herbal Product use Among Puerto Ricans.** B.I. Ortiz; L. Arce-Malavé, K. A. Clauson, B. Soto-Torres. Pharmacy Practice, Pharmaceutical and Administrative Sciences Department, Nova Southeastern University College of Pharmacy, Ponce, P.R.

The objective of this study was to assess the use, attitudes, beliefs, and expenditures on herbs and dietary supplements among Puerto Ricans. A descriptive study was conducted among a convenience sample of communities in Puerto Rico. A 32-item questionnaire

served as the data collection tool. Chi square and frequency distributions were calculated using SPSS. The significance level was set at $p < 0.05$. Herb use was reported by approximately 68% of participants. Relatives and friends accounted as their primary source of information (43.5%). Only 13.6% relied on healthcare professionals' knowledge about herbs, however, 70% think they should consult them. Sixty seven percent considered herbs free from side effects, and 54% as always efficacious. Herbs were considered useful for the treatment of colds and allergies (79.6%), constipation (76.2%), stomach problems (74.8%), and insomnia (71.4%). The top five herbs used were ginger (30.6%), aloe vera (29.9%), chamomile (22.4%), star anise (21.1%), and linden (19.0%). Monthly expenditures ranged from $< \$10.00$ (39.5%) up to $> \$100.00$ (0.7%). There is a high prevalence of use and a dangerous level of confidence in the safety of herbs among the Puerto Rican population. Significant misconceptions towards the safety and efficacy of herbs were identified. Pharmacists should increase their knowledge about herbs and other alternative therapy modalities in order to prevent potentially dangerous drug-herb interactions and adverse reactions.

R-066 M.Rojas, Pharm D. Department of Pharmacy. Nova Southeastern University Ponce. PR.
 W. Marsh. MBA, PhD. Department of Pharmacy Science and Administration. Nova Southeastern University, Ft. Lauderdale, FL., B. Ortiz. Pharm D. Department of Drug Information Nova Southeastern University, Ponce, PR.

Alcohol abuse and alcohol dependence are considered as major public health issues. Among treatment modalities for alcohol dependence, self support groups have been identified as invaluable resources for patient recovering and empowerment. The purpose of this study was to assess physicians' awareness and referrals to self help support groups for alcoholic patients and their families. Two hundred physicians were randomly selected from the local telephone directory. The research tool consisted on a nine item questionnaire. From those respondents, 39%, 8%, 5%, and 8% knew where AA (Alcoholics Anonymous) Al-Anon, ACOA (Adult Children of Alcoholics) and Alateen groups meet, respectively. Most practitioners reported either fair knowledge (45%) or little to no knowledge (44%) of the 12 step program used by these groups. Eighty five percent thought that self support groups were effective; however, only 47% frequently referred their patients. The main reasons for lack of referrals were unawareness of the programs (56%) or not knowing the locations where they meet (61%).

Physicians who reported greater familiarity with self help groups more likely to refer their patients ($p = .007$). Findings from our study suggest that there is a lack of physician awareness concerning the existence of support groups for alcoholic patients and their families. Furthermore, our findings suggest that there is a need for more education about self help groups among study physicians. As a team, they may work together in the development of health education campaigns, and join efforts to increase the number of referrals to support groups.

II. Presentaciones Orales

Morphological and Immunohistochemical Characterization of Sensory Neuron Subpopulations. C. Feliciano 1; C. Castro 2; I. Berrios 2; D.p. Kuffler 2. 1 Section of Neurosurgery, 2. Institute of Neurobiology, School of Medicine, UPR.

Adult frog dorsal root ganglia (DRG neurons) are composed of subpopulations responding to different physiological stimuli, with unique biophysical and pharmacological properties. Prior studies demonstrated two distinct broad-based populations of DRG neurons, called small dark and large light neurons based on the presence or absence of cytoplasmic granules and neuron diameters. We found that six subpopulations of DRG neurons can be identified under bright-field illumination based purely on morphological criteria: four with cytoplasmic granules with unique morphologies and distinct differences in size distributions, and two with no cytoplasmic granules, but distinct size distributions. This study was designed to determine whether the morphologically distinct DRG neurons correspond to specific physiological subpopulations identified by immuno-labeling. Preliminary results indicate that some morphologically distinct subpopulations are antibody positive for specific markers but not others. More studies are needed to determine whether co-labeling with multiple antibodies allows unique neuron subpopulations to be identified and to determine whether there is a correlation between neuron morphology and function. If so, morphological recognition of sensory neuron subpopulations will allow a far faster and cost-effective means for addressing clinical issues, like diagnosis of neuron pathology and the influences of novel drugs on sensory neurons.

R-068 Promoting Sensory Axon Regeneration into the Injured Spinal Cord. C. Castro; D.P. Kuffler. Institute of Neurobiology, UPR.

The axons of dorsal root ganglion (DRG) neurons can not regenerate into or within the injured spinal cord because their regeneration is inhibited by the proteoglycan CSPG. If CSPG in the spinal cord is neutralized, axons of DRG neurons can regenerate into and within the spinal cord. However, neutralizing CSPG in the spinal cord has proved to be extremely difficult. Working with adult rat DRG neurons in vitro, we developed a simple method by which to make DRG neuron growth cones non-sensitive to the inhibitory influences of CSPG, thus making it not necessary to neutralize all the CSPG in the spinal cord to allow DRG axons to regenerate. We show that neurites of DRG neurons in soma contact with Schwann cells are 7.4-fold shorter than those of neurons without soma contact with Schwann cells (naked neurons). When Schwann cell CSPG is eliminated by digestion with the enzyme C-ABC, the neurites of Schwann cell-contacting and naked neurons are of equal length, indicating that the outgrowth inhibition was eliminated. We also show that neurite outgrowth from naked neurons is not inhibited by contact with Schwann cells. These data indicate that CSPG inhibits neurite outgrowth through contact between the neuron soma and Schwann cells, and not by contact between neurites of naked neurons and Schwann cells. Thus, we have found a novel and simple mechanism by which eliminating CSPG within DRG makes DRG neuron neurites insensitive to the outgrowth inhibition of CSPG. This suggests that elimination of CSPG in DRG will allow the axons of DRG neurons to regenerate into and within the spinal cord.

R-069 Beyond Their Strengths: Provider's Perception of Adherence on Puerto Rican Women with HIV/AIDS. M. Rivero¹; C. Dawson-Rose². 1 UPR-RCM, School of Nursing; and 2 UCSF School of Nursing

BACKGROUND: Provider-patient interactions are key determinants of women success in adhering to HAART regimens. **AIM:** Explore, provider's perceptions and experiences with women with HIV/AIDS about HAART adherence. **DESIGN:** Qualitative design, **SAMPLE:** Ten providers from community based and clinics in Puerto Rico. **FINDINGS:** Three categories emerged as provider's describes their experiences: a) gender related demands, b) fear of disclosure the HIV status, and c) dealing with treatment complexity. Having HIV infection and responding to traditional gender expectations make it challenging for women to focus on their health and assume

an active role to control their lives and follow nearly perfect adherence. Women were concerned about social stigma and discrimination if the HIV/AIDS status is disclosure to others. Providers recognized that the requirement to adhere to a complex, difficult, time-consuming, regimen that interfered with daily activities and gender demands did not always make sense to women. **IMPLICATIONS:** 1) when health care providers value what women with HIV are going through and help them to reduce the burden, women are more likely to engage in adherence; 2) gender issues should be integrated comprehensively throughout every intervention with women; 3) need to establish assistance programs for the discussion of women perceptions of stigma and the process of disclosure of the HIV/AIDS to keep them connected with their family, sexual partners and friends; and 4) simple and personalized treatment regimens are central to adherence. Supported by: NIH/NINR and the NCMHD (5-P20-NR008342) and (P20 NR008359).

R-070 Knowledge, Attitudes and Contextual Conditions Associated with Standard Precautions for HIV Prevention Among Nursing Personnel. L. I. López, RN, MSN, R. Vargas, MA & M. Rivero, RN, DNS, School of Nursing, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

This study aimed to identify the levels of knowledge, attitudes and perception on labor conditions related to the use of standard precautions for HIV prevention in a sample of 100 members of nursing personnel from three hospitals of San Juan Metropolitan Area. Three scales were developed and used to collect data. Participants reflected correct knowledge on use of standard precautions and attitudes of predisposition to use standard precautions. They indicated, however, absence of total fulfillment with regulations of protection on the part of their employers. High levels of exposure to blood-borne pathogens were reported. It is recommended to design aggressive plans of education to promote the security, and a greater supervision to hospitals for guarantee the fulfillment with the laws of security.

R-071 Psychosocial Impact of HIV/AIDS Diagnosis on a Group of Puerto Rican Women: A Pilot Study. C. Santana¹, M. Rivero, R.L. Vargas; UPR-RCM, School of Nursing, 1 Graduate Program

BACKGROUND: Women constitute 23% of all new AIDS cases in Puerto Rico and 35% of all new HIV infections. It is expected that this number will be increasing with time. **AIM:** To determine the psychosocial impact of HIV/AIDS diagnosis on a group of Puerto Rican women

examining the following variables; fear of diagnosis disclosure, depressive symptomatology and self-esteem. DESIGN: Quantitative and correlational design. SAMPLE: 60 women that have been diagnosed with HIV/AIDS for 5 or more years. FINDINGS: Results indicate that 38% had not disclosed their HIV diagnosis to others because of fear of rejection by family members. Similarly, 25% had not reported their diagnosis to their sexual partners for fear of being abandoned. The results of the study also reflect high levels of depression and changes in self-esteem. IMPLICATIONS: It is necessary for women living with HIV/AIDS to receive comprehensive services tailored to address these psychosocial issues. Supported by Nursing Research Center on HIV/AIDS Health Disparities (NIH/NINR and the NCMHD 5-P20-NR008342).

R-072 **Calidad de Vida de Personas Viviendo con VIH/SIDA que Experimentan Síntomas de Lipodistrofia.** E. Velásquez, Programa Graduado, Decanato de Enfermería, Universidad de Puerto Rico, Recinto de Ciencias Médicas, San Juan, Puerto Rico.

Actualmente en Puerto Rico se han reportado 29,961 casos de SIDA y 4,172 casos de VIH (Departamento de Salud, 2005). Las personas diagnosticadas con VIH/SIDA experimentan un amplio espectro de síntomas entre los que destaca la lipodistrofia. Aunque en la isla existen personas con lipodistrofia, no se ha documentado incidencia o prevalencia de casos, ni se ha explorado cómo esta influye en la calidad de vida. Este estudio examina cómo la lipodistrofia impacta la calidad de vida en las personas que viven con VIH/SIDA, particularmente en su bienestar físico, emocional, social, funcional y cognoscitivo. Para esto se utilizó el FAHI, vers. 4. También se explora la relación que existe entre calidad de vida, conductas de salud y factores sociodemográficos. La muestra del estudio fue de 54 participantes que reciben servicios en centros de tratamiento para VIH/SIDA en el área metropolitana de San Juan. El 35% de la muestra reportó padecer de depresión. De igual manera, datos preliminares apuntan hacia una correlación significativa entre las variables depresión y calidad de vida. Los conocimientos obtenidos ayudarán a desarrollar estrategias efectivas para el manejo de los efectos que puede causar la lipodistrofia en las personas con VIH/SIDA.

Autopsy Findings in Three Macrosomic Babies Born to Mothers with Gestational Diabetes Mellitus. L. Tormos-Pol, MD 1; M. S.

R-073 Correa-Rivas MD 1; K. Adamsons-Summers MD, PhD 2. 1 Department of Pathology and Laboratory Medicine and 2 Department of OB-GYN, Medical Sciences Campus, University of Puerto Rico.

Objective: To present the morphometric and histopathologic findings in three macrosomic newborns as adverse predictors of fetal outcome. Methods: We evaluated the morphometric measurements and histopathologic findings of autopsy material performed in 2004 of three macrosomic newborns who died within 4 to 18 hours after birth. Two were born at term; one by cesarean section and the other by vaginal delivery. One was born at 37 weeks gestation by cesarean section because of preeclampsia. All three mothers had gestational diabetes mellitus. Particular attention was placed on the heart, lungs and liver in regard to maturity and pathologic findings. Organ weights were recorded and compared to expected weights. Results: Organomegaly with exception of the brain were evident. Heart weight was increased by as much as 147% and the liver by 115%. The increase in heart mass was due to cellular hyperplasia and not hypertrophy. Lung weight was increased by up to 90%. The histologically mature lungs revealed congestion and focal hemorrhages with unusually prominent intraacinar arterioles as evidence of pulmonary hypertension. The enlarged liver revealed increased erythropoiesis and hepatic steatosis. Conclusions: Maternal diabetes mellitus has profound adverse effects in the development of the fetus with increased neonatal morbidity/mortality. Close follow up of diabetic mothers with strict glucose control has not been successful to eliminate macrosomia which at present affects about 9.2 percent of all newborns nationwide. Better strategies should be evaluated to minimize or even to eliminate the permanent sequelae of fetal hyperinsulinemia.

The Role of Plasma Oncotic Pressure in the Macrosomic and Hyperinsulinemic Newborn.

Y. Galib Fiol MD1; M. S. Correa-Rivas MD1; K. Adamsons MD, PhD2; 1 Department of Pathology and Laboratory Medicine, 2 Department of Obstetrics and Gynecology, Medical Sciences Campus, University of Puerto Rico.

Medical literature has remained virtually silent regarding topics such as arteriolar conductance and plasma oncotic

pressure. Since arteriolar conductance is the main determinant of capillary blood pressure, and never exceeds the oncotic pressure of plasma, the clinician is rarely confronted with situations in which this regulatory process fails. The hyperinsulinemic macrosomic newborn of the diabetic mother is one of the rare exceptions. It is expected that arteriolar conductance in the newborn is high. Under normal circumstances the high conductance is compensated by the low inotropism of the ventricles protecting the newborn from developing pulmonary edema, hypovolemia, and hemoconcentration. The myocardial hyperplasia of the hyperinsulinemic newborn changes the previous balance, unless it is compensated by the needed hyperplasia of the arterioles. Irrespective of the protective action of the arterioles, the plasma oncotic pressure is likely to play a decisive role. We present two macrosomic newborns who died within 18 hours after birth with plasma albumin less than half the calculated optimum. The histopathologic changes in the liver of these macrosomic babies question the hepatic functional capacity to synthesize the needed albumin to maintain a pressure of 30 torr. Restoration of optimal albumin levels should be considered to maintain the oncotic pressure and avoid the possible consequences of hypovolemia, hemoconcentration, and increased blood viscosity worsening oxygenation in these newborns who suffer pulmonary hypertension among other problems.

Promoting Neurological Recovery following Traumatic Nerve Injury. I. Sosa 1; J. Santiago 2; O. Reyes 3; D. Kuffler 4. 1 Section of Neurosurgery, 2 Department of Orthopedic Surgery, 3 Doctors Center Hospital, Manati, 4 Institute of Neurobiology, Medical Sciences Campus, UPR.

Each year over 50,000 people in the US suffer peripheral nerve traumas requiring surgical repair. Only 10-20% recover moderate to normal neurological function because of the lack of a reliable technique for inducing axon regeneration across gaps >0.5 cm. We are testing a new technique for its ability to restore neurological function after traumatic peripheral nerve injuries. The technique requires two materials, a tube of exogenous collagen to bridge the nerve gap, and a 3-dimensional matrix filled with neurotrophic and wound healing factors. We repaired nerve gaps from 2-12 cm, 3½ weeks to 3½ years post trauma. Each of 4 patients recovered neurological function, quantitatively assessed from limited to normal. At a minimum, each patient recovered movement of some fingers, the ability to generate force, and skin sensitivity appropriate for the repaired nerve. The latency of evoked

potentials approached normal. There was neurological recovery even with a 12-cm gap repaired 3½ years post trauma. The best recovery was in a patient with a 5 cm gap repaired 3½ weeks post trauma with normal muscle control and force generation, normal conduction latency, and sensitivity to vibration, temperature and touch, with normal 2-point discrimination. Following surgery, each patient had from significant reduction to complete elimination of pain associated with the injury. These results indicate that, using a simple technique, neurological function of lesioned peripheral nerves can be restored, even across long nerve gaps, and at long times post trauma, but the best recovery is when the repair is performed as soon after the trauma.

Can Humans Recover Function Following Paraplegia? O. Reyes 1; I. Sosa 2; R. Brau 2; D.P. Kuffler 3. 1 Doctors Center Hospital, Manati; 2 Division of Neurosurgery, 3 Institute of Neurobiology, School of Medicine, UPR.

There is no neurological recovery following a spinal cord lesion in humans because the spinal cord tissues contains factors that inhibit axon regeneration, and lack factors to promote axon regeneration. Although a technique has been developed for inducing neurological recovery in an animal model, there is no reliable technique that can be applied clinically to humans. Here we present preliminary results from a small clinical study in which we applied a novel technique in an attempt to induce neurological function in patients with an anatomically lesioned spinal cord. The patients had spinal cord gaps of from 2-5 cm long. The gaps were bridged with a collagen tube filled with a patient-derived 3-dimensional matrix containing neurotrophic and wound healing factors. One patient recovered no neurological function. However, two patients recovered some neurological function. They developed sensitivity in one leg, and could localize which leg, as well as where it was stimulated. In addition, and one of these patients developed sensitivity to temperature and vibration. This patient also developed bladder and bowel sphincter control, and sensitivity in his genital area. To our knowledge, these are the first cases in which humans have recovered neurological function following a complete anatomical spinal cord transection. Although the recovery was limited, the results suggest that even simple modifications of this technique should lead to more extensive neurological recovery. Further studies are required to determine the reliability of the technique, and when is the optimal time post trauma to perform the lesion repairs.

Outcomes of a Community Pharmacy-Based Pharmaceutical Care Program for Patients with Diabetes. F.J. Jiménez-Ramírez; H.A.

R-077 Monsanto-Planadeball. Department of Pharmacy Practice, University of Puerto Rico School of Pharmacy.

A Pharmaceutical Care Program was implemented to assess clinical and humanistic outcomes with patients serving as their own control. Diabetes Mellitus (DM) is the third leading cause of death in Puerto Rico. Puerto Ricans are among the high risk ethnic groups to develop DM and related complications. Glucose control has been directly related to prevention of chronic diabetes related complications. Patients were recruited, educated and evaluated prospectively as approved by the UPR Medical Sciences Campus IRB. Inclusion criteria were: (1) diagnosis of type 1 or 2 DM, (2) 18 years of age or older, (3) willingness to participate and comply with follow-up appointments. A structured educational program and assessment was provided by a pharmacist who is also a Certified Diabetes Educator and a nutritionist. Clinical (glycosylated hemoglobin A1c) and humanistic (quality of life and patient satisfaction) outcomes were measured. One hundred fifty-nine patients were enrolled in the program and 70 % remain active. Average age was 59 ± 11.7 years, primarily females (73%). The average glycosylated hemoglobin at baseline was 8.65 ± 2.18 % compared to 7.69 ± 1.47 % at the end of the period analyzed (N=71, $p=0.003$). There was a significant improvement in diabetes knowledge score from baseline (67%) to one year after (80%), $p < 0.01$. Satisfaction with pharmacist services improved slightly from baseline to one year after ($p=0.06$). A community pharmacy-based pharmaceutical care program for patients with DM was successful improving outcomes and diabetes related knowledge. Supported by: AADE, Aventis, Farmacia San José, and UPR-School of Pharmacy.

Precision and Accuracy of Measurements between 3D and Traditional Orthodontic Models. A.V. García Motta, A.R. Elías-Boneta, C.

R-078 Toro, K. Psoter, School of Dentistry, University of Puerto Rico, Medical Sciences Campus.

Even though orthodontic digital models have gained popularity in recent years, the precision and accuracy of the measurements made on them have not been systematically evaluated to be used for clinical or research purpose by using the Little Irregularity Index. Therefore, the purpose of this study was to evaluate the precision and accuracy of three-dimensional electronic models images employing Geodigm software 6.00 (E-model Inc.) as compared to the traditional manual measurements done

on plaster study models with a digital caliper. The study sample consisted of 30 pairs of plaster and digital models of 12-17yr olds residing in Puerto Rico, with an Irregularity Index >5 mm, seeking treatment at the Orthodontic Graduate Program of the University of Puerto Rico. Digital measurements were obtained from the E-model software and manual measurements were performed using a digital caliper calibrated to the nearest 0.001mm. The Irregularity Index scores were examined by using Linear Regression Analysis and a Randomized Block Factorial design with repeated measurements. Intraexaminer calibration was excellent because it was found a high correlation in the values between both time periods of measurements ($R=0.964$). It was found an explained variation of 93.8 % between both measurement methods so scores derived from digital models are valid and reliable measures of crowding. This study provides scientific evidence that aid clinicians in using a new and improved technique for measuring dental casts, thus making clinical documentation and research easier and more convenient.

Bridging Basic Science and Clinical Practice: A Challenge for Contemporary Medical Education. E. R. Parrilla-Castellar; K. Adamsons.

R-079 Department of Obstetrics and Gynecology, Medical Sciences Campus, University of Puerto Rico.

Length of medical education in the United States has remained virtually unchanged since the early decades of the last century. In the meantime, the breadth of medical information potentially available to the medical student and physician has increased more or less exponentially. On the narrow subject of "childhood obesity and hypertension", an Internet search covering the last three years yielded 1038 articles. It is clear that no medical school curriculum can evaluate such volumes of contributions and decide on scientific grounds what information should be included, leaving clinically relevant basic science concepts to be taught authoritatively and not founded on current literature. Therefore, it is not unexpected that items in the subject index of physiology and pharmacology textbooks, such as "oncotic pressure", "capillary blood pressure", and "distension force" are absent from well-recognized texts, not only in Obstetrics and Gynecology, but other fields as well. This accounts for such views that edema is due to salt retention, oliguria of preeclampsia is caused by vasospasm, acceleration of organ maturation of the fetus (i.e. lungs) is achieved with glucocorticoids, and that respiratory distress of the macrosomic newborn is due to lung immaturity. Collectively, these observations dictate an urgent need

for students and practitioners to hear, through their teachers, the voices of contemporary basic scientists to ensure that the vast and continually expanding body of clinical information optimally transforms patient care.

R-080 Undergraduate Research Teaching of Echinoderm Development using Whole Mount Immunocytochemistry in the Sea Urchin *Lytechinus variegatus*. A.T. Méndez-Merced; L. Rosado; D. López-Torres. Universidad del Este-AGMUS, School of Sciences and Technology, Carolina, P.R.

Marine invertebrates of the Phylum Echinodermata are deuterostome phylogenetically related to chordates. These organisms, especially echinoids or sea urchins, are widely used as model animals in developmental studies. We are using the sea urchin, *Lytechinus variegatus*, to teach undergraduate students Development, basic research skills and immunocytochemistry. In vitro culture from one cell embryos to echinopluteus larvae has been accomplished. Temporal expression of several protein markers have been tested using whole mount immunocytochemistry. Alpha tubulin has been detected in gastrula mobile cilia and pluteus ciliated bands while serotonin (5-HT) neurotransmitter was observed in pre-neuronal cells in the apical plate of the gastrula and in pre-oral neuronal cells and fibers of the pluteus larva. Immunoreactivity against the holothurians echinoderm heptapeptide GFSKLYFamide was preliminarily observed in the intestinal area possibly the sphincter to the intestine of the pluteus. Our data validates those of investigators elsewhere and the accomplishments of our objectives. These research experiences advance students Science education and motivate their interest to pursue a scientific career. Funded by BRIN-PR/NIH, URGREAT MBRS-RISE and Universidad del Este.

R-081 La Comunidad Define sus Prioridades en Investigación y Educación a través de Internet: la Experiencia de tendenciaspr.com en el Área de Salud. M. Lobato Vico, Facultad de Estudios Generales, Universidad de Puerto Rico, Recinto de Río Piedras, Río Piedras, Puerto Rico.

Internet provee unas capacidades de búsqueda de información sin precedentes, pero su mayor aportación al desarrollo de un nuevo paradigma en educación e investigación puede venir en el sentido inverso: a través de internet se obtiene una rica información sobre la demanda de información, qué se busca, quién, cómo y para qué, y también cómo se encuentra mejor. Así se pueden orientar las prioridades de investigación y los

métodos de difusión y educación a la comunidad a través de internet. La presentación analiza la experiencia del proyecto tendenciaspr.com en este proceso, y en concreto de sus páginas en temas de Salud. Tendenciaspr.com es un proyecto universitario para la difusión gratuita de datos y estadísticas sobre Puerto Rico, que busca democratizar los datos que se producen a través de entidades gubernamentales y privadas y hacerlos universalmente accesibles. Se publica un portal de internet cuyo diseño responde a la lógica del usuario, y se desarrollan páginas y documentos de análisis de acuerdo a los intereses de los visitantes. La tercera parte de las 70,000 visitas anuales que recibe el portal tendenciaspr.com buscan temas de salud. En la presentación se proveen ejemplos de los "rastros" que dejan estas visitas, directa o indirectamente, sobre la información sobre salud que buscan (comentarios, búsquedas internas, tiempo de visita, etc.). Como respuesta a estos intereses observados, el portal ha incorporado nuevas tablas, ha desarrollado páginas sobre temas específicos (Drogas y Alcohol, por ejemplo), y prepara documentos de análisis. El proyecto tendenciaspr.com tienen financiación del DEGI (UPR, Río Piedras).

R-082 El Microscopio Virtual en la Enseñanza. C. González Keelan MD, M. Santé MD, M. Marcos MD, I.L. Rivera MS, Departamento de Patología, Escuela de Medicina, Universidad de Puerto Rico, Recinto de Ciencias Médicas, San Juan, Puerto Rico.

El microscopio virtual (MV) simula un microscopio, con imágenes histológicas digitalizadas. El curso de patología incluye laboratorios de histopatología. Atendemos hasta 27 estudiantes simultáneamente, en 3 microscopios de diez cabezas (MDC). Repetimos los ejercicios hasta atender todo el estudiantado. Un profesor dirige la exploración. El MV permite que los estudiantes hagan los ejercicios en sus microprocesadores y podríamos atender todos los estudiantes simultáneamente. Los estudiantes controlan las imágenes, siendo aprendizaje más activo. También pueden acceder al MV en su tiempo libre. Objetivos: Identificar qué beneficios aporta el MV en la enseñanza de histopatología. Estrategias y actividades: Ofrecimos dos ejercicios de laboratorio a mitad de la clase, usando el MV. Los estudiantes hicieron el ejercicio en sus computadoras con un profesor, para aclarar dudas. La otra mitad de la clase se distribuyó en grupos de nueve estudiantes y tomo los laboratorios con el MDC. Luego, se intercambiaron los grupos para los siguientes 2 laboratorios. Al final, se ofreció un cuestionario al estudiantado para establecer su satisfacción con cada método. Resultados: 81 estudiantes

contestaron el cuestionario. Hubo mayor grado de satisfacción en MDC que en MV en todos los criterios evaluados: Imagen 86/25, Aclaración de dudas 91/19, Uso del tiempo 89/15, excepto en que usaron el MV luego del laboratorio con más frecuencia que el MDC 14/19. Proyección al futuro: Superar las dificultades que presento el MV, para sacar más provecho de este recurso educativo.

Experiencia de Práctica en la Comunidad: Terapia Ocupacional Promoviendo la Salud y Bienestar en la Comunidad Los Bravos de Sabana Seca. D. Hernández; A. Cruz. Programa de Maestría en Ciencias en Terapia Ocupacional, Colegio de Profesiones Relacionadas a la Salud, RCM, UPR.

El Programa de Maestría en Terapia Ocupacional llevó a cabo una experiencia de práctica con el propósito de que los estudiantes desarrollaran conocimientos, actitudes y destrezas de evaluación e intervención en la comunidad. Los estudiantes junto a facultativos evaluaron un grupo de 10 mujeres que participan en el Proyecto Niños de Nueva Esperanza en la Comunidad Los Bravos. El proceso evaluativo tuvo el objetivo de obtener un perfil ocupacional del grupo, que permitiera identificar las tendencias en cuanto a: roles, intereses, necesidades, el uso del tiempo en actividades y ocupaciones significativas y la influencia del ambiente en su ejecución ocupacional. Los resultados obtenidos reflejaron: desbalance y deprivación ocupacional, falta de satisfacción en las ocupaciones, conflicto de roles, dificultad para estructurar el tiempo e involucrarse en actividades de interés. Las estrategias de intervención con énfasis en la promoción de salud y prevención de enfermedad incluyeron: educación sobre el uso del tiempo libre, selección de actividades y ocupaciones que promuevan estilos de vida saludables, actividades creativas y consultorías a participantes y director del proyecto. El 100% de las mujeres, los estudiantes y el director del proyecto expresaron un alto nivel de satisfacción con la experiencia de servicio. Se proyecta continuar con los servicios incluyendo a otras poblaciones y áreas de necesidad de esta comunidad.

Situational Analysis of Assistive Technology Services in the Medical Science Campus, University of Puerto Rico. E.M. Orellano College of Health Related Professions, San Juan, Puerto Rico.

The purpose of this situational analysis was to identify environmental factors that support or constitute barriers for the provision of assistive technology (AT) services in the Medical Science Campus (MSC). A SWOT

(Strength, Weakness, Opportunities, Threats) analysis was performed in September and October of 2005 using several sources of primary and secondary research. Primary research included interviews with key representative informants of the MSC: a student with disability, faculty representative, and an administrative representative that provides services for students with disabilities. Secondary research included the analysis of data from fundamental guiding documents of the MSC, federal and local legislations that mandates the provision of AT in public postsecondary institutions, and literature search through electronic databases on assistive technology and postsecondary students with disabilities. The results revealed that the MSC is committed to comply with its legal requirements to provide reasonable accommodations to students with disabilities. However, the lack of knowledge of AT resources and benefits for academic success of students, faculty and staff, lack of organization of MSC resources for the provision of AT, and lack of designated funding for AT, constituted the principal barriers for the provision of AT. Based on this results, an action plan must be developed to meet the AT needs of the MSC students with disabilities and .to comply with its legal requirements and strategic intent for the provision of accessible services to all its students.

Pilot Study of Risk Factors for Exposure to Abuse and Neglect of Aged Puerto Ricans. A. Irizarry Irizarry. Department of Social Sciences, University of Puerto Rico in Arecibo, Arecibo, Puerto Rico.

Limited research data exists related to exposure of the Puerto Rican aged to abuse and neglect. This study sought to identify those areas of greatest exposure and the socio-demographic variables intervening. It is part of a larger study measuring opinion and exposure of the aged towards abuse and neglect. The exposure segment of the developed questionnaire was made up of eight socio-demographic variables and twenty three situations of abuse and neglect. During the months of August to December of the year 2004 face to face interviews with 430 seniors were carried out. Undergraduate college students were recruited for the interview process. The sample of respondents was based upon availability. An informed consent sheet was signed by the participants before the interview process began. Responses were entered into the SPSS statistical package program. The statistical test of Phi was carried out and analysis is based upon responses of .05 or less. Age cohort was the most significant for exposure to abuse and neglect being the oldest old (80+) those at greatest risk A rural zone of

residence and living arrangements were also found to increase risk. Gender and marital status while impacting did so to a lesser extent. Prevention and intervention efforts must be directed at the oldest old and those residing in rural zones of the island. Supported by the Institutional Academic Research Committee of the UPR College of Arecibo.

El Efecto de la Reforma de Salud sobre el Cuidado Prenatal en Puerto Rico: periodo de

R-086 1995 al 2000. H.A. Marín; R. Ramirez; M. Peña; P. Wise; Y. Sanchez. Instituto de Investigacion en Servicios de Salud de Puerto Rico, Escuela Graduada de Salud Publica, UPR., y Stanford University.

I. Objectives: The objective of this study is to asses the effect of Medicaid managed care (MMC) on the access, initiation, utilization, and adequacy of prenatal care services during the implementation period of the health care reform in Puerto Rico from 1995 to 2000.

II. Methodology: The population in this study is all the infants born alive and their mothers in Puerto Rico from the year 1995 to 2000. The dependent variables in this study are the following: use and no use of prenatal care , when the initial care occurred ,the number of visits for prenatal care,and the adequacy of care. The most important independent variable in our study is what type of health insurance the mother had during pregnancy. This variable is divided in four categories: those who had private health insurance, those with traditional Medicaid, those with Medicaid managed care (MMC), and those uninsured.

III. Results: First, the statistical results indicates that even after adjusting for confounders and selection bias MMChad a positive and significant effect on the amount and adequacy of prenatal care compared to those under traditional Medicaid. But, second, after adjusting for confounders and selection bias MMC did not improve acces os the timely initiation of care compared to traditional Medicaid.

IV. Conclussions: At least during the period of 1995 to 2000 the health care reform in Puerto Rico through Medicaid managed care was not able to achieve its objective of equalizing the access, initiation, amount and adequacy of care received by the Medicaid population to that of the private sector.

Impact of Managed Care on Healthcare Utilization among Adolescents with Asthma.

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R-087 Rodríguez². UPR ¹ Graduate School of Public Health, Department of Health Services Administration, and ² Department of Human Development, and ³ Puerto Rico Health Services Research Institute, UPR Graduate School of Public Health, Department of Health Services Administration

Statement of the problem: Asthma is the most common chronic lung disease diagnosed in adolescents in Puerto Rico (PR), and affects disproportionately low income populations. The Medicaid Program turned to managed care in an effort to reduce costs, and improve access to high quality healthcare services. Objective: To identify healthcare utilization patterns in adolescents under managed care (MC) and fee-for-service (FFS) insurance models. Procedure: This study explores the patterns of healthcare utilization for adolescents aged 13 to 17 years diagnosed with asthma in a group of beneficiaries of the PR Healthcare Reform (MC), and FFS plan. A total of 9,609 insurance claims between 1999 and 2001 were examined. Healthcare utilization was defined as three continuous variables measuring the frequency of visits and use of a specific type of service in a year. Results: The mean of physician office visits in the FFS plan was 6.89 (SD=11.32) and in the MC plan was 1.38 (SD=1.80). The mean of emergency room visits in the FFS group was 3.97 (SD=3.59) and 1.29 (SD=1.16) for the MC group. Hospital admissions presented a similar trend, 4.5 (SD=4.24) in the FFS and 1.11 (SD=0.43) in the MC group. Statistically significant differences were sustained for each year of study (p<.001) in all variables. Conclusion: These results illustrate differences in the way adolescents have access to care according to their insurance status. This may suggest an “insurance effect” on asthma-related management. Further understanding of the impact of these differences on clinical outcomes could guide asthma improvement efforts.

Comparison of Tooth Size Discrepancies among Malocclusion Groups and Gender

R-088 Using Bolton's Indexes: UPR Orthodontic Clinic. O. Yau, School of Dentistry, University of Puerto Rico, Medical Sciences Campus.

Orthodontist are challenged at the “finishing” stages of cases by tooth size imbalance that varies among different ethnical and malocclusion groups. There is limited data available regarding the tooth size discrepancies (TSD) among Puerto Ricans (PR). Bolton's index is a measure of

TSD obtained from subjects in the USA and used as a standard for treatment planning to achieve: good alignment and intercuspation, ideal overbite and overjet. Awareness of TSD by ethnic group can contribute to the expected outcomes. The specific aims are to: describe the prevalence of anterior and overall TSD, compare the TSD ratios with the Bolton's indexes, gender, and malocclusion groups. 158 casts were evaluated, representing all patients of the Orthodontic Clinic. For each cast the mesiodistal diameters were measured using an electronic digital caliper. A calibration exercise was conducted; the R2 value obtained was 0.99. Results for anterior and overall (ū/CI) by gender and malocclusion groups were: male 78.53(76.54-79.21), 92.47(91.18-93.77); female 77.87(76.54-79.21), 92.41(91.42-93.39). Class I 78.50(76.98-80.02), 93.06(92.01-94.09); Class II 77.53(75.72-79.34), 91.64(92.01-94.09); and Class III 78.32(76.42-80.20), 92.60(91.25-93.94). Using as a statistical indicator a quasi-confidence interval, no differences were detected for gender or malocclusion groups. Using the same interval to detect differences from Bolton's indexes, differences were found for: male anterior, female overall, and Class I overall ratios. Other studies are needed to evaluate the clinical significance of these results.

R-089 The HIV Symptom Experience of Latina Women. L.N. Gaud, School of Nursing, Graduate Program, UPR-RCM, San Juan, Puerto Rico

In Puerto Rico, 23% of all AIDS cases reported between 1981 and 2005 were in women. Women are the fastest growing group of people living with HIV/AIDS in the island. Symptoms related to HIV/AIDS have been found to be a significant reason for medication non-adherence and are correlated with depression and lower quality of life. The purpose of this descriptive study is to describe the symptom experience of a sample of HIV positive women in Puerto Rico (n= 72). The Revised Sign & Symptom Checklist for Persons with HIV Disease was used to collect data. Participants were asked to rate the intensity (mild, moderate, severe) of the symptoms (out of a list of 72 possible symptoms) they were experiencing at the moment of measure. According to preliminary data muscle aches, weakness and depression were the most frequent symptoms reported. The number of symptoms experienced by this group was quite high. Participants also have some significant factors affecting their quality of life, such as level of income. Nursing research can contribute towards understanding how HIV-related symptoms impact their quality of life and what types of symptom management skills would be useful.

Autosomal Dominant Juvenile Myoclonic epilepsy not linked to GABRA 1 gene mutation in a Puerto Rican Family. M. Fiol-Elias,

R-090 University of Minnesota, MN, W. Oetting, University of MN, C. Cadilla, University of Puerto Rico RCM, J. Roman, University of Puerto Rico RCM; N.J. Downing, University of MN, B. Chaar, RCM

Objective: This study identifies genetic factors associated with familial epilepsy in Puerto Rico (PR) and reports the findings on a rare form of Autosomal Dominant (AD) Juvenile Myoclonic Epilepsy (JME).

Background: PR is characterized by large families, consanguinity, and a possible founder effect as identified in Hermansky-Pudlak (Ankister et al), oculo-cutaneous albinism (Wilber et al), and schizophrenia (Oetting et al). Genetic information was obtained in 15 families evaluated at a referral center at the UPR Clinical Research Center.

Design/Methods: 80 families with epilepsy were identified, 15 were ascertained for; type of seizures, age of onset, pedigree, neuro-imaging, EEG data and DNA was extracted in 53 consented subjects. A Puerto Rican family with ADJME was genotyped. A report by Cossette et al in a AD-JME French-Canadian family showed a mutation in the GABRA 1 gene, and Gardiner et al reported CHRNA7, A4 mutations. The GABRA 1 gene in 5q34 of 3 affected and 3 unaffected members was sequenced.

Results: The family with JME will be characterized and demographed. No significant mutations of the GABRA 1 gene in the promoter region or exons 3-11 was found and will be looked into.

Conclusion/Relevance: A study in progress of the genetics of epilepsies in PR is informative because of the characteristics of this population. A family with AD-JME was genotyped and revealed no mutations in the GABRA 1 gene as reported. Other loci for this rare form of seizures will be searched for. This study confirms the genetic heterogeneity of this epilepsy syndrome.

Pathways to "Environmental Health Evidence Based" Policy and Practice: A Framework for Community Action. V.E.

R-091 Reyes Ortiz, MSc, R.R. Dávila Torres, MS, University of Puerto Rico, Graduate School of Public Health

Objective: Proposed an evidence based policy and practice pathways that help both research/policy actors and community navigate the use of evidence. Method: To formulate the evidence based policy and practice pathway, we reviewed relevant literature for health, public policy, and the social sciences. Results: Three stages are identified: (1) sourcing the evidence, (2) using the

evidence and (3) implementing the evidence. Also, several decision making factors were identified as part of the pathway. Conclusion: Understanding how evidence informs policy and practice is critical in promoting effective and sustained public health action.

Molecular Tool Based on the *arrA* Gene to Characterize Arsenate-Respiring Bacteria.

R-092 J.R. Pérez-Jiménez¹; and L. Y. Young².
 1University of Puerto Rico-Bayamón; and
 2Rutgers, The State University of New Jersey, New Brunswick, NJ.

The arsenate-respiring bacteria (ARB) are a diverse group that derives energy from arsenate. Arsenate respiratory reductase (ARR) catalyzes the process and forms a distinctive cluster within the DMSO reductase family. Despite the lack of biochemical understanding about ARR, its gene (*arrA*) could be used as a biomarker to distinguish ARB. Our objective is to develop a molecular tool for the characterization of ARB based on a large fragment of the *arrA* gene. Primers for nearly complete, internal and partial amplification of the *arrA* gene were designed and tested on genomic DNA from several ARB, non-ARB and environmental samples. Resulting amplicons were cloned for sequencing and phylogenetic analysis. Several combinations of degenerate primers produced amplicons of ~0.8, 1.3, and 2.3 kb for the *arrA* of *B. selenitireducens* consisting of one single band of the expected size. A fragment of ~2.1 kb was cloned and sequenced. No amplicon was observed for *Escherichia coli* or *Pseudomonas putida* that possess several DMSO-type reductases. Amplicons (~2.1 kb) for *Bacillus macyae*, *Desulfosporosinus* sp. Y5, and *Sulfurospirillum arsenophilum* were sequenced. Phylogenetic topology based on the *arrA* gene was partially congruent with that of 16S rRNA-based analysis. We have generated considerably long *arrA* amplicons. A molecular biomarker should be long enough and genetically persistent to register evolutionary changes suitable for characterization. We continue examining the *arrA* gene from isolates and environmental samples to resolve their diversity and develop specific detection tools. Supported by: NIEHS (N00014-99-1-0), NSF CHE-0221978.

Prevalence of Hypodontia in 10 to 14 Year Old Puerto Ricans.

R-093 G. J. Pagán, School of Dentistry, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.
 Non syndromic tooth agenesis (hypodontia) is the most common developmental dental anomaly. Hypodontia may lead to dental malpositioning, periodontal damage and lack of development of the alveolar bone height. In

addition, functional and esthetic problems may arise. An interdisciplinary approach should provide optimal dental care and promote emotional and psychological well being. The prevalence of hypodontia in Puerto Rico (PR) is unknown. The aim of this study is to report the prevalence of hypodontia in PR children between 10 to 14 years of age as well as the prevalence per tooth, the differences between genders and clinics. A total of 1911 patient files between the ages of 10 to 14 years were examined at random from nine orthodontic clinics selected by judgment located in the north, northeast, southeast, east, west, metro-north and San Juan areas of PR. All patient records to be considered in the study must have an initial panoramic x-ray, medical and dental history, and have seek treatment in the last five years. Patients with history of any syndrome or palatal fissure were excluded from the study. Two calibrated investigators examined the records. The estimated prevalence for the children corresponding to the clinics subjectively selected in this study was 6.3%; 2.2% in males and 4.2% in females. The most frequently missing teeth were the maxillary lateral incisor (1.9% right, 1.8% left) and the mandibular second premolar (1.3%). The highest prevalence was found in the Aibonito clinic (10.7%) and the lowest in the San Juan clinic (3.2%). A large variability was observed among clinics and gender.

Trends in Prevalence of Current Smoking, Puerto Rico and States Without Tobacco Control Programs, 1996 to 2001.

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In 2004 the prevalence of smoking in Puerto Rico (PR) is 12.6%, while three of the four leading causes of death in PR (heart disease, cancer, and hypertension) are associated with smoking. Tobacco use places a tremendous public health burden on the people of PR; 11.5% of all deaths and 10% of all health care costs in PR are attributable to smoking. The objective of this analysis is to compare the 1996 to 2001 trends in smoking prevalence in Puerto Rico and USA states without tobacco control programs, and the contribution of a comprehensive tobacco control effort initiated in Puerto Rico in the 1990's to this difference. Data from the Behavioral Risk Factor Surveillance System for the years 1996 to 2001 were used to examine prevalence changes and trends of smoking using multivariate logistic regression models. The primary outcome measures are current prevalence trends of smoking for the years 1996 to 2001. In 1996 the prevalence

of current smokers in Puerto Rico was 14.5, and 23.6 in the USA. By 1998 the prevalence had increase in PR to 15.7 % and to 24.1% in the USA states. By 2001 the prevalence had declined in PR to 12.5% and to 22.8% in the USA states. The decline in smoking prevalence in Puerto Rico over the 1990's did not reflect national trends and did not result solely from the changes in measured sociodemographic factors in that period. Even though the analysis did not test the time path of the effect, it suggests that the tobacco control programs in Puerto Rico have had a slow and cumulative, but beneficial impact in the smoking prevalence of the Island.

Laboratory Response Capacity and Infrastructure Needs Assessment to Address Public Health Threats and Emergencies in Puerto Rico. M. Rivera; J. Viera; M. Vera; Y. Estrada; A. Pattatucci. Center for Evaluation and Sociomedical Research, Graduate School of Public Health Medical Sciences Campus-UPR.

The island's capacity to detect and respond to public health threats depends both on the strength of its laboratory infrastructure and on the ability of its public health department to work with emergency response partners. The overall goals of this project were to examine the present state of laboratory preparedness in Puerto Rico and identify potential laboratories throughout the island that could participate in the Laboratory Response Network. The Laboratory Response Network (LRN) is a consortium and partnership of laboratories that provide immediate and sustained laboratory testing and communication in support of public health emergencies, particularly in response to acts of bioterrorism. A baseline assessment of laboratory needs was obtained through interviews with the laboratory director or person designated by the director at all hospitals and a sample of CDT, reference, veterinary and environmental laboratories from all health regions. Findings revealed that Puerto Rico's laboratory response capacity and infrastructure is not prepared to respond effectively to a bioterrorist event or public health emergency that includes Category A biological agents. Few laboratories in the island have the needed infrastructure and surge capacity to efficiently respond; they lack sufficient staff, surveillance systems, biosafety facilities, technologies, and capacity to quickly and accurately receive, process or identify a suspicious organism. Further work is needed at all levels to ensure that Puerto Rico's laboratory system will be fully prepared to respond to man-made or naturally-occurring public health emergencies.

Thyroid Hormones and Acceleration of Fetal Maturation in Gestational Diabetes.

R-096 Schwarz, O. Sanchez, K. Adamson, Department of Obstetrics and Gynecology, Medical Sciences Campus, University of Puerto Rico.

Thyroid hormones as the only physiologic accelerators of fetal maturation have not been accepted by the clinical establishment of the United States, inspite of our seemingly convincing reports in *Acta Obstetrica et Gynecologica Scandinavica*, *Seminars in Perinatology* (by Invitation), and the non-debatable article in *Journal of Gynecologic Investigation* by Linda Chan and co-workers on T3 and lung compliance in the fetal monkey. Acceleration of fetal maturation in gestational diabetics, however, is an area where even the most influential conservatives, could not continue to dominate, because glucocorticoids are highly detrimental in these patients. When our Abstracts from SGI Meeting in 2000, and the 2003 World Congress in Gynecology and Obstetrics are transformed into publishable reports in the journals of these societies, the practitioners might change her/his views what accelerates organ maturation of the fetus. Learning that in the more than 17 years in which we accelerated the maturation of the fetus of the gestational diabetic with weekly (1 to 3 doses of 500mcg) intraamniotic T4, to deliver her/him before the hyperinsulinemia has produced permanent damage to the circulatory system, and has increased markedly the population of fat cells, not a single newborn, less than 35 or 36 weeks old, required admission to the Intensive Care Unit for respiratory care. Not a single newborn was macrosomic, and there was no neonatal death.

The Implementation of Second Step, a School-based Youth Violence Prevention Curriculum

R-097 With Elementary Students in PR. B. Mirabal, Dept. of Pediatrics, UPR School of Medicine, Vélez, CN, Dept of Biostatistics and Epidemiology, UPR School of Public Health, Rodríguez-Frau M, Dept. of Undergraduate Health Education, M. Méndez, UPR College of Health Related Professions

Youth violence is a serious public health problem. Homicides are the first cause of death for youth over 15 years of age in PR, particularly in males 20-29 years old; over 90% of these deaths are associated to firearms. Effective, culturally appropriate youth violence prevention interventions are needed which can be implemented early in the child's development. The UPR Center for Hispanic Youth Violence Prevention culturally adapted Second Step, a Youth Violence Prevention Curriculum found effective in the US. A cognitive-behavioral curricular

intervention, it teaches prosocial skills (empathy, impulse control & anger management). Teachers were trained to serve as session facilitators. The instruments were revised and pilot tested prior to the intervention. The intervention was implemented in 4 public elementary schools in a high risk community in PR. It consisted of 35 sessions of 45 minutes duration, during the 2004 - 2005 school year. A total of 143 third grade students participated in the study; 91 were in the experimental group and 52 served as controls. Several measures were used: pre and post tests, observations of student prosocial and antisocial behaviors by trained observers, and teacher interviews. Multivariate analyses were conducted. The pre and post test results, controlling for gender, showed that students in the experimental group (EG) acquired all three prosocial skills. An increase in the empathy score was observed for both males and females, while the impulse control score increased only in males. Anger management scores also increased. The study was supported by funds from the CDC.

R-098 Use of the Internet by Physicians in Puerto Rico. J.G. Quijada, F. Hernández, H.A. Monsanto. Merck Sharp and Dohme (I.A.) Corp., Carolina, Puerto Rico.

The objective of this study was to determine the extent of use of the Internet by physicians to support their clinical practice. Personal interviews were conducted between January and February, 2005 among a representative sample of 385 physicians from different specialties and geographical regions in Puerto Rico. Eighty-one percent reported using the Internet. Rheumatologists, Endocrinologists and Cardiologists were the specialties with the highest usage rate. Internet use decreased as age increased. Geographic variations were observed; metropolitan area physicians were more likely to use the Internet when compared to their counterparts from outside the metropolitan area (81% vs. 74%). The top reasons for not using the Internet were "not interested", "lack of time", and "too difficult". The great majority of those who use the Internet do it from home (81%) followed by the office (68%). Almost two-thirds use dial-up to connect to the Internet at home or the office. The main reasons for using the Internet was "professional" (95%), followed by "personal" (89%) and for administrative purposes (46%). Those who use it for professional purposes do it to look for references (92%), to communicate with colleagues (33%) and to obtain continuing education (31%). The principal benefits perceived by the respondents from accessing the Internet were "current information" (47%) and "fast access" (27%). The sites that respondents visit

more often for professional purposes are Merck Medicus (73%), JAMA (61%) and WebMD (59%).

R-099 Correlation of Aminoglycosides Pharmacokinetics with Severity of Disease in Critically Ill Patients. A. Perez¹, D.F. Dexter¹, J. Bertran-Pasarell², H.M. Guiot², M. Gonzalez-Ramos², Rafael Garcia MPH³. ¹Pulmonary Disease Section, Department of Medicine, UPR School of Medicine; ²Infectious Diseases Section, Department of Medicine, UPR School of Medicine; ³UPR School of Pharmacy.

Introduction: Aminoglycosides still have an important role in the treatment of infections in critically ill patients. Studies suggest that the volume of distribution (Vd) of aminoglycosides in critically ill patients is increased. Therefore, in critically ill patients with increased Vd usual doses may result in sub-therapeutic serum concentrations.

Objective: To evaluate the correlation between pharmacokinetic parameters of aminoglycosides and severity of illness of patients in critical state by analyzing the Sequential Organ Failure Assessment (SOFA) scoring system as a covariant of pharmacokinetic parameters of aminoglycosides. The presumption is that sicker patients (as indicated by higher SOFA score) have higher Vd.

Methods: This is a prospective, on-going, open label study conducted in ICU of UDH. Patients enrolled are 21 years or older, admitted to ICU, and requiring an aminoglycoside. Organ dysfunction is assessed using the SOFA score. A first serum aminoglycoside concentration sample (peak) is collected 30 minutes after the first dose infusion. A second sample is collected at approximately the dosing midpoint interval, while the third sample (through) is collected within 15 minutes prior to the scheduled second dose.

Results: Preliminary results suggest that pharmacokinetics of aminoglycosides in critically ill patients differ from the expected. In the 8 patients enrolled so far, SOFA score has ranged from 2 to 8. Importantly, in 4 of the 8 patients studied (50%), serum concentrations 30 minutes after first dose infusion (peak levels) did not achieve therapeutic levels.

R-100 Expectant Management vs. Intervention to Eliminate Macrosomic Fetuses in Diabetic Pregnancies. S. Schwarz, K. Adamsons, Department of Obstetrics and Gynecology, Medical Sciences Campus, University of Puerto Rico.

For 3 decades there has been a continuous search for a substance that accelerates fetal lung maturation as

premature delivery has not decreased. In spite of initial conflicting reports, glucocorticoids (GC) has become the gold standard in antenatal treatment of prematurity except in Diabetic patients where it is considered detrimental to metabolic control. The use of thyroxin (T4) was initially seen in European Journals. Its use for 15 yrs. in our institution brought surprising observational results. After intra-amniotic injection of T4 in 98 patients in preterm labor the L/S ratio could be predicted to be mature within one week when it reached 1.6. A double blind random study of T4 and GC demonstrated a better outcome in fetuses given T4 at less than 31 wks. Improved care in NICU assures better outcome after 31 weeks. We present three groups of diabetic patients that were delivered after showing lung maturity at or before 36 wks. No Admissions to NICU, average weight was 1007 gms. less than a similar group delivered after 37 wks. In this similar group 44% of fetuses were above 90th percentile growth and one weighed 5028 gms. in spite of good metabolic control. Subsequent reports of 20 patients in 2002 and 34 in 2003 showed similar results. In 2003 there was one case of shoulder dystocia in a fetus that weighed under 3000 gms at 35.3 wks. And thrombocytopenia in a fetus of 5057 gms. delivered by c/s at 35.3 weeks.

Skin Disease in HIV Positive Persons Living in Puerto Rico. D.M. Freytes, RN, MSN, C.M.

R-101 Arroyo-Novoa, RN, MSN, M.I. Figueroa-Ramos, RN, MSN, R.B. Ruiz-Lebrón, RN, MSN, N.A. Stotts, RN, EdD, FAAN, and A. Busquets, MD, School of Nursing, SubGraduate Program, UPR-RCM, San Juan, Puerto Rico.

Skin disease is extremely common in HIV-positive patients and increases as the disease progresses, as well as, the first clue of HIV infection. It is important to identify inexpensive strategies to identify HIV-AIDS and its progression. This study aimed to determine the frequency of skin disease in HIV+ people, to validate the agreement of self-reported skin condition versus objective data obtained by physical examination, and to describe the characteristics of HIV-positive patients with skin disease in Puerto Rico. The IRB Committee at the Medical Sciences Campus in Puerto Rico approved the study. This descriptive correlational study was conducted in an urban area in San Juan, Puerto Rico, where 95 HIV+ adult people participated. Most were males (n=61), of low income with a ninth grade education. Ninety five (95%) percent of the participants had skin disease. Most often reported were onychomycosis (n=16), non-genital warts (n=11), and excoriation (n=9). Kappa index confirmed the relationship between self-reported skin condition/symptoms with skin diagnosis by physician (k=.42).

Participants with highest level of education had a lower prevalence of skin disease and symptoms than the other groups (p=0.014). This study shows that HIV+ Puerto Ricans can identify significant skin manifestations that are associated with a skin diagnosis. This supports the importance on education to achieve optimal levels of health and to get people involved in their health care. Supported by: Nursing Research Center on HIV/AIDS Health Disparities from University of Puerto Rico School of Nursing (NIH/NINR P20NR08342).

Semantic-syntactic Categories of the Verbs Used by Puerto Rican Children Within the Ages of Three to Five Years at the R-102 Metropolitan Area of San Juan, Puerto Rico: Educational Applications. A. Villanueva-Reyes, Graduate School of Public Health, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

This study describes, within a cognitive-gestalt paradigm, some of the different semantic-syntactic uses of the verbs produced by Puerto Rican preschoolers. One of the purposes of this study is to evaluate if individuals use adequate differentiation of certain semantic distinctions during lexical development. This is evidenced by greater or lesser use of transitive versus intransitive verbs, dynamic versus stative verbs, and opaque versus transparent verbs. This research evaluated the management of these verbal categories in spontaneous speech during play activity of thirty Puerto Rican boys and girls within the ages of three, four and five years. Evidence was found that in spontaneous speech, participants used transitive and intransitive verbal instances with equal frequency, even though they possessed a higher quantity of transitive verbs in their repertoire. Additionally, instances with opaque and dynamic verbs appear with higher frequency, when compared with transparent and stative verbs. Differences in ages were not observed. Gender (sex variable) was relevant only in relation to lexical abundance, where girls evidenced a more extensive lexicon than boys, and this vocabulary growth remained constant throughout the ages studied. Findings sustain the possibility that transitive and dynamic verbs possess inherent characteristics that contribute to learning and, later, aid in incorporating verbs into the lexical repertoire. Possible educational applications within the school and clinical setting are discussed.

R-103 **Implantación y Evaluación de un Practicum de Avanzada en Salud de la Mujer en el Programa Doctoral de la Escuela de Farmacia.** B.A. Torres, L. González, E.Vega. School of Pharmacy, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

Se implantó y evaluó un practicum selectivo avanzado en el área de salud de la mujer (SM) para estudiantes doctorales. Surge para incorporar temas de SM en el currículo. Se ha demostrado que las mujeres son las que más buscan atención para condiciones de salud y la mayoría de los estudiantes de farmacia son féminas. El practicum posee un enfoque educativo, clínico e investigativo. El escenario es el Centro de Excelencia Mujer y Salud del RCM (Centro). Su componente clínico se ofrece en las clínicas de ginecología del RCM. Este resulta idóneo para el desarrollo de competencias en los estudiantes. Los logros alcanzados incluyen: educar estudiantes doctorales en el área de SM, educar mujeres participantes del Centro en temas como: anticonceptivos, endometriosis, menstruación y obesidad. Se usaron metodologías como folletos, charlas, cuñas televisivas, desarrollo de un módulo sobre obesidad e intervenciones directas con pacientes. En el área de investigación se desarrolló un proyecto sobre adhesión labial que iniciará en enero de 2006. Otro logro fue el afianzar las relaciones entre la Escuela de Farmacia y el Centro lo que ha redundado en acuerdos de colaboración. La evaluación por los estudiantes fue excelente. La percepción de la profesora es que estudiantes y mujeres participantes se beneficiaron positivamente. Profesionales adscritos al Centro evaluaron la ejecutoria de la profesora como excelente y han solicitado su participación en el Centro. Proyecciones futuras: aumentar el número de estudiantes, ampliar áreas de investigación y publicaciones y seguir ofreciendo servicios educativos y clínicos de excelencia.

R-104 **El Rol Educativo en los Profesionales de la Salud: Modelo Educativo Interdisciplinario Incorpora los Medios y la Tecnología de la Información como Fuentes de Desarrollo Humano.** M. Pacheco; R. García; J. Guzmán; Proyecto Título V, Oficina del Rector, Recinto de Ciencias Médicas, Universidad de Puerto Rico, Puerto Rico.

El desarrollar en los estudiantes las destrezas educativas para promoción y mantenimiento de la salud y prevención de enfermedades constituye el objetivo principal del Componente Educativo en el Proyecto Título V. Está dirigido a estudiantes subgraduados del Decanato del CPRS, Enfermería y Primer Nivel Profesional de la Escuela

de Farmacia. Las estrategias utilizadas son: seleccionar los estudiantes de las escuelas participantes y un plan de trabajo ofreciendo talleres para el logro de los objetivos. El Componente Educativo, comprometido con la integración de la tecnología, facilita a los estudiantes participantes el desarrollo y adquisición de las herramientas necesarias para el éxito de sus actividades educativas, incluyendo en sus talleres el desarrollo del Portafolio Electrónico. Se estableció un grupo piloto en los participantes de agosto-diciembre/2005. En conclusión se obtuvieron 15 Portafolios Electrónicos que evidencian a los Profesionales de la Salud del RCM en un proceso continuo y de desarrollo. Se presenta un aprendizaje significativo que permite el trabajo interdisciplinario en la construcción de sus conocimientos y trabajos presentados, evidenciando competencias y actitudes. Recopila experiencias de aprendizaje reflexivo propiciando la expresión y comunicación del participante. Se proyecta que los estudiantes participantes, continúen utilizando esta herramienta de apoyo como forma innovadora de enseñanza, aprendizaje, creación, investigación y evaluación. Subvencionado por el Proyecto Título V del Departamento de Educación Federal a través del "Grant" PO31S010027PO.

R-105 **Implementación y Evaluación de una Experiencia Educativa sobre Niños/as con necesidades Especiales: Academia de Liderazgo para Maestros que Educan a Estudiantes Excepcionales.** M. Cordero; N. Berríos; C. Vázquez; W. Pacheco; M. Ramírez. Programa de Investigación y Refortalecimiento Comunitario (CIReC), Instituto FILIUS de Investigaciones sobre Impedimentos y Rehabilitación, UPR.

La Academia de Liderazgo para Maestros busca mejorar la calidad y el alcance de la preparación de maestros/as del Programa Regular Académico, de forma que éstos desarrollen destrezas necesarias para garantizar igualdad de oportunidades educativas a todos sus estudiantes. Además, desarrollar un nuevo liderato docente que promueva la formación de comunidades de aprendizaje entre los profesionales. Los objetivos de la Academia son lograr que los participantes: 1) identifiquen las características principales de lo que son las comunidades de aprendizaje; 2) identifiquen la base legal de los servicios educativos para estudiantes con impedimentos; 3) analicen acomodos y modificaciones curriculares para niños con diferentes tipos de impedimentos; 4) identifiquen inteligencias, talentos y estilos de aprendizaje; 5) reconozcan y distingan entre los impedimentos de alta y baja incidencia entre otros. A

través de un proceso de evaluación investigativa y el análisis de 139 cuestionarios completados por maestros/as de seis regiones educativas del sistema público esperamos conocer el nivel de aprovechamiento de estos profesionales además y cómo la estructura y el diseño de los adiestramientos mejoran la calidad de la enseñanza. Aumentar los conocimientos pedagógicos, el trabajo en equipo y desarrollar un sentido de satisfacción profesional del personal de la escuela involucrados en comunidades de aprendizaje. Para mejorar el aprendizaje de estudiantes con impedimentos atendidos en la escuela. La Academia es un proyecto desarrollado como una iniciativa del Departamento de Educación.

R-106 Explorando Estrategias para la Formación de un Nuevo Liderato en la Creación de Escuelas Inclusivas: Academia de Liderazgo para Directores/as de Escuelas sobre Niños/as con Necesidades Excepcionales. N. Berríos; C. Vázquez; M. Cordero; M. Ramírez. Programa de Investigación y Refortalecimiento Comunitario (CIREC), Instituto FILIUS de Investigación sobre Impedimentos y Rehabilitación, UPR.

La Academia de Liderazgo para Directores/as sobre niños y niñas excepcionales busca refinar el liderazgo en el área de niños/as excepcionales para que estos puedan desarrollar su potencial como seres humanos. Se busca crear conciencia y proveer herramientas para la preparación efectiva de los directores de escuela que eventualmente impacte el resto del sistema escolar. Objetivos: 1) lograr un cambio en las actitudes de los familiares, la facultad y el estudiantado y 2) incrementar el entendimiento del rol de cada miembro de la escuela para realizar un esfuerzo colaborativo. A través de un proceso de evaluación investigativa los directores/as evaluaron como la Academia los capacitó en cuanto a: 1) cambios de actitudes en la comunidad escolar en beneficio a los/as estudiantes con impedimentos (67.3%), 2) cambios en las relaciones con los padres y madres (59.2%), 3) aumento en la colaboración profesional y trabajo en equipo en la escuela que dirige (65.8%), 4) identificación certera de niños/as y jóvenes con necesidades especiales (52.3%), 5) aumento en la participación de los/as estudiantes con impedimentos en las actividades regulares (62.5%), 6) aumento en la participación de estudiantes con impedimentos en los programas de avalúo (56.9%), e 7) intercambio y mentoría entre directores/as con otros profesionales sobre Educación Especial (49.3%). Como resultado de la Academia de directores/as se dio inicio al desarrollo y la implantación de una Academia de Maestros Regulares que educan niños/as

con necesidades excepcionales. La Academia de Directores es un proyecto financiado por el Fideicomiso de Niños.

R-107 ProSerEs®: Una Experiencia de Educación Comunitaria para Niños, Niñas y Jóvenes con Necesidades Especiales. W. I. Pacheco-Bou; E. Flores; C. Vázquez-Rivera. Programa de Investigación y Refortalecimiento Comunitario, Instituto FILIUS, Universidad de Puerto Rico.

El Proyecto de Servicios Terapéuticos Integrados para Niños, Niñas y Jóvenes con Necesidades Especiales (Pro SerEs®) es un proyecto demostrativo que tiene como propósito ofrecer servicios terapéuticos integrados en Psicología, Ocupacional y Patología del Habla y Lenguaje a 200 niños, niñas y jóvenes en tres escuelas elementales del Residencial Luis Lloréns Torres utilizando las bases conceptuales del Sistema de Cuidado, el proceso del Wraparound y el concepto de Refortalecimiento. Se desarrolla un plan de intervención individualizado e interdisciplinario basado en las necesidades y fortalezas del niño o la niña que integra los servicios necesarios en función de sus metas. Este plan incluye servicios individualizados, continuos e intensivos, basado en el contexto socio-cultural del niño, la niña y su familia, evaluaciones, reuniones con padres, madres o personas significativas en su vida, integración de la familia, reuniones educativas con el personal escolar y reuniones entre los especialistas para re-evaluar el plan de intervención según sea necesario. El proyecto utiliza la investigación participativa para evaluar los resultados del modelo basándose en indicadores de progreso escolares, psicológicos, familiares y sociales para establecer el impacto de la integración de los servicios en el proceso terapéutico del niño, la niña o la persona joven. Hemos logrado un 90% de participación de los padres y las madres en dos escuelas y un 49% en una tercera escuela. Las intervenciones con la familia y el personal escolar parten de estrategias de educación comunitaria.

R-108 Evaluating the Blackboard Learning System in the Teaching and Learning Process of Health Professionals from Students Perspective. C. Ortiz, MBA; R. Garcia, PhD; A. Castro, MS, Proyecto Título V, Oficina del Rector, Recinto de Ciencias Médicas, Universidad de Puerto Rico, Puerto Rico.

Blackboard Course Management Systems provide online access to instructional materials to support learning and also serve as virtual classrooms for distance education for faculty and students. The system provides collaborative learning environments by offering tools

such as electronic mail, file transfer, discussion forums and online chat. How do faculty and students employ tools within a Blackboard course management system, and how does utilization it related to student success? The Title V Project at the Medical Sciences Campus evaluated how the courses created by faculty members of the School of Pharmacy, the School of Nursing and the College of Health Related Professions are used by the students to achieve their academics goals. The presentation will explain the methodology utilized to survey students in order to discover how the Blackboard Course Management System impacted teaching and student's learning process. This evaluation provides critical information to (1) understand how students are using the system, (2) provide a basis for future decisions about instructional design, faculty training, support, etc., and (3) document any connection between the technology and learning outcomes for accreditation purposes and institutional accountability.

R-109 The Development of the Anatomy-Physiology Multimedia Virtual Lab (APMVL): Educational Tool for Health Professions Students. R. García, Ph.D.; C.Ortiz, M.S., S. Aponte, AD. MSEIP Project, Chancellor Office, Medical Sciences Campus, University of Puerto Rico.

The MSEIP Project proposes to improve the teaching-learning process on the Anatomy-Physiology courses to increase student performance by the Anatomy-Physiology Multimedia Virtual Laboratory (APMVL); and further develop the computer skills of the students and faculty. Objectives: provide ease access to the information and technological resources; develop in the AP faculty the necessary skills to create multimedia-virtual educational materials (MVEM); increase the frequency of use of technology resources; and the student performance in the AP courses. Strategies: development of the communication infrastructure; establish the APMVL; training of the faculty and students in the use of computers, and the faculty in the preparation of MVEM using Microsoft Producer. Results: six AP faculty members were identified; two levels of training were offered; the priority areas for the MVEM were established (nervous and cardiovascular systems); two interdisciplinary modules. Conclusions: It is expected that this virtual educational scenario will provide the students a teaching environment in which they acquire the skills, knowledge and motivation required to succeed in the health sciences. In addition the faculty will increase their teaching tools in order to improve and transform the curricula in the anatomy-physiology field. This scenario will substantially increase our Hispanic minority students

with the opportunities to seek to graduate degrees in anatomy-physiology science and will become a model to follow by others fields. Supported by MSEIP of the Department of Education through the Grant #P120A039975-04.

Partnership to Improve Women's Health: UPR Center of Excellence in Women's Health, Local Battered Women Shelters and Industry.
R-110 L. Laras; D. Camacho; M. Cruz; Y. Arroyo; M. González, Women Health Center, Dean for Academia Affairs, University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico.

As a Center of Excellence in Women's Health, we receive requests for health education. We learned that many participants didn't have a yearly PAP, some were hypertensive without medications, diabetics were not sure of recommendations given, many were treating each other, and others were getting health complications because of lack of or improper care. Some difficulties in providing health education to participants of the shelters are: rapid turn over of women, busy professionals, different levels of education, lack of health professionals with understanding of victimization issues and dynamics, among others. In an effort to provide health education for women of Battered Women Shelters, a partnership was established among the UPR Women's Health Center, local shelters and a private corporation with the following objectives: assess health information needs, produce "user friendly" health reference materials in a manual style, train and rehearse roles to facilitate personnel's interaction with participants and evaluate the experience. From 7 shelters, 70 subjects answered, 27 participants and 43 employees. Most of the participants were under 30 years old. Only 50% of the women had health care within the last year while 74% had no knowledge about their rights and responsibilities. Reported health problems were obesity (27%), asthma (23%), and poor circulation(22%). Results of the evaluation of educational strategy will be presented.

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Evaluación de las Dimensiones Éticas de la Reforma de Salud de Puerto Rico. Oliver Vázquez, M; Santos Vargas, L.; Fábregas Troche, S.; Ferrer, J.; Villarini, A.; Izquierdo Mora, L.

R-111

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Como parte de los trabajos de la Comisión Evaluadora del Sistema de Salud de Puerto Rico, el Comité de Ética evaluó el modelo actual en sus dimensiones éticas a nivel organizacional-ambiental y en la relación proveedor de salud-paciente. Luego de elaborar el marco de referencia ético fundamental, se analizaron los datos empíricos disponibles sobre el Sistema de Salud y sobre el funcionamiento de la "Reforma" legislada y puesta en vigor por el Gobierno de P.R. para garantizar cuidado de salud a las poblaciones vulnerables; se recopilaban las fuentes de datos disponibles: Procuraduría del Paciente, vistas públicas de la Comisión, prensa nacional, legislación, otros. Se utilizó la técnica de análisis de contenido para evaluar el cumplimiento con los principios éticos de autonomía, beneficencia, no maleficencia y justicia. Se desarrolló un instrumento para analizar los criterios de: acceso al buen cuidado de salud, respeto a la dignidad humana, autodeterminación, justicia, competencia profesional, y Cooperación y aprecio mutuo. La evaluación concluye que el advenimiento de la reforma, resultó en la fragmentación del sistema en sus diversos componentes y niveles de cuidado, en la pérdida del enfoque salubrista de atención primaria, la desvinculación con la comunidad y cambio al criterio de funcionamiento predominantemente economicista.

En resumen, el modelo y estilo de prestación de servicios de salud bajo la Reforma viola los principios éticos evaluados y presenta asuntos de importancia en el orden tanto de la micro ética, como la macro ética, tanto del sector de pacientes como de proveedores de salud.

How Prepared is the Public Health Workforce to Respond to Bioterrorism or other Public Health Emergencies? J. Toro; B. Santiago; M.

R-112

Morales; E. Negrón; M del C. Santos; A. Pattatucci; M. Vera. UPR Center for Evaluation and Sociomedical Research, School of Public Health.

Terrorist events occurring in this millennium have highlighted the role of the governmental public health workforce in responding to disasters, assisting communities in recovery, and assuring the quality and accessibility of health services. With this newly acknowledged threat has come the realization that public health workers are not adequately prepared to address these challenges, accentuating the importance of providing training. An assessment of emergency preparedness and response training needs of the Puerto Rico Department of Health (PRDOH) public health workforce was conducted to provide the basis for planning training activities. This training needs assessment targeted 6,038 public health professionals. A total of 4,935 completed questionnaires were returned, yielding an overall response rate of 82%. Across most occupational classifications, the major training needs that emerge are related to a lack of understanding of 1) the agency's terrorism response plans and protocols and 2) their own individual roles and responsibilities in a public health terrorism response. In almost half of the 38 core emergency preparedness competencies, more than 70% of the respondents indicated that they had a high need for training in the area associated with the competency. The findings from this needs assessment allow identifying high priority training areas for the development of a training plan that is both appropriate and applicable. This assessment also provides baseline data for the future evaluation of the training programs targeted at improving emergency preparedness and response capacity of the PRDOH public health workforce.