

# *Gerald M. Aronoff, M.D.*

Medical Director  
Carolina Pain Associates  
Charlotte, NC  
USA

Where have we come in 40  
years?

- 1953 John Bonica wrote *The Management of Pain*
  - \* As a clinician he refined and promoted the therapeutic use of n. blocks...led to the interventional model for pain clinics

## 1960's

- UK- Cicely Saunders-Multidisciplinary care for dying pts...hospice and palliative care modes emerged
- 1963-Ronald Melzack and Pat Wall-proposed SC mechanism regulating transmission of pain sensations between periphery and the brain. Suggested neural mechanism to explain counter-stimulation for pain relief

## 1960's

- Dr John Bonica founded the Univ of Washington Pain Center in Seattle Washington, USA (Interventional > non-interventional)
- Dr. Benjamin Crue founded the City of Hope Pain Center in Duarte California, USA (Non-interventional>interventional)  
CPS perpetuated by CNS>peripheral

## 1970's

- Richard Sternbach-"Physiologic and affective perceptions of pain as learned responses of the nervous system interacting with the individual's learned behaviors in coping with pain experiences."

## 1970's

- Wilbert Fordyce introduced operant conditioning into the treatment of chronic pain. Became a major part of behavior modification rx in MPC programs
- John Liebeskind and UCLA gp showed naloxone reversible brain stimulation in animals

## 1970's

- 1973 Bonica formed IASP in Seattle, Wash- invited 300 researchers and clinicians
- Mid 1970's Kathleen Foley created the first taxonomy of cancer pain
- Robert Twycross demonstrated superior reliability and efficacy of oral morphine over heroin and reported the absence of tolerance or addiction in cancer pts, even with long term use.

## 1980's

- 1982 WHO organization ladder for use of analgesics for cancer pain-Use meds on a regular schedule and titrate to pt's pain

# IASP

- 1984 Definition: An unpleasant sensory and emotional experience associated with actual or potential tissue damage

## 1980s through today

- Turk, DC, Meichenbaum D, Genest M. Pain and Behavioral Medicine. A Cognitive-Behavioral Perspective, Guilford Press; 1983
- Biopsychosocial approach to chronic pain

## 1990's through today

- Improved imaging technology-Pet scans, F-MRI
- More innovative interventional technology
- Pharmacotherapeutic breakthroughs
  1. Topical,transdermal, buccal medication
  2. Sustained acting opioids
  3. Tamper resistant opioids

## 1990s through today

- Preemptive analgesia
- The role of neurotransmitters in the pain experience
- Distribution of opiate receptors in the brain stem, thalamus and cortex impacting on the affective and anti-nociceptive effects of opioids

## 1990s through today

- Descending pain pathways being able to modulate pain transmission at the dorsal horn
- Deficiencies in some neurotransmitters contributing to anxiety, depression, and psychotic conditions. Antidepressant action by increasing cortical levels of neurotransmitters. Also actions on neuropathic pain conditions

## Today-NIH

- NIH supported scientists have identified a gene variant of an enzyme that reduces sensitivity to acute pain and decreases the risk of chronic pain
- A study of genes affected by COX-2 lead to the discovery of its role in connection to multiple cellular pathways that contribute to pain relief and adverse side-effects

# National Institute of Health- Tomorrow

- Predicting pain and its impact on patients
- Personalizing pain management strategies
- Preempting the long-term effects of intense, prolonged, or chronic pain





# ***Definition of Pain***

A Personal, Subjective, Unpleasant Experience Involving, Sensations and Perceptions **which may or may not be a result of Tissue Damage or Physical Injury.** Its Expression may be influenced by Psychosocial, Ethnocultural, Genetic, Biochemical, Religious, and other factors.

Aronoff 1985

# ***PAIN***

**No Direct Relationship Between**

Tissue Damage

**and**

Severity of **Pain**

Beecher (1959)

# *Disease Model*

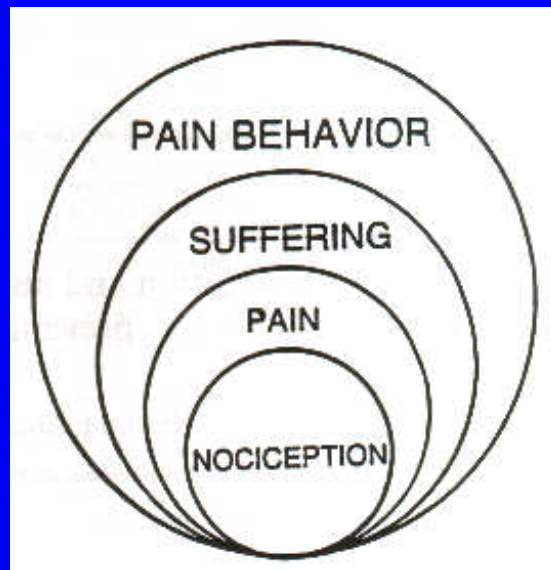
1. Observe Symptoms  
("Illness Behavior")
2. Try to identify  
Underlying Pathology  
("Diagnosis")
3. Treat by Attacking  
Underlying Pathology

# *Rx Chronic Pain*

## Major Results of Using the Acute Care Model to Rx Chronic Pain

- ☐ **Failure** to Control the **Pain**
- ☐ Frequent Iatrogenic Complications
- ☐ Inappropriate Medication Usage
- ☐ Excessive Invasive Procedures

# Schema CPS-Loeser



## CHRONIC PAIN SYNDROME

- NOT a DX but a Descriptive Term
  - 1.PERSISTENT C/O PAIN
  - 2.POOR COPING
  - 3.DYSFUNCTIONAL PAIN BEHAV.
  - 4.SELF-LIMITATIONS IN ADL
  - 5.SUBJECTIVE COMPLAINTS > OBJECTIVE FINDINGS

# CHRONIC PAIN SYNDROME

- Associated Suffering often leads to chronic illness behaviors and a disability conviction
- Dysfunctional Behaviors are learned and become Goal Directed
- A Bio-Psycho-Socio-Economic Disorder
- Central>peripheral factors generate and prolong suffering and disability

## ***Chronic Pain Behavior***

### **Factors Influencing Chronic Pain Behavior**

Implications of injury/Probabilities of outcome

Development History and Past Experience

Ethno-cultural Influences

Premorbid Psychological Health or (Pathology)

Secondary Gain

Environmental Reinforcers

# *Chronic Pain Syndromes*

## Emotional Factors

- ☐ Depression
- ☐ Pain Prone Disorder
- ☐ Somatization Disorder
- ☐ Conversion Disorder
- ☐ Hypochondriasis
- ☐ Atypical Somatoform Disorder
- ☐ Psychological Factors Affecting Physical Conditions
- ☐ Psychogenic Pain
- ☐ Malingering
- ☐ Schizophrenia

## Psychogenic Pain

- Not a diagnosis of exclusion
- DSM IV Diagnosis- Pain Disorder Associated with Psychological Factors
- Pain causes significant distress
- Psychological factors play a major role in ongoing pain
- Evaluate impairment using chapter on Mental and Behavioral Disorders

# Malingering

- Not rare, especially in workers' compensation, LTD and personal injury population.
- Distinguish from factitious disorder
- Confirmation of malingering gen depends on intentional or inadvertent surveillance
- By definition, malingering is not a disease but a volitional deception.

## ***DEPRESSION***

### **GROWING EVIDENCE SHOWS THAT DEPRESSION**

- ✗ Lowers Pain Tolerance
- ✗ Increases Analgesic Requirements
- ✗ Adds to Debilitating Effects of Pain

# *Medication*

## **TRICYCLIC ANTIDEPRESSANTS**

-  **Neuropathic Pain**
-  **Insomnia**
-  **Depression**

# *Chronic Pain*

**“Many pain patients lose their symptoms when given antidepressant medication”**

# PAIN-PATHOPHYSIOLOGY

- NOCICEPTIVE
- NEUROPATHIC
- MIXED
- UNCERTAIN
- SOMATOFORM (PSYCHOGENIC)

# INTERVENTIONS FOR CP

- Resolution of intractable pain most often requires balancing pharmacological, non-pharmacological AND interventional strategies



# ***GOALS OF M.P.C.***

- 1. Eliminate source of pain ( when possible)**
- 2. ↑ ADL despite pain**
- 3. ↑ Coping skills ↓ Suffering**
- 4. ↓ Pain Behaviors (Maladaptive)**
- 5. Alternative Techniques of Pain Control**
- 6. Rx Drug Dependence**

# ***GOALS OF M.P.C.***

- 7. Evaluate and Rx Psychosocial Problems**
- 8. Vocational / Occupational Rehab**
- 9. Improve Communications with other Health Care Providers**
- 10. Patient Actively Involved in his Health Care**

# ***GOAL OF RX: Therapeutic Efficacy***

- × REDUCE PAIN/SUFFERING**
- × INCREASE FUNCTION**
- × IMPROVE QOL**
- × ABSENSE OF ADVERSE SE'S**

## ***Progress in M.P.C***

- ☐ Attitude**
- ☐ Motivation**
- ☐ Support Systems**
- ☐ Well Defined Goals**
- ☐ No Major 1\*, 2\*, 3\* Gain**

# Nonpharmacologic Therapy

- Patient Education
  - 1.Hurt does not equal harm
  - 2.Inactivity does >harm than activity
  - 3.Pos. attitude and pos. thinking
  - 4.Expect to feel better
  - 5.CP is psychosomatic (effects the psyche and body)
  - 6.CP effects social systems
  - 7.Work is therapeutic

## NONPHARMACOLOGICAL MODALITIES FOR CP

- Pain education
- heat,cold(ice) massage
- PT/exercise
- TENS
- Relaxation/BFT
- Distraction techniques
- Cognitive-behavioral. therapy
- Hypnosis
- Acupuncture
- Nerve blocks
- Nerve ablation
- NS procedures
- SCS/periph NS

# PHARMACOTHERAPY

- Nociceptive Pain responds to appropriate oral pharmacologic interventions in most instances. (acetamin, ASA, NSAIDS, Cox-2, opioids)
- Opioids which act as partial agonists should not be used for managing CP


# ADJUVANT THERAPY

- Initial therapy for neuropathic pain
- To enhance analgesia or diminish side effects of traditional analgesics
- Use in conjunction with any level of analgesia

# ADJUVANT ANALGESICS

- ANTIDEPRESSANTS (TCA/HCA, SNRI)
- ANTICONVULSANTS
- PHENOTHIAZINES
- ANTIHISTAMINES
- CORTICOSTEROIDS
- CAFFEINE
- MARIHUANA
- TOPICAL ANESTHETICS
- CAPSAICIN
- CLONAZEPAM

## ***CLINICAL STUDIES SUGGEST***

 THERE IS A SUB-GROUP OF CP PTS WHO CAN BE RX WITH CHRONIC OPIOIDS. ON THESE THEY REMAIN FUNCTIONAL AND PRODUCTIVE. WITHOUT ADEQUATE ANALGESIA PAIN BECOMES AN IMPAIRMENT AND COMPROMISES THE QUALITY OF THEIR LIVES.(Aronoff, 1992)


# ***INSIGHTS FROM THE CANCER POPULATION***

**UNRELIEVED PAIN IS ASSOCIATED WITH**

- 1. INCREASED MORBIDITY**
- 2. PSYCHOSOCIAL DISTRESS**

 **EFFECTIVE ANALGESIA CAN REVERSE THESE AND IMPROVE THE QUALITY OF LIFE**


# ***INSIGHTS FROM THE CANCER POPULATION***

 **MANAGEMENT PROBLEMS RELATED TO TOLERANCE OR PHYSICAL DEPENDENCE ARE RARE**

 **ADDICTION IS RARE WITHOUT PRIOR HX OF SUBSTANCE ABUSE**

# ***ADVERSE OUTCOMES***

 **RISK OF MAJOR ORGAN TOXICITY-  
NOT SUPPORTED BY STUDIES  
(except endocrine)**


 **SIDE EFFECTS -  
CONSTIPATION > COGNITIVE  
DYSFUNCTION**

# ***PSEUDOADDICTION***

**WEISSMAN & HADDOX (1989)**

**“ In the setting of undertreated pain, some patients develop aberrant behaviors that may be quite similar to those associated with addiction. When pain is relieved, the behaviors cease and opioids and other drugs are used responsibly.”**

# ***RISK OF ADDICTION***

 **STUDIES SUGGEST THAT  
INHERENT PREDISPOSITIONS  
DISTINGUISH CHRONIC PAIN  
POPULATION FROM ADDICTS (EG.  
PERSONALITY CHARACTERISTICS)**

# ***ADDICTION STUDIES***

 **CONCLUDE THAT CP PATIENTS  
HAVE LOW RISK OF ADDICTION  
DESPITE CHRONIC OPIOID USEAGE**



# PAIN

**“CURE”** of Pain in the sense of alleviation of the source of nociception may not be possible but pain complaints and behaviors need not be the focal point of the patient’s life.

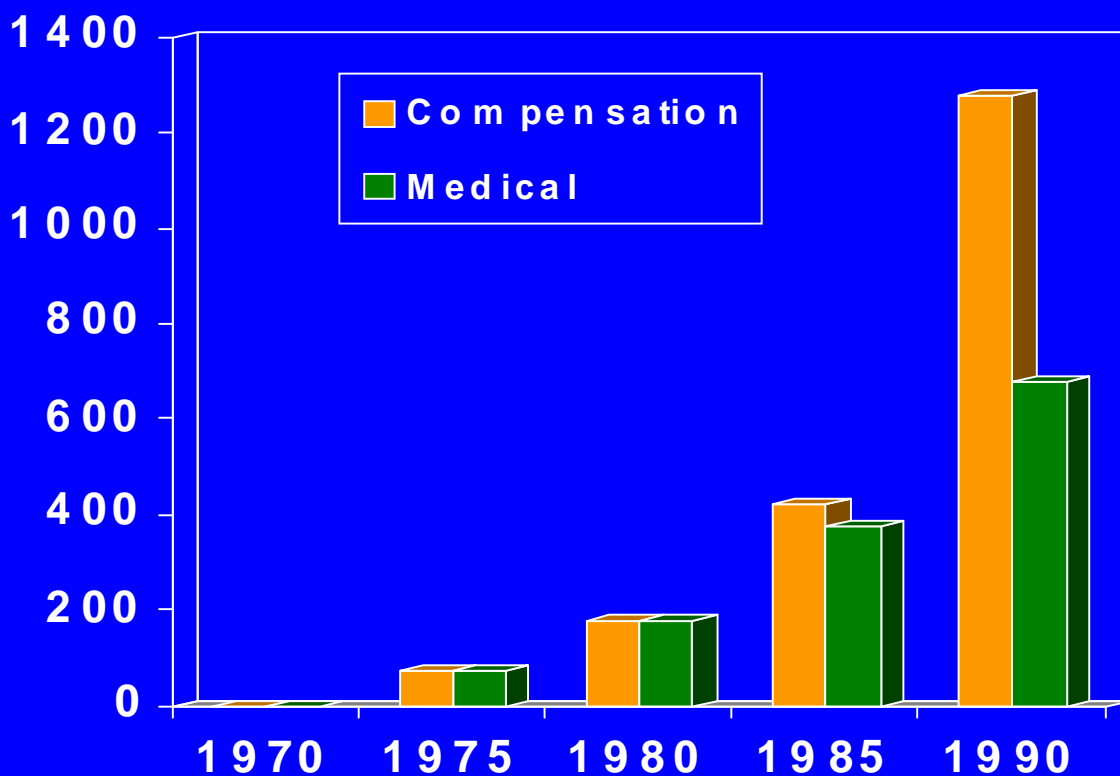


Fig. 5 Disability Costs in the United States as a percentage of 1970 levels

# ***CHRONIC BACK PAIN***

**It is the exception rather than the rule that chronic back pain can be attributable to definable disease ...**

# ***OCCUPATIONAL STUDIES***

**Premorbid Psychopathology  
Puts Worker at Risk for Injury  
and may Adversely Influence  
Outcome**

Aronoff 1985

# *Surgical Outcome*

## **EFFECT OF COMPENSATION IN SURGICAL OUTCOME**

1. Patients receiving compensation for back injuries are less likely to improve after Disc surgery than patients not receiving compensation
2. Compensation patients reported 1/3 as many excellent results (ie no residual sx's & working with impairment) 4x more poor results

# *Rehabilitation*

## **Can Rehabilitation Succeed Despite Financial Disincentives?**

Catchlove & Cohen (**PAIN-14:1982**) used Directive RTW approach for patients on W.C.

Rx Contract

**“You Will Return to Work within 1-2 months”**

# ***PAIN REHAB-2***

**Return to  
Work  
1-2 Months.  
Post Rx**

**60%(DIR)**

**25%(ND)**

**Directive**

**Non-directive**

# ***PAIN REHAB-3***

**9 mos.  
Post Rx  
Still  
Working**

**90%(DIR)**

**75%(ND)**

**Directive**

**Non-directive**

# ***PAIN REHAB-4***

## **DIRECTIVE GROUP ALSO:**

- 1. Fewer Compensation Benefits**
- 2. Fewer Pain Rx's**

## **Conclusion**

- We have come a long way to improve pain patient care over the last 40 years but access to quality pain care is still unavailable in many parts of the world.**
- Chronic pain care should have a basis in science but the art of medicine often determines patient outcome in terms of functional improvement and QOL.**

# Conclusion

- The last 40 years has taught us that “the meaning of pain-cognitive, affective, and behavioral-are different for each individual and shape the pain experience and response to therapy”

JAMA 290:18 11/03