

Low-dose ketamine infusions for chronic pain management: Does this qualify as evidence-based practice?

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Abstract

Chronic pain is becoming increasingly prevalent and burdensome both worldwide and in the United Kingdom. Due to the complexity of chronic pain and the therapeutic challenge associated, management is often difficult and requires multidisciplinary care encompassing a combination of pharmacological and non-pharmacological strategies. Conventional analgesic treatments, such as opioids and anticonvulsants, are effective in less than half of chronic pain sufferers and are typically limited to short-term use to prevent complications associated with long-term use such as tolerance and dependence. Consequently, research and clinical interest in alternative management options for chronic pain have increased in recent years, with ketamine being one example under investigation. However, since ketamine has been licensed as an anaesthetic for decades, it has bypassed the traditional scrutinous drug development sequence that is typically seen for therapeutics marketed for pain. As such, data supporting the unlicensed administration of ketamine for chronic pain management is lacking and is being outpaced by the rates of off-label use in pain clinics. Recent limited evidence suggests that ketamine, when given as an intravenous infusion in subanaesthetic doses for refractory pain patients, may provide modest analgesic effects in nearly all aetiologies of chronic pain, with side effects common but typically mild. However, there are concerns over the safety of this practice due to the paucity of robust supportive evidence and the accompanying lack of clinical guidelines or standardised protocols. This review shall summarise the literature examining the use of subanaesthetic-dose ketamine infusions for chronic pain to comment on the current level of evidence, with limitations of existing research and future recommendations discussed.

Keywords

Pain, chronic pain, pain management, pain postoperative, pain clinics

Introduction

Chronic pain is exceptionally prevalent and continues to result in significant health, societal, and economic burden worldwide.¹ Due to the complexity of chronic pain perception, to which psychological and social factors contribute, management is often challenging and requires multimodal strategies.² Across all aetiologies, it is estimated that conventional analgesic treatments, such as opioids, antidepressants, and antiepileptics, are effective in just 30–40% of chronic pain patients, with the rest suffering inadequate pain control.^{3,4} Moreover, these drugs are limited by complications preventing long-term use as evidenced

by the ongoing opioid epidemic in the United States (US), where mortality is fuelled by immoderate opioid prescribing⁵; a public health crisis that, according to recent evidence, the United Kingdom (UK) is at risk of mirroring.⁶ Consequently, the need for safe and effective pharmacological alternatives to complement the

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Low Dose Ketamine Infusion In The Management Of Chronic

Maureen Cooney, Ann Quinlan-Colwell



Low Dose Ketamine Infusion In The Management Of Chronic:

Advanced Therapeutics in Pain Medicine Sahar Swidan, Matthew Bennett, 2020-12-17 Chronic pain places a tremendous burden on both the patient and the healthcare system. The use of opioids to address pain has resulted in negative impacts. As practitioners work to undo the current opioid crisis, options to manage pain need a new approach. *Advanced Therapeutics in Pain Medicine* offers pioneering approaches to this intransigent problem, providing a functional medicine approach toward treating pain. This book is dedicated to the advancement of non-opioid therapeutic options that offer real progress in reaching a future of better pain management. With an emphasis on pathophysiology, chapters review various types of pain and propose comprehensive treatment plans. These include manual therapies, novel pharmacologic and plant-based approaches, hormonal effects on pain pathways, as well as psychological and lifestyle interventions. Features: Written by a multi-disciplinary team, the book provides clinicians with multiple non-opioid treatment considerations. Enables practitioners to shift from a one-size-fits-all treatment approach toward individualized patient care. Includes case studies to help educate the provider on how to implement treatment plans in practice. Written by a team of physicians, pharmacists, psychologists, and researchers, this important book offers a much-needed step forward in optimizing pain care and benefits practitioners who care for patients experiencing chronic pain.

The Complete Low Back Pain Toolkit Jeffery J. Rowe, MD, 2023-04-26 This comprehensive guide to low back pain provides readers with an in-depth understanding of the causes, symptoms, and risk factors associated with this common condition. With expert insights into anatomy and physiology, proper diagnosis, and the role of imaging techniques, the book offers a solid foundation for those seeking relief from low back pain. A wide range of non-surgical treatment approaches is explored, including physical therapy, chiropractic care, and massage, as well as alternative and complementary therapies like acupuncture, yoga, and mindfulness. The book delves into spinal decompression therapy, exercise therapy, and manual therapies, providing readers with an extensive array of options for conservative care. Pain management is a key focus, with detailed discussions on medications, neuromodulation techniques such as spinal cord stimulation and dorsal root ganglion stimulation, and various interventional pain management procedures. These include facet joint injections, lumbar epidural steroid injections, lumbar radiofrequency neurotomy, and many others, offering the reader an overview of the latest advancements in the field. For cases requiring surgical intervention, the guide covers minimally invasive surgery techniques, providing insights into advanced methods that reduce recovery time. Surgical interventions such as lumbar discectomy and spinal fusion are also discussed, along with post-operative care and rehabilitation strategies. Prevention plays a crucial role in maintaining a healthy spine, and the book emphasizes the importance of lifestyle factors, workplace interventions, and proper posture and ergonomics. Strategies for managing chronic low back pain, as well as prevention and management techniques for athletes, are also explored. As the field of low back pain research and treatment continues to evolve, the book concludes with a look at future directions and innovations. This all-encompassing guide is an

invaluable resource for patients or anyone interested in understanding and effectively managing low back pain With its multidisciplinary approach The Complete Low Back Pain Toolkit A Practical Guide to Finding Your Unique Solution provides readers with the tools and knowledge necessary to make informed decisions and achieve better outcomes **Assessment and Multimodal Management of Pain** Maureen Cooney,Ann Quinlan-Colwell,2020-10-31 Learn best practices and evidence based guidelines for assessing and managing pain Assessment and Multimodal Management of Pain An Integrative Approach describes how to provide effective management of pain through the use of multiple medications and techniques including both pharmacologic and non pharmacologic treatment regimens A holistic approach provides an in depth understanding of pain and includes practical assessment tools along with coverage of opioid and non opioid analgesics interventional and herbal approaches to pain and much more Written by experts Maureen F Cooney and Ann Quinlan Colwell this reference is a complete step by step guide to contemporary pain assessment and management Evidence based practical guidance helps students learn to plan and implement pain management and aligns with current guidelines and best practices Comprehensive information on the pharmacologic management of pain includes nonopioid analgesics opioid analgesics and co analgesics including dose titration routes of administration and prevention of side effects UNIQUE Multimodal approach for pain management is explored throughout the book as it affects assessment the physiologic experience and the culturally determined expression acknowledgement and management of pain UNIQUE Holistic integrative approach includes thorough coverage of pain management with non pharmacologic methods Clinical scenarios are cited to illustrate key points Equivalent analgesic action for common pain medications provides readers with useful guidance relating to medication selection Pain rating scales in over 20 languages are included in the appendix for improved patient clinician communication and accurate pain assessment UNIQUE Authors Maureen F Cooney and Ann Quinlan Colwell are two of the foremost authorities in multimodal pain assessment and management Sample forms guidelines protocols and other hands on tools are included and may be reproduced for use in the classroom or clinical setting *Challenging Cases and Complication Management in Pain Medicine* Magdalena Anitescu,Honorio T. Benzon,Mark S. Wallace,2017-11-17 This comprehensive book provides reviews of pain management complications that arise in clinical practice Organized into sections focused on types of pain therapy and procedures each chapter is based on actual complications starting with a case description that delineates the context with a short past medical and surgical history pain management technique and outcome it is followed by a comprehensive review of the topic described in the first section Authors emphasize the elements of differential diagnosis that pointed towards establishing of the complication and describe the best way to treat the identified complication Physicians treating pain patients will be presented the necessary tools in identifying and treating unanticipated complications following pain interventions thus providing safer care for their patients **Yao & Artusio's Anesthesiology** Hugh C. Hemmings Jr.,Fun-Sun F. Yao,Peter A. Goldstein,Natalia I. Girardi,Vinod Malhotra,Tiffany R. Tedore,2025-08-11 Prepare for the oral and

written boards with this case based easy to use review tool from Drs Hugh C Hemmings Jr Fun Sun F Yao Peter A Goldstein Natalia I Girardi Vinod Malhotra and Tiffany Tedore Yao Artusio's Anesthesiology Problem Oriented Patient Management Tenth Edition contains more than 60 real world cases accompanied by questions that conform to the four areas of questioning on the oral boards reinforcing step by step critical thinking about today's surgical anesthesia and patient management This core text has been thoroughly revised to bring you up to date with all that's new in the field Acute Pain Management Raymond S. Sinatra, 2009-04-27 This textbook is written as a comprehensive overview of acute pain management It is designed to guide clinicians through an impressive array of different options available to them and to patients In the last decade there has been a flurry of interest in the extent to which acute pain can become chronic pain and how we might reduce the incidence of such chronicity This overview covers a wide range of treatments for pain management including the anatomy of pain pathways the pathophysiology of severe pain pain assessment therapeutic guidelines analgesic options organization of pain services and the role of anesthesiologists surgeons pharmacists and nurses in providing optimal care It also discusses the use of patient controlled analgesia and how this may or may not be effective and useful Pain Management for Clinicians Carl Edward Noe, 2020-05-22 This book focuses on the modern clinical management of acute and chronic pain syndromes It not only presents information in a clinically illuminating format but in a manner that is cognizant of the current prescription opioid epidemic Divided into seven sections this book covers acute pain common pain conditions regional pain problems interdisciplinary evaluation and treatment medical treatments and pain in different stages of life Concluding with the exploration of several special topics the last section includes an important discussion on the regulatory and legal issues in the use of controlled substances Chapters are concise and relevant with an emphasis on treatment based upon evidence from clinical trials and interpretation by practitioners in the field Expertly written text is further supplemented by high quality figures images and tables outlining proven treatments with drug dose or other information describing details of treatment Timely informative and socially conscious Pain Management for Clinicians A Guide to Assessment and Treatment is a valuable reference for clinicians who manage patients with chronic and common pain problems **Cumulated Index Medicus**, 2000 *Practical Management of Pain E-Book* Honorio Benzon, James P. Rathmell, Christopher L. Wu, Dennis Turk, Charles E. Argoff, Robert W Hurley, 2022-02-10 For more than 30 years Practical Management of Pain has offered expert guidance to both clinicians and trainees covering every aspect of acute and chronic pain medicine for adult and pediatric patients The fully revised 6th Edition brings you fully up to date with new developments in patient evaluation diagnosis of pain syndromes rationales for management treatment modalities and much more Edited by a team of renowned pain clinicians led by Dr Honorio Benzon this authoritative reference is a comprehensive practical resource for pain diagnosis and treatment using a variety of pharmacologic and physical modalities Presents a wealth of information in a clearly written easily accessible manner enabling you to effectively assess and draw up an optimal treatment

plan for patients with acute or chronic pain Takes a practical multidisciplinary approach making key concepts and techniques easier to apply to everyday practice Shares the knowledge and expertise of global contributors on all facets of pain management from general principles to specific management techniques Discusses the latest best management techniques including joint injections ultrasound guided therapies and new pharmacologic agents such as topical analgesics Covers recent global developments regarding opioid induced hyperalgesia neuromodulation and pain management and identification of specific targets for molecular based pain Includes current information on the use of cannabinoids in pain management and related regulatory professional and legal considerations Includes the latest guidelines on facet injections and safety of contrast agents Provides new evidence based critical analysis on treatment modality outcomes and the latest information on chronic pain as a result of surgical interventions Enhanced eBook version included with purchase Your enhanced eBook allows you to access all of the text figures and references from the book on a variety of devices **Pain Management**

Magdalena Anitescu,2018-05-01 Pain Management A Problem Based Learning Approach combines comprehensive didactics on pain management topics with board like questions grouped in real time pain practice exams It is uniquely designed to maximize the retaining of learned information by the long life learner in the ABA certification recertification process It is also ideally used as a reference compendium offering theoretical and practical advice to the busy pain practitioner Oxford

Textbook of Pediatric Pain Bonnie J. Stevens,Gareth Hathway,William T. Zempsky,2021 The iOxford Textbook of Paediatric Pain i brings together clinicians educators trainees and researchers to provide an authoritative resource on all aspects of pain in infants children and youth *Pain Assessment and Pharmacologic Management - E-Book* Chris Pasero,Margo

McCaffery,2010-10-04 Pain Assessment and Pharmacologic Management by highly renowned authors Chris Pasero and Margo McCaffery is destined to become the definitive resource in pain management in adults It provides numerous reproducible tables boxes and figures that can be used in clinical practice and emphasizes the benefits of a multimodal analgesic approach throughout In addition Patient Medication Information forms for the most commonly used medications in each analgesic group can be copied and given to patients This title is an excellent resource for nurses to become certified in pain management Presents best practices and evidence based guidelines for assessing and managing pain most effectively with the latest medications and drug regimens Features detailed step by step guidance on effective pain assessment to help nurses appropriately evaluate pain for each patient during routine assessments Provides reproducible tables boxes and figures that can be used in clinical practice Contains Patient Medication Information forms for the most commonly used medications in each analgesic group to be copied and given to patients Offers the authors world renowned expertise in five sections Underlying Mechanisms of Pain and the Pathophysiology of Neuropathic Pain includes figures that clearly illustrate nociception and classification of pain by inferred pathology Assessment includes tools to assess patients who can report their pain as well as those who are nonverbal such as the cognitively impaired and critically ill patients Several pain rating scales

are translated in over 20 languages Nonopioids includes indications for using acetaminophen or NSAIDs and the prevention and treatment of adverse effects Opioids includes guidelines for opioid drug selection and routes of administration and the prevention and treatment of adverse effects Adjuvant Analgesics presents different types of adjuvant analgesics for a variety of pain types including persistent chronic pain acute pain neuropathic pain and bone pain Prevention and treatment of adverse effects is also covered Includes helpful Appendices that provide website resources and suggestions for the use of opioid agreements and for incorporating pain documentation into the electronic medical record Covers patients from young adults to frail older adults Provides evidence based practical guidance on planning and implementing pain management in accordance with current TJC guidelines and best practices Includes illustrations to clarify concepts and processes such as the mechanisms of action for pain medications Features spiral binding to facilitate quick reference

Current Therapy in Pain E-Book Howard S. Smith, 2008-12-21 This unique resource focuses on the diagnosis and treatment of painful conditions both acute and chronic from a multi disciplinary perspective Joined by a team of nearly 200 international contributors representing a wide range of specialties Dr Smith presents the best management options within and across specialties Succinct treatment and therapy guidelines enable you to quickly access clinically useful information for both inpatient and outpatient pain management Offers a cross discipline approach to pain management for a comprehensive view of the best treatment options within and across specialties including internal medicine gynecology physical medicine and rehabilitation orthopedics and family medicine Provides succinct treatment and therapy guidelines enabling you to locate useful information quickly Organizes guidance on acute and chronic therapies in a templated format to facilitate consistent quick access consultation appropriate for inpatient or outpatient pain management

Practical Management of Pain Honorio MD Benzon, James P. Rathmell, Christopher L. Wu, Dennis C. Turk, Charles E. Argoff, Robert W Hurley, 2013-09-12 Obtain all the core knowledge in pain management you need from one of the most trusted resources in the field The new edition of Practical Management of Pain gives you completely updated multidisciplinary overview of every aspect of pain medicine including evaluation diagnosis of pain syndromes rationales for management treatment modalities and much more In print and online it is all the expert guidance necessary to offer your patients the best possible relief In summary this is the best explanation of what lies behind MRI that I have read taking what can be a dry subject and making it readily understandable and really interesting I would recommend it to anyone starting their MRI training and anyone trying to teach MRI to others Reviewed by RAD Magazine June 2015 Understand and apply the latest developments in pain medicine with brand new chapters covering disability assessment central post stroke pain chronic widespread pain and burn pain Effectively ease your patients pain with today s best management techniques including joint injections ultrasound guided therapies and new pharmacologic agents such as topical analgesics Access up to the minute knowledge on all aspects of pain management from general principles to specific management techniques with contributions from renowned experts in the field Read the full

text and view all the images online at expertconsult.com Understand and apply the latest developments in pain management with brand new chapters covering disability assessment central post stroke pain widespread chronic pain and burn pain Effectively ease your patients pain with today's best management techniques including joint injections ultrasound guided therapies and new pharmacologic agents such as topical analgesics **Bonica's Management of Pain** Scott M. Fishman, 2012-03-29 Now in its Fourth Edition with a brand new editorial team Bonica's Management of Pain will be the leading textbook and clinical reference in the field of pain medicine An international group of the foremost experts provides comprehensive current clinically oriented coverage of the entire field The contributors describe contemporary clinical practice and summarize the evidence that guides clinical practice Major sections cover basic considerations economic political legal and ethical considerations evaluation of the patient with pain specific painful conditions methods for symptomatic control and provision of pain treatment in a variety of clinical settings **Pediatric Injectable Drugs: The Teddy Bear Book** Stephanie J. Phelps, Kelley R. Lee, Tracy M. Hagemann, 2024-10-17 The Teddy Bear Book is the only reference of its kind that focuses on the unique issues that healthcare professionals face when using injectable medications in children such as limited fluid volumes maximum concentrations and rates of administration The 12th Edition features more than 270 updated monographs including over 40 monographs new to this edition that cover the following areas Safety issues Infusion related cautions Dosages and conditions requiring dosage adjustments Contraindications and warnings Adverse drug effects Preparation and compatibility Bolus intermittent and continuous IV administration Monitoring **Disorders of the Shoulder: Reconstruction** Joseph P Iannotti, Gerald R. Williams (Jr.), Anthony Miniaci, Joseph David Zuckerman, 2013-09-16 Of the nearly 8 million shoulder injuries treated annually in the United States almost half are rotator cuff repairs and most of these injuries are treated by orthopedic sports medicine specialists This title covers the full spectrum of shoulder procedures including open and arthroscopic procedures **Migraine Pain Management** Stephen B. Shrewsbury, 2024-10-24 Migraine Management Current Pharmacological and Non pharmacological Options is a comprehensive guide to established recent and ongoing pharmaceuticals and device development projects The book provides detailed information on the historical developments of migraine pain management druggable targets drugs action mechanisms drugs for acute treatment and preventive care of patients administration routes and alternative treatments This is the ideal reference for academic researchers interested in anti migraine pharmacology It will also be a perfect reference for physicians and care professionals involved in the well being of migraine patients Offers a comprehensive overview of pharmacological and alternative migraine pain treatment options Covers the historical developments and current targets for drug development and delivery routes Provides insights into comorbidities and their impact in patient compliance to treatment **Veterinary Anesthesia and Analgesia, The 6th Edition of Lumb and Jones** Leigh Lamont, Kurt Grimm, Sheilah Robertson, Lydia Love, Carrie Schroeder, 2024-06-18 VETERINARY ANESTHESIA AND ANALGESIA A thoroughly updated new edition of the foundational

reference on veterinary anesthesia and analgesia Veterinary Anesthesia and Analgesia The Sixth Edition of Lumb and Jones is a fully updated revision to this comprehensive authoritative reference to all aspects of veterinary anesthesia and pain management Encompassing both scientific principles and clinical applications the new edition adds new knowledge techniques and discussion of emerging issues throughout Fourteen new chapters significantly expand the coverage of patient monitoring modalities and nociception and pain while presenting new information on safety culture infection prevention and control biomedical engineering and point of care ultrasound Logically organized into sections information on basic principles pharmacology specific body systems and specific species is easy to access Comparative anesthetic considerations for dogs and cats horses ruminants swine laboratory animals free ranging terrestrial mammals marine mammals reptiles amphibians fish and birds are discussed Chapters are devoted to anesthesia and pain management of common domestic species and patient populations including updated chapters on local and regional anesthetic and analgesic techniques A companion website offers video clips of point of care ultrasound techniques and pain assessment and scoring Readers of Veterinary Anesthesia and Analgesia The Sixth Edition of Lumb and Jones will also find Significantly expanded coverage of patient monitoring including new chapters devoted to anesthetic depth and electroencephalography electrocardiography blood pressure ventilation oxygenation and anesthetic gas monitoring More in depth coverage of respiratory physiology and pathophysiology with new sections covering oxygen therapy mechanical ventilation anesthetic management considerations for bronchoscopy intrathoracic procedures including one lung ventilation and patients with respiratory disease Expanded coverage of pain physiology and pathophysiology recognition and quantification of pain and clinical pain management including both pharmacologic and nonpharmacologic modalities A companion website incorporating video clips and example pain scoring sheets to complement the more than 500 images in the text itself With its unparalleled multidisciplinary approach Veterinary Anesthesia and Analgesia is a must own volume for veterinary anesthesia specialists and researchers specialists in other disciplines including both small and large animal surgeons practitioners and students

Perioperative Pain Management for General and Plastic Surgery Deepak Narayan, Alan D Kaye, Nalini Vadivelu, 2018-09-03 All physicians are involved in the management of pain at some level or the other but of the various specialties and health professions surgeons are at the frontline of delivering perioperative pain care Perioperative Pain Management for General and Plastic Surgery offers a concise yet comprehensive overview of the surgical pain management field to help practitioners effectively plan and enhance perioperative pain control Chapters provide guidance on solving common dilemmas facing surgeons who are managing patients with pain related problems and clinical decision making and explore essential topics required for the trainee and practitioner to quickly assess the patient with pain to diagnose pain and painful conditions determine the feasibility and safety of surgical procedure needed and arrange for advanced pain management consults and care if needed This text also explores the latest evolving techniques and appropriate utilization of modern equipment and technology to

safely provide care Highly accessible and written by experts in the field Perioperative Pain Management for General and Plastic Surgery is an ideal resource for practicing surgeons anesthesiologists critical care personnel residents medical students

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