Pathophysiology of Pain 1
Todd W. Vanderah

Processing and interpreting pain signals is a complex process entailing excitation of peripheral nerves, local interactions within the spinal dorsal horn, activation of ascending and descending circuits comprising a loop from the spinal cord to supraspinal structures, and exciting nociceptive inputs at the spinal level. The system is able to undergo neuroplastic transformations when nociceptive inputs are extended over time; such adaptations function as a pronociceptive positive feedback loop. Manipulations to disrupt any of the nodes of this pain facilitatory loop may effectively disrupt the maintenance of the sensitized pain state and diminish or abolish neuropathic pain. Understanding the ascending and descending pain facilitatory circuits may provide for design of rational therapies that do not interfere with normal sensory processing.

The Taxonomy of Pain 13
Harold Merskey

An ideal taxonomy should be comprehensive and its categories should be mutually exclusive. Every item should have a particular place either on its own or with other items that resemble it. This is rarely, if ever, achievable in practice in medicine. The reasons for this are explained. The taxonomy developed by the Task Force on Taxonomy of the International Association for the Study of Pain is described as well as the basis for it.

The Diagnostic Workup of Patients with Neuropathic Pain 21
Steven H. Horowitz

Neuropathic pain is initiated or caused by damage or dysfunction of the peripheral or central nervous systems in various disorders,
each having pain-related symptoms and signs thought secondary
to common pain mechanisms. Ancillary testing may demonstrate
associated nervous system abnormalities, however its specificity
is inadequate at present, as it makes inferential conclusions from
indirect data. Symptom assessment and physical findings remain
paramount in the diagnosis of neuropathic pain.

Problems with Insurance-Based Research on Chronic Pain 31
Harold Merskey and Robert W. Teasell

Social factors affecting estimates of pain severity are noted, includ-
ing attitudes toward pain before anesthesia, changes in attitudes
afterward, and roles of physicians as examiners for military service
or for compensation. Physicians identified as experts by insurance
companies may see patients’ injuries as causing less discomfort
than do those who work for patients. An example is provided of
a report funded by an insurance influence. Two examples are pro-
vided of studies in which treatment of data was insurance-friendly.
We emphasize the importance of recognizing social influences on
the process through which compensation is determined. These in-
fluences may be adverse to the normal evaluation of pain even
when compensation is not an issue, and efforts are required to
minimize potential bias.

Behavioral Medicine Approaches to Pain 45
Akiko Okifuji and Stacy Ackerlind

Pain is a complex, idiosyncratic experience. When pain is the pri-
mary complaint for seeking medical attention, understanding of
multiple factors is essential in guiding successful treatment. Beha-
vorial medicine, a branch of psychology, has been an integral part
of interdisciplinary/multidisciplinary care of pain patients. In this
article, we provide an overview of behavioral medicine approaches
to pain, including assessment and commonly used therapeutic
methods. Particular attention is given to cognitive-behavioral ther-
apy and motivational enhancement therapy.

Physical Medicine Rehabilitation Approach to Pain 57
Steven P. Stanos, James McLean, and Lynn Rader

A physical medicine and rehabilitation approach to acute and
chronic pain syndromes includes a wide spectrum of treatment fo-
cus. Management includes an assessment and treatment model
based on a biopsychosocial approach. Assessment includes a focus
on pain behaviors, posture, muscle imbalances, and gait impair-
ments. Effective treatment programs rely on appropriate and realistic
goal setting. Treatment options may include physical therapy,
polypharmacy, cognitive behavioral therapy, and passive modal-
ities. Treatment goals emphasize achieving analgesia, improving
psychosocial functioning, and reintegration of recreational or leis-
ure pursuits. More complicated multidimensional chronic pain
conditions may require a more collaborative continuum of multi-
disciplinary and interdisciplinary treatment approaches. Progress
in all therapies necessitates close monitoring by the health care pro-
vider and ongoing communication between members of the treat-
ment team.

Nonopioid Analgesics
Muhammad A. Munir, Nasr Enany, and Jun-Ming Zhang

Nonopioid analgesics represent a varied collection of analgesic
agents, many of which also possess antipyretic or anti-inflamma-
tory actions. As a group, nonopioid analgesics represent reasonable
first-line analgesics for a variety of mild to moderate painful condi-
tions and also often may be useful in conjunction with other an-
algescs (eg, opioids) for a myriad of severe painful conditions. Clinicians treating pain should be familiar with the actions,
adverse effects, and individual agents in the group of nonopioid
analgesics.

Adjuvant Analgesics
Helena Knotkova and Marco Pappagallo

Adjuvant analgesics represent a diverse group of drugs that were
originally developed for a primary indication other than pain. Many of these medications are currently used to enhance analgesia
under specific circumstances. The proper use of adjuvant drugs is
one of the keys to success in effective pain management. Since ad-
juvant analgesics are typically administered to patients who take
multiple medications, decisions regarding administration and do-
sage must be made with a clear understanding of the stage of
the disease and the goals of care. The article discusses major classes
of adjuvant analgesics, with the focus on the mechanism of action,
clinical application, and risks and benefits associated with each
particular class of adjuvants.

Topical Analgesics
Gary McCleane

Historically, analgesics were applied by the topical route of admin-
istration. With the advent of oral formulations of drugs, topical ap-
application became less popular among physicians, although patients
still rated this method of drug delivery as efficacious and practical.
We now appreciate that peripheral mechanisms of actions of a vari-
ety of preparations rationalizes their topical application and gives
further opportunity to target peripheral receptors and neural path-
ways that previously required systemic administration to achieve
therapeutic effect. Therefore, a peripheral effect can be generated
by using locally applied drug and, consequently, systemic concen-
trations of that drug may not reach the level at which systemic side
effects can occur.
Complementary and Alternative Medicine for Noncancer Pain
Gira Patel, David Euler, and Joseph F. Audette

The cost of treating chronic pain is a significant and growing public health problem. National surveys indicate that many patients are paying out of pocket for untested complementary and alternative medicine (CAM) treatments for persistent pain. Little is known about appropriate care for patients with chronic pain. As a result, patients are treated symptomatically with medications that can be addictive and procedures that often are not effective. Given the growth of high quality research in CAM, utilization of a number of alternative therapies can provide a counterbalance to conventional approaches to reintroduce a model of care that is more process oriented and moves patients from passive therapies to a more active role in their self-care.