

**Pain management:
Battlefield to bedside and beyond**

**The Pain Medicine and Primary Care
Community Rehabilitation Model and
Stepped Integrated Pain Care in the VHA**

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Pain In Our Wounded Warriors (2002 - June, 2007)

- 686,306 OIF-OEF veterans
- 229,015 using VA services (33.4%) **
 - 43 % *have musculoskeletal diseases*
(*all cause pain by definition*)
- back pain most common
98,000 and counting!
 - 37% *have mental health disorders*

**Kang et al. Paper presented at War-Related Illness and Injury Study Center, 2007.

Congressman John Murtha when discussing the NEJM article describing 350,000 OEF-OIF soldiers with mental health problems:

“If you cannot control their pain, you will never be able to help them with their PTSD and depression”

Transition to Community Care:



Goals of presentation

1) Understand the challenges we face

- ❑ Aging veteran population from Vietnam era
 - ❑ **Chronic pain syndromes from war wounds and physical strain**
 - ❑ DJD spine and joints
 - ❑ causalgia after major nerve injury
 - ❑ **Co-morbidities:** PTSD, depression, substance abuse
 - ❑ **Pain-causing degenerative diseases associated with aging**
 - ❑ Arthritis, diabetic neuropathy, post-herpetic neuralgia
 - ❑ Cancer
- ❑ OEF-OIF “Tsunami” of:
 - ❑ **Severely injured survivors with polytrauma pain, TBI, PTSD**
 - ❑ **Common pain disorders (e.g., low back pain, HA) with emotional trauma**

2) Review health system changes needed to meet these challenges

3) Discuss the Pain Medicine and Primary Care Community Rehabilitation Model, and the implementation of VA’s Stepped Care Program for Pain Management

The Beginning: Battlefield trauma



Courtesy of C. Buckenmaier, MD

THE END

CRPS in artist: Injury Vietnam



Pain Hurts

Courtesy of N. Wiedemer, CRNP

What is pain?



Pain affects the whole person



Established (by research) effects of chronic pain

- **Quality of life**
 - **Physical functioning**
 - **Ability to perform activities of daily living (ADLs)**
 - **Work**
- **Social consequences**
 - **Marital/family relations**
 - **Intimacy/sexual activity**
 - **Social role and friendships**
- **Societal consequences**
 - **Health care costs**
 - **Disability**
 - **Lost workdays**
 - **Business failures**
 - **Higher taxes**
- **Psychological / CNS morbidity**
 - **Fear, anger, suffering**
 - **Sleep disorders**
 - **Loss of self-esteem**
- **Medical comorbidities & consequences**
 - **Accidents**
 - **Medication effects**
 - **Immune function**
 - **Clinical depression**
 - **Neuroplasticity to pain disease**

Mismanaged chronic pain is often a personal, biopsychosocial catastrophe! ...and is a huge public health problem.

Challenges: OEF/OIF Veteran Cohort

VA geared to managing chronic pain diseases and co-morbidities in the Vietnam cohort:

- Consequences of old wounds, both physical and psychological, and lack of early treatment (secondary prevention)
 - Limb injuries and causalgia (CRPS 2)
 - Spine injuries
 - PTSD, Substance abuse
 - Secondary morbidities: obesity, depression, joblessness, inactivity
- Diseases and conditions of aging (tertiary prevention)
 - Diabetic neuropathy, post-herpetic neuralgia
 - Osteoarthritis, spinal stenosis
 - Cancer and its treatments (radiation, chemo)

TYPICAL CASES: Not polytrauma

John: 26 y/o tank commander, HS graduate and divorced father of a 1 y/o daughter living in midwest, combat exposed and losses

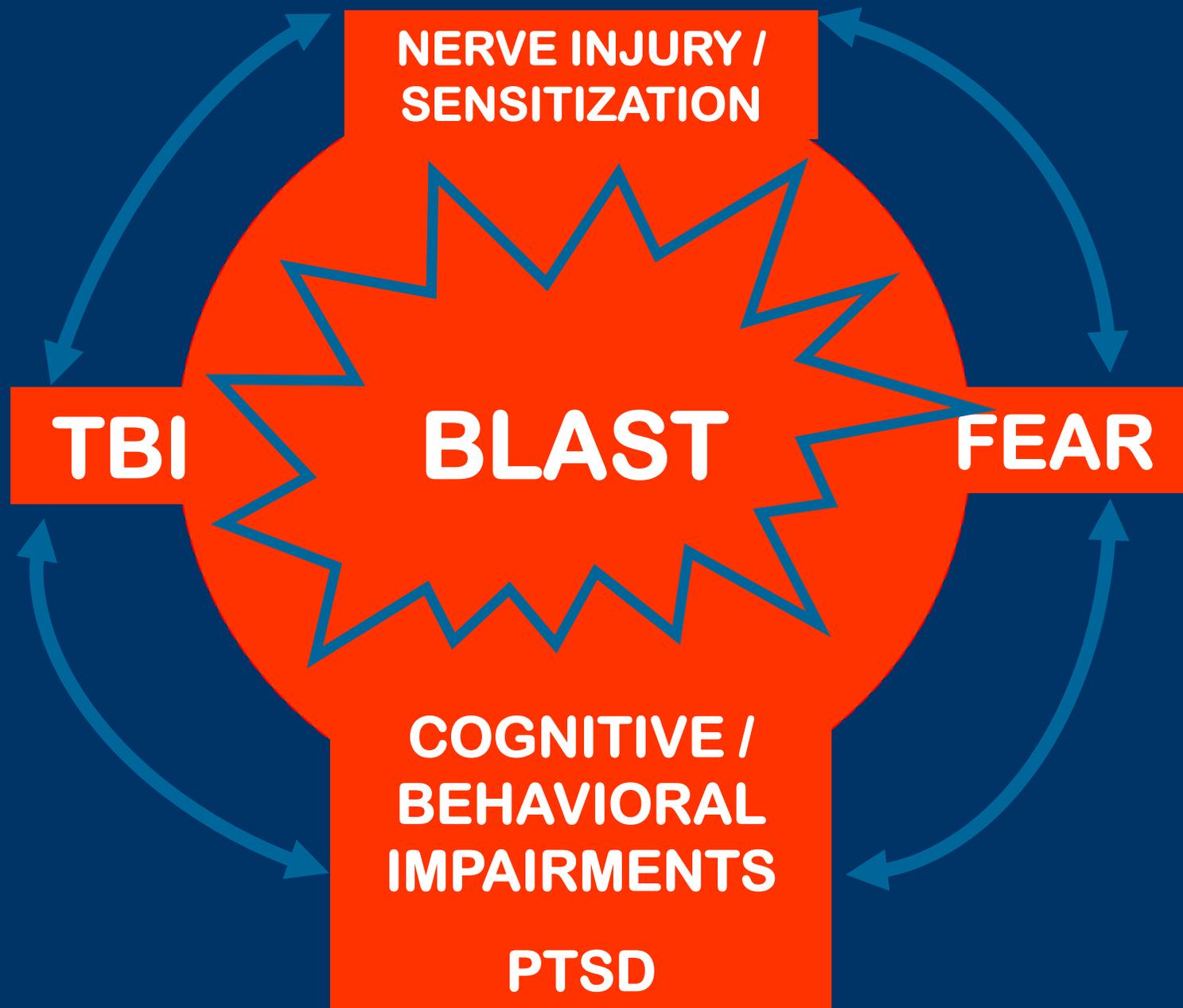
- Myofascial / nociceptive LBP:
 - Negative MRIs, muscle spasm
 - Deconditioned and obese
 - Poor biomechanics, restricted ROM
- Became father in Iraq, divorced on return.
 - Isolated from daughter
- Mild secondary depression and mild anniversary PTSD.
 - No motivation
 - No goals
 - Hanging out

TYPICAL CASE: Not polytrauma

John: 26 y/o tank commander, HS graduate and divorced father of a 1 y/o daughter living in midwest, combat exposed and losses

- Myofascial / nociceptive LBP:
 - Deconditioned and obese: *wt control, graduated exercise*
 - Poor biomechanics, ROM: *stretching, pain school*
 - No pain control: *meds (NSAIDS, tramadol >> hydrocodone), icing, stretching*
 - Became father in Iraq, divorced on return.
 - Isolated from daughter: *problem solving*
 - Mild secondary depression and mild anniversary PTSD.
 - No motivation or goals: *discussed skills in Army (computers and technology) and aptitudes in school (mathematics)*
 - Hanging out: *job and school planning*
- 1 year outcome: Community College; work PT; anniversary reaction; wt loss; girlfriend; reliant on vicodin; ROM restricted.**

A New Challenge with an uncertain pathophysiology and course



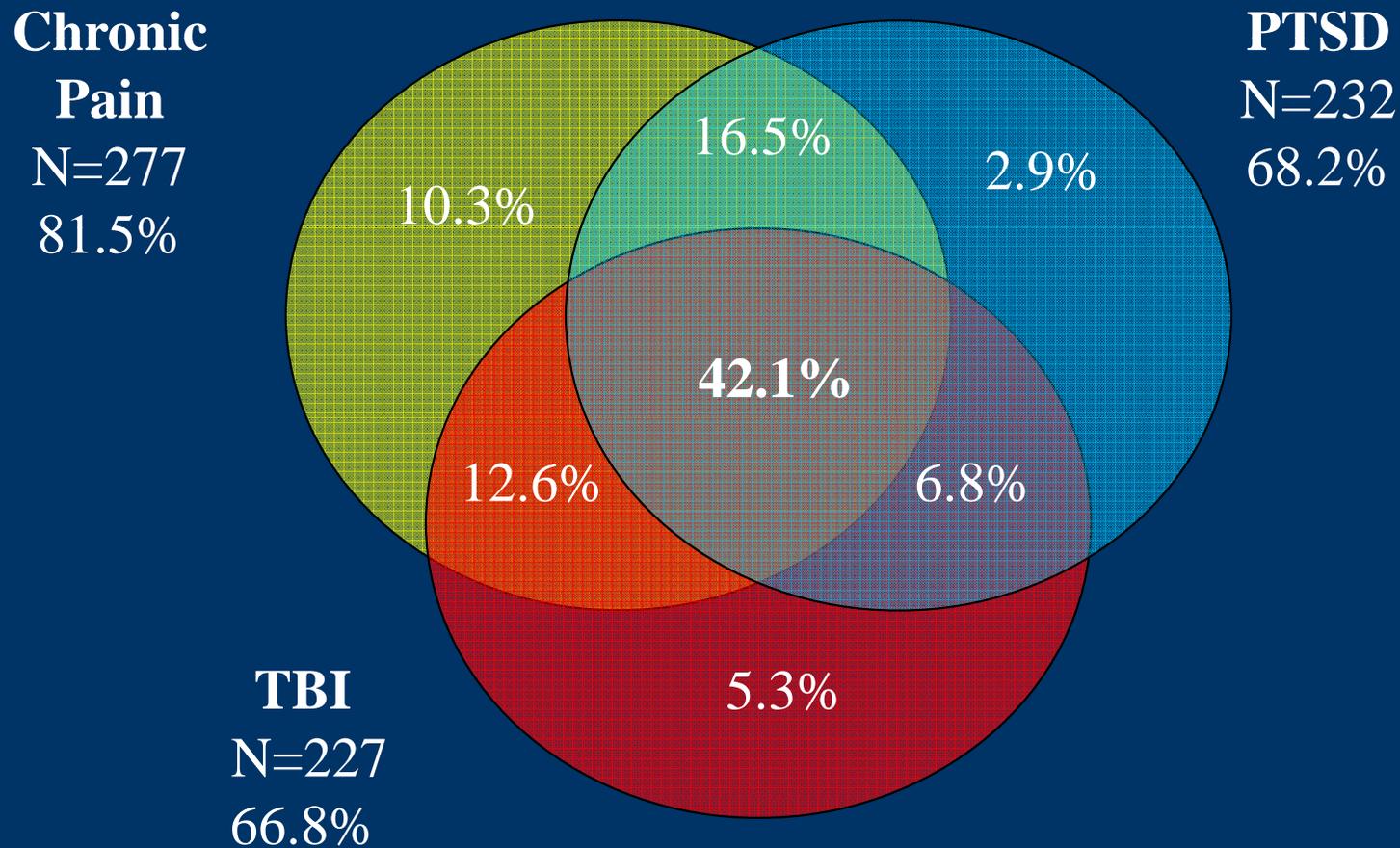
Challenges, OEF/OIF Veteran Cohort

VA and health system not accustomed to treating survivors (90%) of massive wounds from blast injuries.

- head injuries causing cognitive / emotional / sensory disturbances besides pain & HA
- disfigurement and social stigma
- cognitive and psychological damage
- neuropsychiatric impairments
- multiple pain generators / mechanisms:
neuropathic, nociceptive, sensitization, psychosocial, neuroremodeling, etc

Soldiers require rehabilitation from polytrauma.

Prevalence of Chronic Pain, PTSD and TBI in a sample of 340 OEF/OIF veterans



POLYTRAUMA CASE

- **Michael, 25 y/o decorated combat veteran, married, one son:**
 - MVA multiple R leg fractures 2001
 - MVA 2002
 - blast injury 2003 with shoulder dislocation, cervical injury, brachial plexus injury
 - Residual:
 - TBI with HA, cognitive impairments, seizure disorder
 - CRPS II R leg
 - back and neck pain
 - PTSD, depression
 - Family stress

Polytrauma - Michael

- **Engagement and structure:** Immediate “ownership”
 - Accept severity and responsibility
 - Eliminate denial of lives threatened
 - “We’re on your side and here for you”
 - Biopsychosocial assessment: pain generators / activators; emotional / behavioral factors; neurological / cognitive factors
 - Tolerate aberrant behavior to stay engaged and solve problems
 - Family meetings
 - Coordinated care with polytrauma team and community MD
- **Structure:** regular weekly meetings and crisis intervention PRN.
- **Family management**
- **Team approach**

“ It is not the strongest of the species that survive, nor the most intelligent, but the ones most responsive to change ”

Charles Darwin

How do you deliver clinical care to a population of patients with chronic pain that is driven by performance based, biopsychosocial outcomes?

Understand the causal models of pain disease

- the mechanisms underlying these models
- the biopsychosocial formulation for each disease
- the evidence basis for treatment of each disease population

Develop chronic disease management programs:

- address salient biopsychosocial factors for each disease population (e.g., CRPS, LBP, HA)
- guide the formulation of each patient's chronic pain
- develop goal-oriented management plans for patients
- train a competent health care workforce

ANS activation < Stress < Pain

**BRAIN
PROCESSING**

Nerve
injury

Ectopic
discharge

C fiber
Abeta fiber

Ectopic
discharge

Limb
trauma

Phenotypical
Changes

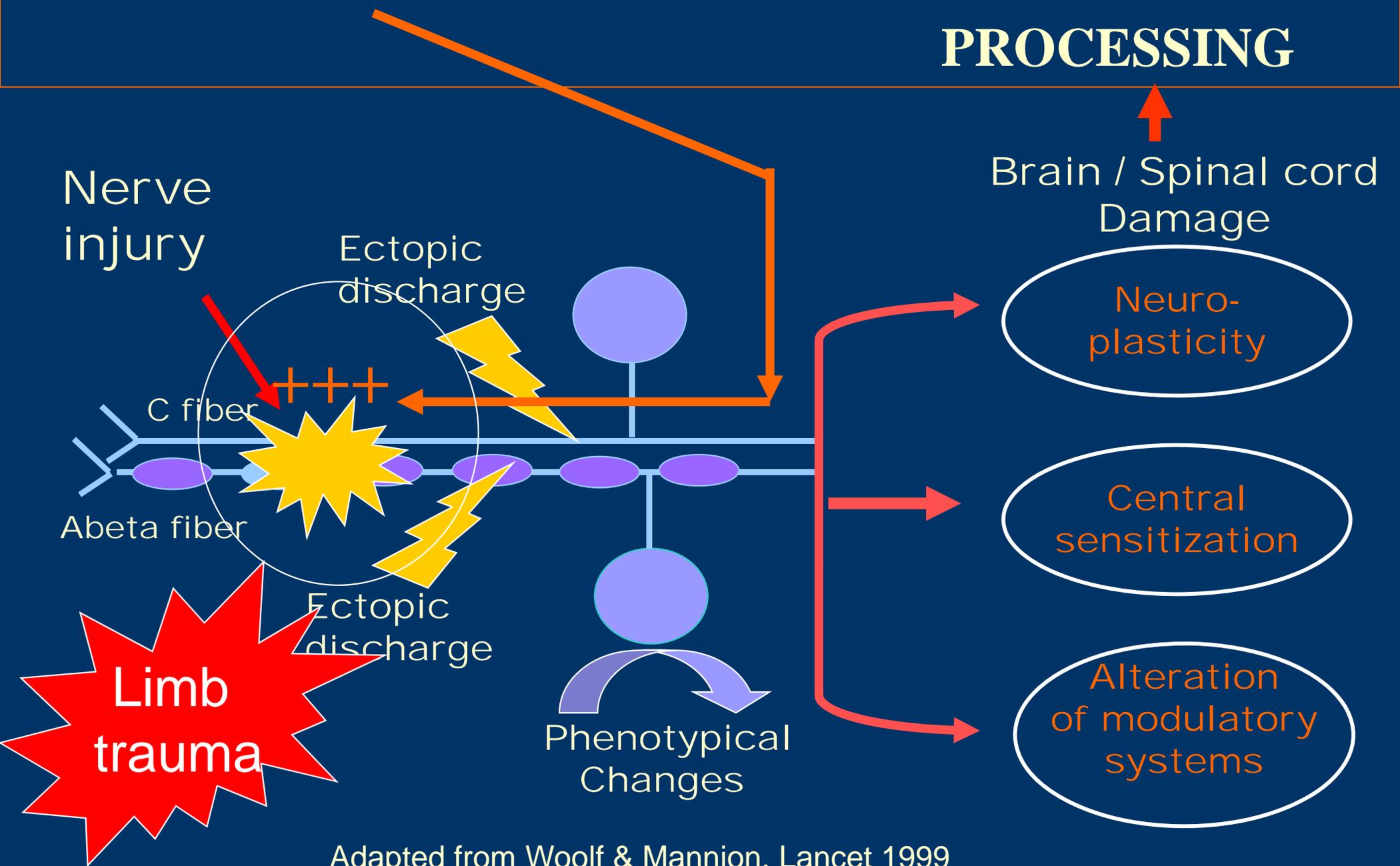
Brain / Spinal cord
Damage

Neuro-
plasticity

Central
sensitization

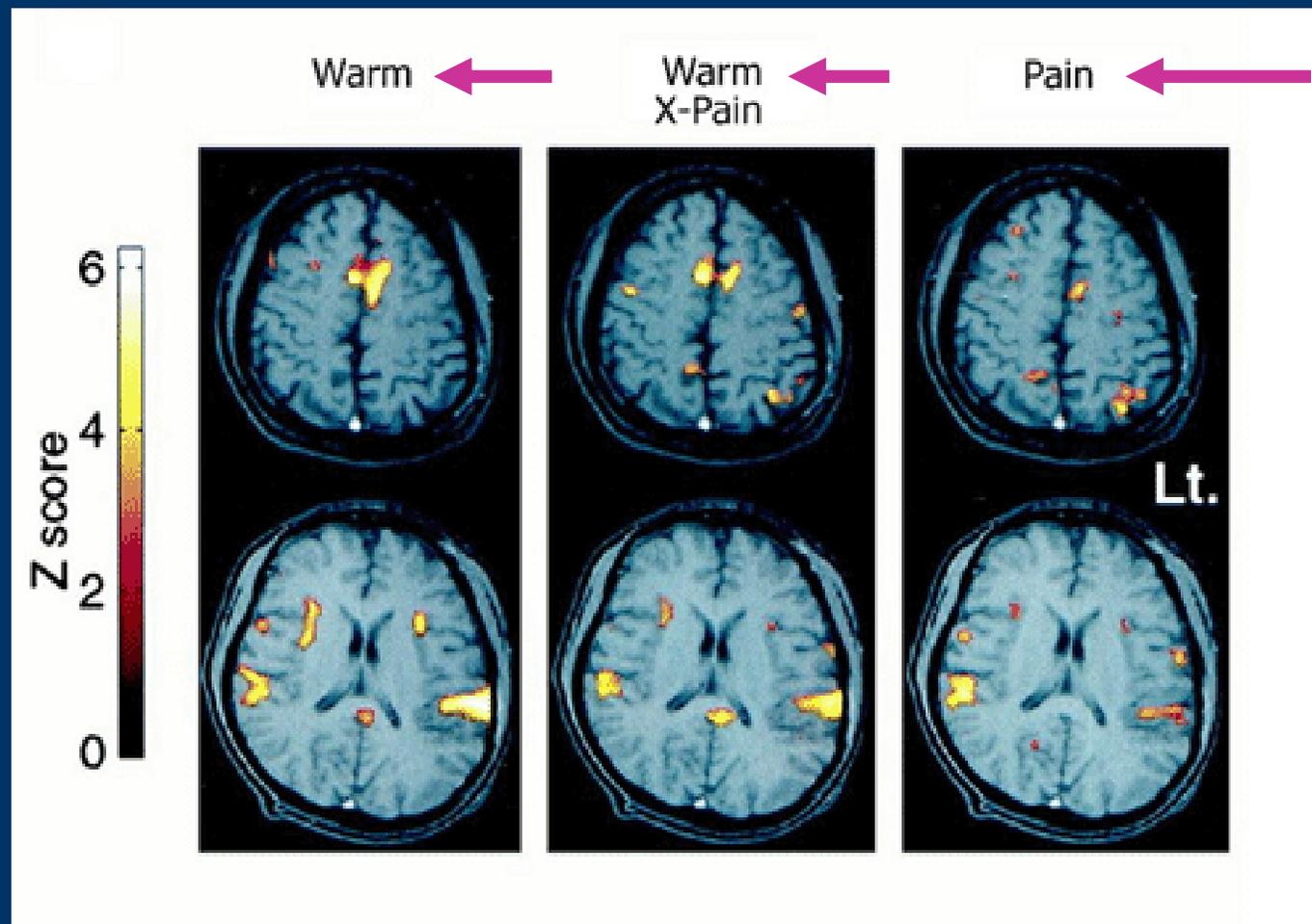
Alteration
of modulatory
systems

Adapted from Woolf & Mannion, Lancet 1999
Attal & Bouhassira, Acta Neurol Scand 1999



Can we measure the impact of experience?

Pain is conditionable: Expectation of Pain Activates the Anterior Cingulate Gyrus

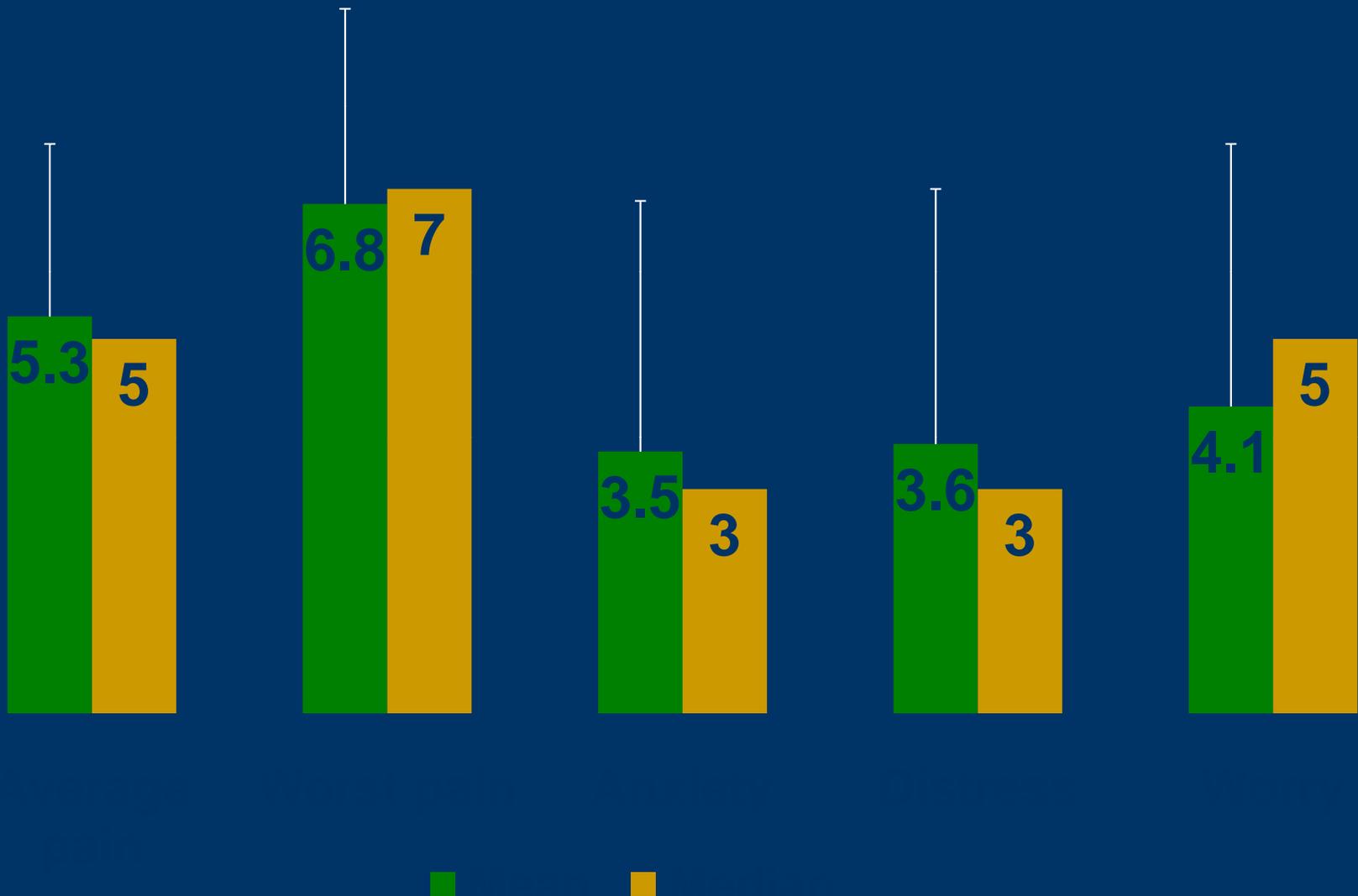




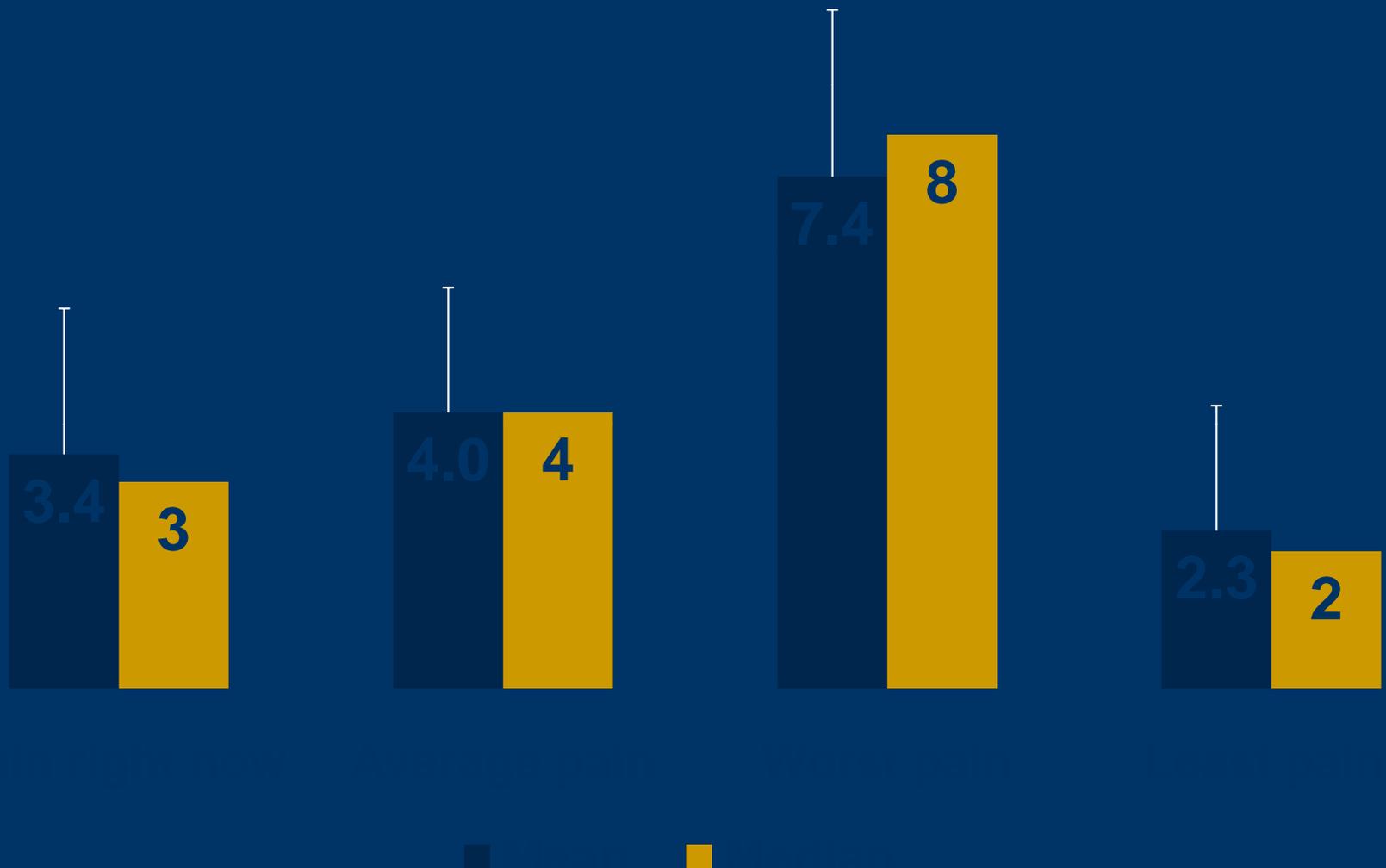
Sample Characteristics

- **Participants were:**
 - Average age 25 yrs \pm 5 (range 19 to 43)
 - Male (99.1%)
 - Predominantly Caucasian (80%)
 - Injured from improvised explosive devices (60%) and gunshot (21.8%)
- **93% were hospitalized at LRMC < 8 days**
- **Results for all outcomes were also presented**
 - Quantitative data: Poster 4267
 - Qualitative data: Poster 4293

Pain and Emotional Outcomes During Transport



Pain Intensity Levels at LRMC



Beginning to End: The Chronic Pain Cycle

Pathology:

- Muscle atrophy, weakness;
- Bone loss;
- Immunocompromise
- Depression

Pathophysiology of Maintenance:

- Radiculopathy
- Neuroma traction
- Myofascial sensitization
- Brain, SC pathology (atrophy, reorganization)

Psychopathology of maintenance:

- Encoded anxiety dysregulation
 - PTSD
- Emotional allodynia
- Mood disorder

Acute injury and pain

Central Sensitization

Neurogenic Inflammation:

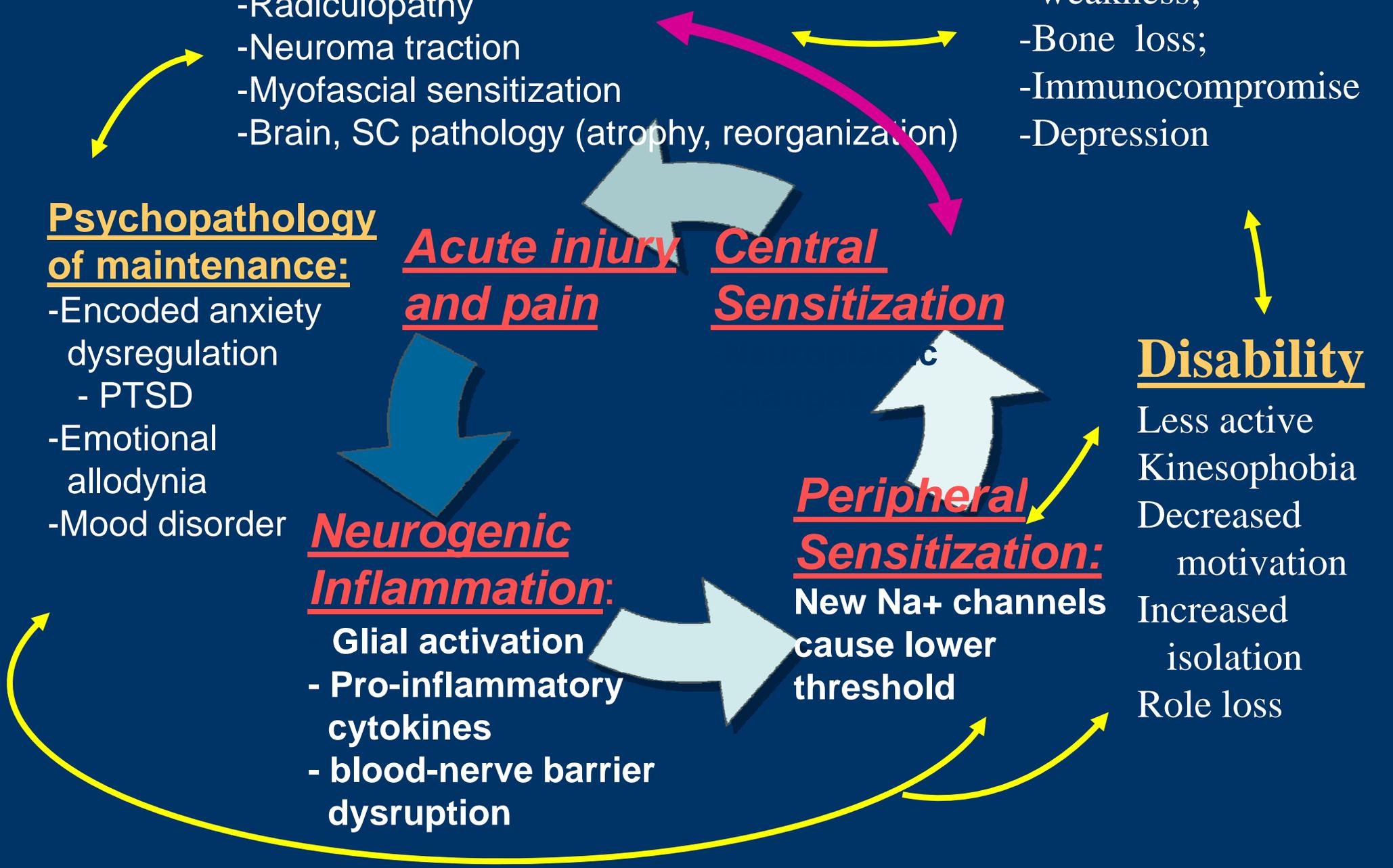
- Glial activation
- Pro-inflammatory cytokines
- blood-nerve barrier disruption

Peripheral Sensitization:

New Na⁺ channels cause lower threshold

Disability

Less active
Kinesophobia
Decreased motivation
Increased isolation
Role loss



MANAGEMENT PRINCIPLES : Summary

Primary prevention

- Avoid or minimize injuries and diseases causing pain

Secondary prevention

- rapidly prevent or minimize:
 - * *nociception*
 - * *neural activation of pain pathways*
- rapidly restore and maintain:
 - * *meaningful function*
 - * *quality of life*

Gallagher R, Polomano R. Early, continuous and restorative pain management in injured soldiers: The challenge ahead. Pain Med;7(4):284-284

Secondary prevention: Blocking The Stimulus To Prevent Central Sensitization



Stojadinovic et al, *Pain Medicine* 2006;7(4):330-338



NO PAIN!



THE END: A 21th century pain image

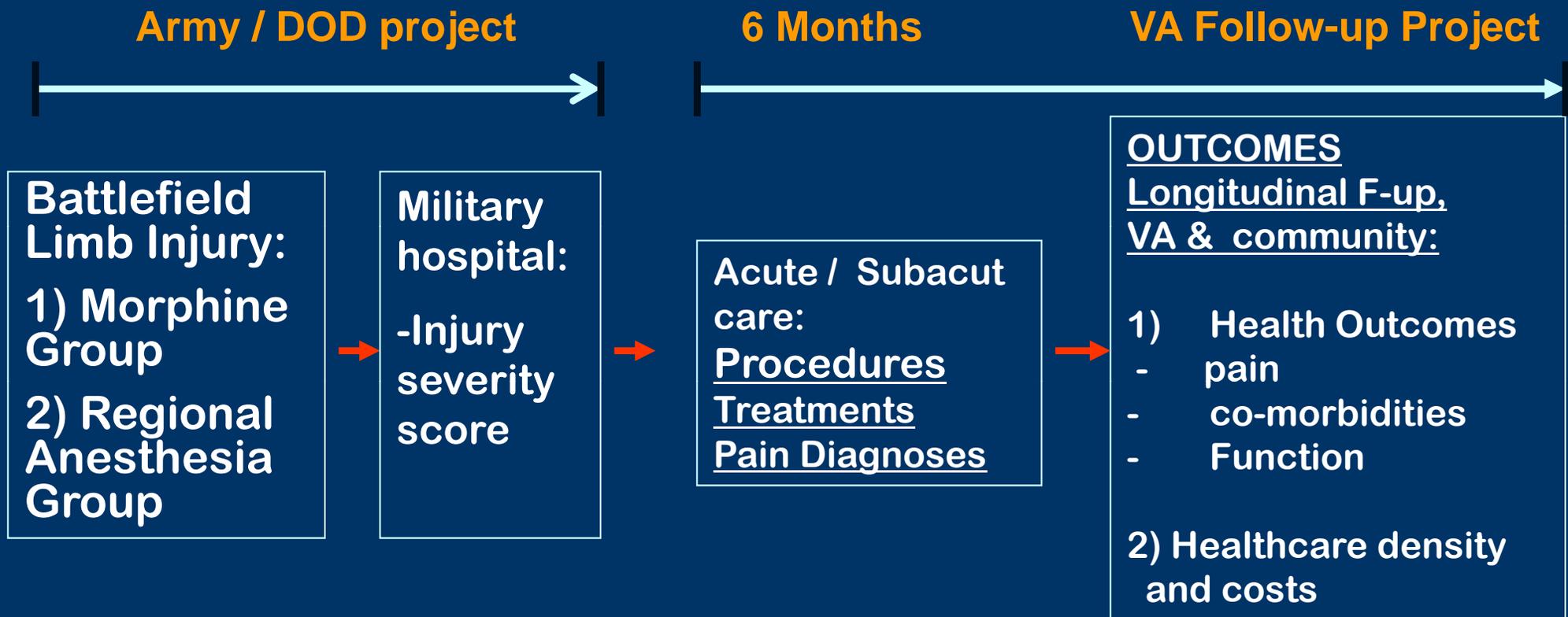
No CRPS in our soldier: Injury Iraq

HAPPY CAMPERS !!



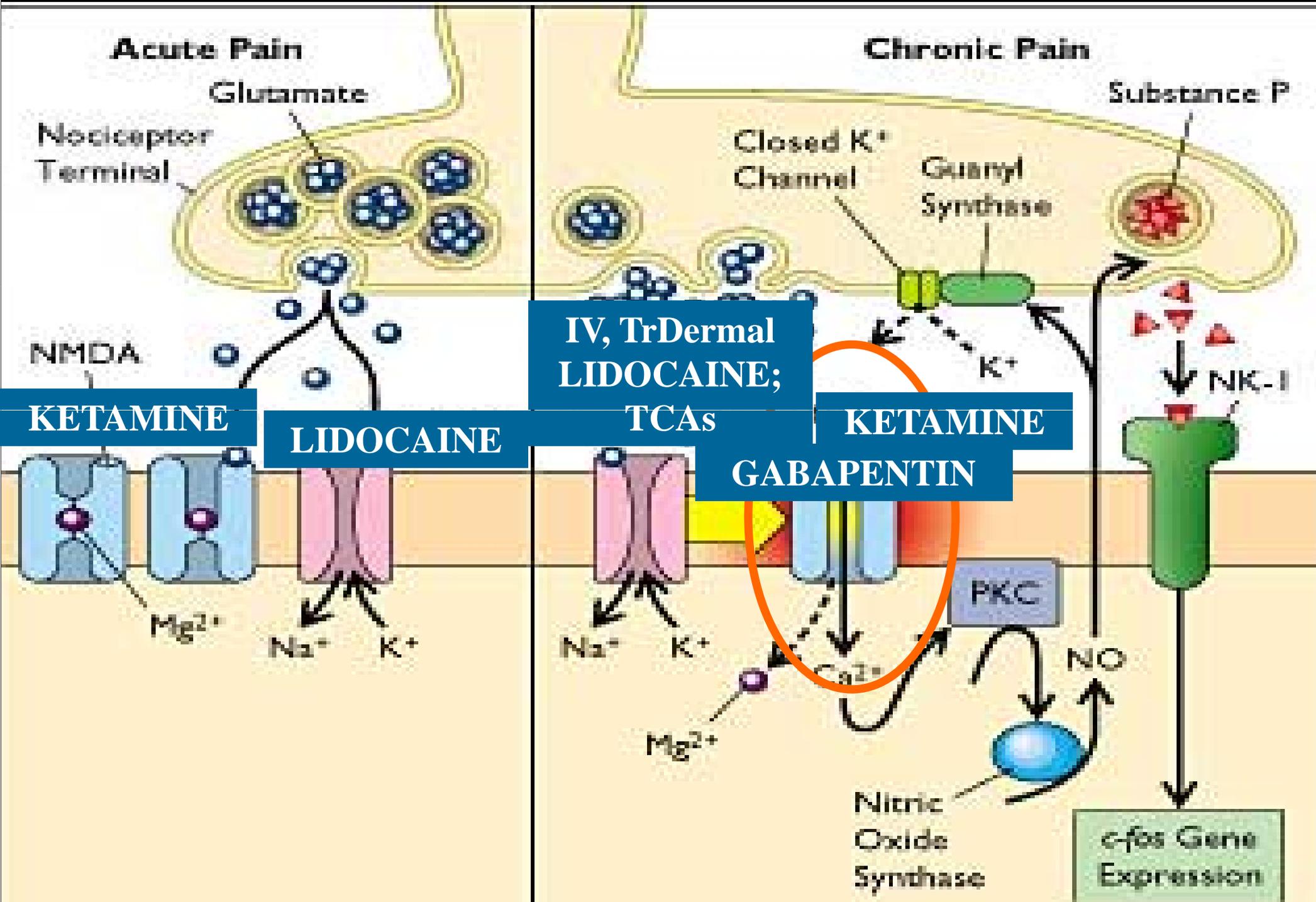
Novel treatment of pain on the battlefield: A case-controlled study of longitudinal outcomes

PHILILADELPHIA VA / U PENN (Gallagher, Polomano, Oslin, Farrar, Guo)
WRAMC (Buckenmaier, Stojadonovic)
BAMC (McGhee)



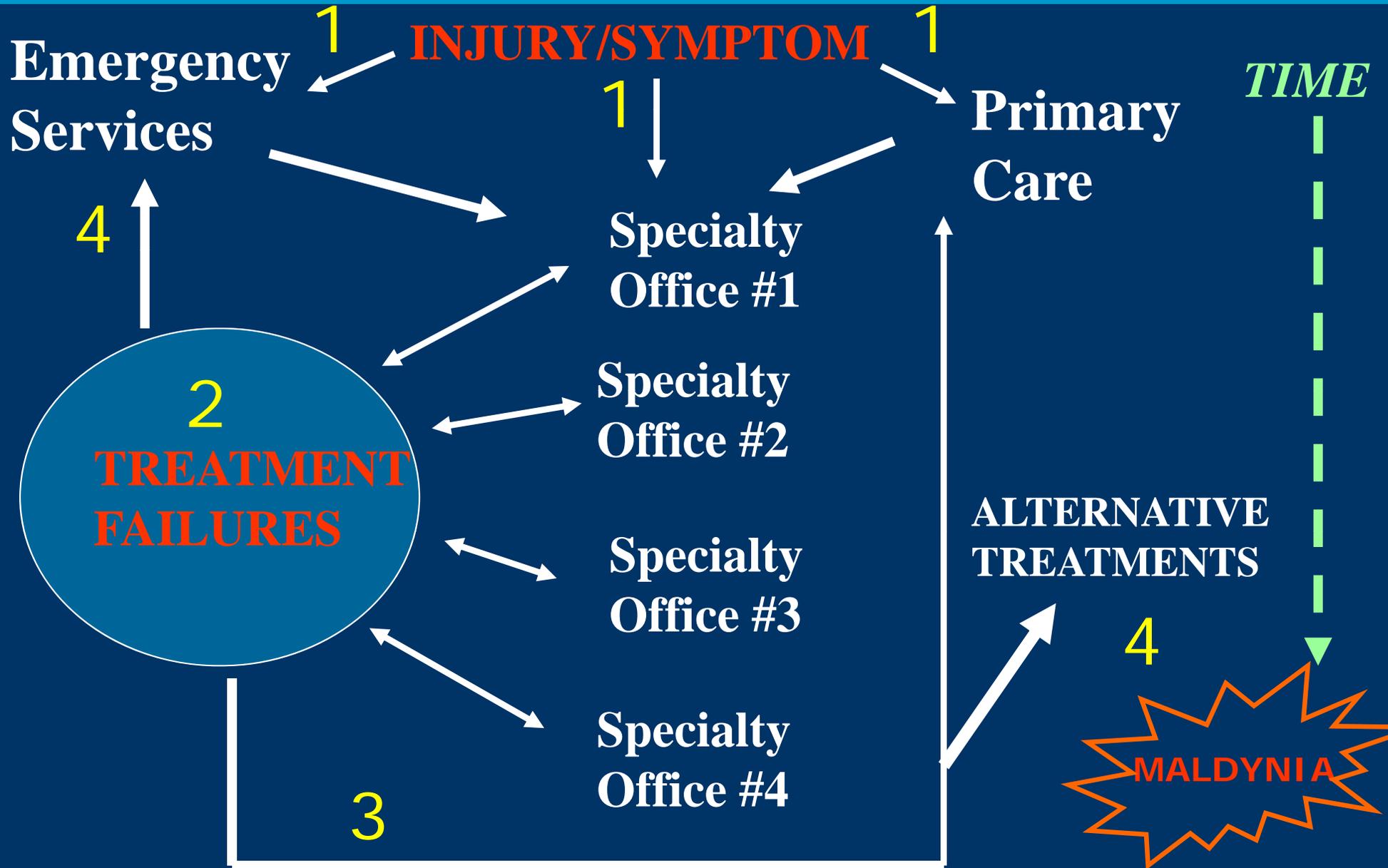
Gallagher, Polomano. Early, Continuous, and Restorative Pain Management in Injured Soldiers: The Challenge Ahead. *Pain Med* 2006;7(4):284-286

Prevent and Treat Central Sensitization



The tertiary, sequential care model

DOES NOT WORK FOR PATIENTS OR POPULATIONS



DOES NOT WORK FOR PATIENTS OR POPULATIONS

The managed primary care model



CHRONIC PAIN TREATMENT IN MANAGED CARE

WHEN IN DOUBT, PRESCRIBE!!



"I medicate first and ask questions later."

Managing **PAIN** in Primary Care: Issues and Challenges



*JCAHO & VHA
Mandate to
Manage pain*

*Policies
Guidelines
Expectations*

Brief Visits

*Complicated
Patients*

*Variable pain
medicine
consultation*

*Clinical
Reminders*

*Resources
not meeting
demand*

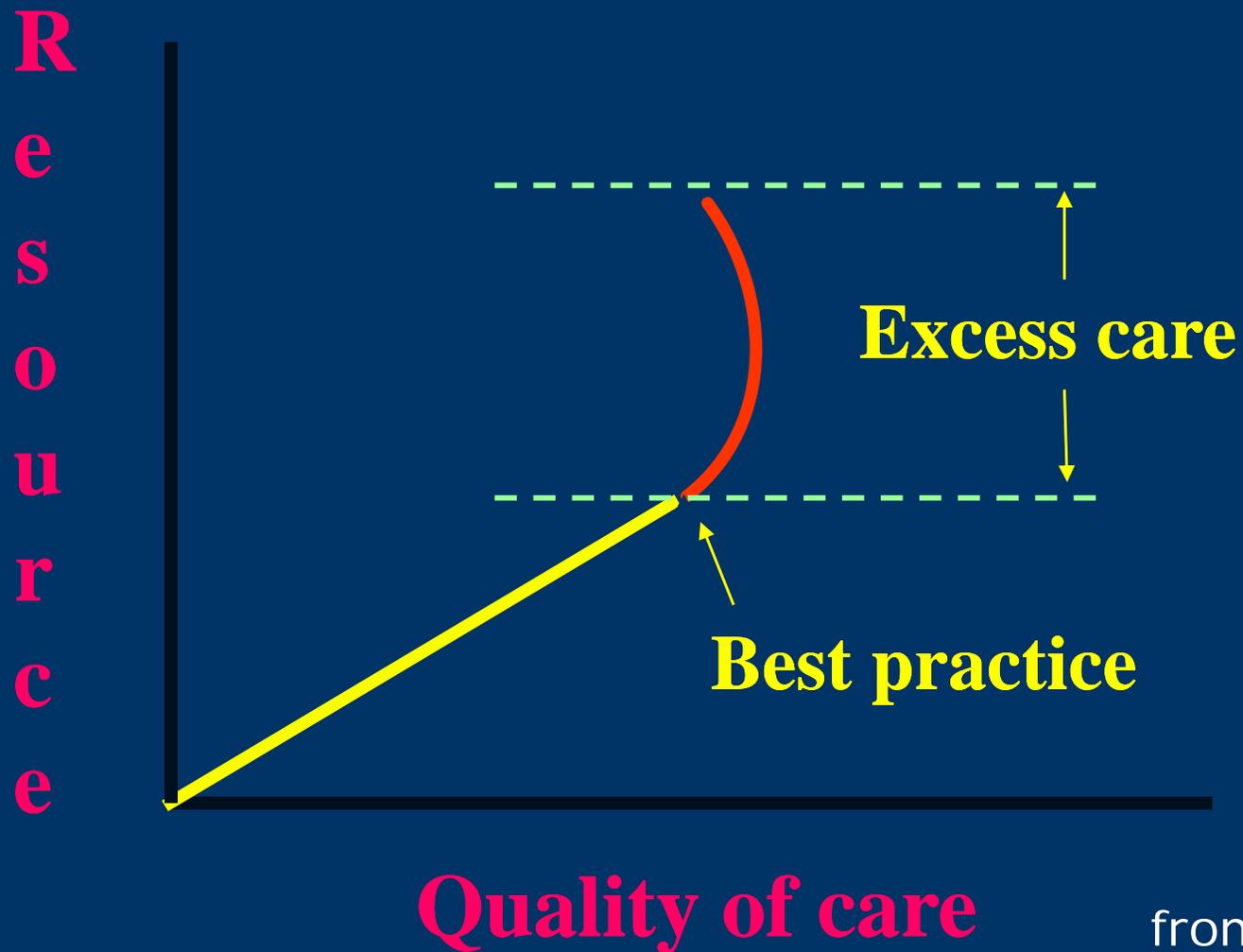
TYPICAL CASE, 2004

Merideth: 35 y/o woman with LBP treated for 6 months by 4 specialty services at VA before being sent to pain medicine service.

In that 6 months:

- Illegally fired from middle management job due to pain-related physical impairments and distress
- Secondary untreated depression
- Sexual dysfunction
- Marital and family stress leading to divorce

Cost vs Quality



from W. Brose

How do we deliver clinical care driven by performance based, biopsychosocial outcomes?

Organize health care services and train a competent workforce to:

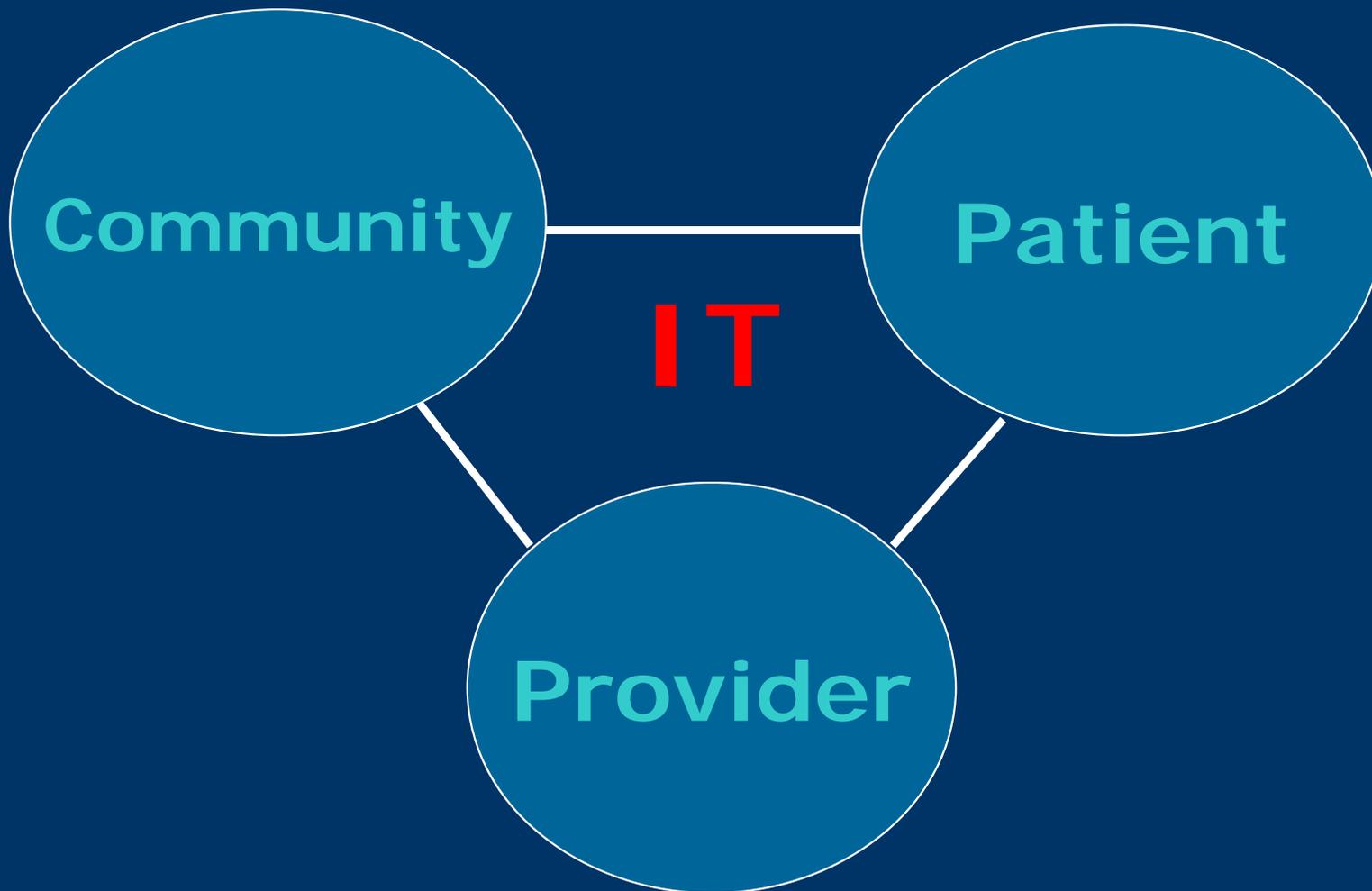
- 1) Apply evidence-based treatment approaches at a level appropriate to clinical setting (injury mgmt, primary care, pain medicine).
- 2) Apply chronic disease management principles in a community setting by utilizing clinical skills cost effectively in a performance based, integrated treatment network that:
 - Reduces risk for complications and chronicity
 - Relies on a sustainable patient /provider / community network of support and responsibility

The pain medicine and primary care community rehabilitation model

- **A model for pain management that is based on four core principles:**
 - 1) an educated patient and community empowered to participate in care
 - 2) a health care workforce trained to provide competent, timely effective care at level of need (primary care with access to pain medicine specialty care)
 - 3) outcomes focus: quality of care, true costs (human capital model)
 - 4) shared responsibility for outcomes: payer, patient, provider

A solution to fragmented pain treatment:

Use Information Technology (IT) and
Communication Networks to Activate the Power of the
“Social Brain”



ORGANIZATIONAL CHALLENGES

- 1) Find Cases
- 2) Identify Those At Risk
- 3) Prioritize Treatment
- 4) Engage Patient Emotionally At Their Level Of Tolerance
- 5) Immediately Intervene At Level Of Need
- 6) Restore Function And Personal Networks

Continuity and Stepped Care, VHA

Electronic transfer of information from military to VA

VA screening to identify risk level and needs

Minimal risk

Moderate to severe risk

Routine Scheduling

Primary care visit

Primary Care Stepped Programs:
- pain school
- pain coping skills (CBT) groups,
- opioid renewal clinic

Immediate engagement and intervention
Core primary care pain management team: PCP, behavioral medicine, mental health, social work

Pain medicine specialty treatment

Pain medicine clinic consultation

Mental Health Specialty Programs

POLYTRAUMA

Restoration of:

pain control; community network; physical and psychosocial function

PRIORITY WHEN LEAVING THE MILITARY HEALTH CARE SYSTEM

CASE FINDING:

Screening – high sensitivity for identifying threats to successful societal re-entry:

- **uncontrolled pain**
- emotional distress
- interpersonal stress
- physical impairments
- traumatic brain injury and sensory/motor/cognitive impairments /behavioral impairments
- occupational dislocation or uncertainty

When Leaving The Military Health Care System For The VA

CASE FINDING:

Rapid Diagnosis – high specificity for:

- Cognitive impairments – puts premium on physical examination for pain
- Pain differential:
 - Pain generators: tissues activating nociception
 - Pain mechanisms: neural, visceral, nociceptive, myofascial
 - Pain-related functional impairments
- Anxiety / PTSD
- Depression
- Substance abuse
- Family functioning
- Occupational functioning

Evidence-based Continuum of Care

(Gallagher, AAPM 2008)

Relative proportion of pain care, by setting

Tertiary care: PM Subspecialties

- Neuroremodeling
- Gene therapies
- Neurostimulation
- Rehabilitation Centers

Secondary care: Pain Medicine

- Biopsychosocial assessment
 - ** pain generators, mechanisms
 - ** perpetuating factors
 - - - peripheral, CNS, psychosocial
- Biopsychosocial Formulation
- Goal-oriented plan

Primary care

- Mech. Based Drug Algorithms
- Stepped Behavioral Care
- Physical Therapy
- Office procedures

Self-care

- meditation
- exercise
- web-training
- social modeling
- social supports

**PAIN
MEDICINE**
-Practice
-Training
-Research

Tertiary Care
Subspecialty, tertiary prevention

Secondary Care
Specialty, Subspecialty, Secondary / tertiary prevention

Primary Care
Specialty, Primary / secondary prevention

Self Care, Community Care
*Primary/secondary Prevention
Disease Management*

POPULATION OF PATIENTS IN PAIN

Save The Date: Sept 21-25



Evolving Paradigms II

National VA/DoD OEF/OIF Conference, The Las Vegas Hilton Hotel, Las Vegas, Nevada

Attendees: VA and DoD health care professionals, administrators, and staff that provide care and services for the OEF/OIF service members and Veterans.

Conference will offer:

- Patient-centric focused agenda
- Interactive, multi-disciplinary, issue-driven breakout sessions
- National VA and DoD presenters
- Case studies
- Educational, Interactive Exhibits (VA, DoD, VSOs, and community organizations)
- Poster Session

***Small disciplinary / program office specific mini- conferences – by invitation from sponsoring group**

Pain faculty from DoD: Chester Buckenmaier, Scott Griffiths, Christopher Maani, Jeffrey Barr, Geselle McKnight