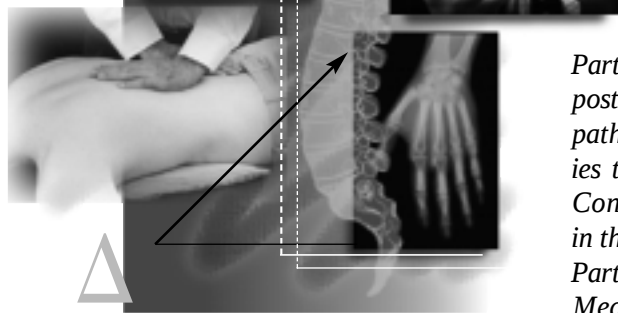




Forty-fifth Annual AOA Research Conference Abstracts, 2001: Part 1

Part 1 contains abstracts in AOA Research Fellowships, and poster presentations on osteopathic manipulative medicine/osteopathic principles and practice (OMM/OPP) and Clinical Studies to be presented at the Forty-fifth Annual AOA Research Conference. For the convenience of attendees, abstracts appear in their scheduled sequence and are numbered for easy reference. Part 2, abstracts in the Poster Session on Basic Sciences and Medical Education, will appear in the September issue.

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AOA Research Fellowships F01

The Role of p19^{ARF} in Bone Growth and Differentiation Cherise N. Russo, BS and Nalini Chandar PhD, Department of Biochemistry, Chicago College of Osteopathic Medicine, Chicago, Illinois 60615

The p19^{ARF} gene has been suggested to have a role in inducing cell-cycle arrest via the p53-MDM2 pathway. The ability of p19^{ARF} to arrest the cell cycle progression appears to be p53 dependent. Cells deficient for p53 are also refractory to ARF regulation. Our lab has produced data that indicates a correlation exists between p53 and bone differentiation. The regulatory mechanisms of bone regulation appear to include both p53 and p19^{ARF}.

High molecular weight DNA and RNA was isolated from a set of human osteosarcoma cell lines: MG-63, G292, U2OS, SAOS-2 and HOS, as well as a set of murine osteosarcoma cell lines: F6, B10, G8, and a normal osteoblast line MC3T3-E1. Changes in structure and expression of p19^{ARF} and p14^{ARF}, the human analogue, were analyzed through Southern, Northern blots, and RT-PCR. Our data indicates that there is reciprocal expression of p53 and p19^{ARF}. In cell lines where we have characterized p53 to be absent, we have observed strong expression of p19^{ARF} and in cells with wild type p53, p19^{ARF} was low or undetectable. Mutations in p53 also appeared to affect the activity of p19^{ARF}. These results suggest a role of p19^{ARF} in the p53 regulation pathway. The results obtained will be discussed in terms of their p53 status. Modulation of p19^{ARF} also occurs during in vitro osteoblast differentiation, and these results will be discussed in terms of a possible role for p19^{ARF} during bone differentiation. Our results suggest that p19^{ARF} influences the p53 pathway of cellular growth regulation. The AOA and NIH CA74341 grants supported this research.

Poster Presentations-OMM/OPP P01

Effect Of Pre-Emptive Morphine And Postoperative Osteopathic Manipulative Technique On Pain Following Total Abdominal Hysterectomy: A Pilot Study. F Goldstein, Ph.D.*; S Jeck, D.O.*; A Nicholas, D.O.*; M Berman, D.O.*; M Lerario, B.Sc., R.Ph*. *Dept. of Biomedical Sciences, *Dept. of Obstetrics and Gynecology, and *Dept. of Osteopathic Manipulative Medicine, Philadelphia College of Osteopathic Medicine, Phila., Pa, 19131; *Dept. of Anesthesiology and *Dept. of Pharmacy, City Avenue Hospital, Phila., Pa, 19131.

This double-blind investigation evaluated pre-emptive morphine (M), postoperative OMT or the combination on pain after elective total abdominal hysterectomy (TAH). After receiving approval from the City Avenue Hospital IRB, 38 volunteer pts were randomly assigned to one of four groups as follows:

Group	N	Preop	Postop
1	8	Saline	Sham OMT
2	10	Saline	OMT
3	10	Morphine	Sham OMT
4	10	Morphine	OMT

Morphine, 10 mg, or saline was administered i.v. 10 to 20 min before initial incision. After surgery, each pt was placed on a patient-controlled analgesia (PCA) pump to receive i.v. morphine. Pts also received sham OMT or OMT [thoracic & lumbar myofascial soft tissue and sacral myofascial release techniques] three times following surgery. At 12 & 24 hrs after TAH, blood was analyzed (RIA) for M (ng/mL) levels; pts and nurse-observers reported pain (0-10 scale) and nausea/vomiting (0-3 scale). There were no differences in pain scores and nausea/vomiting among groups. Blood levels of M, when compared to Control (Group 1), were lower when patients received either postop OMT (Group 2) or pre-emptive M (Group 3); however, the largest reduction occurred at 24 hrs in subjects receiving OMT alone or the combination of pre-emptive M and postop OMT (Group 4). A trend was observed showing that postop OMT decreased usage of PCA morphine after elective TAH.

Supported by American Osteopathic Association Grant #96-10-421

P02

EFFECT OF LYMPHATIC PUMP TECHNIQUES ON THE IMMUNE RESPONSE TO INFLUENZA VACCINE

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Hypothesis: We examined the effect of osteopathic manipulative therapy (OMT) on the serum antibody response to a influenza vaccine to test the hypothesis that OMT facilitates lymphatic movement and thus immunologic response in older persons.

Methods: Twenty-eight individuals, age 55 or older, filled-out questionnaires, had baseline blood samples drawn and were assigned to OMT treatment or control no treatment groups. All received the influenza vaccine. The treatment group received OMT (lymphatic pump and rib raising) immediately following vaccination and again 3 days later. Blood samples were taken from all volunteers before vaccination and then at 7 and 21 days postvaccination. Serum antibody of the IgM and IgG classes were quantitated by enzyme immunoassay (EIA). Person performing the EIA was blinded to the group assignments.

Results: Serum samples obtained after the vaccination and first OMT treatment showed positive IgM titers in 55% subjects in the control group, and only 29% in the OMT treatment group. Following the second OMT treatment, 55% of the controls and 53% of the treatment group had positive IgM titers. Likewise, positive IgG titers were found in 36% of control and 35% of OMT group following the second OMT treatment. There was no statistically significant effect of the OMT treatment.

Conclusion: There was no obvious benefit from the OMT treatment on the antibody responses to influenza vaccination in this population.

P03*

D. Menegos, MS, MS-II, P. Coughlin, PhD, B. Stouch, MS, Somatic Dysfunction in Headache: Incidence and Distribution, Dept. of Anatomy, Philadelphia College of Osteopathic Medicine, Philadelphia, PA, 19131

The incidence and distribution of somatic dysfunction in headache patients was analyzed as part of a pilot study stressing the osteopathic model of body unity. Based on the continuity of fascial sheaths and the firm attachments of the dura, it was hypothesized that somatic dysfunction at the level of the cranium should correlate positively with documented dysfunction at the levels of the sacrum and innominates.

Subjects participating in the study were evaluated prior to treatment for somatic dysfunction, with relevant findings being documented on a standardized SOAP note (AAO) by the operator administering the osteopathic manipulative treatment. The SOAP notes were then examined with somatic dysfunction being recorded in a database according to the segment at which the dysfunction was diagnosed. Segments were regionally grouped for purposes of statistical evaluation (C0-C4, C5-C7, etc.).

The resultant data demonstrated statistical significance, indicating a link between somatic dysfunction documented at the level of the cranium and concomitant dysfunction at the levels of the sacrum ($p=0.04$) and the innominates ($p=0.0029$). These findings lend support to the diagnostic perspective employed by osteopathic medicine since its inception, emphasizing fascial continuity and the interrelatedness of body structure.

This research was supported by the AOA (#98-10-462) and the National Headache Foundation.

P04

QUANTIFYING THE SUBJECTIVE ASSESSMENT OF TISSUE TEXTURE CHANGE: COMPARISON OF OSTEOPATHIC PALPATORY FINDINGS WITH RANDOM BLOOD SUGAR IN DIABETIC PATIENTS; A. K. S. Mnaabhi, R.N., M.S.N., D.O., K. E. Nelson, D.O., T. Glonek, Ph.D.; Midwestern University; Chicago College of Osteopathic Medicine, Departments of Family Medicine and Osteopathic Manipulative Medicine; Downers Grove, Illinois, 60515

Skilled osteopathic physicians, such as Norman J. Larson, were known to be able to estimate random blood sugar by palpation. Here we quantify this diagnostic capability. The degree of subcutaneous tissue texture change was estimated on a 5-point scale and compared with the level of concomitantly-obtained random blood sugar using a one-touch® blood glucose monitoring system (N=40, both sexes). Confidentiality was maintained using a numeric code, and only those individuals requiring a one-touch evaluation as part of their routine clinical management were recruited. Patients were examined in the supine position (Beal's compression test), with the physician seated at the head of the table. Skin and subcutaneous tissues of the patient's posterior cervical region were grasped between the thumbs and index fingers, and tissue turgidity (brawny edema) was estimated. Of 40 subjects, 32 had blood sugar measurements greater than 110 by the one-touch method, 21 of those ranged from 110-199, 6 were greater than 200, 2 were greater than 300, and 2 were greater than 400. The remaining 8 ranged from 61 to 108. Twenty-seven patients had palpable tissue texture changes. Statistical analysis revealed a Pearson correlation value of 0.210 with a probability of 0.097, a Kendal correlation of 0.215 with a probability of 0.042, and a Spearman correlation of 0.269 with a probability of 0.047. These results indicate that the palpatory findings associated with tissue texture change can be demonstrated to correlate with a second quantifiable variable, in this case blood glucose levels.

P05

Effect of gender and method of stretching the transverse carpal ligament in cadavers: application to Carpal Tunnel Syndrome

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Hypothesis: Osteopathic manipulation and static stretching are more effective in elongating the transverse carpal ligament (TCL) when used in sequence.

Methods: Twenty (10 male + 10 female) fresh-frozen cadaver upper limbs were tested. Two modes of applying tensile loads to the TCL were used. These were (1) static 10 N mediolateral loads applied to four bone pins via wires by hanging weights over pulleys ("weights") and (2) dynamic loads applied through osteopathic manipulation ("manips"). The manipulations were a subset of those used in our previous study (Sucher & Hinrichs, JAOA, 96:679-686, 1998; #2, #3, #4, and #6 in order) and were repeated after a 15-minute recovery period. After applying weights maximum elongation was obtained within 2-3 hours. Following a 2-3 hour recovery period the weights were reapplied and then followed by another recovery period. Half the limbs of each gender received weights first followed by manips (on subsequent days); and the other half received manips first. Ligament elongations were computed from motion of the bone pins with a two-camera 3D video system.

Results: (1) Manips produced greater peak elongations than weights. (2) Weights produced greater sustained elongations than manips (after the recovery period). (3) Females had greater peak and sustained elongations than males. (4) Weights were more effective when preceded by manips (but not the reverse). Osteopathic manipulation appears to play a crucial role in "priming" the TCL prior to stretching by the patient, especially in women.

Sponsored by a grant from the American Osteopathic Association.

*Student presentation competition.

P06

The Effects of a Structured OMT Curriculum on Osteopathic Exams and OMT for Hospitalized Patients

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Hypothesis: A structured clinical curriculum in OPP/OMT taught to housestaff will significantly increase the use of osteopathic exams and OMT for hospitalized patients.

Methods: In this prospective observational study, the author reviewed the charts of all D.O. FP and IM admissions for the presence of an osteopathic exam and use of OMT during a two-month pre-curriculum period. The author then facilitated a six-month curriculum that included lectures, labs and OMT rounds. At the end of the curriculum a second chart review of all D.O. FP and IM admissions was repeated for the following two-month period. A third chart review was completed one year after the completion of the curriculum. The attending physicians and housestaff were unaware of the chart reviews.

Results: The percentage of patients that received osteopathic exams increased from 46.3% to 83.7% ($p < 0.0001$). One year after the completion of the curriculum the percentage of patients receiving an osteopathic exam was still significantly increased (46.3% to 67.4% $p < 0.05$). OMT use increased from 0% documented to 4% at the end of the curriculum. One year later documented OMT use decreased to 1.3%.

Conclusions: It appears from this study that a structured clinical curriculum in OPP/OMT can have a meaningful and lasting effect on the osteopathic practices of housestaff.

P07

Who is Aware of and Using Osteopathic Physicians in the United States? Results from the Second Osteopathic Survey of Health Care in America (OSTEOSURV-II). J.C. Licciardone, D.O. University of North Texas Health Science Center, Texas College of Osteopathic Medicine, Department of Family Medicine. Fort Worth, TX 76107.*

Hypothesis. The evolution of osteopathic medicine raises questions about public awareness and use of osteopathic physicians. Although osteopathic physicians account for more than 58 million ambulatory patient visits annually in the United States, little has been published about these patients until the introduction of the *First Osteopathic Survey of Health Care in America* in 1998. This study seeks to extend the findings of *OSTEOSURV-I*.

Materials and Methods. The *Second Osteopathic Survey of Health Care in America (OSTEOSURV-II)* was a national telephone survey conducted in 2000 to measure and determine the factors associated with awareness and use of osteopathic physicians. A total of 499 adult, non-institutionalized, household respondents provided data relevant to ambulatory health care.

Results. The overall response rate was 64%. The prevalences of awareness, lifetime use, and current use of osteopathic physicians among unscreened respondents were 46%, 16%, and 7%, respectively. Among lifetime users, 84% received primary care; 52%, osteopathic manipulative treatment; and 25%, specialty care. The multivariate factors most strongly associated with awareness of osteopathic physicians were college education (rate ratio [RR], 1.86; 95% confidence interval [CI], 1.43-2.40; $P < .001$), 60 or more years of age (RR, 1.52; 95% CI, 1.15-2.01; $P = .003$), and Midwest residence (RR, 1.39; 95% CI, 1.05-1.84; $P = .02$). Non-Whites (including Hispanics) were less likely to be aware of osteopathic physicians (RR, 0.54; 95% CI, 0.38-0.76; $P < .001$). Those with college education (RR, 2.34; 95% CI, 1.44-3.79; $P = .001$), of intermediate age (RR, 1.71; 95% CI, 1.12-2.61; $P = .01$), and women (RR, 1.68; 95% CI, 1.12-2.52; $P = .01$) were more likely to report lifetime use of osteopathic physicians. Non-Whites were less likely to report lifetime use (RR, 0.25; 95% CI, 0.11-0.57; $P = .001$).

Conclusions. Promotional efforts are needed to increase awareness of osteopathic medicine and to remove barriers to using osteopathic physicians, particularly among non-Whites.

*Supported in part by a faculty research grant from UNTHSC.

P08

Validity and Reliability of the Osteopathic Survey of Health Care in America. J.C. Licciardone, D.O., University of North Texas Health Science Center, Texas College of Osteopathic Medicine, Department of Family Medicine. Fort Worth, TX 76107.*

Hypothesis: The *Osteopathic Survey of Health Care in America (OSTEOSURV)* was recently developed to serve as a longitudinal research instrument in the realm of osteopathic medicine. The purpose of this study was to establish the validity and reliability of the *OSTEOSURV* instrument.

Materials and Methods: *OSTEOSURV* methodology included random digit dialing using computer-assisted technology. There were 139 items and 1106 respondents in *OSTEOSURV-I* (1998) and 72 items and 499 respondents in *OSTEOSURV-II* (2000). Content validity was assessed qualitatively. Construct validity was measured using the Spearman rank correlation coefficient. Factor analysis was also used to further explore and validate the instrument. Reliability was measured using the internal consistency method (Cronbach's alpha coefficient). Test-retest (Cohen's kappa coefficient) was also used in a random sample of *OSTEOSURV-II* respondents.

Results: *OSTEOSURV* demonstrated content and construct validity. A 12-item "perceptions of osteopathic medicine" construct emerged. Moreover, factor analysis identified three distinct dimensions of osteopathic medicine which were subsequently designated "conventional medicine," "manual medicine," and "somato/visceral medicine." The perceptions of osteopathic medicine construct demonstrated an acceptable degree of reliability ($\alpha = 0.68$), which surpassed that of other more established, health-related instruments ($\kappa = 0.38$).

Conclusions: *OSTEOSURV* is a valid and reliable instrument that may be used to conduct longitudinal research. *OSTEOSURV-III* is scheduled to be administered during 2002.

*Supported in part by a faculty research grant from the University of North Texas Health Science Center.

P09*

The Effect Of Low Intensity Laser Irradiation on Soft Tissue Trigger Points H.C. McCarthy, M.S., C.H. Greene, Ph.D., M. DeJoseph, D.O. Philadelphia College Of Osteopathic Medicine
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Trigger Points are palpable areas within soft tissue that may be painful, and often become chronic. The skin overlying the trigger point is reported to exhibit a lowered electrical skin resistance as compared to surrounding uninvolved skin surfaces. The objective of this study was to determine if low intensity Helium-Neon laser irradiation resolves trigger points by monitoring changes in skin resistance. A total of nine student volunteers (5 male and 4 female) with palpable soft tissue trigger points on the thoracic dorsum participated in this study. Each was assigned to either a no treatment, sham treatment, or laser treatment group. Pre and post-treatment skin resistance was measured at the TP site at each of the five treatment sessions (trials) for each group. Other parameters monitored included heart rate, blood pressure, core temperature, room temperature, skin surface temperature and O₂ saturation. There was a trend of decreasing skin resistance in the two control groups (no treatment and sham) while the laser irradiated group remained unchanged. Heart rates in the sham treatment group were found to be significantly higher as compared to the no treatment group. Significant differences also were found in skin surface temperature over the TP between the no treatment group and the laser treated group after the second treatment session.

*Student presentation competition.

Clinical Studies C01*

K.L. Flotildes, M.S., MS-I, P.M. Coughlin, Ph.D., B. Stouch, The Evaluation of the Effect of Osteopathic Manipulative Techniques (OMT) on Headache Pain, Philadelphia College of Osteopathic Medicine, Dept. Of Anatomy, Philadelphia, PA, 19131

This study is a continuation of previous pilot studies that evaluated the effect of osteopathic manipulative therapy in the treatment of migraine, sinus, and tension headaches. Each patient was placed in one of six experimental groups. The types of treatment included Myofascial Release, Strain/Counterstrain, and Craniosacral, and an "ad-lib" OMT group; the controls included a sham treatment group and an untreated group. Pain scores were recorded for pre-treatment, post-treatment, 2-hr, 4-hr, 24-hr, and 48-hr observation times. Intra-subject pain reporting revealed significant differences in pre- and post- treatment values in the sinus and tension headache groups.

We also examined the correlation between stress and the occurrence of headache pain. Patients were administered a survey to indicate the number of stressors which occurred in the previous 24-hour period and to assess the degree to which those stressors affected them. The ratio of the two values for each patient was then evaluated relative to the severity of their reported headache pain and response to treatment. Statistical analysis showed that each patient's stress level did not correlate with the pain they reported as a result of their headache. The mean stress scores remained within a small range and could be attributed to the homogeneity of the patient population.

These findings suggest that OMT is effective in relieving pain due to sinus and tension headache symptoms. Further studies should include a comprehensive population to determine the relationship between stress and headache.

This study was made possible through funding by the AOA (#98-10-462) and the National Headache Foundation.

C03

COMPARISON OF EFFICACY BETWEEN CELECOXIB AND NAPROXEN IN THE TREATMENT OF ANKLE SPRAIN

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Hypothesis: Ankle sprain, a common soft-tissue injury, results in pain, inflammation, ecchymosis, and swelling. Celecoxib, a COX-2 specific inhibitor, may be as effective as naproxen in reducing signs and symptoms of ankle sprain.

Materials and Methods: This 8-day, randomized, double-blind study enrolled 198 patients each in celecoxib 400 mg/day and naproxen 1000 mg/day groups. Patients had first- or second-degree inversion ankle sprain with moderate-to-severe ankle pain on weight bearing [$\geq$ 45mm on 100-mm visual analog scale (VAS)] at baseline.

Results: The mean age was 30 years; most patients were male (67%). Injuries were primarily sports-related (54%) and occurred within 48 hours of first study dose (mean duration, 23.2 hours). Covariate-adjusted analyses of primary endpoints (Patient's Global Assessment and VAS on weight bearing) at Day 4 demonstrated that celecoxib was as effective as naproxen in improving signs and symptoms of ankle sprain.

	Patient's Global Assessment: Ankle Injury* n (%)		Ankle Pain (VAS), mm Mean (SE)	
	Celecoxib	Naproxen	Celecoxib	Naproxen
Baseline*	-	-	68 (14.5)	68 (13.1)
Day 4	139 (71%) [†]	142 (72%)	32 (2.0) [‡]	29 (1.9)
Day 8	175 (89%) [†]	178 (90%)	15 (1.7) [‡]	15 (1.7)

* Responders improved by ≥ 1 grade on 5-pt scale: 1(very good) to 5(very poor); [†] $p \geq 0.51$; [‡] celecoxib vs. naproxen within 95% CI limits for non-inferiority; * VAS=Mean (SD)

Conclusions: Celecoxib was as effective as maximum recommended dose of naproxen in treating pain associated with ankle sprains. Celecoxib, with its platelet-sparing properties, may offer an advantage over naproxen in treatment of ankle sprain injuries.

Sponsored by Pharmacia Corporation and Pfizer Inc.

C02

EFFICACY OF CELECOXIB COMPARED TO IBUPROFEN IN THE TREATMENT OF ANKLE SPRAIN

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Hypothesis: We hypothesized that celecoxib, a COX-2 specific inhibitor, would be as effective as ibuprofen and better than placebo in treatment of ankle sprain.

Materials and Methods: This 10-day, randomized, double-blind study enrolled patients in celecoxib 400 mg/day (n=147), ibuprofen 2400 mg/day (n=155), or placebo (n=141) groups. Patients had first- or second-degree inversion ankle sprains with moderate-to-severe ankle pain on weight bearing [$\geq$ 45mm on 100-mm visual analog scale (VAS)] at baseline.

Results: Mean age was 31 years; 60% patients were male. Injuries (sports-related, 50%) occurred within 48 hours of first study dose (mean duration-25.6 hours). Covariate-adjusted analyses of primary endpoints, Patient's Global Assessment-Ankle Injury responder rate and Ankle Pain VAS on weight bearing, at Day-4 demonstrated that celecoxib was significantly more effective than placebo and as effective as ibuprofen in treatment of ankle sprain.

	Patient's Global Assessment* n(%)			Patient's Ankle Pain (VAS)-mm Mean(SE)		
	Celecoxib	Ibuprofen	Placebo	Celecoxib	Ibuprofen	Placebo
Baseline	..	..	..	69 (14.1)	68 (14.8)	71 (12.1)
Day 8	121 (82) [†]	126 (81)	101 (72)	23 (1.8) [†]	24 (1.8)	31 (1.8)
Day 11	133 (90) [†]	142 (92)	124 (88)	16 (1.8) [†]	16 (1.8)	20 (1.8)

*Improved by ≥ 1 grade on 5-point scale: 1(very good) to 5(very poor); [†]celecoxib vs. ibuprofen within 95% CI for non-inferiority; * VAS=Mean(SD)

Conclusion: Celecoxib was as effective as maximum recommended dose of ibuprofen for pain and was superior to placebo in treating ankle sprains. Celecoxib, with its platelet-function-sparing properties, may offer an advantage over ibuprofen in treatment of ankle sprain injuries.

Sponsored by Pharmacia Corporation and Pfizer Inc.

C04

A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED PILOT STUDY IN HUMAN IMMUNODEFICIENCY VIRUS (HIV)-INFECTED PATIENTS ON HIGHLY ACTIVE ANTIRETROVIRAL THERAPY RECEIVING THE INFLUENZA VACCINE. Damon L. Baker, D.O., Leslie M. Paugh, D.O., John J. McCarthy. Oklahoma State University-College of Osteopathic Medicine, Department of Internal Medicine-HIV Division. Tulsa, Oklahoma 74107.

Hypothesis: The HIV-infected patient's ability to mount an immunologic response to the influenza vaccine is dependent on their CD4+ cell count. The higher the patient's baseline CD4+ cell count, the higher their antibody titer in response to the vaccine.

Methods: Patients were randomized into one of two groups. The investigators were blinded. Group B received the influenza vaccine, while Group A received a saline injection. Screening evaluations included confirmation of HIV infection, informed consent, history and physical exam, CDC classification, current medications, complete metabolic panel, complete blood count, liver function tests, CD4+ cell count and HIV-RNA viral load. Efficacy evaluations included CD4+ cell counts and viral load titers at baseline, 2, 8, and 16 weeks. Hemagglutination inhibition assays for antibody response were obtained at 2, 8, and 16 weeks. Monitoring for signs and symptoms of influenza occurred at 2, 8, and 16 weeks.

Results: Fourteen patients enrolled in the study. Three patients were lost to follow-up. Six patients received the placebo saline injection, while five received the influenza vaccine. Three of the six patients in the control group had elevated influenza antibody titers. Two of the three had flu-like symptoms. There was no significant change in the viral load titers in those patients receiving the influenza vaccine (treatment arm); only two of the five patients in the treatment arm mounted an immunologic response as evidenced by a positive Influenza A antibody titer. Only one of the two patients in the treatment arm with a positive antibody response had a drop in their CD4+ cell count.

Conclusions: The results of this pilot study are inconclusive and would suggest the need for a larger sample population to evaluate vaccine response and its effect on CD4 cell counts.

Sponsors of the research: Oklahoma State University-College of Osteopathic Medicine, Department of Internal Medicine, HIV Division.

*Student presentation competition.

C05

Erundu-Cymet Syndrome: Survivability of 46 XY, inv(21)(q11.2q22.1)

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Abnormalities of the 21st chromosome have been associated with Down syndrome, leukemias including both myeloid and lymphoid types, Alzheimer's disease, persistent truncus arteriosis, platelet dysfunction, and intrauterine fetal death.

Intrauterine fetal death is usually due to numerous phenotypic abnormalities associated with abnormalities of the 21st chromosome. These abnormalities have included arteriovenous malformations (avm) of the pulmonary vasculature, cerebral vasculature and cardiac anomalies most notably atrial septal defect and persistent left sided vena cava emptying into the left atrium.

We report a case of a 48 year old male with a history of mental retardation, seizures, and cerebral aneurysms that had been surgically resected ten years previously. Initial presentation was gait imbalance. On initial evaluation the patient had normal vital signs, and an oxygen saturation of 88% on room air. This increased to 93% on 100% nonrebreather mask. Lung exam and workup was normal. Abdominal cat scan revealed abnormal azygous-hemiazygous venous system with a patent vena cava.

Karyotype analysis and fluorescence in-situ hybridization (FISH) revealed a paracentric inversion in the proximal portion of the long arm of chromosome 21 with a karyotype of 46, XY, inv(21)(q11.2q22.1)

The presence of pulmonary cerebral and systemic avms with a rare congenital heart malformation without a corresponding intracardiac shunt strongly points towards a genetic syndrome.

C06*

A.S. Parikh, M.S., MS-II, B. Stouch, P.M. Coughlin, Ph.D. The Effects of OMT on Vital Signs During Headache, Philadelphia College of Osteopathic Medicine, Department of Anatomy, Philadelphia, PA 19131

It was hypothesized that receiving OMT during headache would have a significant effect on the patient's vital signs, and that the effect would be related to the patient's satisfaction. Each subject was diagnosed under IHS criteria, and a random treatment was chosen. Treatments included Strain/Counterstrain, Myofascial Release, Craniosacral, and an "ad-lib" OMT group. Controls included a sham treatment group and an untreated group. Vital signs were taken before and after each treatment, and each subject filled out a satisfaction survey after the treatment session.

The study correlated subject satisfaction with the vital signs. Sinus headache patients who reported satisfaction with their treatment had an increase in oxygen saturation after treatment, while sinus headache patients who were not satisfied with their treatment had a decrease in oxygen saturation after treatment. Migraine headache patients who reported satisfaction with their treatment had a lower respiration rate after treatment, while migraine headache patients who were not satisfied with their treatment did not experience a change in their rate of respiration. Migraine headache patients who reported satisfaction with their treatment had lower systolic blood pressure after treatment, while migraine headache patients who were not satisfied with their treatment had increased systolic blood pressure.

These findings suggest that OMT is effective in helping to relieve tension with concomitant changes in certain vital signs. Further studies should include a comprehensive population to determine the relationship between OMT and the other vital signs as related to patient satisfaction.

This study was made possible through funding by AOA (98-10-462).

C07

The Impact of Drug Interactions on Health Care Costs for Patients Treated with Donepezil

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Hypothesis

This study examines whether drug-drug interactions with donepezil raise total health care costs for Alzheimer's patients.

Materials and Methods

This study employs multivariate methods to determine whether Alzheimer's patients who take donepezil in conjunction with one of ten potentially interacting drugs (i.e., sertraline, paroxetine, diltiazem, propoxyphene, ranitidine, omeprazole, haloperidol, fluoxetine, verapamil and ciprofloxacin) incur higher health care costs than Alzheimer's patients taking the same drugs without using donepezil. The multivariate model controls for age, gender, race, and comorbidities.

Results

For eight of the ten interacting drugs, the impact on total costs is greater in the donepezil than in the no-donepezil cohort. In four of these eight cases (i.e., ranitidine, haloperidol, diltiazem, and paroxetine), the interacting drug has a significant impact on total costs in the donepezil cohort but not in the no-donepezil cohort. Moreover, the magnitude of these effects is often substantial: interactions raise costs per patient-year by \$3,287 for ranitidine, \$1,620 for haloperidol, \$1,356 for diltiazem, and \$672 for paroxetine.

Conclusions

These findings suggest that drug-drug interactions with donepezil may significantly increase the cost of care among Alzheimer's patients. Patients on multiple drugs should be treated with caution when prescribed donepezil.

C08*

Value of Community-Based Automated Blood Pressure Machine Measurements in Large Arm Hypertensive Patients. S.E.Young B.S., J.R.Matthews B.S., J.Severson B.S., S.Coleridge D.O.*

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Hypothesis: Due to the prevalence of obese patients in hypertensive populations, this study will determine the value of community based blood pressure machines in monitoring the blood pressures in large arm hypertensive patients.

Materials and Methods: Auscultated and automated blood pressures were performed, three each, in an alternating fashion on two different large arm subjects (> 33cm). Subjects rested two minutes before initiation of measurements and two minutes between each reading. Both auscultated and automated readings were taken on the same arm. The arm used for each study was matched to the arm for which the machine was designed, most commonly the left. The first reading taken (auscultated or machine) was alternated at each site, and the investigator performing the auscultated readings was blinded to the machine results.

Results: The auscultated systolic and diastolic averages were 123.33 ± 6.54 and 82.73 ± 4.91 , respectively, and automated averages were 124.05 ± 9.27 and 77.85 ± 5.32 , respectively. Using twenty different community-based automated blood pressure devices, no statistically significant difference was found between systolic pressures, but diastolic pressures were found to be statistically different at a very significant level ($p < 0.001$, $n = 60$).

Conclusions: Based on the finding of statistically significant diastolic blood pressure differences between automated and auscultated methods, this study suggests that monitoring large arm hypertensive patients with community-based blood pressure machines may be inappropriate given the fact that these machines are designed for average arm sizes.

*Student presentation competition.

C09

Health Insurance and Patient Satisfaction: Results from a National Survey. J.C. Licciardone, D.O., K.G. Fulda, University of North Texas Health Science Center, Texas College of Osteopathic Medicine, Department of Family Medicine. Fort Worth, TX 76107.*

Hypothesis: Health insurance coverage may be an important factor affecting the physician-patient relationship and, ultimately, clinical outcomes and patient satisfaction. Data from the *Osteopathic Survey of Health Care in America* were used to measure the effect of health insurance coverage on patient satisfaction.

Materials and Methods: This study used data collected during the *First Osteopathic Survey of Health Care in America (OSTEOSURV-I)*. A total of 1106 respondents were contacted in 1998 using random digit dialing. Among other items, they were queried about their health insurance coverage and satisfaction with various aspects of health care. Overall satisfaction with their health care provider was the focus of this study. Multiple logistic regression was used to compute odds ratios (ORs) and 95% confidence intervals (CIs) measuring patient satisfaction among respondents with various types of health insurance coverage compared to those respondents not having any insurance.

Results: A majority of respondents expressed overall satisfaction with their health care provider, regardless of their health insurance coverage status. However, respondents with multiple insurance coverage (OR, 5.66; 95% CI, 2.18-14.69; $P < .001$) and those in health maintenance organizations or preferred provider organizations (OR, 2.93; 95% CI, 1.18-7.26; $P = .02$) were significantly more likely to be strongly satisfied after adjusting for potential confounders. Other factors associated with being strongly satisfied were having more than 16 years of education (OR, 3.90; 95% CI, 1.07-14.22; $P = .04$), being more than 60 years of age (OR, 2.37; 95% CI, 1.02-5.51; $P = .05$), and being White (OR, 1.98; 95% CI, 1.00-3.93; $P = .05$).

Conclusions: Patients with multiple types of insurance coverage and those in health maintenance organizations or preferred provider organizations are likely to experience the strongest satisfaction with their health care provider. Age, race, and education are also important determinants of such satisfaction.

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C11

The role of presenting temperature in utilization of diagnostic tests and antibiotics in the initial management of febrile children in family practice residency clinics – An Arbor Net Study. Damon Schranz, D.O., Elizabeth Palmrozzi, D.O., and the Febrile Child Study Group. University of North Texas Health Science Center, Department of Family Medicine, Family Practice Residency Program, Fort Worth, TX 76107.

Hypothesis: Preschool children with fevers are commonly evaluated in family practice (FP) settings. Antibiotics and diagnostic tests are often over-utilized in management of acute illness, thus contributing to antibiotic resistance and rising medical costs. This study evaluates the rate of antibiotic and diagnostic test utilization for initial management of febrile children presenting at FP residency clinics. **Material/Methods:** Two hundred and four health care providers from 10 FP residency clinics participated in a 13-week prospective study of febrile children, aged 0 to 71 months. For each eligible child, data were collected on demographics, temperature, duration of illness, laboratory tests, diagnoses, treatment, and disposition. We assessed overall use of antibiotics as well as rate of antibiotic use for each of 10 diagnoses and at each site. Comparisons were made using chi-square. **Results:** Data from 546 febrile child encounters were analyzed, with 54% resulted in antibiotics prescribed. Most diagnoses were categorized as acute respiratory infections with URI and otitis media representing 65% of all diagnoses. Rates of antibiotic use depended upon diagnosis [range: 0 to 100%]. Overall use depended upon clinic [17 to 88%]. Initial temperature was positively and linearly related to amount of tests ordered ($p < 0.001$) and whether a prescription antibiotic was written ($p < 0.034$). **Conclusions:** Antibiotics were prescribed in a majority of preschool children presenting with fever. Degree of temperature directly affected the amount of antibiotics and number of diagnostic tests. This high level of use cannot be justified by current evidence. High variability was demonstrated among clinical sites, suggesting that physician-prescribing behavior can likely be modified.

C10

MOOD (Missouri Outcomes Data) Study: Mirtazapine efficacy and beneficial side effects in the geriatric skilled nursing facility patient.

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Hypothesis: The purpose of this retrospective, comparative extension study was to assess the efficacy, clinical outcomes and potential impact on weight associated with the use of Mirtazapine, Paroxetine and Sertraline

Materials and Methods: The sample (N=1231) included patients referred to Long Term Psychiatric Management group for psychiatric consultation and follow-up during a 5-month period in 1999. The patients were in 85 nursing homes in St. Louis, MO, which were served by a variety of Pharmacy providers and attending physicians. The only common feature is that all the patients were referred to Long Term Psychiatric Management for Psychiatric Services. All patients with a diagnosis of depression and/or documented use of antidepressants were considered candidates for the study.

Results: To determine the influence of each of the antidepressant medicines on patient weight, a selected group of individuals in each of the study groups, who had been started on the respective antidepressant in month 1, was monitored for weight change over a 5-month period. Sertraline was found to be relatively weight neutral; Paroxetine was associated with an average wt. loss of 4.4 lbs and mirtazapine was associated with an average wt gain of 7lbs.

Conclusions: The principal conclusion was that mirtazapine has weight maintenance properties ($p < 0.001$) compared to paroxetine and sertraline and may help nursing homes minimize weight loss related QI issues in depressed patients.

C12*

Effect of Bupivacaine Infusion on Post-Surgical Pain Following Correction of Equinovarus Foot Deformity using the Split Anterior Tibialis Tendon Transfer (SPLATT) Procedure: Preliminary Results from a Pilot Study. S Parker, BS*; F Goldstein, PhD*; M Keenan, MD*; D Fuller, MD*; M Misbin, MD*. *Dept. of Biomedical Sciences, Philadelphia College of Osteopathic Medicine, Phila., Pa, 19131; *Dept. of Anesthesiology and *Dept. of Orthopaedic Surgery, Albert Einstein Medical Center, Phila., Pa, 19141.

Severe pain following extensive surgery such as the Split Anterior Tibialis Tendon Transfer (SPLATT) procedure to correct equinovarus foot deformity can be difficult to manage in brain-injured patients. We examined the effect of constant infusion of bupivacaine over the peripheral posterior tibial nerve on the amount of meperidine and hydroxyzine administered to SPLATT pts in the immediate 24-hour post-op period. In this double-blind placebo-controlled study, seven volunteer patients have been entered thus far on a randomized basis. After completion of the procedure but before wound closure a catheter was inserted over the posterior tibialis nerve. This catheter was connected to a constant infusion pump containing either saline (Group 1, Sal. n=4) or bupivacaine, 0.5%, (Group 2, Bupiv. n=3) with a flow rate of 2 mL/hr. Data collected over 24 hours were the amount of meperidine and hydroxyzine given, nausea/vomiting (0-3 scale) and pain (0-10 scale). Preliminary results showed a substantial difference between the groups regarding pain medication: the average meperidine dose over 24 hrs in Group 2 (Bupiv) was lower (191.7 mg) than in Group 1 (365.0 mg) but the average pain score was slightly higher in Group 2. The 24 hour dose of hydroxyzine in Group 2 (58.1 mg) was also lower than Group 1 (143.3 mg). Neither group experienced any nausea or vomiting. From these preliminary data, a trend has been observed that continuous infusion of bupivacaine appears to decrease post-surgical pain in patients undergoing the SPLATT procedure.

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*Student presentation competition.

C13*

Effect of Pre-Emptive Morphine on Perioperative Fentanyl in Elective Total Knee Arthroplasty: Preliminary Results from a Pilot Study. J McMahon, BS*; F Goldstein, PhD*; M Misbin, MD*; R Fine, MD*; A Puglisi, MD*; J Williams, Jr., MD*; D Blackwell, RN, MS*. *Dept. of Biomedical Sciences, Philadelphia College of Osteopathic Medicine, Phila., Pa, 19131; *Dept. of Anesthesiology, *Dept. of Orthopaedic Surgery, *Dept of Nursing, Albert Einstein Medical Center (AEMC), Phila., Pa, 19141.

We examined the effect of pre-emptive morphine on doses of fentanyl used perioperatively in patients undergoing elective total knee arthroplasty. In this ongoing double-blind placebo-controlled investigation approved by the AEMC IRB, ten patients thus far have volunteered to be randomized into one of two groups: Group 1 patients (n=5) received saline, 10 mL, i.v.; Group 2 patients (n=5) received morphine, 10 mg in 10 mL, i.v. All injections were given 10 to 20 minutes prior to initial skin incision. Following surgery, patients were placed on i.v. morphine via a patient-controlled analgesia (PCA) pump. Data collected were perioperative fentanyl doses, patient-reported pain scores (0-10) shortly after arrival in the post-anesthesia care unit (PACU), PCA morphine in the PACU, and time to discharge from PACU to the surgical floor. Patients in Group 2 received less fentanyl during surgery than patients in Group 1 (3.7 µg/Kg vs 4.3 µg/Kg, respectively). Pain scores shortly after arrival in the PACU were significantly ($p<0.001$) lower in Group 2 than in Group 1 (0.0 vs 9.3). The mean times in the PACU were not different between groups but the mean total morphine consumption in PACU was less in Group 2 than in Group 1 (8.0 mg vs 18.6 mg). These data show that pre-emptive morphine reduced the dose of both intra-operative fentanyl and PACU morphine use as well as post-operative PACU pain scores.

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C14

Effect of Pre-Emptive Morphine on Post-Surgical Pain Following Total Knee Arthroplasty: Preliminary Results from a Pilot Study. T Piroosko, BS*; F Goldstein, PhD*; M Misbin, MD*; R Fine, MD*; A Puglisi, MD*; J Williams, Jr., MD*; D Blackwell, RN, MS*. * Dept. of Biomedical Sciences, Philadelphia College of Osteopathic Medicine, Phila., Pa, 19131; *Dept. of Anesthesiology, *Dept. of Orthopaedic Surgery, *Dept of Nursing, Albert Einstein Medical Center (AEMC), Phila., Pa, 19141.

This double-blind placebo-controlled investigation, approved by the AEMC IRB, was designed to evaluate the effect of pre-emptive morphine on post-surgical pain following elective unilateral total knee arthroplasty. Ten volunteer patients were randomized into one of two groups: Group 1: Control (5 patients) received saline, 10 mL, i.v.; Group 2: Morphine (5 patients) received morphine, 10 mg in 10 mL, i.v. All injections were given 10 to 20 minutes prior to initial skin incision. Following surgery, patients were placed on i.v. morphine via a patient-controlled analgesia (PCA) pump. At 12, 24, 36 & 48 hours after injection of study drug, morphine blood levels (ng/mL) were measured; patients and nurse-observers reported scores for pain (0-10 scale) and nausea/vomiting (0-3 scale) at the same times; total PCA morphine use was also documented. At 12, 24 & 48 hrs, morphine blood levels were lower in Group 2 (27.8, 22.1 & 27.1 ng/mL, respectively) than in Group 1 (37.5, 43.0 & 39.0 ng/mL, respectively). Pain scores reported by patients and nurse-observers at the same times were lower in Group 2 than in Group 1. PCA attempts at 12, 24, 36 & 48 hours were lower in Group 2 (31, 23, 24 & 22, respectively) compared to Group 1 (42, 35, 25 & 28, respectively). However, nausea/vomiting scores from patients and nurse-observers were higher in Group 2 at all time points. From these preliminary data, a trend has emerged showing that pre-emptive morphine appeared to reduce pain in surgical patients during the immediate 48-hour postoperative period following elective total knee arthroplasty.

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C15

Exercise-induced protein excretion in a population of young osteopathic medical students. E. Whipkey-Olson, B. Duffy, E. Amador, V. Nguyen, Menini, MD, Ms. Touro University College of Osteopathic Medicine, Division of Basic Medical Sciences, Vallejo, CA 94592.

Hypothesis. Increased excretion of proteins after exercise is a well documented phenomenon that has been studied mostly in professional athletes. In this pilot study, we address the question of whether this can also be true for a population of medical students, non-professional athletes, performing a standardized monitored exercise.

Methods. Subjects were exercised at 50 rpm on a bicycle ergometer for 20 minutes and heart rate monitored at different intervals during a pre-exercise, exercise and post-exercise period. (See abstract from B. Acdan et al.) Two samples of urine were collected from student subjects (n=21): the first morning urine and a second sample at least 1 hour after exercise. The urine samples were screened for hemoglobin and proteins using dipsticks and their sediments were studied. Bio-Rad protein assay was used to quantify protein concentrations and SDS-PAGE to evaluate selectivity of the excretion. Creatinine excretion was measured to normalize each protein value.

Results. Protein excretion after exercise, expressed as absolute values of µg protein/mg creatinine, was increased in 61.9% of the student subjects: 25.38 ± 14.56 (pre-exercise) vs 88.38 ± 60.83 (post-exercise), $p<0.002$. The increment ranges between 1.5 and 10.5 fold. SDS-PAGE profiles showed selective protein excretion, mostly albumin followed by IgG and low molecular weight peptides. Only 19%, 4 out of 21 subjects, displayed abnormal elements in the post-exercise sediment (RBCs and hyaline casts). This is compared with the pre-exercise samples that displayed no abnormal elements in the sediment.

Conclusions. A high prevalence of exercise-induced increased protein excretion after a well-controlled, standardized exercise program was demonstrated. It seems to be essentially from glomerular origin although the presence of low molecular weight proteins suggest a tubular component which we are currently investigating with appropriate markers.

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C16

The Effectiveness of Self-Administered Audiotaped Systematic Desensitization vs. No Treatment in the Reduction of Post-Radiation Pain, Depression, and Death Anxiety in Cancer Patients.

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A frequent theme running through the literature on the emotional needs of cancer patients is that they need to be an involved in their therapy soon as possible. Even when the treatment is palliative, the more control they have, the better they handle the stress. Systemic desensitization is a treatment, which has been found effective in overcoming a number stressful of situations.

Three brief paper and pencil tests were used as pretest and posttest measures, and opportunity was provided for self-reports of additional results.

From 1995 to 1997, the radiation oncologist of requests for pain medication kept 371 records and the comparative dosages actually prescribed. Records were kept of patients written responses to the following two questions. Is the pain tolerable? - 212 out of 371 for 57%. Is the pain controlled? - 338 out of 371 for 91%. All patients did received radiation therapy and chemotherapy.

Systematic desensitization consists of deep muscle relaxation and guided visual imagery leading the patient to and through a feared, unpleasant, or physiologically painful or disruptive event. With the calmness of relaxation a physiological counter-conditioning process can begin to take place in which the patient learns to tolerate the noxious stimuli and avoid, control or ignore subsequent results until they become less feared, more pleasant, or physiologically less damaging. Over repeated use the patient gains more and more control of the situation.

*Student presentation competition.