



PAIN MANAGEMENT FEBRUARY 2004

Acello, B. "Following the guideline for pain control in the elderly." *Nursing*. 33, no. 10(2003): 17 UI 14571876.

Anonymous. "How much does it hurt? The pervasive problem of pain." *Prairie Rose*. 72, no. 3(2003): 18 UI 14533203.

Anonymous. "'Pressure pants' provide angina relief for diabetics." *Health News*. 9, no. 11(2003): 2 UI 14619808.

Aribogan, A., et al. "Patient-controlled epidural analgesia after major urologic surgeries. A comparison of tramadol with or without bupivacaine." *Urologia Internationalis*. 71, no. 2(2003): 168-75 UI 12890955.

The efficiency and safety of patient-controlled epidural analgesia by using tramadol alone and combined with bupivacaine were investigated for postoperative pain treatment after major urological surgeries. For PCEA: in group I (n = 17) a loading dose of 20 mg tramadol with a continuous infusion of 1 mg/ml tramadol at a rate of 8 ml/h was given. In group II (n = 17), patients received an initial loading dose of 20 ml bupivacaine 0.125% and a supplemental continuous infusion of 8 ml/h. In group III (n = 17), a loading dose of 20 mg tramadol with 20 ml bupivacaine 0.125% were given and a supplemental infusion of 1 mg/ml tramadol in 20 ml bupivacaine 0.125% combination was begun with a rate of 8 ml/h. A demand epidural bolus dose of 5 ml with a lockout time of 30 min was also used in all patients. VAS for pain intensity, vital signs, sedation scale and side effects was monitored at 0, 15, 30 min and 1, 2, 3, 4, 8, 12, and 24 h of the postoperative period. Statistical significance was determined using Kruskal-Wallis, Fisher's exact, analysis of variance for repeated measurements and Tukey tests. The hemodynamic values and sedation scales were insignificantly different ($p > 0.05$). The adequate analgesia was provided in all patients. However VAS values were significantly lower in group III than in groups I and II at every measurement ($p < 0.05$). The incidence of side effects in all three groups was low ($p > 0.05$). In conclusion, we suggested that a combination of tramadol with bupivacaine can provide the most effective and safe postoperative analgesia with minimal risk for side effects. Copyright 2003 S. Karger AG, Basel

Ballantyne, J. C., and J. Mao. "Opioid therapy for chronic pain." *New England Journal of Medicine*. 349, no. 20(2003): 1943-53 UI 14614170.

Banos, J. E., et al. "Neuropathic pain: some clues for future drug treatments." *Mini-Reviews in Medicinal Chemistry*. 3, no. 7(2003): 719-27 UI 14529513.

Neuropathic pain is still far from being adequately dealt with. Under this name, several clinical entities have been considered and most of them only share several painful ailments. At present, the available treatments can only alleviate the pain of roughly half of the patients, and their effectiveness is often limited by the appearance of the intolerable side effects. In this review, we will consider the pathophysiology of neuropathic pain to understand the basis of pharmacological treatments that are currently being investigated. Some examples of these drugs will also be considered. [References: 105]

Barbuto, J. P. "Beyond narcotics for effective pain management." *Journal of Managed Care Pharmacy*. 9, no. 2(2003): 175-6 UI 14613347.

Berglund, B., and E. L. Harju. "Master scaling of perceived intensity of touch, cold and warmth." *European Journal of Pain: Ejp*. 7, no. 4(2003): 323-34 UI 12821402.

A new approach is presented for scaling perceived intensity of touch, cold and warmth based on magnitude estimation. In this method named master scaling thenar is utilized as common reference area for scaling and calibrating perceived intensity. The master scaling is particularly well suited for clinical applications in which the stimulation in pain-affected body areas creates a complex perception (e.g., paradoxical heat for cold stimulation) and/or aberrant psychophysical functions for perceived intensity. The results from three different experiments showed that: (a) All patients and healthy subjects were able to scale adequately the perceived intensity of touch, cold, and warmth at unaffected body areas. (b) Thenar stimulations were shown to be adequate common references in the joint scaling of perceived intensity of other body areas in pain patients as well as healthy persons. (c) Individual thenar psychophysical functions can be used for screening patients and healthy persons with regard to their ability to scale perceived intensity of touch, cold and warmth. (d) Master scaled perceived intensity scales can be used for determining if various pain-unaffected body areas are normal or abnormal in patients and in healthy persons. (e) The interindividual variation in perceived intensity is considerably reduced after master scaling and approaches that of intraindividual variation as found in olfaction and hearing. Finally, empirically based thenar Master Functions of perceived intensity for touch, cold and warmth are proposed to be used in future sensory testing of patients, as well as of healthy persons.

Beric, A. "Spinal cord injury pain." *European Journal of Pain: Ejp*. 7, no. 4(2003): 335-8 UI 12821403.

Awareness that SCI pain is common emerged during the past decade. However, there are a number of unresolved issues. There is a need for variety of experimental models to reflect diversity of SCI pains. Current classification is not as user-friendly as it should be. More attention should be given to a condition of the spinal cord below and above the SCI lesion. A consensus for what is an optimal SCI functional assessment for patients with sensory complaints and pain should be developed. Further extensive SCI pain research is needed prior to spinal cord regeneration trials in order to be able to cope with a potential for newly developed pains that may appear during incomplete spinal cord regenerative attempts. [References: 10]

Bianchi, M., and M. Broggin. "A randomised, double-blind, clinical trial comparing the efficacy of nimesulide, celecoxib and rofecoxib in osteoarthritis of the knee." *Drugs*. 63, no. Suppl 1(2003): 37-46 UI 14506910.

Joint pain is the main complaint in patients affected by osteoarthritis (OA), and NSAIDs are commonly used to treat pain associated with OA. Over the past few

years, cyclo-oxygenase (COX)-2-selective inhibitors have been proved to have certain advantages over non-selective NSAIDs and have been increasingly used for pain management in patients with OA. OBJECTIVE: The main objective of this randomised, double-blind, within-patient study was to compare the analgesic efficacy of three COX-2 inhibitors in 30 patients affected by symptomatic OA of the knee. We evaluated the effects of oral nimesulide (100mg), celecoxib (200mg) and rofecoxib (25mg). Each drug was administered for 7 days. METHODS: Analgesic efficacy was determined using the patient's assessment of pain on a visual analogue scale (VAS) and by total pain relief over 3 hours (TOPAR3) on the first and last days of treatment. In addition, the overall analgesic efficacy and tolerability were determined by a global assessment by the patient at the end of each week of treatment, using 5-point categorical scales. At the end of the study, each patient was asked about which of the three forms of treatment they would choose as a continuation of the pain therapy. RESULTS: Taking all the results into consideration, nimesulide proved to be significantly more effective in providing symptomatic relief than did celecoxib and rofecoxib. Furthermore, nimesulide provided more rapid relief of pain associated with walking than did the other two drugs tested. Patients expressed similar preference for nimesulide and rofecoxib, but a lesser preference for celecoxib treatment. No patient withdrew from the study because of adverse events and the three different forms of treatment were generally safe and well tolerated. CONCLUSION: The present data confirm our previous observations in patients with rheumatoid arthritis, further suggesting that nimesulide represents an effective agent for the treatment of joint pain, with particular reference to the rapid onset of its analgesic effect.

Block, B. M., et al. "Efficacy of postoperative epidural analgesia: a meta-analysis." *Jama*. 290, no. 18(2003): 2455-63 UI 14612482.

CONTEXT: Whether epidural analgesia is a better method than parenteral opioids for postoperative pain control remains controversial. OBJECTIVE: To systematically review the efficacy of postoperative epidural analgesia vs parenteral opioids, the primary alternative technique. DATA SOURCES: Studies were identified primarily by searching the National Library of Medicine's PubMed database (1966 to April 25, 2002) and other sources for studies related to postoperative epidural analgesia. STUDY SELECTION: Inclusion criteria were a comparison of epidural therapy vs parenteral opioids for postoperative analgesia, measurement of pain using a visual analog scale (VAS) or numeric rating scale, randomization of patients to either therapy, and adult patients (> or =18 years). A total of 1404 abstracts were identified, 100 of which met all inclusion criteria. DATA EXTRACTION: Each article was reviewed and data extracted from tables, text, or extrapolated from figures as needed. Weighted mean pain scores, weighted mean differences in pain score, and weighted incidences of complications were determined by using a fixed-effect model. DATA SYNTHESIS: Epidural analgesia provided better postoperative analgesia compared with parenteral opioids (mean [SE], 19.40 mm [0.17] vs 29.40 mm [0.20] on the VAS; $P < .001$). When analyzed by postoperative day, epidural analgesia was better than parenteral opioids on each postoperative day ($P < .001$ for each day after surgery). For all types of surgery and pain assessments, all forms of epidural analgesia provided significantly better postoperative analgesia compared with parenteral opioid analgesia ($P < .001$ for all), with the exception of thoracic epidural analgesia vs opioids for rest pain after thoracic surgery (weighted mean difference, 0.6 mm; 95% confidence interval, -0.3 to 1.5 mm; $P = .12$). The complication rates were lower than expected for nausea or vomiting and pruritus but comparable with existing data for lower extremity motor block. CONCLUSION: Epidural analgesia, regardless of analgesic agent, location of catheter placement, and type and time of pain assessment, provided better postoperative analgesia compared with parenteral opioids. [References: 53]

Bogduk, N., and M. Karasek. "Two-year follow-up of a controlled trial of intradiscal electrothermal anuloplasty for chronic low back pain resulting from internal disc disruption." *Spine Journal: Official Journal of the North American Spine Society*. 2, no. 5(2002): 343-50 UI 14589465.

BACKGROUND: On the basis of observational data, intradiscal electrothermal anuloplasty (IDETA) has been implemented as a treatment for back pain resulting from internal disc disruption. PURPOSE: To assess the efficacy of IDETA. STUDY DESIGN: Prospective cohort study with comparison group and 2-year follow-up. PATIENT SAMPLE: Of 53 patients who satisfied the diagnostic criteria for internal disc disruption, 36 were allocated to a treatment group and 17 to a comparison group, according to whether their insurer approved treatment with IDETA. OUTCOME MEASURES: Outcomes were assessed in terms of relief of pain, return to work and use of opioids to treat persisting pain. METHODS: The treatment group underwent IDETA. The comparison group underwent a conventional rehabilitation program. Outcomes were assessed at 3 months, 12 months and 2 years after treatment. RESULTS: As a group, the comparison patients exhibited no significant improvement in their pain at any time. One was partially relieved, but no patient was completely relieved at either 12 or 24 months. The patients treated with IDETA exhibited significant improvements in their median pain scores, which were sustained at 12 and 24 months. At 24 months, 54% of these patients had achieved at least 50% relief of their pain, no longer used opioids and were at work. Seven patients (20%) were totally free of pain and at work at 24 months. CONCLUSIONS: The long-term results of IDETA are stable and enduring. It is not universally successful, but 54% of patients can reduce their pain by half, and one in five patients can expect to achieve complete relief of their pain.

Boivie, J. "Central pain and the role of quantitative sensory testing (QST) in research and diagnosis." *European Journal of Pain: Ejp*. 7, no. 4(2003): 339-43 UI 12821404.

Borjesson, M., and M. Dellborg. "'Before intervention - is the pain really cardiac?'" *Scandinavian Cardiovascular Journal*. 37, no. 3(2003): 124-7 UI 12881151.

Braunwald, E. "Application of current guidelines to the management of unstable angina and non-ST-elevation myocardial infarction." *Circulation*. 108, no. 16 Suppl 1(2003): III28-37 UI 14605017.

Unstable angina/non-ST-elevation myocardial infarction (UA/NSTEMI) is a common but heterogeneous disorder with patients exhibiting widely varying risks. Early risk stratification is at the center of the management program and can be achieved using clinical criteria and biomarkers, or a combination. In addition to anti-ischemic therapy and aspirin, the thienopyridine clopidogrel is indicated except in patients who are potential candidates for urgent coronary artery bypass grafting (CABG). Platelet glycoprotein (GP) IIb/IIIa antagonists are indicated in high-risk patients likely to undergo percutaneous coronary intervention (PCI) but are not indicated in the management of lower-risk patients who do not undergo PCI. There is a growing body of evidence to support the substitution of the low-molecular-weight heparin (LMWH) enoxaparin for unfractionated heparin (UFH). Three recent trials have demonstrated the benefit of an early invasive strategy with catheterization followed by revascularization in patients at high and intermediate risk. Lower-risk patients should undergo early noninvasive stress testing. An intensive program of secondary prevention is mandatory and should be begun before hospital discharge.

Bruera, E., and H. N. Kim. "Cancer pain." *Jama*. 290, no. 18(2003): 2476-9 UI 14612485.

Bugter, M. L., et al. "Prior ibuprofen exposure does not augment opioid drug potency or modify opioid requirements for pain inhibition in total hip surgery." *Canadian Journal of Anaesthesia*. 50, no. 5(2003): 445-9 UI 12734151.

PURPOSE: In previous animal studies, a prior exposure to non-steroidal anti-inflammatory drugs (NSAID) augmented opioid drug potency. This study was designed to answer the question whether a similar effect can be attained in man. The objective was to use NSAID for preoperative pain reduction and at the same time use the NSAID exposure to reduce opioid requirements for pain inhibition in major orthopedic surgery. **METHODS:** In this double-blind, randomized study, 50 patients scheduled for total hip surgery were included. Patients of Group I received a placebo drug three times a day two weeks before surgery, and those allocated to Group II received ibuprofen (600 mg) three times a day. For surgical anesthesia, all patients received intrathecal bupivacaine 20 mg plus 0.1 mg morphine in a total volume of 4 mL. **RESULTS:** The preoperative or postoperative visual analogue scale pain scores or the amount of iv morphine showed no differences between the two groups in the first 24 hr after surgery. The median total blood loss in the ibuprofen group was 1161 mL vs 796 mL in the placebo group ($P < 0.01$). **CONCLUSION:** Pretreatment with ibuprofen before major hip surgery does not improve the pain scores or reduce morphine requirement but significantly increases blood loss. Considering the presence of relevant adverse effects, pretreatment with a non-selective NSAID is not recommended.

Burns, J. W., et al. "Cognitive factors influence outcome following multidisciplinary chronic pain treatment: a replication and extension of a cross-lagged panel analysis." *Behaviour Research & Therapy*. 41, no. 10(2003): 1163-82 UI 12971938.

Reducing maladaptive cognitions is hypothesized to constitute an active therapeutic process in multidisciplinary pain programs featuring cognitive-behavioral interventions. A cross-lagged panel design was used to determine whether: a) early-treatment cognitive changes predicted late-treatment pain, interference, activity and mood changes, but not vice versa; b) three cognitive factors made unique contributions to outcome; c) substantial cognitive changes preceded substantial improvements in outcome. Sixty-five chronic pain patients, participating in a 4-week multidisciplinary program, completed measures of pain helplessness, catastrophizing, pain-related anxiety (process factors), pain severity, interference, activity level and depression (outcomes) at pre-, mid- and posttreatment. Results showed that early-treatment reductions in pain helplessness predicted late-treatment decreases in pain and interference, but not vice versa, and that early-treatment reductions in catastrophizing and pain-related anxiety predicted late-treatment improvements in pain severity, but not vice versa. Findings suggested that the three process factors predicted improvements mostly in common. However, little evidence was found that large early-treatment reductions in process variables preceded extensive improvements in pain. Findings replicate those of a recent report regarding cross-lagged effects, and offer support that cognitive changes may indeed influence late-treatment changes in outcomes.

Buvanendran, A., et al. "Effects of perioperative administration of a selective cyclooxygenase 2 inhibitor on pain management and recovery of function after knee replacement: a randomized controlled trial." *Jama*. 290, no. 18(2003): 2411-8 UI 14612477.

CONTEXT: Controlling postoperative pain after knee replacement while reducing opioid-induced adverse effects and improving outcomes remains an important challenge. **OBJECTIVE:** To assess the effect of combined preoperative and postoperative administration of a selective inhibitor of cyclooxygenase 2 on opioid consumption and outcomes after total knee arthroplasty (TKA). **DESIGN, SETTING, AND PATIENTS:** Randomized, placebo-controlled, double-blind trial conducted June

2001 through September 2002, enrolling 70 patients aged 40 to 77 years and undergoing TKA at a university hospital in the United States. INTERVENTIONS: Patients were randomly assigned to receive 50 mg of oral rofecoxib at 24 hours and at 1 to 2 hours before TKA, 50 mg daily for 5 days postoperatively, and 25 mg daily for another 8 days, or matching placebo at the same times. MAIN OUTCOME MEASURES: Postoperative outcomes including postsurgical analgesic consumption and pain scores achieved, nausea and vomiting, joint range of motion, sleep disturbance, patient satisfaction with analgesia, and hematologic and coagulation parameters. RESULTS: Total epidural analgesic consumption and in-hospital opioid consumption were less in the group receiving rofecoxib compared with the group receiving placebo ($P < .05$). Median pain score (visual analog scale [VAS], 0-10) achieved for the knee was lower in the rofecoxib group compared with the placebo group during hospital stay (2.2 [interquartile range [IQR], 1.4-3.2] vs 3.5 [IQR, 2.7-4.3], $P < .001$) and 1 week after discharge (2.6 [IQR, 1.4-3.5] vs 3.7 [IQR, 2.9-4.7], $P = .03$). There was less postoperative vomiting in the rofecoxib group (6%) compared with the placebo group (26%) ($P = .047$), as well as a decrease in sleep disturbance compared with the placebo group on the night of surgery ($P = .006$) and on the first ($P = .047$) and second ($P < .001$) days postoperatively. Knee flexion was increased in the rofecoxib group compared with the placebo group at discharge (active flexion: mean [SD], 84.2 degrees [11.1 degrees] vs 73.2 degrees [13.6 degrees], $P = .03$; passive flexion: 90.5 degrees [6.8 degrees] vs 81.8 degrees [13.4 degrees], $P = .05$) and at 1 month postoperatively (109.3 degrees [8.5 degrees] vs 100.8 degrees [11.8 degrees], $P = .01$), with shorter time in physical therapy to achieve effective joint range of motion. The rofecoxib group was more satisfied with analgesia and anesthesia at discharge compared with the placebo group (median satisfaction score, 4.3 [IQR, 3.0-4.7] vs 3.3 [IQR, 2.3-4.3], respectively; $P = .03$), and the differences persisted at 2-week and at 1-month follow-up. There was no intergroup difference in surgical blood loss ($P > .05$ for both intraoperative and postoperative blood loss). CONCLUSION: Perioperative use of an inhibitor of cyclooxygenase 2 is an effective component of multimodal analgesia that reduces opioid consumption, pain, vomiting, and sleep disturbance, with improved knee range of motion after TKA.

Camu, F., L. Shi, and C. Vanlersberghe. "The role of COX-2 inhibitors in pain modulation." *Drugs*. 63, no. Suppl 1(2003): 1-7 UI 14506906.

NSAIDs are the analgesics that are most commonly used world-wide. In the past few years, there have been significant advances in explaining the mechanism of action and clinical efficacy of the drugs belonging to this pharmacological family. Recent data relating to the role of cyclo-oxygenase (COX)-2 in the development of neuronal hyperexcitability and pain hypersensitivity have opened new perspectives in our understanding of the therapeutic effects of these drugs in several painful conditions. The main objective of this brief review is to deal with some physiopathological and pharmacological aspects concerning the role of NSAIDs, with special reference to COX-2 inhibitors, in the treatment of pain. [References: 49]

Carlisle, D. "Africans are dying of AIDS without pain relief." *Bmj*. 327, no. 7423(2003): 1069 UI 14604919.

Carragee, E. J., and T. F. Alamin. "Discography. a review." *Spine Journal: Official Journal of the North American Spine Society*. 1, no. 5(2001): 364-72 UI 14588317.

BACKGROUND CONTEXT: Discography is used today as the basis of the diagnosis of discogenic back and neck pain. As such, it plays a pivotal role in the formulation of treatment plans for patients complaining of chronic axial spine pain. PURPOSE: A brief history of discography is described here, followed by a discussion of the current

uses of discography, the technique involved, and recent studies questioning its validity. **STUDY DESIGN/SETTING:** A selective review of discography articles from peer-reviewed literature from 1967 to 2000 is provided. We included articles analyzing the validity of discography as well as those concerning its proper use, technique, and complications. **METHODS:** Articles relevant to the subject of discography were systematically reviewed for recommendations regarding technique, the interpretation of results, and conclusions regarding its validity. **RESULTS:** The specificity of discography is dramatically affected by the characteristics of the patient examined. In a patient with chronic pain states and psychiatric risk factors, the specificity was determined to be at most 20%. In healthy patients with no chronic pain states and a normal psychiatric profile, the specificity was found to be at most 90%. The ability of a patient to determine reliably the concordance of pain provoked during discography is poor. We could find no data addressing the sensitivity of the study. **CONCLUSIONS:** Clinicians who use discography to determine treatment pathways for their patients need to critically examine the validity of the test. Recent studies examining the specificity of discography have led us to proceed much more cautiously in interpreting the results of discography. [References: 42]

Cepeda, M. S., and D. B. Carr. "Women experience more pain and require more morphine than men to achieve a similar degree of analgesia." *Anesthesia & Analgesia*. 97, no. 5(2003): 1464-8 UI 14570666.

Sex differences in pain perception and in response to opioids have been described, but the findings are inconsistent. We sought to determine the effect of sex on pain perception, morphine consumption, and morphine analgesia after surgery. We designed a prospective cohort study and included 423 women and 277 men who emerged from general anesthesia after surgical procedures and who reported pain intensity of ≥ 5 on the 0-10 numeric rating scale (NRS). We administered 2.5 mg of morphine IV every 10 min until the pain intensity was ≤ 4 of 10. Every 10 min, patients rated their pain on the NRS and indicated the degree of pain relief on a 5-point Likert scale. After adjustment for type of operation and age, we found that women had more intense pain and had larger morphine consumption than men. The difference in NRS pain intensity was 0.4 U (95% confidence interval, 0.1-0.6 U). Women required 0.03 mg/kg more morphine than men (95% confidence interval, 0.02-0.04 mg/kg). We conclude that women have more intense pain and require 30% more morphine to achieve a similar degree of analgesia compared with men. Clinicians should anticipate the differences in opioid requirement to avoid undertreatment of pain in women. **IMPLICATIONS:** The effect of sex on opioid response is not clear. To determine the effect of sex on morphine consumption and morphine analgesia, we designed a cohort study. We found that women had more intense pain and required 30% more morphine to achieve a similar degree of analgesia compared with men.

Chuang, Y. C., et al. "Gene therapy for bladder pain with gene gun particle encoding pro-opiomelanocortin cDNA." *Journal of Urology*. 170, no. 5(2003): 2044-8 UI 14532850.

PURPOSE: Interstitial cystitis is a bladder hypersensitivity disease associated with bladder pain that has been a major challenge to understand and treat. We hypothesized that targeted and localized expression of endogenous opioid peptide in the bladder could be useful for the treatment of bladder pain. Pro-opiomelanocortin (POMC) is one of such precursor molecules. In this study we developed a gene gun method for the transfer of POMC cDNA in vivo and investigated its therapeutic effect on acetic acid induced bladder hyperactivity in rats. **MATERIALS AND METHODS:** Human POMC cDNA was cloned into a modified pCMV plasmid and delivered into the bladder wall of adult female rats by direct injection or the gene gun. Three days after gene therapy continuous cystometrograms were performed using urethane

anesthesia by filling the bladder (0.08 ml per minute) with saline, followed by 0.3% acetic acid. Bladder immunohistochemical testing was used to detect endorphin after POMC cDNA transfer. RESULTS: The intercontraction interval was decreased after intravesical instillation of acetic acid (73.1% or 68.1% decrease) in 2 control groups treated with saline or the gene gun without POMC cDNA, respectively. However, rats that received POMC cDNA via the gene gun showed a significantly decreased response (intercontraction interval 35% decreased) to acetic acid instillation, whereas this antinociceptive effect was not detected in the plasmid POMC cDNA direct injection group. This effect induced by POMC gene gun treatment was reversed by intramuscular naloxone (1 mg/kg), an opioid antagonist. Increased endorphin immunoreactivity with anti-endorphin antibodies was observed in the bladder of gene gun treated animals. CONCLUSIONS: The POMC gene can be transferred in the bladder using the gene gun and increased bladder expression of endorphin can suppress nociceptive responses induced by bladder irritation. Thus, POMC gene gun delivery may be useful for the treatment of interstitial cystitis and other types of visceral pain.

Coyne, P. J. "When the world health organization analgesic therapies ladder fails: the role of invasive analgesic therapies." *Oncology Nursing Forum*. Online. 30, no. 5(2003): 777-83 UI 12949590.

Dal, D., et al. "A background infusion of morphine does not enhance postoperative analgesia after cardiac surgery." *Canadian Journal of Anaesthesia*. 50, no. 5(2003): 476-9 UI 12734156.

PURPOSE: To compare the effects of patient-controlled analgesia (PCA), with or without a background infusion of morphine on postoperative pain relief and stress response after cardiac anesthesia. METHODS: With University Ethics approval, 35 consenting adults undergoing elective open-heart surgery were randomly assigned preoperatively in a double-blind fashion to receive either morphine PCA alone (Group I, n = 15) or morphine PCA plus a continuous basal infusion (Group II, n = 14) for 44 hr postoperatively. Pain scores with visual analogue scale (VAS) at rest, deep inspiration and with cough, sedation scores, stress hormone levels [cortisol, adrenocorticotropin (ACTH) and growth hormone (GH)] and morphine consumption were assessed, and serum morphine levels were measured at four, 20, 28 and 44 hr after surgery. Adverse effects including nausea, vomiting, constipation, urinary retention and pruritus were noted. Total blood, fluid requirements, drainage and urinary output were recorded. RESULTS: Postoperative morphine consumption at 44 hr was less in Group I (29.43 +/- 12.57 mg) than in Group II (50.14 +/- 16.44 mg), P = 0.0006. There was no significant difference between groups in VAS scores, GH levels, blood levels of morphine and adverse effects. While VAS scores, ACTH and GH levels decreased significantly in both groups, plasma cortisol levels increased significantly in Group I only at four hours. In Group II, ACTH and cortisol were higher at four and 44 hr respectively. CONCLUSION: PCA with morphine effectively controlled postoperative pain after cardiac surgery. The addition of a background infusion of morphine did not enhance analgesia and increased morphine consumption.

De la Rue, S. "Pain therapeutics-SMi Conference. 11-12 June, 2003, London, UK." *Idrugs*. 6, no. 7(2003): 652-5 UI 12906016.

Dean, C. "A piece of my mind. Grams." *Jama*. 290, no. 18(2003): 2379-80 UI 14612460.

DeAngelis, C. D. "Pain management." *Jama*. 290, no. 18(2003): 2480-1 UI 14612486.

Dimitrova, A., et al. "Cerebellar responses evoked by nociceptive leg withdrawal reflex as revealed by event-related fMRI." *Journal of Neurophysiology*. 90, no. 3(2003): 1877-86 UI 12702705.

The aim of the present study was to examine nociceptive leg withdrawal reflex-related areas in the human cerebellum using event-related functional brain imaging (fMRI). Knowledge about cerebellar areas involved in unconditioned limb withdrawal reflex control has some relevance in understanding data of limb withdrawal reflex conditioning studies. Sixteen healthy adult subjects participated. Nociceptive leg withdrawal reflexes were evoked by electrical stimulation of the left tibial nerve behind the medial malleolus. An event-related fMRI paradigm was applied with a total of 30 stimuli being delivered pseudorandomly during 500 consecutive MR scans. Surface electromyographic (EMG) recordings were performed from the left anterior tibial muscle. Only trials with significant reflex EMG activity were used as active events in fMRI statistical analysis. The specified contrasts compared the active event condition with rest. Leg withdrawal reflex-related areas were located within the vermis, paravermis, and lateral posterior cerebellar hemispheres bilaterally. Vermal and paravermal areas in lobules III/IV in the anterior lobe and in lobule VIII in the posterior lobe agree with the cerebellar representation of climbing and mossy fiber hindlimb afferents and voluntary leg movements. They are likely related to efferent modulation of the leg withdrawal reflex and/or sensory processing of afferent inputs from the reflex and/or the noxious stimulus. Additional activation within vermal lobule VI and hemispherical lobules VI/Crus I may be related to other pain-related processes (e.g., facial grimacing, fear, and startlelike reactions).

Doleys, D. M. "Psychologic evaluation for patients undergoing neuroaugmentative procedures." *Neurosurgery Clinics of North America*. 14, no. 3(2003): 409-17 UI 14567142.

Neuroaugmentative and neuromodulation therapy continues to expand. New applications are being found for existing technology, such as the use of SCS therapy in the treatment of head pain. The potential impact of existing therapies is enhanced by new discoveries as exemplified by the availability and demonstrated efficacy of different pharmacologic agents and combinations of agents in intrathecal therapy [39]. Increased attention is being paid to cortical stimulation, including motor cortex stimulation and deep brain stimulation. We must, however, not let our fascination for gadgets betray sound sense. The role of psychosocial factors in the outcome of more "objective" and measurable problems, such as spasticity and tremor versus pain, remains an open area of investigation. Although psychologic issues may not be as prevalent in the amelioration of such problems, they may influence the patient's overall level of satisfaction with the therapy and improvement in quality of life. [References: 39]

Dreyfuss, P. H., S. J. Dreyer, and Nass. "Lumbar zygapophysial (facet) joint injections." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 3 Suppl(2003): 50S-59S UI 14589218.

Duffy, T., et al. "Inhibition of PGE2 production by nimesulide compared with diclofenac in the acutely inflamed joint of patients with arthritis." *Drugs*. 63, no. Suppl 1(2003): 31-6 UI 14506909.

OBJECTIVE: Cyclo-oxygenase (COX) exists in two isoforms, COX-1 and COX-2. COX-1 is responsible for homeostatic functions, whereas COX-2 is inducible and responsible for the inflammatory effects of prostaglandins. Nimesulide, a selective inhibitor of COX-2, has been shown to relieve pain rapidly in arthritis. We examined the effect of nimesulide on prostaglandin formation in arthritis, to evaluate if this compound gains access to the site of inflammation and whether this is required for

analgesia. **STUDY DESIGN:** This was a single-dose, double-blind, double-dummy, parallel group study of nimesulide 100mg compared with diclofenac 50mg. **METHODS:** Serial sampling of synovial fluid, whole blood and plasma was performed at baseline and 0.5, 1, 2, 3 and 4 hours after drug administration. Synovial tissue was obtained by needle biopsy at completion of the study period. Synovial fluid prostaglandin E2 (PGE2) was measured by enzyme immunoassay. COX-1 and COX-2 activities in whole blood were estimated by serum thromboxane B2 (TxB2) and endotoxin-induced PGE2 concentrations respectively. Synovial tissue COX-1 and COX-2 mRNA and protein expression were studied by reverse transcriptase polymerase chain reaction and immunohistochemistry respectively. Twenty patients with acute knee inflammation on a background of arthritis of all types completed the study. **RESULTS:** Patients were allocated randomly to groups to receive nimesulide (n = 10) or diclofenac (n = 10). The mean (+/- SEM) plasma concentration of PGE2 in the nimesulide group decreased from 24.45 +/- 2.71 ng/mL at baseline to 1.74 +/- 2.71 ng/mL at 2 hours. Diclofenac also inhibited PGE2, but at a later time point (28.15 +/- 2.86 ng/mL at baseline and 0.85 +/- 2.86 ng/mL at 4 hours). The mean (+/- SEM) synovial fluid concentration of PGE2 was 319 +/- 89 pg/mL before treatment; it remained unaltered over 4 hours after the administration of nimesulide or diclofenac (235 +/- 72 pg/mL). In contrast, in six patients receiving long-term treatment with nimesulide or a non-selective NSAID, synovial PGE2 was 61 +/- 24 pg/mL, suggesting that inhibition of synovial prostaglandin formation is delayed compared with that in plasma. Nimesulide caused partial inhibition of serum TxB2 (a decrease from a mean of 268 +/- 24 ng/mL to one of 164 +/- 27 ng/mL at 2 hours), whereas diclofenac had a greater effect (a decrease from 224 +/- 33 ng/mL, to 76 +/- 27 ng/mL at 3 hours). **CONCLUSIONS:** Nimesulide, a COX-2 selective inhibitor, has a rapid onset of action in the blood compartment, with early inhibition of PGE2 generation, an index of COX-2 activity. In contrast, it exhibits a delay in achieving therapeutic concentrations in the synovial fluid. Thus factors other than local inhibition of prostaglandins may explain the rapid onset of analgesia that is associated with nimesulide, including a possible central mechanism of pain relief.

Eftekhari, B., et al. "Vestibular schwannoma with contralateral facial pain - case report." *BMC Neurology*. 3, no. 1(2003): 2 UI 12659656.

BACKGROUND: Vestibular schwannoma (acoustic neuroma) most commonly presents with ipsilateral disturbances of acoustic, vestibular, trigeminal and facial nerves. Presentation of vestibular schwannoma with contralateral facial pain is quite uncommon. **CASE PRESENTATION:** Among 156 cases of operated vestibular schwannoma, we found one case with unusual presentation of contralateral hemifacial pain. **CONCLUSION:** The presentation of contralateral facial pain in the vestibular schwannoma is rare. It seems that displacement and distortion of the brainstem and compression of the contralateral trigeminal nerve in Meckel's cave by the large mass lesion may lead to this atypical presentation. The best practice in these patients is removal of the tumour, although persistent contralateral pain after operation has been reported.

Elkersh, M. A., et al. "Epidural clonidine relieves intractable neuropathic itch associated with herpes zoster-related pain." *Regional Anesthesia & Pain Medicine*. 28, no. 4(2003): 344-6 UI 12945030.

OBJECTIVE: We present a case of intense herpes zoster-related pain and itching in the ophthalmic division of the trigeminal nerve (V1). Successful pain and itch management was achieved after insertion of a high thoracic epidural catheter with a continuous infusion of bupivacaine and clonidine. **CASE REPORT:** A 73-year-old woman with metastatic malignant melanoma developed acute herpes zoster-related pain and itching unresponsive to conventional oral medications. The patient described severe and frequent attacks of lancinating pain occurring in the

dermatomal distribution of the left ophthalmic division of the trigeminal nerve. She also had a disturbing itch in the same distribution as her pain. The patient had significant reduction in the frequency and intensity of the lancinating attacks after placement of a thoracic epidural catheter with continuous infusion of 1 microg/mL clonidine and 0.05% bupivacaine. The itching resolved completely as well. CONCLUSION: High thoracic epidural infusion of bupivacaine and clonidine was beneficial in relieving neuropathic itch in a patient with acute herpes zoster-related pain in the distribution of the trigeminal nerve.

Evans, R. "The effectiveness of transdermal fentanyl in palliative care." *Nursing Times*. 99, no. 41(2003): 24-5 UI 14603653.

Current literature suggests that transdermal fentanyl is efficacious in relieving cancer-related pain with less opioid-related constipation than morphine for patients in the palliative care setting. However, randomised controlled trials are needed to study the drug's efficacy compared with other level-three opioids that are used to manage cancer-related pain in palliative care.

Fardon, D. "3. From the Clinic." *Spine Journal: Official Journal of the North American Spine Society*. 1, no. 1(2001): 79 UI 14588378.

Fardon, D. "From the dermatology clinic...postherpetic neuralgia, in which the source of radiculopathy is revealed by examination of the skin." *Spine Journal: Official Journal of the North American Spine Society*. 2, no. 1(2002): 85 UI 14598807.

Ferguson, S. A., et al. "Predicting recovery using continuous low back pain outcome measures." *Spine Journal: Official Journal of the North American Spine Society*. 1, no. 1(2001): 57-65 UI 14588369.

BACKGROUND CONTEXT: There is a lack of research evaluating multiple follow-up visits, specifically when using continuous outcome measures. Continuous outcome measures with several follow-up assessments would allow us to evaluate rate of recovery. PURPOSE: To predict low back pain outcomes based on the quantification of initial conditions. STUDY DESIGN/SETTING: This was a prospective study where patients were enrolled within the first month of low back pain symptoms and evaluated for 3 months. Patients were recruited from several primary care facilities. PATIENT SAMPLE: Thirty-two patients with local low back pain symptoms were recruited for the study. OUTCOME MEASURES: There were four major outcome measures, including functional performance probability, symptom intensity, impairment of activities of daily living, and a summary outcome measure. METHODS: Regression models were constructed using the initial conditions, including psychological, psychosocial, physical workplace, and personal factors, to predict the rate of recovery for each outcome measure. RESULTS: Twenty-eight patients completed the study. The r^2 value for the rate of recovery regression models were 0.77 symptom intensity prediction, 0.85 activities of daily living prediction, 0.87 functional performance probability prediction, and 0.96 summary outcome measure prediction. Two functional performance patterns of recovery were found, including a steady improvement and a large jump in improvement. A discriminant function model identified the pattern of recovery in 91% of cases given initial conditions. CONCLUSIONS: Continuous outcome measures can be accurately predicted given the initial conditions.

Friedrich, M. G., et al. "Blood oxygen level-dependent magnetic resonance imaging in patients with stress-induced angina." *Circulation*. 108, no. 18(2003): 2219-23 UI 14557359.

BACKGROUND: Blood oxygen level-dependent (BOLD) MRI reflects tissue oxygenation and may be useful for the detection of myocardial ischemia in patients

with suspected coronary artery disease. METHODS AND RESULTS: We studied 25 patients with stress-induced angina using a T2*-sensitive echo planar imaging sequence before and during adenosine in a single-slice approach. BOLD-MRI results were compared with quantitative angiography and adenosine thallium single-photon emission computed tomography (SPECT). Although image quality was variable because of artifacts, no data were excluded from the analysis. During adenosine, a mean signal intensity decrease was observed for myocardial segments related to coronary stenoses >75%. On average, a nonsignificant increase was observed in the other segments. The angiographically determined stenosis was correlated with BOLD-MRI results. Including all segments and using BOLD-MRI signal intensity increase cutoff value of 1.2%, BOLD-MRI had a sensitivity of 88% and a specificity of 47% to correctly classify severe stenoses. Adenosine thallium SPECT data from distal segments of the same coronary territory were also correlated with BOLD-MRI. However, variability was substantial. CONCLUSIONS: In patients with stress-induced angina, adenosine BOLD-MRI detects myocardial ischemia in myocardial segments related to severe coronary stenoses. Its potential will increase with additional improvement of spatial coverage and image quality.

Gardner, G., et al. "Reconceptualising the objectives of a pilot study for clinical research." *International Journal of Nursing Studies*. 40, no. 7(2003): 719-24 UI 12965163.

This is a methodological study in which a case report is used to retrospectively analyse the link between a successful pilot study and stalled main study to identify potential methodological weaknesses in the planning process. The analysis identified unanticipated influences related to hospital processes and discipline boundaries that adversely influenced participant recruitment and retention for a clinical trial. The findings of the study demonstrate that, whilst the pilot is an important step in research planning to confirm the design and operational processes for a study, a thorough analysis of the relevant health service environment is an important additional objective for the pilot study.

Garrity-Moses, M. E., J. K. Liu, and N. M. Boulis. "Molecular biology and gene therapy in the treatment of chronic pain." *Neurosurgery Clinics of North America*. 14, no. 3(2003): 419-35 UI 14567143.

Technologic advancements have made cell type-specific targeting, expression control, and safe and stable gene transfer possible. Animal research has provided increasing experience with gene transfer to the nervous system and sensory neurons in particular. Gene-based neuromodulation can be achieved through neuronal delivery of transgenes capable of altering synaptic function. Alternatively, ex vivo gene transfer can be used to create cell lines capable of secreting analgesic neuropeptides. Transplantation of these grafts and direct gene-based neuromodulation can be applied to the control of pain and the root causes of pain. These approaches combine anatomic and pharmacologic specificity. As the technology continues to improve, clinical application of cellular and molecular pain control is likely. [References: 103]

Gerner, P., et al. "Topical amitriptyline in healthy volunteers.[see comment]." *Regional Anesthesia & Pain Medicine*. 28, no. 4(2003): 289-93 UI 12945021.

BACKGROUND AND OBJECTIVES: The antidepressant amitriptyline is used as an adjuvant in the treatment of a variety of chronic pain conditions. This drug interacts with many receptors and ion channels, such as Na⁺ channels. In a randomized, double-blinded, and placebo-controlled trial, we investigated whether amitriptyline also is capable of providing cutaneous analgesia when applied topically in 14 healthy volunteers. METHODS: Amitriptyline hydrochloride was prepared as a 45% water/45% isopropanol/10% glycerin solution and titrated to pH 8.5 with sodium hydroxide. Four areas, 2 on each arm, of approximately 1 cm(2) each were marked

on the ventral aspect of the upper arm. A piece of gauze, placed on each of the marked areas and affixed to the arm with an occlusive plastic dressing, was saturated via syringe with placebo and amitriptyline solutions (10 mmol/L, 50 mmol/L, and 100 mmol/L). After 1 hour, the dressings and gauze were removed. A 16-G blunt needle was used to grade the pain at the marked area once per hour (1 = complete analgesia, 10 = normal pain sensation). RESULTS: The analgesic effects of 50 mmol/L and 100 mmol/L solutions of amitriptyline were significantly higher than those of the placebo or the 10 mmol/L solution. However, no significant difference was found between the analgesia provided by the placebo solution versus the 10 mmol/L solution or between the 50 mmol/L versus the 100 mmol/L solution. The only side effect observed was a concentration-dependent redness of the skin. CONCLUSIONS: Topically applied amitriptyline is effective as an analgesic in humans. Different vehicles may improve its efficacy and decrease the skin redness observed.

Gilron, I., B. Milne, and M. Hong. "Cyclooxygenase-2 inhibitors in postoperative pain management: current evidence and future directions." *Anesthesiology*. 99, no. 5(2003): 1198-208 UI 14576559.

Gopal, S. T., M. P. Lane, and G. R. Park. "Remifentanyl for the pain of pancreatitis." *Anaesthesia*. 58, no. 11(2003): 1137-8 UI 14616623.

Goya, P., et al. "Cannabinoids and neuropathic pain." *Mini-Reviews in Medicinal Chemistry*. 3, no. 7(2003): 765-72 UI 14529517.

After a brief overview of the endocannabinoid system (CB receptors, and endocannabinoids) and of the cannabinergic ligands, some general issues related to cannabinoids and pain are commented. Finally, the most important findings regarding cannabinoids and neuropathic pain are discussed in detail. [References: 98]

Greenway, F. L., et al. "Temporary relief of postherpetic neuralgia pain with topical geranium oil." *American Journal of Medicine*. 115, no. 7(2003): 586-7 UI 14599644.

Haldeman, S., et al. "Clinical perceptions of the risk of vertebral artery dissection after cervical manipulation: the effect of referral bias." *Spine Journal: Official Journal of the North American Spine Society*. 2, no. 5(2002): 334-42 UI 14589464.

BACKGROUND CONTEXT: The growing recognition of cervical manipulation as a treatment of neck pain and cervicogenic headaches has led to increased interest in potential complications that may result from this treatment approach. Recent surveys have reported that many neurologists will encounter cases of vertebral artery dissection that occur at various times after cervical manipulation, whereas most practitioners of spinal manipulation are of the opinion that these events are extremely rare. We asked the question whether these differences in perception could be explained in part by referral or selection bias. PURPOSE: To assess the effect of referral bias on the differences in perceived incidence of vertebral artery dissection after cervical manipulation between neurologists and chiropractors in Canada. STUDY DESIGN: This study was a retrospective review of cases where neurological symptoms consistent with cerebrovascular ischemia were reported by chiropractors in Canada. METHODS: An analysis of data from a chiropractic malpractice insurance carrier (Canadian Chiropractic Protective Association [CCPA]) and results of a survey of chiropractors was performed to determine the likelihood that a vertebral artery dissection after cervical manipulation would be reported to practicing chiropractors. This was compared with the likelihood that a neurologist would be made aware of such a complication. RESULTS: For the 10-year period 1988 to 1997, there were 23 cases of vertebral artery dissection after cervical manipulation reported to the CCPA

that represents 85% of practicing chiropractors in Canada. Based on the survey, an estimated 134,466,765 cervical manipulations were performed during this 10-year period. This gave a calculated rate of vertebral artery dissection after manipulation of 1:5,846,381 cervical manipulations. Based on the number of practicing chiropractors and neurologists during the period of this study, 1 of every 48 chiropractors and one of every two neurologists would have been made aware of a vascular complication from cervical manipulation that was reported to the CCPA during their practice lifetime. CONCLUSIONS: The perceived risk after cervical manipulation by chiropractors and neurologists is related to the probability that a practitioner will be made aware of such an incident. The difference in the number of chiropractors (approximately 3,840 in 1997) and neurologists (approximately 4,000 in 1997) in active practice and the fact that each patient who has a stroke after manipulation will likely be seen by only one chiropractor but by three or more neurologists partly explains the difference in experience and the perception of risk of these two professions. This selection or referral bias is important in shaping the clinical opinions of the various disciplines and distorts discussion on the true incidence of these complications of cervical manipulation. The nature of this study, however, describes the likelihood that a clinician will be made aware of such an event and cannot be interpreted as describing the actual risk of stroke after manipulation.

Hammesfahr, J. F., A. B. Knopf, and T. Stitik. "Safety of intra-articular hyaluronates for pain associated with osteoarthritis of the knee." *American Journal of Orthopedics (Chatham, Nj)*. 32, no. 6(2003): 277-83 UI 12834190.

Sodium hyaluronate (Hyalgan, and Supartz) and hylan G-F 20 (Synvisc) are hyaluronans (HA) injected intra-articularly for pain relief in osteoarthritis of the knee. Each product has demonstrated a very favorable safety profile in clinical trials and practice. The most common adverse event associated with their use is mild injection site pain and swelling. Rare incidences of pseudogout and anaphylactoid reactions have been reported to be associated with their use. Occasionally, pseudosepsis, also known as a severe acute inflammatory reaction (SAIR) syndrome, has been reported to be associated with these products. Clinical and postmarketing data indicate that HA therapy is a safe treatment for osteoarthritis of the knee. [References: 60]

Hampton, T. "Researchers probe pathways of pain: new insights emerging from molecular studies." *Jama*. 290, no. 18(2003): 2391-2 UI 14612462.

Helfand, A. E. "Foot pain in later life: some psychosocial correlates." *Clinics in Podiatric Medicine & Surgery*. 20, no. 3(2003): 395-406 UI 12952044.

What we have just described is a collection of problems that mark our aged of today and clearly indicate that primary foot care should be provided as a primary health service for the elderly, the mentally ill, the emotionally ill, the retarded, the blind, and others with chronic diseases. For if any of the primary problems were present on any other part of the body, except the foot, they would be provided as a covered service under the current Medicare regulations. One might ask if the foot is not a part of the anatomy and if perhaps we have forgotten the words of the classic song, which proclaims that the foot bone is connected to the head bone. The author might add a "footnote" ... in so many ways. To achieve the desired outcome of having podiatric services available to all aging patients, foot care must be integrated into all comprehensive forms of health care delivery, so that podiatric care becomes a primary service, thus permitting patients to maintain an optimal level of foot health and general health. The ability to walk requires a catalyst--foot health. Keeping patients walking is a goal that has been a part of the podiatric profession since its inception over a century ago. With the high prevalence of foot problems in the elderly, and especially in those with chronic disease and mental impairment, the needs for the future are significant. It has been projected that we as a nation and

society cannot afford to deliver a maximum level of health care for the elderly. In truth, we cannot afford not to provide these basic and needed services. For it is our society that has prolonged life. It is now our responsibility to provide life for these precious given years and to assure dignity for those who have made life better for all of us. [References: 91]

Henderson, J. M. "Neuroaugmentation for chronic pain. Preface." *Neurosurgery Clinics of North America*. 14, no. 3(2003): ix-x UI 14567134.

Herzog, R. J., et al. "Magnetic resonance imaging: use in patients with low back pain or radicular pain." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 3 Suppl(2003): 6S-10S UI 14589213.

Houten, J. K., and T. J. Errico. "Paraplegia after lumbosacral nerve root block: report of three cases.[see comment]." *Spine Journal: Official Journal of the North American Spine Society*. 2, no. 1(2002): 70-5 UI 14588291.

BACKGROUND CONTEXT: Lumbar nerve root blocks and epidural steroid injections are frequently employed in the management of degenerative conditions of the lumbar spine, but relatively few papers have been published that address the complications associated with these interventions. Serious complications include epidural abscess, arachnoiditis, epidural hematoma, cerebrospinal fluid fistula and hypersensitivity reaction to injectate. Although transient paraparesis has been described after inadvertent intrathecal injection, an immediate and lasting deficit has not been previously described as sequelae of a nerve root block. **PURPOSE:** We present three cases in which either persisting paraplegia or paraparesis occurred immediately after administration of a lumbar nerve root block and propose a mechanism for this devastating but previously unreported complication. **STUDY DESIGN/SETTING:** Case reports of three patients. **PATIENT SAMPLE:** Three patients, two women and one man ranging in age from 42 to 64 years, underwent three procedures performed at three different facilities, in the hands of two different injectionists. In each instance, penetration of the dura was not thought to have occurred. In two procedures the needles were placed transforamenally, one at L3-4 on the left and one at L3-4 on the right, and in the third the needle tip was placed immediately lateral to the S1 nerve root. **OUTCOME MEASURES:** Patient follow-up data from medical office records. **METHODS:** In each case, needle placement was verified with injection of a contrast media in conjunction with either computerized tomography or biplanar fluoroscopy. No backbleeding or cerebrospinal fluid was encountered upon aspiration in any of the procedures. Magnetic resonance imaging (MRI) was performed within 48 hours of injury in all patients. **RESULTS:** In each patient, paraplegia suddenly ensued after instillation of the steroid solution and, in each instance, postprocedure MRI revealed increased signal in the low thoracic spinal cord on T2-weighted imaging consistent with edema. The sudden onset of neurological deficit and the imaging changes noted in the spinal cord point to a vascular explanation for these injuries. We postulate that in these patients the spinal needle either penetrated or caused injury to an abnormally low dominant radiculomedullary artery, a recognized anatomical variant. This vessel, also known as the artery of Adamkiewicz, in 85% of individuals arises between T9 and L2, usually from the left, but in a minority of people may arise from the lower lumbar spine and rarely even from as low as S1. The artery of Adamkiewicz travels with the nerve root through the neural foramen and irrigates the anterior spinal artery. Injury of it or injection of particulate matter into it, as what may happen with the commonly used epidural steroid injectates, may result in infarction of the lower thoracic spinal cord, producing the clinical and imaging findings seen in these three patients. **CONCLUSIONS:** We present the cases of three patients who had lasting paraplegia or paraparesis after the performance of a nerve root block. We propose that the

mechanism for this rare but devastating complication is the concurrence of two uncommon circumstances, the presence of an unusually low origin of the artery of Adamkiewicz and an undetected intraarterial penetration of the procedure needle.

Inal, G., et al. "Periprostatic nerve blockade before transrectal ultrasound-guided prostate biopsy: the Ankara Numune experience." *Urologia Internationalis*. 71, no. 2(2003): 165-7 UI 12890954.

OBJECTIVES: To assess the efficacy and morbidity of periprostatic local anesthesia before transrectal ultrasound-guided biopsy of the prostate. **METHODS:** From August 2001 to December 2001, 58 patients underwent transrectal ultrasound-guided prostate biopsy at the 2nd Department of Urology, Ankara Numune Education and Research Hospital. Fifty patients who fulfilled the inclusion criteria were randomized into 2 groups of 25 patients each. Group 1 received periprostatic local anesthesia with 1% lidocaine while group 2 received no local anesthesia. Pain scale responses were analyzed for each aspect of the biopsy procedure with a visual analog scale. **RESULTS:** There was no difference between the 2 groups in pain scores during digital rectal examination, intramuscular injection and probe insertion. The mean pain scores during needle insertion in group 1 receiving periprostatic nerve block and in group 2 receiving no local anesthesia were 3.00 +/- 2.22 and 6.16 +/- 2.85, respectively, and were found to be significantly different ($p < 0.001$), but morbidity after the biopsy was not statistically different between the 2 groups. **CONCLUSION:** Periprostatic local anesthesia before prostate biopsy is a safe and easy method to increase patient comfort during the procedure. Copyright 2003 S. Karger AG, Basel

Jansen, L. A. "The moral irrelevance of proximity to death." *Journal of Clinical Ethics*. 14, no. 1-2(2003): 49-58 UI 12953353.

Johnson, R. W. "Herpes zoster in the immunocompetent patient: management of post-herpetic neuralgia." *Herpes*. 10, no. 2(2003): 38-45 UI 14577953.

Post-herpetic neuralgia (PHN) is the most common complication of herpes zoster (HZ, shingles), particularly in the elderly and those with severe acute phase symptoms. Unless or until varicella vaccination reduces the incidence of HZ and attenuates the risk and/or severity of complications, PHN will continue to result in patient suffering and remain a significant cause of healthcare and social support resource consumption. There have been useful advances in PHN management (e.g. use of the anticonvulsant gabapentin and topical local anaesthetic patches), but some cases remain intractable. Prevention is an important strategy, and antiviral drugs, while not totally effective, provide the most accepted method. Other acute interventions require further evaluation (nerve blocks, acute phase use of tricyclic antidepressants or anticonvulsants). As prevention of PHN requires early recognition and prompt management of at-risk patients presenting with acute HZ, public education and provision of information to relevant healthcare personnel are important. This article discusses issues relevant to PHN management and prevention, and provides a review of the pertinent literature. [References: 70]

Joris, J. L., et al. "Spinal mechanisms contribute to analgesia produced by epidural sufentanil combined with bupivacaine for postoperative analgesia." *Anesthesia & Analgesia*. 97, no. 5(2003): 1446-51 UI 14570663.

When used alone, lipid-soluble epidural opioids are thought to produce analgesia supraspinally via systemic absorption. However, spinal opioids and local anesthetics have been shown to act synergistically at the spinal level in animal studies. We, therefore, tested the hypothesis that sufentanil requirements will be less when given epidurally than IV in patients simultaneously given epidural bupivacaine after major abdominal surgery. Forty patients were anesthetized with isoflurane and epidural

bupivacaine for major abdominal surgery. After surgery, each was given a continuous epidural infusion of bupivacaine at a rate of 5 mg/h and sufentanil patient-controlled analgesia (PCA). In a randomized, double-blinded fashion, the sufentanil was given either epidurally or IV. PCA settings were the same in each group. For 60 hrs after surgery, the following variables were measured: pain scores at rest, during mobilization, and during coughing; extension of sensory block; side effects; and sufentanil consumption. Pain scores, extension of sensory block, and the incidence of side effects did not differ between the two groups. Consumption of sufentanil in the epidural group was half that of the IV group (48 h after surgery: 107 +/- 57 microg versus 207 +/- 100 microg for the epidural and IV groups, respectively; $P < 0.05$). We conclude that spinal mechanisms contribute to the analgesia produced by epidural sufentanil in combination with a local anesthetic. IMPLICATIONS: When combined with epidural bupivacaine, the sufentanil requirement was 50% less when given epidurally than IV. Epidural sufentanil thus appears to have a spinal mechanism of action.

Joshi, S. N., and J. L. Blackshear. "66-year-old man with long-standing intermittent chest pain." *Mayo Clinic Proceedings*. 78, no. 11(2003): 1405-8 UI 14601700.

Kamat, A. M., et al. "Total pelvic exenteration: effective palliation of perineal pain in patients with locally recurrent prostate cancer." *Journal of Urology*. 170, no. 5(2003): 1868-71 UI 14532795.

PURPOSE: Locally recurrent prostate cancer can be a debilitating disease. Perineal pain associated with rectal involvement by prostate cancer is difficult to palliate by conventional methods. We describe a group of patients who had intractable perineal pain due to locally recurrent prostate cancer and underwent total pelvic exenteration for palliation. MATERIALS AND METHODS: We retrospectively reviewed the data for men who underwent total pelvic exenteration with urinary and colonic diversion at our institution between October 1995 and October 2002 for the relief of perineal pain from prostate cancer. Patients were selected for consideration for surgical extirpation on the basis of the presence of biopsy proven recurrent prostate cancer and evidence of rectal invasion on sonography. All patients received radiation therapy and hormonal therapy and had intractable perineal or pelvic pain resistant to narcotics. RESULTS: A total of 14 men underwent total pelvic exenteration for palliation during the 7-year period evaluated. There were no perioperative deaths. There were 7 postoperative events, including pulmonary embolus in 2 patients, and ileus, wound infection, cholecystitis, stomal stenosis and pelvic abscess in 1 patient each. After exenteration all patients had significant relief of pain and 11 (79%) had complete relief of pain symptoms. For these 11 patients the average symptom-free period was 14.1 months (range 3 to 36). Seven patients eventually died of disease, with the median period from exenteration to death being 24 months. CONCLUSIONS: Total pelvic exenteration is effective therapy for palliation of perineal pain associated with locally recurrent prostate cancer and can also effectively palliate other local symptoms such as hematuria, ureteral obstruction, voiding dysfunction and rectal incontinence. This procedure can be performed with acceptable morbidity in a highly select group of patients.

Kamata, M., et al. "Milnacipran for the treatment of chronic pain." *Human Psychopharmacology*. 18, no. 7(2003): 575-6 UI 14533142.

Kapoor, V., et al. "Radicular pain avoidance during needle placement in lumbar diskography." *AJR. American Journal of Roentgenology*. 181, no. 4(2003): 1149-54 UI 14500247.

OBJECTIVE: The objective of our study was to determine whether a method could be found to reduce iatrogenic radicular pain during needle placement in lumbar

diskography. MATERIALS AND METHODS: After obtaining permission from the institutional review board at the University of Pittsburgh Medical Center, we conducted a study using medical records and existing data that were recorded for quality control during lumbar diskography. A coaxial technique was being used for lumbar diskography. We evaluated data for 71 intervertebral disks in 26 patients in which the needle placement was randomly high (superior) or low (inferior), and the associated pain response during needle placement was recorded. In an attempt to minimize iatrogenic pain during needle placement, we identified a potentially "safe window" for needle placement on MRI of the lumbar spine. On oblique fluoroscopy of the lumbar spine, the safe window is a triangle formed by the superior articular facet medially, the superior endplate of the lower vertebra inferiorly, and an imaginary line joining the tip of the superior articular facet and the superolateral tip of the vertebral body. This safe window was then used for needle placement in another 73 intervertebral disks in 27 patients. Pain response to needle placement was recorded for quality control, and the medical records were retrospectively compared with the initial 71 intervertebral disks in which needle placement was random. RESULTS: In the initial group with random needle placement, lower extremity radicular pain occurred in 13 (18.3%) of 71 intervertebral disks with superior needle placement and in 23 (32.4%) of 71 intervertebral disks with inferior needle placement (total, 50.7%). The pain responses of the superior and inferior groups were not significantly different ($p = 0.27$). On MRI, the average distances between the nerve ganglion-fascicle-rami and the superior articular facets at the superior disk level were 1.1, 1.4, and 2.5 mm at L3-L4, L4-L5, and L5-S1, respectively. The average distances between the nerve ganglion-fascicle-rami and the superior articular facets at the inferior disk level were 3.0, 3.6, and 6.6 mm at L3-L4, L4-L5, and L5-S1, respectively. When the safe window was used, only five (6.8%) of 73 patients reported radicular pain. The decrease in radicular pain between the two groups was significant ($p < 0.001$). CONCLUSION: Iatrogenic lower extremity radicular pain is common during random needle placement at lumbar diskography. High or low needle placement in the intervertebral disk could not predict whether radicular pain would be averted. We identified a safe window that can be used for needle placement during lumbar diskography to minimize iatrogenic lower extremity radicular pain and thereby improve the reliability of the test.

Klein, R. G., et al. "Biochemical injection treatment for discogenic low back pain: a pilot study." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 3(2003): 220-6 UI 14589203.

BACKGROUND CONTEXT: Biochemical treatment options including attempts at intervertebral disc restoration are desirable for the physiologic treatment of degenerative disc disease. PURPOSE: This was a pilot study to test the potential effectiveness of intradiscal injection therapy using agents known to induce proteoglycan synthesis in the treatment of intervertebral disc disease. STUDY DESIGN: Prospective, within subject, experimental design was applied in the study. PATIENT SAMPLE: Thirty patients, average age 46.5 years, with chronic intractable low back pain of 8.5 years average duration, took part in the study. All patients had lumbar discography with reproduction of pain. OUTCOME MEASURES: Pretreatment Roland-Morris disability scores and visual analogue scores were compared with 1-year follow-up posttest values of these scores. METHODS: Lumbar intervertebral discs were injected with a solution of glucosamine and chondroitin sulfate combined with hypertonic dextrose and dimethylsulfoxide (DMSO). Assessment of pain and disability was completed before treatment and an average of 12 months after the last treatment. RESULTS: Posttreatment Roland-Morris scores for the entire group of 30 patients of $6.4 \pm .994$ were significantly ($p < .001$) lower than pretreatment scores of $12.0 \pm .92$ (mean \pm SE). The posttreatment visual analogue scores of $3.00 \pm .44$ were also significantly less than the pretreatment of $6.11 \pm .33$

(mean+/-SE). Although the results were statistically significant for the 30 patients as a whole, 17 of the 30 patients (57%) improved markedly with an average of 72% improvement in disability scores and 76% in visual analogue scores. The other 13 patients (43%) had little or no improvement. Patients who did poorly included those with failed spinal surgery, spinal stenosis and long-term disability. There were no complications or serious side effects, although postinjection pain was moderate to severe for 48 to 72 hours and required epidural steroids in five cases.

CONCLUSIONS: The results of this pilot study suggest that intradiscal injection therapy with glucosamine, chondroitin sulfate, hypertonic dextrose and DMSO warrants further evaluation with randomized controlled trials.

Kubitzek, F., et al. "Analgesic efficacy of low-dose diclofenac versus paracetamol and placebo in postoperative dental pain." *Journal of Orofacial Pain*. 17, no. 3(2003): 237-44 UI 14520769.

AIMS: To compare the efficacy and safety of diclofenac-K (12.5 mg) vs paracetamol (500 mg) and placebo given in a flexible dosage regimen to treat pain resulting from extraction of impacted third molar teeth. METHODS: This was a 2-day, double-blind, double-dummy, randomized, parallel-group, placebo-controlled study of diclofenac-K (12.5 mg) tablets vs paracetamol (500 mg) tablets and placebo in patients with moderate or severe pain within 8 hours of extraction of impacted third molars. RESULTS: After the first 2-tablet dose, patients took on average 2.5 additional tablets of diclofenac-K or 2.4 tablets of paracetamol, almost all as 1-tablet doses. Most placebo patients discontinued by taking rescue medication (ibuprofen 200 mg) on the first day. Pain relief after the initial dose of diclofenac-K (2 x 12.5 mg) was superior to placebo ($P < .01$ for all efficacy outcomes) and comparable to paracetamol (2 x 500 mg). About 30% of patients in each active treatment group took rescue medication during the study, compared to 78% on placebo. About 70% in each active treatment group considered the overall pain relief to be "some," "a lot," or "complete" compared to only 15% on placebo. The incidence of adverse events in each active treatment group was low and comparable between the treatments. CONCLUSION: An initial double-dose of diclofenac-K (2 x 12.5 mg) or paracetamol (2 x 500 mg) adequately relieved the most intense postoperative pain, and the flexible multiple dose regimen (1 or 2 tablets) maintained adequate pain relief thereafter. Most patients needed only 1-tablet doses following the initial 2-tablet dose.

Lau, H., N. G. Patil, and F. Lee. "Randomized clinical trial of postoperative subfascial infusion with bupivacaine following ambulatory open mesh repair of inguinal hernia." *Digestive Surgery*. 20, no. 4(2003): 285-9 UI 12748432.

BACKGROUND: Wound pain remains the commonest problem after ambulatory open repair of inguinal hernia. Postoperative subfascial infusion of the wound with bupivacaine extends local analgesia at home and may achieve superior analgesia compared with oral analgesics alone. The objective of the present trial was to evaluate the efficacy of postoperative subfascial infusion of the wound with 0.5% bupivacaine at 2 ml per hour for 48 h after operation. METHODS: Forty-four patients who underwent ambulatory open tension-free mesh hernioplasties were randomized to two arms of treatment. The pump group had an infusion pump containing 100 ml 0.5% bupivacaine being placed between the external oblique aponeurosis and the Prolene mesh, whereas the nonpump group was treated with oral analgesics alone. Assuming that an observed difference of 2.0 existed between the mean pain scores of the two groups, the estimated sample size would be at least 20 patients in each group. RESULTS: Postoperative pain scores at rest and on coughing were significantly lower in the pump group than in the nonpump group on days 0 and 1 after surgery ($p < 0.01$). Before being discharged, none of the pump group patients requested analgesics, but 6 patients of the nonpump group required analgesic

supplement ($p = 0.025$). Ten patients (50%) of the pump group experienced no pain during the period of bupivacaine infusion. Recovery variables, including time taken to resume ambulation and micturition, were comparable between the two groups. The pump and nonpump group patients returned to their normal activities after a median of 3 and 4 days, respectively ($p = 0.217$). The postoperative morbidity rates of the two groups were similar. CONCLUSION: Postoperative subfascial infusion of the wound with 0.5% bupivacaine achieved superior analgesia compared with oral analgesics alone. Portable infusion pump is a safe technique to continue local analgesia at home after ambulatory open repair of inguinal hernia. The drawbacks of the ON-Q Pain Management System included its high cost and frequent seepage of blood-stained anesthetic fluid into the wound dressing. Copyright 2003 S. Karger AG, Basel

Lehtinen, J. T., P. Tetreault, and J. J. Warner. "Arthroscopic management of painful and stiff scapulothoracic articulation." *Arthroscopy*. 19, no. 4(2003): E28 UI 12671603.

We present the case of a patient who had chronic refractory scapulothoracic pain accompanied by the loss of scapulothoracic motion. Despite intensive physical therapy, the insidious onset of scapulothoracic pain and stiffness progressed. A wide range of diagnostic tests did not show a systemic, anatomic, or neurologic cause for the disorder. Finally, the patient elected to undergo an arthroscopic release and decompression of the scapulothoracic articulation. The patient had a dramatic response to surgery; the pain was gone immediately, and by 4 months after surgery, her scapulothoracic motion was evaluated as symmetric. One year after the surgery, she maintained an active lifestyle and was extremely satisfied with the result. Progressive and painful loss of shoulder motion in the case reported was due to a rare adhesive inflammation of the scapulothoracic bursa, which was successfully treated using arthroscopic resection. Arthroscopy of the scapulothoracic articulation is an option to treat scapulothoracic abnormalities, especially bursitis, but long-term clinical studies are needed to strongly recommend this emerging treatment option.

Levin, L. A., and S. Lessell. "Pain: a neuro-ophthalmic perspective." *Archives of Ophthalmology*. 121, no. 11(2003): 1633 UI 14609924.

Levy, R. M. "Deep brain stimulation for the treatment of intractable pain." *Neurosurgery Clinics of North America*. 14, no. 3(2003): 389-99, vi UI 14567140.

Deep brain stimulation (DBS) plays an important role in the treatment of chronic pain when other less invasive treatment modalities have been exhausted. DBS is an apparently safe and effective treatment option for a select group of patients. Further research into the mechanisms of pain relief by DBS and careful prospective outcomes studies should help to define better the optimal techniques for DBS and clarify which patient populations may be best helped by this interventional procedure.

[References: 83]

Lopez-Rodriguez, M. L., A. Viso, and S. Ortega-Gutierrez. "VR1 receptor modulators as potential drugs for neuropathic pain." *Mini-Reviews in Medicinal Chemistry*. 3, no. 7(2003): 729-48 UI 14529514.

The involvement of VR(1) in the endogenous pain signalling has converted this receptor into a promising therapeutic target for the development of a new family of potent analgesics devoid of the shortcomings of other analgesics commonly used. The desensitisation induced after VR(1) activation points to the utility of VR(1) agonists for the treatment of various nociceptive disorders including mitigation of neuropathic pain, inhibition of neurogenic inflammation and suppression of urinary bladder hyperreflexia, whereas VR(1) antagonists have been described as valuable agents for the treatment of inflammatory hyperalgesia and pain. Structure of the

main classes of VR(1) ligands developed to date, their molecular mechanisms of action and their promising utility for the management of diverse nociceptive alterations, specially neuropathic pain, are discussed in this review. [References: 99]

Marchettini, P., et al. "The Lindblom roller." *European Journal of Pain: Ejp.* 7, no. 4(2003): 359-64 UI 12821407.

Neuropathic pain is caused by injury of the peripheral or central nervous system. The neurological examination of the sensory system in neuropathic pain patients guides the anatomical localization of the injury. Among the sensory modalities to be tested, priority should be given to those subserved by small peripheral sensory fibers or by the spinothalamic tract that most commonly are abnormal in neuropathic pain patients. Testing of cold and warm perception was traditionally carried out in the clinic using tubes filled with water at different temperatures, a cumbersome method that has limited the routine examination of these sensory modalities. The Lindblom roller offers a practical and effective method of readily testing temperature perception and is among the best available clinical tools for delineating the anatomical boundaries of a sensory abnormality. Routinely use of the Lindblom roller shall be standard bedside clinical assessment of neuropathic pain patients. To exemplify this statement we describe two patients affected by complex and fluctuating painful sensory abnormalities caused by an extradural mass compressing the spinal cord. The level of the injury was readily localized with a roller kept at room temperature.

Mattia, C., and F. Coluzzi. "Antidepressants in chronic neuropathic pain." *Mini-Reviews in Medicinal Chemistry.* 3, no. 7(2003): 773-84 UI 14529518.

This review presents available clinical studies and new insights into mechanisms of analgesic effect and possible new routes of administration of antidepressant drugs. Older TCAs continue to be superior treatments. We focused on recent findings on newer antidepressants as analgesics. Their use should be supported by further controlled trials. [References: 99]

McCaul, C., et al. "Intravenous fluid loading with or without supplementary dextrose does not prevent nausea, vomiting and pain after laparoscopy." *Canadian Journal of Anaesthesia.* 50, no. 5(2003): 440-4 UI 12734150.

PURPOSE: To examine the effects of iv compound sodium lactate (CSL) with and without caloric supplementation with dextrose on nausea, vomiting and pain following general anesthesia for laparoscopy. METHODS: We compared iv fluid loading with and without supplementary dextrose for the prevention of postoperative nausea and vomiting (PONV). In a prospective double-blinded controlled trial, 120 ASA I female patients undergoing elective gynecological laparoscopy were randomized to one of three groups, and received either: (a) CSL 1.5 mL.kg(-1) per hour fasting duration; (b) CSL, 1.5 mL.kg(-1) per hour fasting duration with 0.5 g.kg(-1) dextrose added in 50% formulation (CSL/dextrose); or (c) no iv fluid (control). RESULTS: Compared with control the percentage of patients who had no PONV within 24 hr of anesthesia in the CSL and CSL/dextrose groups was 78% vs 83% and 71%, $P = 0.81$ and $P = 0.683$ respectively. The numbers needed-to-harm for causing PONV episodes in CSL/dextrose vs CSL or control groups were 5.7 [95% confidence interval (CI), 5.57-5.91] and 8.2 (95% CI, 8.01-8.37) respectively. The number needed-to-treat for prevention of PONV episodes in CSL vs control was 19.2 (95% CI, 19.08-19.37). A greater proportion of patients in the CSL/dextrose group required narcotic analgesia in the postanesthetic care unit compared to those in the control group (16/35 vs 7/37, $P = 0.03$). The CSL/dextrose group also demonstrated hyperglycemia (serum glucose 14.0 +/- 3.94 vs 5.0 +/- 1.01 vs 5.2 +/- 0.9 mmol.L(-1), $P < 0.0001$) in the postanesthetic care unit compared to the CSL and control groups. The CSL/dextrose group also reported increased thirst at 24 hr

compared to control (20/35 vs 11/37, P = 0.035). CONCLUSION: These findings suggest that: 1) administration of dextrose is associated with nausea, increased opioid requirement and late thirst after elective gynecological laparoscopy; 2) iv fluids did not decrease PONV.

McCleane, G. J., R. Suzuki, and A. H. Dickenson. "Does a single intravenous injection of the 5HT₃ receptor antagonist ondansetron have an analgesic effect in neuropathic pain? A double-blinded, placebo-controlled cross-over study." *Anesthesia & Analgesia*. 97, no. 5(2003): 1474-8 UI 14570668.

Neurokinin-1-expressing neurones in lamina I to III of the spinal cord are intimately involved in the regulation of ascending and spino-bulbal pathways that regulate excitatory transmission. In experimental animals, ablation of these neurones reduces the responses to a variety of nociceptive stimuli. Furthermore, in animals, spinal application of the selective 5HT₃ receptor antagonist ondansetron mimics these effects, indicating that 5HT₃ receptors play a pronociceptive role and mediate descending excitatory controls that allow spinal neurones to fully code peripheral stimuli. In this study, we examined the potential analgesic effect of a single IV injection of ondansetron in humans with chronic neuropathic pain. Each consenting subject received a single IV injection of 8 mg ondansetron and placebo in varying order at least 1 wk apart with pain scores being recorded for the 48 h preceding and after each injection. Pain scores were significantly reduced 2 h after ondansetron injection (but at no other time point). This suggests that ondansetron can have an analgesic effect in neuropathic pain. Side effects were minor and infrequent. IMPLICATIONS: The selective 5HT₃ receptor antagonist ondansetron, currently used as an antiemetic, may also have analgesic properties. Side effects with a single IV injection are infrequent and usually mild.

McStay, R. "Terminal sedation: palliative care for intractable pain, post Glucksberg and Quill." *American Journal of Law & Medicine*. 29, no. 1(2003): 45-76 UI 12953318.

Mehta, R. H., et al. "Comparison of outcomes of patients with acute coronary syndromes with and without atrial fibrillation." *American Journal of Cardiology*. 92, no. 9(2003): 1031-6 UI 14583352.

Preexisting or new-onset atrial fibrillation (AF) commonly occurs in patients with an acute coronary syndrome (ACS). However, it is currently unknown if previous or new-onset AF confers different risks in these patients. To determine the prognostic significance of new-onset and previous AF in patients with ACS, we evaluated all patients with ACS enrolled in the multinational Global Registry of Acute Coronary Events (GRACE) between April 1999 and September 2001. We compared clinical characteristics, management, and hospital outcomes in patients with ACS and new-onset and previous AF with those without AF. Of a total of 21,785 patients with ACS enrolled in GRACE, 1,700 (7.9%) had previous AF and 1,221 (6.2%) had new-onset AF. Patients with any AF were older, more likely to be women, had more co-morbid conditions, and worse hemodynamic status. Most in-hospital adverse events (reinfarction, shock, pulmonary edema, bleeding, stroke, and mortality) were significantly higher in patients with any AF than those without AF. Only new-onset AF (not previous AF) was an independent predictor of all adverse in-hospital outcomes. We conclude that compared with patients with ACS without any AF, previous and new-onset AF are associated with increased hospital morbidity and mortality. However, only new-onset AF is an independent predictor of in-hospital adverse events in patients with ACS.

Mibu, R., et al. "Results of linearly polarized near-infrared irradiation therapy in patients with intractable anorectal pain." *Diseases of the Colon & Rectum*. 46, no. 10 Suppl(2003): S50-3 UI 14530658.

PURPOSE: Electrogalvanic stimulation and biofeedback therapy for the treatment of intractable anorectal pain have been reported. However, these therapeutic modalities have some disadvantages and insufficient effectiveness. We noticed that digital examination revealed the strongly tender point in both lateral sides of the rectum and introduced linearly polarized near-infrared irradiation therapy to the strongly tender point. The purpose of this study was to review the outcomes and estimate its usefulness. **METHODS:** A total of 35 consecutive patients complained of vague and deep pain in the anorectum. Fourteen patients had a history of lower abdominal surgery. Eighteen patients had disordered defecation. The linearly polarized near-infrared light was irradiated to the strongly tender point on or a few centimeters apart from the skin for ten minutes. The effect of the therapy was assessed as excellent, good, no change, or worse by the patients themselves. **RESULTS:** Ten patients had the strongly tender point in the left side, 8 in the right posterior, and 17 in both. Five patients estimated as excellent, 28 as good, and 2 as no change. Mean total number of irradiation was 18.8 (range, 1-235), and mean number of irradiation for relief from pain was 2.5 (range, 1-9). Anorectal pain recurred in four patients, who received the same therapy and improved. Four patients felt hot during the irradiation, and a patient had frequent micturition after the irradiation. These mild complications easily disappeared. **CONCLUSION:** The linearly polarized near-infrared irradiation therapy is a simple, safe, and effective modality for relief from intractable anorectal pain and recommended for primary therapy.

Michalsen, A., et al. "Effectiveness of leech therapy in osteoarthritis of the knee: a randomized, controlled trial.[see comment]." *Annals of Internal Medicine*. 139, no. 9(2003): 724-30 UI 14597456.

BACKGROUND: Leech therapy was commonly used in traditional medicine for treating localized pain. Clinically significant pain relief after leech therapy for osteoarthritis of the knee has been demonstrated by preliminary data. **OBJECTIVE:** To evaluate the effectiveness of leech therapy for symptomatic relief of osteoarthritis of the knee. **DESIGN:** Randomized, controlled trial. **SETTING:** Outpatient department for integrative medicine of an academic teaching hospital. **PATIENTS:** 51 patients with osteoarthritis of the knee (leech therapy: 24 patients, mean age [\pm SD], 62.5 \pm 10.2 years; topical diclofenac therapy: 27 patients, mean age [\pm SD], 65.5 \pm 6.7 years). **INTERVENTION:** A single treatment with 4 to 6 locally applied leeches (leech therapy group) or a 28-day topical diclofenac regimen (control group). **MEASUREMENTS:** Mean of the pain, function, and stiffness subscores of the Western Ontario and McMaster Universities Osteoarthritis Index and physical sum score of the Medical Outcomes Study 36-Item Short-Form Health Survey with group comparisons at days 3, 7, 28, and 91. **RESULTS:** The primary end point, pain at day 7, was reduced from a mean (\pm SD) of 53.5 \pm 13.7 to 19.3 \pm 12.2 after leech therapy compared with 51.5 \pm 16.8 to 42.4 \pm 19.7 with topical diclofenac (estimated group difference, -23.9 [95% CI, -32.8 to -15.1]; $P < 0.001$). Although the difference between group pain scores was no longer significant after day 7, differences for function, stiffness, and total symptoms remained significant in favor of leech therapy until the end of study and for quality of life until day 28. Results were not affected by outcome expectation. **CONCLUSIONS:** Leech therapy helps relieve symptoms in patients with osteoarthritis of the knee. The potential of leech therapy for treating osteoarthritis and the pharmacologic properties of leech saliva remain to be clarified.

Mikeladze, G., et al. "Pulsed radiofrequency application in treatment of chronic zygapophyseal joint pain." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 5(2003): 360-2 UI 14588947.

BACKGROUND CONTEXT: Chronic zygapophyseal joint arthropathy is a cause of back and neck pain. One proposed method of treating facet joint pathology is ablation of medial branches and dorsal rami with pulsed radiofrequency (RF) waves. PURPOSE: Assessment of efficacy of pulsed RF application for treatment of chronic zygapophyseal joint pain. STUDY DESIGN/SETTING: Retrospective study of 114 patients at a pain management clinic. PATIENT SAMPLE: A total of 114 patients with clinical signs of facet joint involvement and a favorable response to a diagnostic medial branch block using local anesthetic, including 82 females and 32 males with a mean age of 52.8+/-12.6 years. Mean duration of pain was 7.52+/-5.26 years. Twenty-seven had previous back surgery, 83 patients had low back pain and 31 had cervical pain. Pain was on the left side in 47 patients, on the right side in 45 patients, bilateral in 22. OUTCOME MEASURES: Result was regarded as successful if pain reduction was more than 50% on visual analog scale and the duration of effect was more than 1.5 months. METHODS: After obtaining positive stimulation, pulsed RF was applied to medial branches of dorsal rami for 120 seconds with temperature at the tip of the electrode 42 C. RESULTS: Of 114 patients, who had positive response to diagnostic block, 46 patients did not respond favorably to pulsed RF application (pain reduction less than 50%). In 68 patients, the procedure was successful and lasted on average 3.93+/-1.86 months. Eighteen patients had the procedure repeated with the same duration of pain relief that was achieved initially. Previous surgery, duration of pain, sex, levels (cervical vs. lumbar) and stimulation levels did not influence outcomes. CONCLUSION: The results of our study showed that the application of pulsed RF to medial branches of the dorsal rami in patients with chronic facet joint arthropathy provided temporary pain relief in 68 of 118 patients.

Mitka, M. "'Virtual textbook" on pain developed: effort seeks to remedy gap in medical education." *Jama*. 290, no. 18(2003): 2395 UI 14612463.

Morales-Alcelay, S., L. Rubio, and A. Martinez. "AMPA glutamate receptors and neuropathic pain." *Mini-Reviews in Medicinal Chemistry*. 3, no. 7(2003): 757-63 UI 14529516.

Glutamate receptors are implicated in many actions in the central nervous system, as an excitatory amino acid, and one of the more relevant is its role in excitotoxicity. Apart from this, it also has a role as pro-nociceptive agent, so that antagonizing its actions could be of interest for developing new analgesic agents. Furthermore, between the analgesics agents, it is of outstanding interest the fact that there is no specific therapy against the neuropathic pain, and glutamate receptor subunits have elicited as new potential targets for this disturbance. [References: 49]

Morau, D., et al. "Comparison of continuous 3-in-1 and fascia Iliaca compartment blocks for postoperative analgesia: feasibility, catheter migration, distribution of sensory block, and analgesic efficacy." *Regional Anesthesia & Pain Medicine*. 28, no. 4(2003): 309-14 UI 12945024.

BACKGROUND AND OBJECTIVES: Efficacy and technical aspects of continuous 3-in-1 and fascia iliaca compartment blocks were compared. METHODS: Forty-four patients scheduled for cruciate ligament repair or femur surgery were randomly divided into 2 groups. After surgery with the patient anesthetized, catheters were placed for continuous 3-in-1 blocks by means of a nerve stimulator (group 1). In group 2, the catheter was inserted for continuous fascia iliaca compartment block without the use of a nerve stimulator. In both groups, a 5-mg/kg bolus of 0.5%

ropivacaine was administered followed by continuous infusion of 0.1 mL/kg/h of 0.2% ropivacaine for 48 hours. In the postoperative period, all the patients received parenteral propacetamol (6 g daily) and ketoprofen (200 mg daily) and 0.1 mg/kg of subcutaneous morphine as rescue analgesia if the visual analog scale (VAS) pain values were greater than 30 mm. We evaluated the technical difficulties relative to catheter placement, the location of the catheter, the analgesic efficacy, and the distribution of the sensory block at 1 hour, 24 hours, and 48 hours. RESULTS: Catheter placement was faster in group 2, and the absence of nerve stimulation decreased material costs ($P < .05$). No significant difference was observed between groups concerning location of the catheter tip under the fascia iliaca. In both groups, the distribution of the sensory block and its course were similar except for those of the obturator nerve (more sensory blocks in group 1, $P < .05$). No significant difference was noted between the groups regarding median VAS pain values and consumption of morphine during the 48-hour period. No major side effect was observed. CONCLUSIONS: The authors conclude that a catheter for continuous lumbar plexus block can be placed more quickly and at lesser cost using the fascia iliaca technique than the perivascular technique with equivalent postoperative analgesic efficacy.

Moynihan, T. J. "Use of opioids in the treatment of severe pain in terminally ill patients--dying should not be painful." *Mayo Clinic Proceedings*. 78, no. 11(2003): 1397-401 UI 14601699.

Pain is a common symptom at the end of life. The vast majority of pain can be readily managed if simple principles of practice are followed. Chronic pain requires continuous analgesia, and severe pain requires use of strong analgesics, most commonly the opioids. In addition to drugs administered continually, short-acting medications must be available for "breakthrough" pain. This article reviews the principles of pain management in terminally ill patients, using a case-based demonstration. [References: 8]

Muller, I., et al. "Effects of statins on platelet inhibition by a high loading dose of clopidogrel.[see comment]." *Circulation*. 108, no. 18(2003): 2195-7 UI 14568892.

BACKGROUND: Recent studies suggested that some HMG-CoA reductase blockers might inhibit the antiplatelet activity of clopidogrel. Therefore, we analyzed how various statins together with a high loading dose of clopidogrel (600 mg) affect platelet aggregation. METHODS AND RESULTS: Seventy-seven patients with stable angina scheduled for elective coronary stenting were studied. Patients were randomized to receive atorvastatin, fluvastatin, lovastatin, pravastatin, simvastatin (each 20 mg), cerivastatin (0.3 mg), or placebo, plus a high loading dose of 600 mg of clopidogrel. ADP-induced platelet aggregation (5 and 20 micromol/L) was determined before and 2 and 4 hours after first clopidogrel administration. All patients were taking aspirin (100 mg/d) regularly. We found that none of the statins significantly influenced inhibition of platelet aggregation by clopidogrel. CONCLUSIONS: Concomitant use of statins with clopidogrel does not significantly inhibit antiplatelet activity, at least when clopidogrel is administered at a high loading dose of 600 mg.

Nemeth, K. A., I. D. Graham, and M. B. Harrison. "The measurement of leg ulcer pain: identification and appraisal of pain assessment tools." *Advances in Skin & Wound Care*. 16, no. 5(2003): 260-7 UI 14581818.

OBJECTIVE: To identify and compare the psychometric, clinical sensibility, and pain-specific properties of leg ulcer pain assessment tools for use as a guide for clinicians and researchers. DESIGN: Pain assessment tools were selected for appraisal based on 4 inclusion criteria: (1) designed specifically to measure either quality and/or intensity of pain, (2) used in at least 2 different diseases and/or pain-

inducing interventions in adults, (3) generic, and (4) patient self-reporting. The tools were appraised against psychometric properties, clinical sensibility attributes, and pain-specific issues. Two reviewers independently reviewed each abstract, with a third reviewer resolving any disagreements. Then the first 2 reviewers independently assessed the selected tools using the predetermined appraisal criteria. RESULTS: Of 54 identified pain assessment tools, 5 (the pain ruler, the numerical rating scale, the visual analogue scale, the verbal descriptor scale, and the short-form McGill Pain Questionnaire) met the inclusion criteria. Each tool met the appraisal criteria to varying degrees. CONCLUSIONS: The use of a pain assessment tool to measure leg ulcer pain is recommended. Clinicians must decide independently which factors are most important when selecting a tool. Although a specific pain assessment approach cannot yet be recommended, a 2-step pain assessment process is most practical. To optimize pain management, further study is needed to ensure that leg ulcer pain is accurately and reliably assessed. [References: 144]

Nicholson, T., A. McGuire, and R. Milne. "Cost-utility of enoxaparin compared with unfractionated heparin in unstable coronary artery disease." *BMC Cardiovascular Disorders*. 1, no. 1(2001): 2 UI 11701090.

BACKGROUND: Low molecular weight heparins hold several advantages over unfractionated heparin including convenience of administration. Enoxaparin is one such heparin licensed in the UK for use in unstable coronary artery disease (unstable stable angina and non-Q wave myocardial infarction). In these patients, two large randomised controlled trials and their meta-analysis showed small benefits for enoxaparin over unfractionated heparin at 30-43 days and potentially at one year. We found no relevant published full economic evaluations, only cost studies, one of which was conducted in the UK. The other studies, from the US, Canada and France, are difficult to interpret since their resource use and costs may not reflect UK practice. METHODS: We aimed to compare the benefits and costs of short-term treatment (two to eight days) with enoxaparin and unfractionated heparin in unstable coronary artery disease. We used published data sources to estimate the incremental cost per quality adjusted life year (QALY), adopting a NHS perspective and using 1998 prices. RESULTS: The base case was a 0.013 QALY gain and net cost saving of 317 pounds sterling per person treated with enoxaparin instead of unfractionated heparin. All but one sensitivity analysis showed net savings and QALY gains, the exception (the worst case) being a cost per QALY of 3,305 pounds sterling. Best cases were a 495 pounds sterling saving and 0.013 QALY gain, or a 317 pounds sterling saving and 0.014 QALY gain per person. CONCLUSIONS: Enoxaparin appears cost saving compared with unfractionated heparin in patients with unstable coronary artery disease. However, cost implications depend on local revascularisation practice. [References: 23]

Nissen, S. E., et al. "Effect of recombinant ApoA-I Milano on coronary atherosclerosis in patients with acute coronary syndromes: a randomized controlled trial.[see comment]." *Jama*. 290, no. 17(2003): 2292-300 UI 14600188.

CONTEXT: Although low levels of high-density lipoprotein cholesterol (HDL-C) increase risk for coronary disease, no data exist regarding potential benefits of administration of HDL-C or an HDL mimetic. ApoA-I Milano is a variant of apolipoprotein A-I identified in individuals in rural Italy who exhibit very low levels of HDL. Infusion of recombinant ApoA-I Milano-phospholipid complexes produces rapid regression of atherosclerosis in animal models. OBJECTIVE: We assessed the effect of intravenous recombinant ApoA-I Milano/phospholipid complexes (ETC-216) on atheroma burden in patients with acute coronary syndromes (ACS). DESIGN: The study was a double-blind, randomized, placebo-controlled multicenter pilot trial comparing the effect of ETC-216 or placebo on coronary atheroma burden measured by intravascular ultrasound (IVUS). SETTING: Ten community and tertiary care

hospitals in the United States. PATIENTS: Between November 2001 and March 2003, 123 patients aged 38 to 82 years consented, 57 were randomly assigned, and 47 completed the protocol. INTERVENTIONS: In a ratio of 1:2:2, patients received 5 weekly infusions of placebo or ETC-216 at 15 mg/kg or 45 mg/kg. Intravascular ultrasound was performed within 2 weeks following ACS and repeated after 5 weekly treatments. MAIN OUTCOME MEASURES: The primary efficacy parameter was the change in percent atheroma volume (follow-up minus baseline) in the combined ETC-216 cohort. Prespecified secondary efficacy measures included the change in total atheroma volume and average maximal atheroma thickness. RESULTS: The mean (SD) percent atheroma volume decreased by -1.06% (3.17%) in the combined ETC-216 group (median, -0.81%; 95% confidence interval [CI], -1.53% to -0.34%; P =.02 compared with baseline). In the placebo group, mean (SD) percent atheroma volume increased by 0.14% (3.09%; median, 0.03%; 95% CI, -1.11% to 1.43%; P =.97 compared with baseline). The absolute reduction in atheroma volume in the combined treatment groups was -14.1 mm³ or a 4.2% decrease from baseline (P<.001). CONCLUSIONS: A recombinant ApoA-I Milano/phospholipid complex (ETC-216) administered intravenously for 5 doses at weekly intervals produced significant regression of coronary atherosclerosis as measured by IVUS. Although promising, these results require confirmation in larger clinical trials with morbidity and mortality end points.

Ohnmeiss, D. D., and R. F. Rashbaum. "Patient satisfaction with spinal cord stimulation for predominant complaints of chronic, intractable low back pain." *Spine Journal: Official Journal of the North American Spine Society*. 1, no. 5(2001): 358-63 UI 14588316.

BACKGROUND CONTEXT: Results of subsequent surgical intervention in patients with intractable pain after lumbar spine surgery are typically worse than for initial surgery, particularly in those with predominant complaints of back pain rather than lower extremity pain. Spinal cord stimulation (SCS) has been found to yield good results in patients with primary complaints of intractable lower extremity pain. Technological advances have broadened the indications for this treatment. PURPOSE: The purpose of this study was to evaluate patient satisfaction after SCS in the treatment of patients with predominant complaints of chronic, intractable, low back pain. STUDY DESIGN/SETTING: Data were collected from retrospective chart review and patient follow-up questionnaire. Patients were treated at a spine specialty center. PATIENT SAMPLE: The study group consisted of the consecutive series of our first 41 patients who underwent SCS for predominant complaints of low back pain. The mean symptom duration was 82.9 months, and the mean age was 47.9 years (range, 28-83 years). All but three patients had previously undergone lumbar spine surgery (mean, 2.3 prior surgeries). OUTCOME MEASURES: At the time of follow-up (5.5-19 months after SCS implantation), patients completed questionnaires assessing their satisfaction with their outcome, if they would have the procedure again knowing what their outcome would be and if they would recommend SCS to someone with similar problems. In determining outcome, a negative response was assigned for patients who had the device removed. A worst-case analysis was also conducted in which a negative response was assigned for patients lost to follow-up or who failed to respond to a particular question. Data were also collected on complications and re-operations. METHODS: All trial stimulation procedures were performed under local anesthetic with the patient providing feedback concerning pain relief achieved with various lead placements and settings. If one lead did not provide acceptable relief in all the areas needed, placement of a second lead was pursued. If the patient failed to maintain acceptable pain relief (> or =50% pain relief) during a multiday trial period, the leads were removed. If adequate relief was maintained during the trial period, the receiver was implanted. RESULTS: Responses to the follow-up questionnaire indicated that 60% of patients considered themselves

improved from their preoperative condition and the remaining 40% did not; 78.1% of patients would recommend SCS to someone with similar problems, 69.0% were satisfied, 75.0% would have the procedure performed again if they had known their outcome before implantation. Among the 36 patients in whom the system was implanted, it was later removed in 4 because of lack of sufficient pain relief. Other re-operations included repositioning of the leads to regain pain relief in the areas needed, replacement of a malfunctioning unit and revision of lead extension wires. CONCLUSIONS: In this retrospective study, the majority of patients were satisfied with the results of SCS and would have the procedure again knowing what their outcome would be. These results suggest that further investigation of SCS is warranted in this difficult to treat patient population presenting with predominant complaints of chronic, intractable, axial low back pain.

Okmen, E., et al. "Effects of glycoprotein IIb/IIIa inhibition on clinical stabilization parameters in patients with unstable angina and non-Q-wave myocardial infarction." *Heart & Vessels*. 18, no. 3(2003): 117-22 UI 12955426.

Glycoprotein IIb/IIIa receptor inhibition prevents the major cardiac events and improves the prognosis of patients with acute coronary syndromes. The purpose of the study was to evaluate the effects of tirofiban on clinical stabilization parameters in patients with unstable angina (UA) and non-Q-wave myocardial infarction (MI). Eighty-three patients presenting with prolonged ongoing chest pain and ST segment depression were included in the study. Forty-two patients were randomized to aspirin and heparin therapy, and 41 patients to tirofiban therapy in addition to the aspirin and heparin therapy. The interval between the initiation of the treatment and the disappearance of angina, recovery time of ST segment depression, creatine kinase-MB (CK-MB) levels, onset of decrease and normalization of CK-MB, and frequency of in-hospital major cardiac events were compared. The interval between initiation of the treatment and the disappearance of angina was significantly shorter in the tirofiban group (3.5 +/- 4.2 vs 9.1 +/- 8.6 h, $P < 0.001$). Recovery time of ST depression was also significantly shorter in the tirofiban group (5.1 +/- 7.3 vs 12.3 +/- 11.5 h, $P < 0.05$). The peak CK-MB values were significantly lower in the non-Q-wave MI and UA subgroups of tirofiban than in the heparin group ($P = 0.04$ for both). The onset of the CK-MB decrease was significantly earlier in the tirofiban group (15 +/- 14 vs 24 +/- 15 h, $P = 0.02$). The normalization time of the CK-MB was relatively shorter in the tirofiban group but without statistical significance (50 +/- 22 vs 60 +/- 25 h). The tirofiban group had a lower frequency of total major cardiac events (26% vs 54%, $P = 0.01$), acute MI (2.4% vs 19%, $P = 0.03$), and recurrent angina (26% vs 50%, $P = 0.04$). The frequency of death and urgent revascularization did not differ between the groups. Tirofiban, in addition to heparin, provides earlier clinical stability and prevents major in-hospital cardiac events in patients with UA and non-Q-wave MI as compared to heparin therapy alone.

Paungmali, A., B. Vicenzino, and M. Smith. "Hypoalgesia induced by elbow manipulation in lateral epicondylalgia does not exhibit tolerance." *Journal of Pain*. 4, no. 8(2003): 448-54 UI 14622665.

Previous studies have demonstrated that the initial hypoalgesic effect of spinal manipulative therapy was not antagonized by naloxone and did not exhibit tolerance with repeated applications. The implication is that endogenous opioid mechanisms of pain relief are probably not at play in spinal manipulative therapy. The role of endogenous opioid peptides in manipulation of the peripheral joints has not been investigated. The aim of this study was to evaluate whether the initial hypoalgesic effect of a peripheral manipulative technique (mobilization-with-movement treatment for the elbow) demonstrated a tolerance to repeated applications (ie, reduction in magnitude of effect over repeated applications). Twenty-four participants with unilateral chronic lateral epicondylalgia participated in the study. A repeated

measures study was conducted to examine the effect of repeated applications of the mobilization-with-movement treatment for the elbow on 6 separate treatment occasions at least 2 days apart. Pain-free grip strength and pressure pain threshold were chosen as the pain-related outcome measures. Changes in the percent maximum possible effect scores of measures of hypoalgesia were evaluated across the 6 treatment sessions by using linear trend analysis. The results showed no significant difference for the hypoalgesic effect of the treatment technique between sessions ($P > .05$). This peripheral manipulative therapy treatment technique appeared to have a similar effect profile to previously studied spinal manipulative therapy techniques, thereby contributing to the body of knowledge that indicates that manipulative therapy most likely induces a predominant non-opioid form of analgesia.

Pennington, D. W., et al. "Unicompartmental knee arthroplasty in patients sixty years of age or younger." *Journal of Bone & Joint Surgery - American Volume*. 85-A, no. 10(2003): 1968-73 UI 14563806.

BACKGROUND: Unicompartmental knee arthroplasty has been used to treat elderly, low-demand patients, but the literature is sparse regarding the use of this procedure for younger, active patients. The purpose of the present retrospective study was to evaluate the results of unicompartmental knee arthroplasty in younger, more active patients. **METHODS:** Forty-one patients underwent forty-six consecutive unicompartmental knee arthroplasties with use of the Miller-Galante system between 1988 and 1996. All of the patients were sixty years of age or younger and all were physically active. The Hospital for Special Surgery knee score and the University of California at Los Angeles activity assessment were used to rate the function and to determine the activity level of each patient, respectively. Serial radiographs were used to evaluate the status of prosthetic fixation, femorotibial alignment, and the progression of arthrosis in the unreplaced compartment. Long-term survivorship was calculated with use of Kaplan-Meier analysis. **RESULTS:** The mean duration of follow-up was eleven years. Of the forty-five knees that were available for follow-up, three had been revised. The Hospital for Special Surgery score was excellent for thirty-nine (93%) of the remaining forty-two knees and good for three. The University of California at Los Angeles activity assessment score was 6.6 +/- 1.4 for the knees in which the original prosthesis had been retained and 7.3 +/- 1.5 for those in which it had been revised. Two asymptomatic patients had revision of a modular tibial component because of substantial radiographic evidence of polyethylene wear; one of these patients had exchange of the polyethylene insert and the tibial tray, and the other had exchange of the polyethylene insert only. A third patient underwent revision total knee arthroplasty because of continuing knee pain and a progressive tibial radiolucent line that was >2 mm in width. The average postoperative femorotibial alignment was 5 degrees of valgus. Nine knees had progression of arthritis in the unresurfaced compartment; none of these knees were revised, and none of the patients had deterioration in the Hospital for Special Surgery score. Kaplan-Meier analysis demonstrated an eleven-year survivorship of 92%. **CONCLUSIONS:** At an average duration of follow-up of eleven years, unicompartmental knee arthroplasty was associated with pain relief and excellent function in a cohort of patients who had been sixty years of age or younger and active at the time of surgery.

Planells-Cases, R., et al. "Small molecules targeting the NMDA receptor complex as drugs for neuropathic pain." *Mini-Reviews in Medicinal Chemistry*. 3, no. 7(2003): 749-56 UI 14529515.

Pain is a complex disease that usually remains poorly treated or undertreated, especially the neuropathic pain caused by injury to the peripheral or central nervous system. Antagonists of the NMDA receptor complex have emerged as potential drugs

for pain management. A strong case is being raised for non-competitive or uncompetitive antagonists with low-to-moderate affinity and fast on/offset kinetics as drugs with good therapeutic profiles, because of their reduced side effects. [References: 59]

Pohl, M., et al. "Gene therapy of chronic pain." *Current Gene Therapy*. 3, no. 3(2003): 223-38 UI 12762481.

Chronic pain is frequently associated with profound alterations of neuronal systems involved in pain processing and should be considered as an actual disease state of the nervous system. It should not only be relieved, but must really be treated in suffering patients. However, some forms of chronic pain, in particular those of neuropathic origin, are most often not satisfactorily managed with currently available pharmacological agents, some of which, in addition, may be poorly tolerated by some patients. In this context, gene-based approaches may contribute to the search for a better management of chronic pain. The question then arises regarding the most appropriate level for such an intervention using gene-transfer techniques. The first experimental protocols attempted the transfer of opioid precursor genes and their overexpression mainly at the spinal level. They demonstrated the feasibility and the real interest of these approaches by showing that local overproduction of opioid peptides induced antinociceptive effects in animal models of persistent pain, of inflammatory-, neuropathic- and even cancerous origin. Although really tempting data were obtained using gene-based techniques in experimental inflammatory diseases, the possible clinical interest of these approaches in chronic pain has still to be established. Nevertheless, targeting some proinflammatory cytokines, involved not only in inflammation but also in the induction and probably the perpetuation of pain, raises the possibility to block the "development" of chronic pain rather than to "simply" relieve established ongoing pain. Future gene-based protocols will certainly target some of the recently identified molecules involved in pain transduction mechanisms, sensory nerve sensitization or pain perpetuation, and evaluate their potential interest to ideally abolish or, at least, reduce chronic pain. [References: 87]

Puntillo, K. "Pain assessment and management in the critically ill: wizardry or science?" *American Journal of Critical Care*. 12, no. 4(2003): 310-6 UI 12882060.

Assessment and management of patients' pain across practice settings have recently received the increased attention of providers, patients, patients' families, and regulatory agencies. Scientific advances in understanding pain mechanisms, multidimensional methods of pain assessment, and analgesic pharmacology have aided in the improvement of pain management practices. However, pain assessment and management for critical care patients, especially those with communication barriers, continue to present challenges to clinicians and researchers. The state of nursing science of pain in critically ill patients, including development and testing of pain assessment methods and clinical trials of pharmacological interventions, is described. Special emphasis is placed on results from the Thunder Project II, a major multisite investigation of procedural pain.

Raffa, R. B. "Mechanism of action of analgesics used to treat osteoarthritis pain." *Rheumatic Diseases Clinics of North America*. 29, no. 4(2003): 733-45 UI 14603580.

Acute pain is a normal, and often beneficial, physiologic process. The indiscriminant blocking of all pain can delay healing or mask serious medical problems. On the other hand, persistent pain can be nonproductive or deleterious to recovery and can negatively affect a patient's quality of life. If the treatment of pain by pharmacologic means is determined to be desirable, it is important to select an analgesic, or combination of analgesics, that have appropriate mechanisms of action

(i.e., those that modulate the appropriate physiologic pathway). OA pain is an example of a complex type of pain (i.e., it often originates from multiple causes and is transmitted by multiple mediators). Therefore, the choice of the analgesics for the patient who has OA should be based upon the most appropriate mechanisms of action. [References: 38]

Rakel, B., and R. Frantz. "Effectiveness of transcutaneous electrical nerve stimulation on postoperative pain with movement." *Journal of Pain*. 4, no. 8(2003): 455-64 UI 14622666.

This study tested the effectiveness of episodic transcutaneous electrical nerve stimulation (TENS) as a supplement to pharmacologic analgesia on pain with movement and at rest after abdominal surgery and evaluated whether its use during walking and vital capacity maneuvers enhances performance of these activities. TENS, with a modulated frequency, intensity as high as the subject could tolerate, and electrodes placed on either side and parallel to the incision, was compared to placebo TENS and pharmacologic analgesia alone (control) by using a crossover design. Self-report of pain intensity, walking function, and vital capacity were assessed on 33 subjects. TENS resulted in significantly less pain than the control during both walking ($P < .5$) and vital capacity activities ($P < .1$) and significantly less pain than placebo TENS during vital capacity ($P < .01$). TENS also produced significantly better gait speeds than the control ($P < .05$) and greater gait distances ($P < .01$) than the control and placebo TENS. Vital capacity and pain intensity at rest were not significantly different among the 3 treatments. These results suggest TENS reduces pain intensity during walking and deep breathing and increases walking function postoperatively when used as a supplement to pharmacologic analgesia. The lack of effect on pain at rest supports the hypothesis that TENS works through reducing hyperalgesia.

Rasmussen, N. A., and L. A. Farr. "Effects of morphine and time of day on pain and beta-endorphin." *Biological Research for Nursing*. 5, no. 2(2003): 105-16 UI 14531215.

Clients report more pain at some times of day than at others due, in part, to the temporal variation of the body's inhibitory pain response. The analgesic effectiveness of morphine varies with the time of day, perhaps due to the inhibiting or enhancing effects of the drug on plasma beta-endorphin (BE). This experiment was designed to examine the timed effects of morphine on the pain-induced BE response. Six groups of treatment mice (injected with morphine sulfate) and 6 groups of control mice (injected with saline) were exposed to an acute pain stimulus at 4-h intervals, and blood was collected. Plasma BE was analyzed using radioimmunoassay. Control mice showed a robust circadian BE-response rhythm with a peak at 0000 and a nadir at 1200, whereas the BE response of mice that received morphine was arrhythmic. Animals that received morphine tolerated the noxious stimulus longer, but the analgesia varied with time of day. These results indicate that morphine abolishes the rhythmic BE response to pain and does not inhibit pain equally at all times of day. Morphine doses should be titrated to maximize the endogenous pain control system while achieving analgesia with decreased dosages.

Rathmell, J. P., et al. "Intrathecal morphine for postoperative analgesia: a randomized, controlled, dose-ranging study after hip and knee arthroplasty." *Anesthesia & Analgesia*. 97, no. 5(2003): 1452-7 UI 14570664.

In this series, we examined analgesia and side effects of intrathecal morphine sulfate (ITMS) after hip and knee arthroplasty over a dose range of 0.0-0.3 mg. Eighty patients undergoing hip ($n = 40$) or knee ($n = 40$) arthroplasty were randomized to receive ITMS (0.0, 0.1, 0.2, or 0.3 mg). A patient-controlled analgesia (PCA) device provided free access to additional analgesics. Morphine use, pain relief,

and side effects were recorded for 24 h. Data were analyzed with analysis of variance and linear regression. After hip arthroplasty, morphine use was less in patients receiving 0.1, 0.2, or 0.3 mg of ITMS than in control patients ($P < 0.05$). After knee arthroplasty, ITMS did not reduce postoperative morphine requirements. Nausea and vomiting and the incidence of oxygen saturation $<93\%$ were similar in all groups. Pruritus was more common after ITMS. Patients receiving 0.2 or 0.3 mg of ITMS were more satisfied with their pain control than those receiving 0.0 or 0.1 mg after both hip and knee arthroplasty. Analgesic needs are greater after knee arthroplasty than after hip arthroplasty. We conclude that combining small-dose (0.2 mg) ITMS with PCA morphine provides good to excellent pain control in most patients after total hip or knee arthroplasty. However, PCA morphine use was reduced by the addition of ITMS only after hip arthroplasty. IMPLICATIONS: This series examined the need for supplemental analgesics, the quality of analgesia, and the incidence of side effects with intrathecal morphine sulfate (ITMS) for analgesia after hip and knee arthroplasty. Analgesic needs are greater after knee arthroplasty than hip arthroplasty. Combining small-dose (0.2 mg) ITMS with standard doses of PCA morphine provided good to excellent pain control in most patients and reduced patient-controlled analgesia morphine use after hip, but not knee, arthroplasty.

Rauck, R. L., et al. "Long-term intrathecal opioid therapy with a patient-activated, implanted delivery system for the treatment of refractory cancer pain." *Journal of Pain*. 4, no. 8(2003): 441-7 UI 14622664.

The present study evaluated the safety and efficacy of patient-activated delivery of intrathecal morphine sulfate boluses delivered by way of a novel internalized intrathecal delivery system. Patients with refractory cancer pain or uncontrollable side effects were enrolled at 17 US and international sites in this prospective, open-label study. Pain relief, reduction in systemic opioid use, and reduction in opioid-related complications were analyzed both individually and together as a measure of overall success. One hundred forty-nine patients were enrolled and 119 were implanted. Average numeric analog scale pain decreased from 6.1 to 4.2 at 1 month and was maintained through month 7 ($P < .01$) and through month 13 ($P < .05$). Systemic opioid use was significantly decreased throughout the study ($P < .01$). Significant reduction in the opioid complication severity index was demonstrated at all 4 follow-up visits ($P < .01$). Overall success ($\geq 50\%$ reduction in numeric analog scale pain, use of systemic opioids, or opioid complication severity index) was reported in 83%, 90%, 85%, and 91% of patients at months 1, 2, 3, and 4, respectively. This study demonstrated that patients with refractory cancer pain or intolerable side effects achieved better analgesia when managed with patient-activated intrathecal delivery of morphine sulfate via an implanted delivery system.

Roos, D. E., et al. "Quality assurance experience with the randomized neuropathic bone pain trial (Trans-Tasman Radiation Oncology Group, 96.05)." *Radiotherapy & Oncology*. 67, no. 2(2003): 207-12 UI 12812852.

BACKGROUND AND PURPOSE: Trans-Tasman Radiation Oncology Group 96.05 is a prospective randomized controlled trial comparing a single 8 Gy with 20 Gy in five fractions of radiotherapy (RT) for neuropathic pain due to bone metastases. This paper summarizes the quality assurance (QA) activities for the first 234 patients (accrual target 270). MATERIALS AND METHODS: Independent audits to assess compliance with eligibility/exclusion criteria and appropriateness of treatment of the index site were conducted after each cohort of approximately 45 consecutive patients. Reported serious adverse events (SAEs) in the form of cord/cauda equina compression or pathological fracture developing at the index site were investigated and presented in batches to the Independent Data Monitoring Committee. Finally, source data verification of the RT prescription page and treatment records was undertaken for each of the first 234 patients to assess compliance with the protocol.

RESULTS: Only one patient was found conclusively not to have genuine neuropathic pain, and there were no detected 'geographical misses' with RT fields. The overall rate of detected infringements for other eligibility criteria over five audits (225 patients) was 8% with a dramatic improvement after the first audit. There has at no stage been a statistically significant difference in SAEs by randomization arm. There was a 22% rate of RT protocol variations involving ten of the 14 contributing centres, although the rate of major dose violations (more than +/-10% from protocol dose) was only 6% with no statistically significant difference by randomization arm (P=0.44). CONCLUSIONS: QA auditing is an essential but time-consuming component of RT trials, including those assessing palliative endpoints. Our experience confirms that all aspects should commence soon after study activation.

Rosenquist, R. W., J. Rosenberg, and A. United States Veterans. "Postoperative pain guidelines.[see comment]." *Regional Anesthesia & Pain Medicine*. 28, no. 4(2003): 279-88 UI 12945020.

BACKGROUND AND OBJECTIVES: Postoperative pain is the expected but nonetheless undesirable byproduct of all surgical procedures. Humanitarian concerns and recent quasi-governmental regulations have heightened awareness about the importance of treating postoperative pain. This guideline builds upon the foundation created by the Agency for Health Care Policy and Research guideline published in 1993, highlights changes that have occurred over the past 10 years, and makes recommendations based on the current scientific evidence. In addition, it takes advantage of the versatile information management inherent in a web-based format to make the information readily available. METHODS: A multidisciplinary group of physicians, dentists, nurses, pharmacists, physical therapists, psychologists, and ethicists from the Veterans Health Administration (VHA) and Department of Defense (DoD) in conjunction with the VHA Office of Quality and Performance and a consultant group developed a postoperative pain algorithm and supporting documentation. The guideline structure and content were determined by a standardized rating of the evidence gleaned from comprehensive electronic searches. RESULTS: An interactive electronic and traditional "paper" guideline with a pre- and postoperative algorithm was developed. A table, which provides a menu of analgesic choices organized by specific operation, was constructed. Preferences for particular analgesic techniques and classes of medications were identified. A postoperative pain interactive pharmacopoeia and printable patient educational materials were also provided. The guideline may be reviewed at the following website: www.oqp.med.va.gov/cpg/cpg.htm. CONCLUSIONS: This postoperative pain guideline provides readily accessible information and evidence-based guidance to a variety of providers. It highlights deficiencies in our understanding of the pain and recovery processes and how they might guide our choices of postoperative analgesic techniques. In combination with the powerful system-wide data collection capabilities of the VHA, there may be improved understanding of what techniques are useful. Finally, it may lead to the development of reliable, individualized analgesic plans for specific surgical procedures that incorporate the full range of pharmacologic and nonpharmacologic techniques.

Rushton, P., D. Eggett, and C. W. Sutherland. "Knowledge and attitudes about cancer pain management: a comparison of oncology and nononcology nurses." *Oncology Nursing Forum*. Online. 30, no. 5(2003): 849-55 UI 12949598.

PURPOSE/OBJECTIVES: To obtain information about the knowledge and attitudes of Utah nurses concerning cancer pain management. DESIGN: Descriptive study. SETTING: Nurses in Utah. SAMPLE: 44 oncology nurses and 303 nononcology nurses completed the study. METHODS: Ferrell's Nurses' Knowledge and Attitudes Survey Regarding Pain was given to oncology and nononcology nurses to compare knowledge and attitudes about treating cancer pain. MAIN RESEARCH VARIABLES:

Knowledge and attitudes regarding cancer pain. FINDINGS: Attitudes of oncology nurses were more in line with recommended practices (principles) of cancer pain management than those of nononcology nurses. Oncology nurses had a better understanding of recommended practices (principles) of cancer pain management than nononcology nurses but still struggled with understanding the pharmacology of medications used to manage cancer pain. CONCLUSIONS: Nurses do not use evidence-based practice in pain management consistently. Continuing education regarding cancer pain management remains important for oncology and nononcology nurses. IMPLICATIONS FOR NURSING: Adoption of evidence-based practice requires ongoing education of nurses and support from nursing colleagues, nursing administration, and associated healthcare providers. Data from this study can be used to design a curriculum involving content about cancer pain management. All members of the healthcare team should be supported in practicing the correct principles of cancer pain management in actual practice.

Saal, J. A. "Spinal injections: past, present and future." *Spine Journal: Official Journal of the North American Spine Society*. 1, no. 6(2001): 387-9 UI 14588293.

Salcido, R. S. "Is pain a vital sign?" *Advances in Skin & Wound Care*. 16, no. 5(2003): 214 UI 14581812.

Sangdee, C., et al. "Electroacupuncture versus diclofenac in symptomatic treatment of osteoarthritis of the knee: a randomized controlled trial." *BMC Complementary & Alternative Medicine*. 2, no. 1(2002): 3 UI 11914160.

BACKGROUND: The purpose of this study was to compare the efficacy of electroacupuncture (EA), diclofenac and their combination in symptomatic treatment of osteoarthritis (OA) of the knee. METHODS: This study was a randomized, single-blind, placebo controlled trial. The 193 out-patients with OA of the knee were randomized into four groups: placebo, diclofenac, EA and combined (diclofenac plus EA). Paracetamol tablets were prescribed as a rescue analgesic during the study. The patients were evaluated after a run-in period of one week (week 0) and again at the end of the study (week 4). The clinical assessments included the amount of paracetamol taken/week, visual analog scale (VAS), Western Ontario and McMaster Universities (WOMAC) OA Index, Lequesne's functional index, 50 feet-walk time, and the orthopedist's and patient's opinion of change. RESULTS: One hundred and eighty six patients completed the study. The improvement of symptoms (reduction in mean changes) in most outcome parameters was greatest in the EA group. The proportions of responders and patients with an overall opinion of "much better" were also greatest in the EA group. The improvement in VAS was significantly different between the EA and placebo group as well as the EA and diclofenac group. The improvement in Lequesne's functional index also differed significantly between the EA and placebo group. In addition, there was a significant improvement in WOMAC pain index between the combined and placebo group. CONCLUSION: EA is significantly more effective than placebo and diclofenac in the symptomatic treatment of OA of the knee in some circumstances. However, the combination of EA and diclofenac treatment was no more effective than EA treatment alone.

Sator-Katzenschlager, S. M., et al. "Electrical stimulation of auricular acupuncture points is more effective than conventional manual auricular acupuncture in chronic cervical pain: a pilot study." *Anesthesia & Analgesia*. 97, no. 5(2003): 1469-73 UI 14570667.

In this prospective, randomized, double-blinded, controlled study, we tested the hypothesis that auricular electroacupuncture relieves pain more effectively than conventional manual auricular acupuncture. We studied 21 chronic cervical pain patients without radicular symptoms with insufficient pain relief (visual analogue

scale >5) treated with standardized analgesic therapy. All patients received disposable acupuncture needles on the dominant side on the following acupuncture points: cervical spine, shen men, and cushion. In 10 patients, needles were continuously stimulated (2-mA constant current, 1 Hz monophasic) by using the electrical point stimulation device P-STIM. In 11 control patients, no electrical stimulation was administered. All needles were withdrawn 48 h after insertion. Acupuncture was performed once a week for 6 wk. Patients had to complete a questionnaire assessing pain intensity, psychological well-being, activity, sleep, and demand for rescue medication (lornoxepam and tramadol). The reduction in pain scores was significant in the electrical acupuncture group. Similarly, psychological well-being, activity, and sleep were significantly improved in patients receiving electrical acupuncture, and consumption of rescue medication was significantly less. These results demonstrate that continuous electrical stimulation of auricular acupuncture points by using the new point stimulation device P-STIM improves the treatment of chronic cervical pain in an outpatient population. IMPLICATIONS: Continuous electrical stimulation of auricular acupuncture points by using the new point stimulation device P-STIM significantly decreases pain intensity and significantly improves psychological well-being, activity, and sleep in chronic cervical pain patients.

Scherder, E. J., J. A. Sergeant, and D. F. Swaab. "Pain processing in dementia and its relation to neuropathology." *Lancet. Neurology*. 2, no. 11(2003): 677-86 UI 14572736.

Most clinical studies of pain in dementia have focused on assessment procedures that are sensitive to pain in "demented" or "cognitively impaired" elderly patients. The neuropathology of dementia has not played a major part in pain assessment. In this review, the neuropathological effects of dementia on the medial and the lateral pain systems are discussed. We focus on Alzheimer's disease (AD), vascular dementia, and frontotemporal dementia. Lewy-body disease and Creutzfeldt-Jakob disease are briefly reviewed. The results of the studies reviewed show that, although the subtypes of dementia show common neuropathological features (such as atrophy and white-matter lesions), the degree by which they occur and affect pain-related areas determine the pattern of changes in pain experience. More specifically, in AD and even more so in frontotemporal dementia, a decrease in the motivational and affective components of pain is generally present whereas vascular dementia might be characterised by an increase in affective pain experience. Future studies should combine data from experimental pain studies and neuropathological information for pain assessment in dementia. [References: 96]

Schofferman, J., et al. "Failed back surgery: etiology and diagnostic evaluation." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 5(2003): 400-3 UI 14588953.

BACKGROUND CONTEXT: This is a synopsis of a symposium presented to the North American Spine Society Annual Meeting in Montreal, Canada, 2002. PURPOSE: To provide the reader with a distillation of the material presented regarding the diagnosis of failed back surgery syndrome (FBSS). METHODS: Panel presentation. RESULTS: The proper treatment of patients with FBSS depends on a precise and accurate diagnosis. With a careful history, examination, imaging studies, psychological evaluation and diagnostic injections, a diagnosis can be reached in over 90% of patients. The most common diagnoses are foraminal stenosis (25% to 29%), painful disc (20% to 22%), pseudarthrosis (14%), neuropathic pain (10%), recurrent disc herniation (7% to 12%), facet joint pain (3%) and sacroiliac joint (SIJ) pain (2%). Psychological factors are always present and may help or hinder. Common psychological diagnoses include depression, anxiety disorder and substance abuse disorder. Diagnostic injections are very useful for facet joint pain, SIJ pain and

discogenic pain; they may also be used to confirm a putative neural compression as a cause of pain. CONCLUSIONS: Spine surgeons must be aware of the common causes of FBSS in order to be able to thoroughly evaluate their patients and to minimize the occurrence of this problem.

Senagore, A. J., et al. "Randomized clinical trial comparing epidural anaesthesia and patient-controlled analgesia after laparoscopic segmental colectomy." *British Journal of Surgery*. 90, no. 10(2003): 1195-9 UI 14515286.

BACKGROUND: This randomized clinical trial compared the use of thoracic epidural anaesthesia-analgesia (TEA) with morphine patient-controlled analgesia (PCA) for pain relief after laparoscopic colectomy. METHODS: Patients scheduled for segmental laparoscopic colectomy were randomized to receive TEA or PCA. Patients in the TEA group received bupivacaine and fentanyl before incision and after surgery by continuous infusion for 18 h. Patients in the PCA group self-administered morphine using an intravenous pump. The postoperative care plan was otherwise identical for the two groups. Postoperative pain was measured during ambulation using a visual analogue pain score. RESULTS: The study included 38 patients (18 TEA, 20 PCA), 16 of whom underwent right hemicolectomy or ileocollectomy and 22 sigmoid colectomy. Operating times, patient weight and distribution of American Society of Anesthesiologists grade were similar in the two groups. The mean(s.e.m.) total dose of drugs administered was 64(41) mg morphine in the PCA group, and 79(42) mg bupivacaine and 205(140) micro g fentanyl in the TEA group. Postoperative pain scores were significantly better in the TEA group at 6 h (mean(s.e.m.) 2.2(0.4) versus 6.6(0.5) with PCA; $P = 0.001$) and 18 h (2.2(0.3) versus 4.0(0.4); $P = 0.003$). Hospital stay was similar in the two groups. CONCLUSION: TEA significantly improved early analgesia following laparoscopic colectomy but did not affect the length of hospital stay. Copyright 2003 British Journal of Surgery Society Ltd. Published by John Wiley & Sons, Ltd.

Seres, J. L. "Evaluating the complex chronic pain patient." *Neurosurgery Clinics of North America*. 14, no. 3(2003): 339-52 UI 14567136.

The evaluation of the complex chronic pain patient should be different than for the patient with a simple pain problem. The former requires a team approach. It is important that the neurosurgeon contemplating a pain-relieving operation get the best information that is likely to have an impact on outcome. This should include the following: 1. Some way to extract the appropriate information contained in the patient's medical records. 2. Physical factors that have a negative impact on prognosis. 3. Psychologic information, including return-to-work decisions, medication use issues, meaning of prior successes, negative environmental factors, codependency issues, secondary gains and their impact, presence of pain games, negatively acting financial considerations, impact of depression, presence of poor role models, impact of pain on general functioning, and the patient's future plans. Consider that just like a successful operation is a symphony of relatively simple harmonious parts, so, too, is the assessment of the complex chronic pain patient. The complexity of the patient and her or his predicament should not impair your ability to understand her or his real needs. The appropriate assessment of the patient requires that issues other than the pain itself be factored into the decisions about interventions. In the end, it is not appropriate to suggest afterward that psychosocial factors were the major cause for a poor result when nothing had been done about the same factors that had been present before the procedure.

[References: 43]

Sharan, A. D., et al. "Precentral stimulation for chronic pain." *Neurosurgery Clinics of North America*. 14, no. 3(2003): 437-44 UI 14567144.

A decade of clinical experience has suggested that precentral stimulation is an option for patients with deafferentation as well as other chronic pain syndromes. Permanent complications are uncommon. More scientific evidence is warranted to understand the precise mechanisms for this treatment modality. A larger organized clinical trial is desired to establish the efficacy of precentral stimulation. [References: 37]

Sipkoff, M. "Pain management. Health plans need to take control." *Managed Care*. 12, no. 10(2003): 20-6 UI 14598538.

Slipman, C. W., et al. "A critical review of the evidence for the use of zygapophysial injections and radiofrequency denervation in the treatment of low back pain." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 4(2003): 310-6 UI 14589192.

BACKGROUND CONTEXT: Lumbar zygapophysial joints are currently believed to be a cause of axial low back pain. Once this diagnosis is made, decisions about when to institute a particular intervention and which treatment to offer is regionally and specialty dependent. PURPOSE: To perform a critical review of prior published studies assessing the use of interventional treatment options for the treatment of lumbar zygapophysial joint syndrome. STUDY DESIGN: Evidence-based medicine analysis of current literature. METHODS: A database search of Medline (PubMed, Ovid and MDConsult), Embase and the Cochrane database was conducted. The keywords used were low back pain, lumbar zygapophysial joint, lumbar facet joint, radiofrequency denervation, medial branch block, and intraarticular injection. After identifying all relevant literature, each article was reviewed. Data from the following categories were compiled: inclusion criteria, randomization of subjects, total number of subjects involved at enrollment and at final analysis. statistical analysis used, intervention performed, outcome measures, follow-up intervals and results. Guidelines described by the Agency for Health Care Policy and Research were then applied to these data. RESULTS: This review determined that the evidence for the treatment of lumbar zygapophysial joint syndrome with intraarticular injections should be rated as level III (moderate) to IV (limited) evidence, whereas that for radiofrequency denervation is at a level III. CONCLUSIONS: Current studies fail to give more than sparse evidence to support the use of interventional techniques in the treatment of lumbar zygapophysial joint-mediated low back pain. This review emphasizes the need for larger, prospective, randomized controlled trials with uniform inclusion and exclusion criteria, standardized treatment, uniform outcome measures and an adequate duration of follow-up period so that definitive recommendations for the treatment of lumbar zygapophysial joint-mediated pain can be made. [References: 50]

Smith, L. A., et al. "Using evidence from different sources: an example using paracetamol 1000 mg plus codeine 60 mg." *BMC Medical Research Methodology*. 1, no. 1(2001): 1 UI 11231885.

BACKGROUND: Meta-analysis usually restricts the information pooled, for instance using only randomised, double-blind, placebo-controlled trials. This neglects other types of high quality information. This review explores using different information for the combination of paracetamol 1000 mg and codeine 60 mg in acute postoperative pain. RESULTS: Randomised, double-blind, placebo-controlled trials of paracetamol 1000 mg and codeine 60 mg had an NNT of 2.2 (95% confidence interval 1.7 to 2.9) for at least 50% pain relief over four to six hours in three trials with 197 patients. Computer simulation of randomised trials demonstrated 92% confidence that the simulated NNT was within +/- 0.5 of the underlying value of 2.2 with this number of patients. The result was supported a rational dose-response relationship for different doses of paracetamol and codeine in 17 additional trials with

1,195 patients. Three controlled trials lacking a placebo and with 117 patients treated with of paracetamol 1000 mg and codeine 60 mg had 73% (95%CI 56% to 81%) of patients with at least 50% pain relief, compared with 57% (48% to 66%) in placebo controlled trials. Six trials in acute pain were omitted because of design issues, like the use of different pain measures or multiple dosing regimens. In each paracetamol 1000 mg and codeine 60 mg was shown to be better than placebo or comparators for at least one measure. CONCLUSIONS: Different designs of high quality trials can be used to support limited information used in meta-analysis without recourse to low quality trials that might be biased. [References: 58]

Sterman, E., S. Gauker, and J. Krieger. "Continuing education: a comprehensive approach to improving cancer pain management and patient satisfaction." *Oncology Nursing Forum. Online.* 30, no. 5(2003): 857-64 UI 12949599.

PURPOSE/OBJECTIVES: To report on the development and outcomes of a comprehensive program to improve cancer pain management and patient satisfaction. DATA SOURCES: Published research and guidelines, review articles, and patients' personal experiences. DATA SYNTHESIS: A comprehensive cancer pain management program includes performance improvement, patient satisfaction, nursing education, and pain management rounds. This approach to pain can result in effective pain management, patients' reports of acceptable levels of pain, and an increase in patient satisfaction. CONCLUSIONS: Semiweekly pain management rounds provided the opportunity for nurses to practice equianalgesic dosing and make recommendations for changes in pain management. Effective pain management plans can lead to an increase in scores that measure patient satisfaction. IMPLICATIONS FOR NURSING: Nursing pain management education and subsequent use of pain management principles during and between pain management rounds can lead to effective pain management and satisfaction for patients with cancer. Research is needed to assess whether comprehensive programs can change pain management practices in other patient populations.

Taylor, S., A. E. Voytovich, and R. A. Kozol. "Has the pendulum swung too far in postoperative pain control?" *American Journal of Surgery.* 186, no. 5(2003): 472-5 UI 14599609.

BACKGROUND: The Joint Commission on Accreditation of Health Care Organizations declared pain level to be the "fifth vital sign." This has led to increased efforts to reduce patients' pain scores. Current postoperative analgesic modalities may not be entirely safe. We prospectively studied pain and sedation scores to determine whether postoperative patients were reaching sedation levels similar to patients undergoing "conscious sedation" (eg, colonoscopy cases). "Conscious sedation" patients have been shown to achieve states of sedation, which at time result in oxygen desaturation. METHODS: Fifty-three patients within three groups were compared in an observational study. Group 1 included "conscious sedation" patients undergoing colonoscopy. Group 2 included postoperative patients using patient-controlled analgesia (PCA). Group 3 included postoperative patients under nurse-controlled analgesia (NCA). Levels of sedation were monitored using the 6-point Ramsay sedation scale. Pain and oxygen saturation were monitored using an 11-point verbal scale and finger pulse oximetry, respectively. Patients were monitored for up to 12 hours in the postoperative period or for the length of their colonoscopy procedure. RESULTS: Patients in groups 1 and 2 reached similar sedation levels. CONCLUSIONS: Patients may reach dangerous levels of sedation during the first 24 hours postoperatively. Patients using PCA devices warrant close observation during this time period.

Thomas, J. R., and C. F. von Gunten. "Pain in terminally ill patients: guidelines for pharmacological management." *CNS Drugs*. 17, no. 9(2003): 621-31 UI 12828498.

Successful pharmacological treatment of pain in terminally ill patients is possible most of the time. It requires a determination of the type of pain syndrome (i.e. nociceptive, neuropathic or mixed). Complete pain assessment also requires an understanding of other dimensions of suffering that a patient may be experiencing on psychological, social and spiritual/existential levels. The World Health Organization has introduced a three-step approach to treating pain. Opioids are the mainstay of therapy for moderate to severe pain at the end of life. Familiarity with the pharmacokinetics, equianalgesic dose and adverse effects of opioids is necessary for their safe and effective use. In addition, adjuvant analgesics such as antiepileptic drugs, antidepressants and local anaesthetics are often needed to optimise pain control, especially in patients with neuropathic pain. Given the complex aetiology of pain states, combinations of classes of adjuvants may sometimes be needed for effective treatment. [References: 65]

Torpy, J. M., C. Lynn, and R. M. Glass. "JAMA patient page. Pain management." *Jama*. 290, no. 18(2003): 2504 UI 14612487.

Wassmann, S., et al. "Rapid effect of 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibition on coronary endothelial function." *Circulation Research*. 93, no. 9(2003): e98-103 UI 14551237.

Treatment with 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors (statins) decreases cardiovascular event rates in hypercholesterolemic patients. Whether statins exert effects within 24 hours on the coronary vasculature in patients with endothelial dysfunction has not been elucidated. Twenty-seven patients with stable angina pectoris and average low-density lipoprotein cholesterol concentrations of 138+/-9 mg/dL at baseline were allocated to treatment with placebo (14 patients) or 40 mg/d pravastatin (13 patients) in a randomized, double-blind, prospective trial. Coronary endothelial function was assessed before and 24 hours after single treatment by quantitative coronary angiography during intracoronary infusion of nitroglycerin or increasing concentrations of acetylcholine (0.01, 0.1, and 1 micromol/L). Coronary blood flow reserve was measured by Doppler velocimetry during adenosine infusion. Intracoronary acetylcholine infusion induced abnormal vasoconstriction in both groups before treatment, indicating coronary endothelial dysfunction. Treatment with a single oral 40-mg dose of pravastatin significantly attenuated acetylcholine-mediated vasoconstriction after 24 hours (mean+/-SE decrease in luminal diameter before and after treatment: 0.01 micromol/L, 6.1+/-2.2% versus 3.0+/-1.2%; 0.1 micromol/L, 15.6+/-2.6% versus 7.4+/-1.8%; P<0.05; 1 micromol/L, 22.9+/-2.9% versus 13.2+/-2.6%; P<0.05). There was no significant difference in the response to acetylcholine in the placebo group (8.1+/-2.4% versus 9.7+/-2.4%, 16.1+/-2.9% versus 16.8+/-3.2%, and 21.4+/-3.9% versus 23.3+/-4.2%). The response to nitroglycerin infusion was not altered in both groups. Increase in coronary blood flow in response to adenosine and coronary flow reserve remained unchanged during placebo and statin treatment. Serum concentrations of blood lipids and high-sensitive C-reactive protein were not significantly altered after 24 hours in response to placebo or pravastatin therapy. Statin treatment improves endothelium-dependent coronary vasomotion within 24 hours in the absence of significant cholesterol reduction. The full text of this article is available online at <http://www.circresaha.org>.

Weinstein, S. M., S. A. Herring, and Nass. "Lumbar epidural steroid injections." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 3 Suppl(2003): 37S-44S UI 14589216.

Wetzel, F. T., and R. Donelson. "The role of repeated end-range/pain response assessment in the management of symptomatic lumbar discs." *Spine Journal: Official Journal of the North American Spine Society*. 3, no. 2(2003): 146-54 UI 14589229.

BACKGROUND CONTEXT: The selection of appropriate patients for lumbar disc surgery is a challenging task involving a highly variable, multifactorial decision process complicated by a lack of reliable, validated clinical signs and imaging findings. Recently, multiple studies have demonstrated the reliability and diagnostic utility of a standardized form of spinal assessment using repeated end-range test movements while monitoring patterns of pain response (McKenzie assessment). **PURPOSE:** It is the aim of this article to evaluate the utility of this assessment system and its literature support in the selection of candidates for surgery for disc-related pain. **STUDY DESIGN AND METHODS:** A literature review. **RESULTS:** Most patients under consideration for lumbar disc surgery, when examined using this form of dynamic mechanical spinal evaluation, based on patients' patterns of pain response to standardized repeated end-range lumbar test movements and positions, fall into one of three subgroups: 1) a reversible condition, 2) an irreversible condition or 3) an unaffected condition. Reversible conditions in acute to chronic low back and/or leg pain are recoverable, often rapidly so, using nonoperative self-care dictated by the patient's assessment findings. The elicitation of pain "centralization," an improvement (favorable change) in pain location in response to repetitive end-range testing, typically occurring with only one direction of test movement(s), predicts a high likelihood of successful response to conservative care, even in the presence of neurologic deficits. Irreversible conditions are characterized by symptom aggravation by all directions of testing, including the absence of the centralization response, predicting a poor response to nonsurgical care. In those whose pain is unaffected with similar testing, evidence indicates the pain is likely nondiscogenic. A dynamic disc model has been described as a possible model for these varying pain responses. Insight into annular integrity of symptomatic discs is also provided using this repeated end-range/pain response (McKenzie) assessment. **CONCLUSIONS:** As described, the literature supports the use of a repeated end-range/pain response assessment (dynamic mechanical evaluation) in obtaining diagnostic and therapeutic information in patients with low back and leg pain. This may contribute to improving the selection process of surgical patients. [References: 89]

Wincent, A., Y. Liden, and S. Arner. "Pain questionnaires in the analysis of long lasting (chronic) pain conditions." *European Journal of Pain: Ejp*. 7, no. 4(2003): 311-21 UI 12821401.

A study on mainly non-cancer-related pain patients was performed concerning clinical patient data used for pain history-taking and diagnosis. More than 2100 consecutive patients referred to the anaesthetic branch of the Multidisciplinary Pain Centre (MPC) were evaluated at the first visit. The use of a paper questionnaire, including a pain-drawing and pain intensity Visual Analogue Scale (VAS), was analysed. In a substudy of more than 290 consecutive patients, data from a computerised questionnaire and database was analysed. The European Organization for Research and Treatment of Cancer Quality of Life Questionnaires (EORTC QLQ-C30) (version 2.0) was used for recording of the Global Health Status/Quality of Life (GHS/QoL) score. The substudy also included the summarized mechanism-based evaluation of the patients at the first visit, judged by a specialist in pain medicine. The patients' GHS/QoL score was low. The most important pain mechanisms, were nociceptive and peripheral neurogenic. The clinical use of these tools for patient evaluation and for the choice of treatment is suggested. Information technology may be used for analysis of descriptive, evaluative, predictive and prognostic data in pain patients. It can also be used as a tool for clinical pain research towards a

mechanism-based evaluation. Evaluation of patient quality of life and function is suitable for outcome research.

Wollman, S. "Patient education series. Low back pain." *Nursing*. 33, no. 10(2003): 49 UI 14528126.

Wu, C. L., et al. "Effect of postoperative epidural analgesia on morbidity and mortality after total hip replacement surgery in medicare patients.[see comment]." *Regional Anesthesia & Pain Medicine*. 28, no. 4(2003): 271-8 UI 12945019.

BACKGROUND AND OBJECTIVES: The effect of postoperative epidural analgesia (vs. systemic analgesia) on patient outcomes is unclear. Available randomized controlled trials (RCTs) have focused on the intraoperative period and not properly examined the effect of postoperative epidural analgesia (EA) on outcomes.

METHODS: A 5% nationally random sample of Medicare beneficiaries from 1994 to 1999 was analyzed to identify patients undergoing total hip arthroplasty (Common Procedural Terminology [CPT] code 27130, 27132, 27134, 27137, 27138). Patients were divided into 2 groups depending on the presence or absence of postoperative EA based on the CPT coding (01996). The rate of major morbidity (acute myocardial infarction, deep venous thrombosis, pulmonary embolism, angina, respiratory failure, heart failure, cardiac dysrhythmias, pneumonia, pulmonary edema, sepsis, acute renal failure, paralytic ileus, acute cerebrovascular event) and death at 7 and 30 days after the procedure were compared. Multivariate regression analysis was performed to determine if the presence of postoperative (EA) had an independent effect on mortality or major morbidity. Data were reported as an odds ratio with 95% confidence intervals (CI) when appropriate. **RESULTS:** The unadjusted 7- and 30-day death rate was significantly lower for EA versus no EA (1.9/1000 [95% CI: 0.2-3.6] vs. 3.9/1000 [95% CI: 3.0-6.2] at 7 days [P = .04] and 5.8/1000 [95% CI: 2.9-8.7] vs. 9.9/1000 [95% CI: 8.6-11.3] at 30 days [P = 0.01]). However, multivariate regression analysis revealed that there was no difference between the groups with regard to mortality or major morbidity with the exception of an increase in deep venous thrombosis in patients who received EA. **CONCLUSIONS:** The use of postoperative EA was not associated a lower incidence of mortality and major morbidity in Medicare patients undergoing total hip arthroplasty. However, the results should be interpreted with caution because of limitations in using the Medicare claims data for analysis. Further trials using other properly conducted and designed studies (e.g., RCTs) would be ideal to validate these results.

Yelnik, A. P., F. M. Colle, and I. V. Bonan. "Treatment of pain and limited movement of the shoulder in hemiplegic patients with botulinum toxin a in the subscapular muscle." *European Neurology*. 50, no. 2(2003): 91-3 UI 12944713.

Three poststroke hemiplegic patients were treated by injecting Botulinum toxin A (BtxA) into the subscapularis muscle, to reduce pain and increase the range of motion in the shoulder. According to the described procedure, 250 units of Dysport toxin were injected through a 0.8-mm diameter needle with electrostimulation guidance. In the 3 cases, injection of BtxA reduced pain and improved the range of motion, especially abduction and external rotation, of the hemiplegic shoulder. This result confirms the role of spasticity in hemiplegic shoulder pain and the beneficial effects of Botulinum toxin injection into the subscapularis muscle deserve to be confirmed in further series. Copyright 2003 S. Karger AG, Basel

Yukioka, H. "Less agreement is noted between the visual analog scale and the faces scale for patients with moderate pain than for those with severe pain.[comment]." *Critical Care Medicine*. 31, no. 9(2003): 2417-8; author reply 2418 UI 14501986.

Zhang, W. T., et al. "Modulation of cold pain in human brain by electric acupoint stimulation: evidence from fMRI." *Neuroreport*. 14, no. 12(2003): 1591-6 UI 14502082.

The purpose of this study is to investigate the modulation of pain responses in the human brain by electric acupoint stimulation (EAS). Eight healthy subjects were enrolled; each received real or mock EAS treatment in separate sessions. Cool (18 degrees C) and cold (2 degrees C) stimuli were delivered, during which functional magnetic resonance imaging scans were performed, before and after treatment. Real EAS specifically increased the pain-specific activation in bilateral secondary somatosensory area, medial prefrontal cortex, and Brodmann area (BA) 32, while it decreased the activation in contralateral primary somatosensory area, BA7, and BA24. We suggest that EAS may induce an analgesic effect via modulation of both the sensory and the emotional aspect of pain processing.