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Focus Article

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Time Series Analysis of California's Prescription Monitoring Program: Impact on Prescribing and Multiple Provider Episodes

Aaron M. Gilson, Scott M. Fishman, Barth L. Wilsey, Carlos Casamalhuapa, and Hassan Baxi

Prescription monitoring programs (PMPs) are designed to reduce medication diversion by identifying individuals obtaining the same medication from multiple providers. This article determined whether recent changes to California's PMP influence the extent to which practitioners issue opioid prescriptions and the incidence of multiple provider episodes involving these opioids. This work illustrates the viability of this drug control program on prescribing practice and diversion behaviors.

Original Reports

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A Pilot Study of the Tolerability and Effects of High-Definition Transcranial Direct Current Stimulation (HD-tDCS) on Pain Perception

Jeffrey J. Borckardt, Marom Bikson, Heather Frohman, Scott T. Reeves, Abhishek Datta, Varun Bansal, Alok Madan, Kelly Barth, and Mark S. George

Several brain stimulation technologies are beginning to show promise as pain treatments. But traditional versions of one specific technique—transcranial direct current stimulation (tDCS)—stimulate broad regions of cortex with poor spatial precision. A new brain stimulation technique—high definition tDCS—allows for focal delivery of the charge to discrete regions of the cortex. This research presents preliminary tolerability and efficacy data on this technique, which may have applications in the management of pain.

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ON THE COVER

Electrotherapy techniques allow for the instant electricity to targeted brain regions with minimally invasive methods that are effective in managing some forms of chronic pain, by inducing changes in cortical excitability that may be related to changes in concentrations of glutamate and gamma-aminobutyric acid. Research shows that high definition transcranial direct current stimulation allows for focal delivery to discrete regions of the cortex. See Borckardt, et al, page 112.

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Physical Activity and Function in Adolescents With Chronic Pain: A Controlled Study Using Actigraphy

Anna C. Wilson and Tonya M. Palermo

Physical functioning is often impaired in adolescents with chronic pain, which has largely been demonstrated through subjective self-report measures. Actigraphy uses motion monitoring as an objective means for assessing physical activity level. This study demonstrates that adolescents with chronic pain have lower physical activity levels—as measured objectively via actigraphy—as well as poorer subjective reports of physical functioning compared to healthy adolescents.

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The Interruptive Effect of Pain in a Multitask Environment: An Experimental Investigation

Dimitri M. L. Van Ryckeghem, Geert Crombez, Christopher Eccleston, Baptist Liefoghe, and Stefaan Van Damme

Daily life is characterized by the need to stop, start, repeat, and switch between multiple tasks. The authors experimentally investigated the effects of pain and its anticipation in a multitask environment. Results show that pain interferes with the performance of a simultaneous task, independent of the pain intensity. Pain also interferes with the performance of a subsequent task; these effects are stronger with high-intensity pain. This adapted paradigm may offer unique possibilities for investigating pain interference with task performance in a multitask setting.

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The Economic Cost of Chronic Noncancer Pain in Ireland: Results From the PRIME Study, Part 2

Miriam N. Raftery, Padhraig Ryan, Charles Normand, Andrew W. Murphy, Davida de la Harpe, and Brian E. McGuire

To assess the economic cost of chronic pain in Ireland, information was gathered from 140 people with chronic pain. Direct and indirect costs attributable to chronic pain and medical conditions were recorded retrospectively for 12 months. Mean cost per chronic pain patient was estimated at €5,665 per year across all grades of pain, with mean costs increasing according to the severity of pain. A small proportion of patients account for the bulk of costs. The significant burden of chronic pain highlights the need for cost effective interventions to reduce long term disability.

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Craving of Prescription Opioids in Patients With Chronic Pain: A Longitudinal Outcomes Trial

Ajay D. Wasan, Edgar L. Ross, Edward Michna, Lori Chibnik, Shelly F. Greenfield, Roger D. Weiss, and Robert N. Jamison

Little is known about whether chronic pain patients treated with opioids experience craving for their medications, whether contextual cues may influence craving, or if there is a relationship between craving and medication compliance. This report studied craving in 62 patients who were at low or high risk for opioid misuse while they were enrolled in a program to improve medication compliance. Findings indicate that craving is a potentially important psychological construct. Targeting craving may be an important intervention to decrease misuse and improve prescription opioid compliance.

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Repetitive Treatment With Diluted Bee Venom Reduces Neuropathic Pain Via Potentiation of Locus Coeruleus Noradrenergic Neuronal Activity and Modulation of Spinal NR1 Phosphorylation in Rats

Suk-Yun Kang, Dae-Hyun Roh, Seo-Yeon Yoon, Ji-Young Moon, Hyun-Woo Kim, Hye-Jung Lee, Alvin J. Beitz, and Jang-Hern Lee

The authors previously demonstrated that a single injection of diluted bee venom (DBV) temporarily alleviates thermal hyperalgesia, but not mechanical allodynia, in neuropathic rats. This study sought to determine whether repetitive injection of DBV produces more potent analgesic effects on neuropathy-induced nociception. Mechanistic information shows that repetitive treatment of DBV can produce a stronger effect than single DBV treatment, indicating a potential novel strategy for the management of chronic pain.

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How Do I Empathize With You? Let Me Count the Ways: Relations Between Facets of Pain-Related Empathy

Jaclyn B. Issner, Annmarie Cano, Michelle T. Leonard, and Amy M. Williams

This research examined components of empathy within the context of chronic pain couples. Also, the interrelationships between empathy variables and spouse responses to pain were investigated. Results note that there are not clear associations among empathy variables and that the climate in which solicitousness is provided may influence the extent to which spouses display empathic responses. The conclusions have implications for models of pain empathy and suggest that future research is needed to understand relations between aspects of empathy.

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The Association Between Race and Neighborhood Socioeconomic Status in Younger Black and White Adults With Chronic Pain

Carmen R. Green and Tamera Hart-Johnson

Both race and socioeconomic status (SES) contribute to disparities. This report assessed the relative roles of neighborhood SES and race in the chronic pain experience for adults younger than 50. Data from a tertiary care pain center were matched to 2000 US Census data to examine the roles of race and neighborhood SES on chronic pain and its sequelae in 3,730 adults. Blacks had significantly more pain and disability and lived in lower SES neighborhoods. A lower SES neighborhood was associated with increased sensory, affective, pain-related disability, and mood disorders. This work identified important variability in pain related outcomes.

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Muscle Pain Differentially Modulates Short Interval Intracortical Inhibition and Intracortical Facilitation in Primary Motor Cortex

Siobhan M. Schabrun and Paul W. Hodges

Excitability of the motor cortex can be suppressed during muscle pain, yet the mechanisms are largely unknown. Short-interval intracortical inhibition (SICI) and intracortical facilitation (ICF) were examined as possible candidate mechanisms to underpin this change. Results indicate that muscle pain differentially modulates SICI and ICF. Although the functional relevance is unknown, the authors hypothesize that decreased facilitation and increased inhibition may contribute to the restriction of movement of a painful body part.

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Physical Activity, Sustained Sedentary Behavior, and Pain Modulation in Women With Fibromyalgia

Laura D. Ellingson, Morgan R. Shields, Aaron J. Stegner, and Dane B. Cook

Fibromyalgia (FM) has been conceptualized as a disorder of the central nervous system, characterized by augmented sensory processing and an inability to effectively modulate pain. The authors previously noted that physical activity (PA) is related to the brain's processing of pain, providing evidence for a potential mechanism of pain management. This work examined PA and sustained sedentary behavior. Conclusions show that physical activity and sedentary behaviors are related to central nervous system regulation of pain in FM. Studies aimed at increasing physical activity or reducing sedentary behavior and determining the impact of these on pain regulation are warranted.