

## Fact Sheet

## Pain Management

### Yesterday

- Early Greeks and Romans advanced the idea that the brain played a role in producing the perception of pain.
- In the 19th century, physician-scientists discovered that opiates such as morphine could relieve pain and chemist Felix Hoffmann developed aspirin from a substance in willow bark. Aspirin remains the most commonly used pain reliever.
- In 1994, the International Association for the Study of Pain (IASP) defined pain as an “unpleasant sensory and emotional experience associated with actual or potential tissue damage”

### Today

- Pain affects more Americans than diabetes, heart disease and cancer *combined*.
- A survey by the National Center for Health Statistics (2006) revealed that 26% of adults experienced pain lasting more than 24 hours in the month prior, and 10% experienced the same pain for a year or more.
- Chronic pain is the most common cause of long-term disability.
- For infants and children, pain requires special attention, particularly because they are not always able to describe the type, degree, or location of pain they are experiencing.
- NIH-supported scientists identified a gene variant of an enzyme that reduces sensitivity to acute pain and decreases the risk of chronic pain.
- A clinical study found that medications called kappa-opioids provide good relief from acute pain in women, yet increase pain in men. This difference in pain perception and treatment by gender has led to new directions for research on the experience and relief of pain.

- COX-2 (cyclooxygenase-2) is a major contributor to pain associated with inflammation. A study of genes affected by COX-2 led to the discovery of its role in connection to multiple cellular pathways that contribute to pain relief and adverse side-effects.

### Tomorrow

The NIH is poised to make major discoveries that will improve outcomes for individuals experiencing acute or chronic pain by ***predicting*** the onset of pain and its impact on patients, ***personalizing*** pain management strategies, and ***preempting*** the long-term adverse effects of intense, prolonged, or chronic pain.

– *Predicting pain and its impact on patients.*

Advances in basic and clinical genetics are making it possible to both characterize genetic factors related to pain sensitivity and develop novel therapeutic approaches.

– *Personalizing pain management strategies.*

Symptom management strategies for pain will include a combination of biological and behavioral approaches adaptable to the needs of individual patients. Adjustments to treatments will be made based on individual patient responses.

– *Preempting the long-term effects of intense,*

*prolonged, or chronic pain.* Scientists are discovering approaches to treat stages of diseases or conditions prior to their onset. Likewise, advancements in pain research will identify approaches to treating pain at its early stages, thereby preempting the chronic or long-term negative outcomes.

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