Rational Polypharmacy:

Transition from Acute to Chronic Pain with / without Comorbidities

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Pain In Our Wounded Warriors (2002-2007)

- **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***
  - ***37% have mental health disorders***

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

Gironda, R. J., Clark, M. E., Massengale, J., & Walker, R. L.

Pain among Veterans of Operations Enduring Freedom and Iraqi Freedom.

***Pain Medicine 2006, 7,* 339-343.**

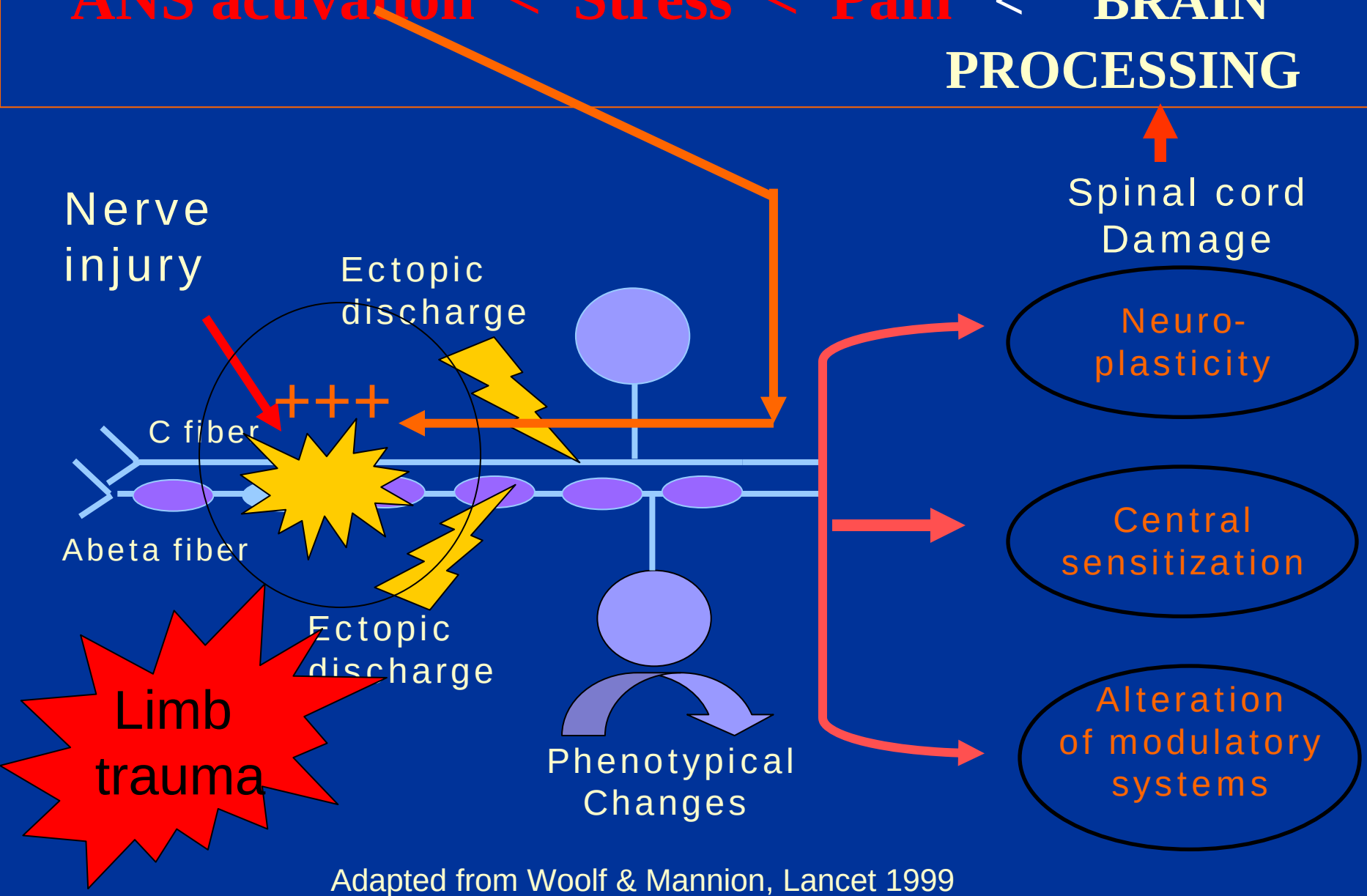
The Burden of Chronic Pain Conditions and Diseases

- Causes
  - lack of societal & medical knowledge about chronic pain diseases and conditions
    - phenomenology and pathophysiology of chronic pain diseases
    - primary prevention
    - secondary prevention
    - treatment
  - education and training deficits
  - social inequities in access to care
  - organizational models of care

THE BEGINNING: The injury

Courtesy of C. Buckenmaier, MD

ANS activation < Stress < Pain < BRAIN PROCESSING



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

THE CONSEQUENCE

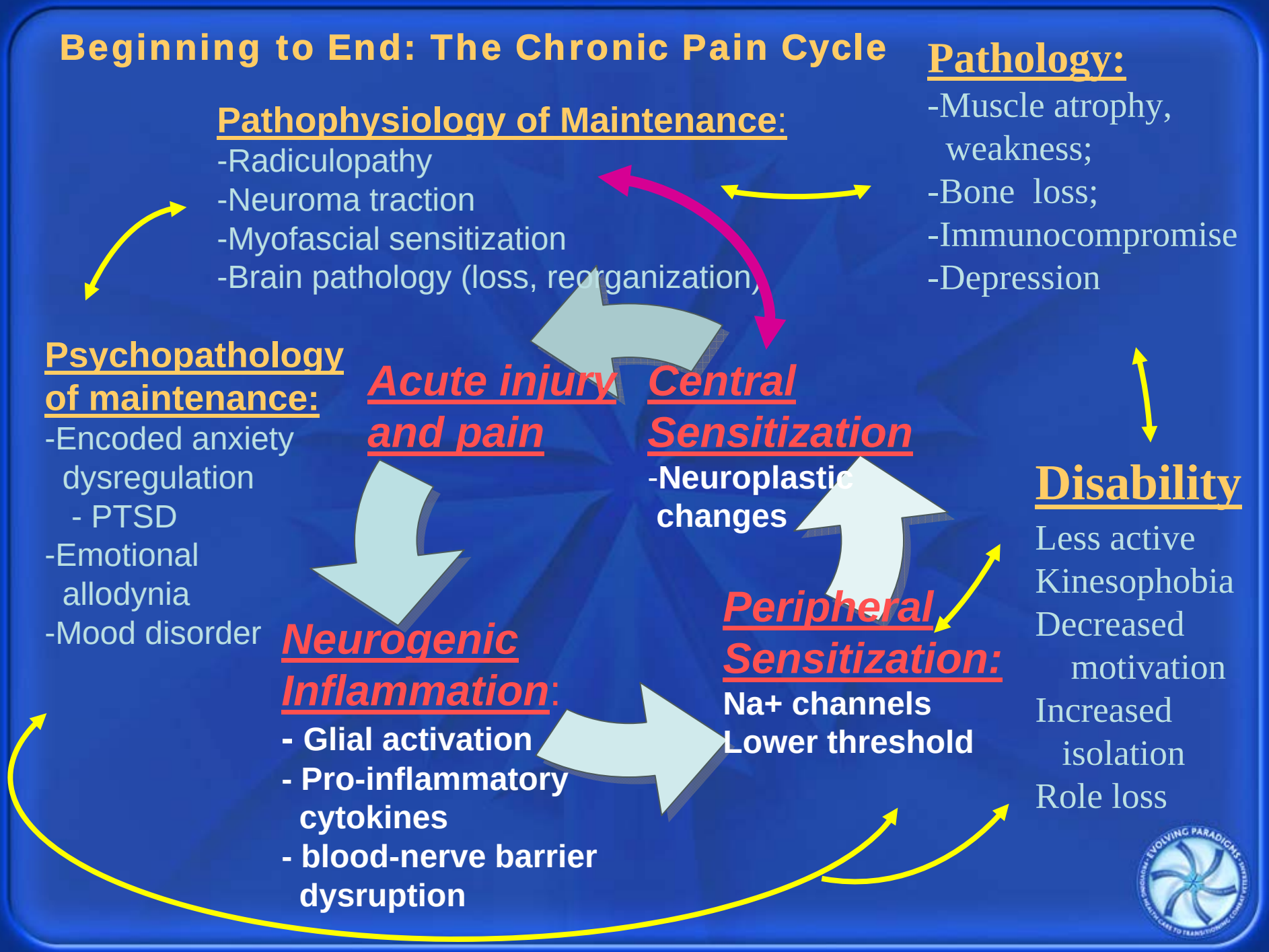
CRPS in artist: Injury Vietnam

Courtesy of N. Wiedemer, CRNP

THE CONSEQUENCE

PAIN AFFECTS THE WHOLE PERSON

Beginning to End: The Chronic Pain Cycle



Public Health Challenge: Secondary Prevention

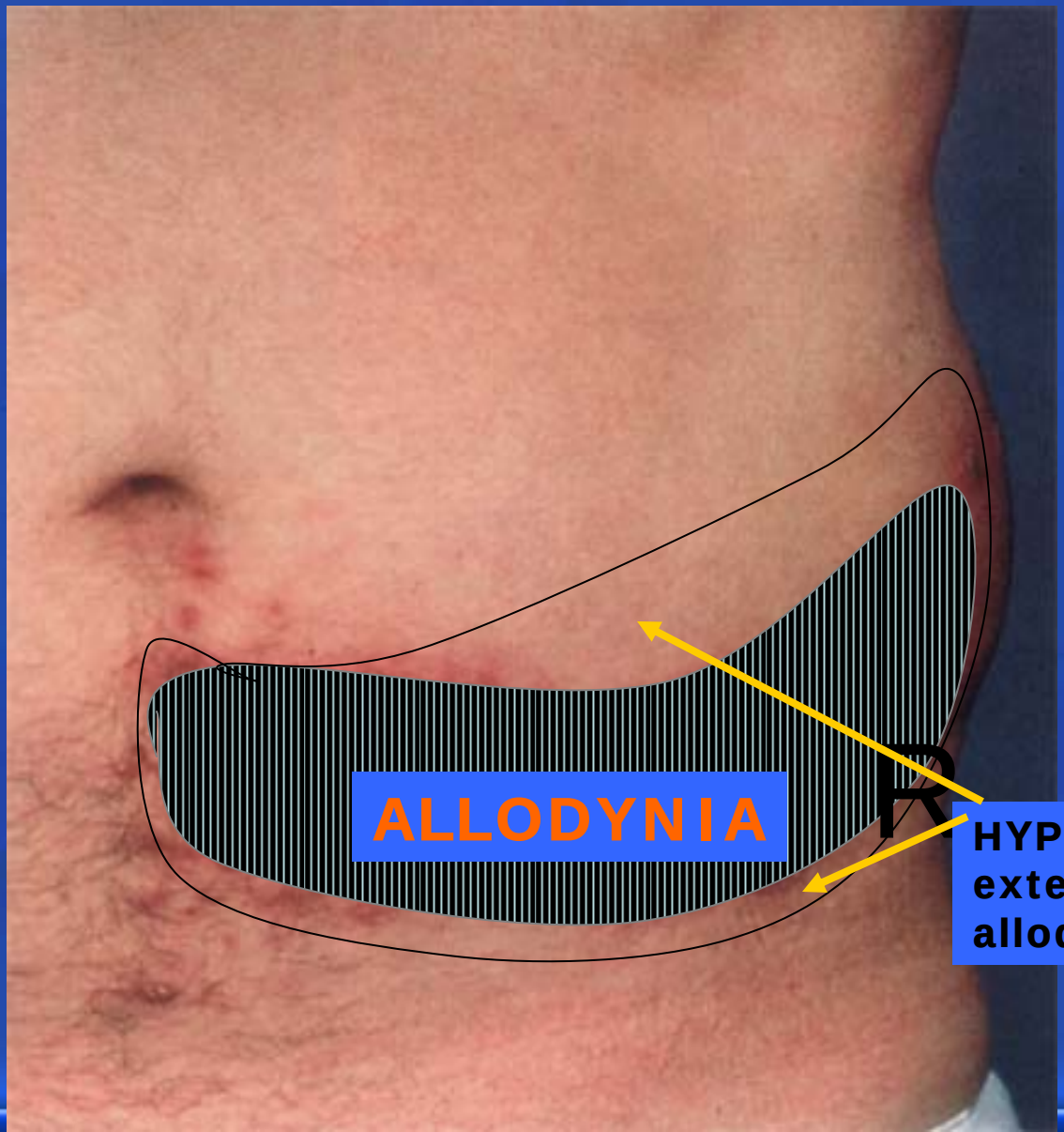
How do we prevent injuries from causing chronic pain and its consequences?

Diseases >> nerve damage >>

>> spinal cord damage >> prolonged pain>> distress >>> brain damage>>

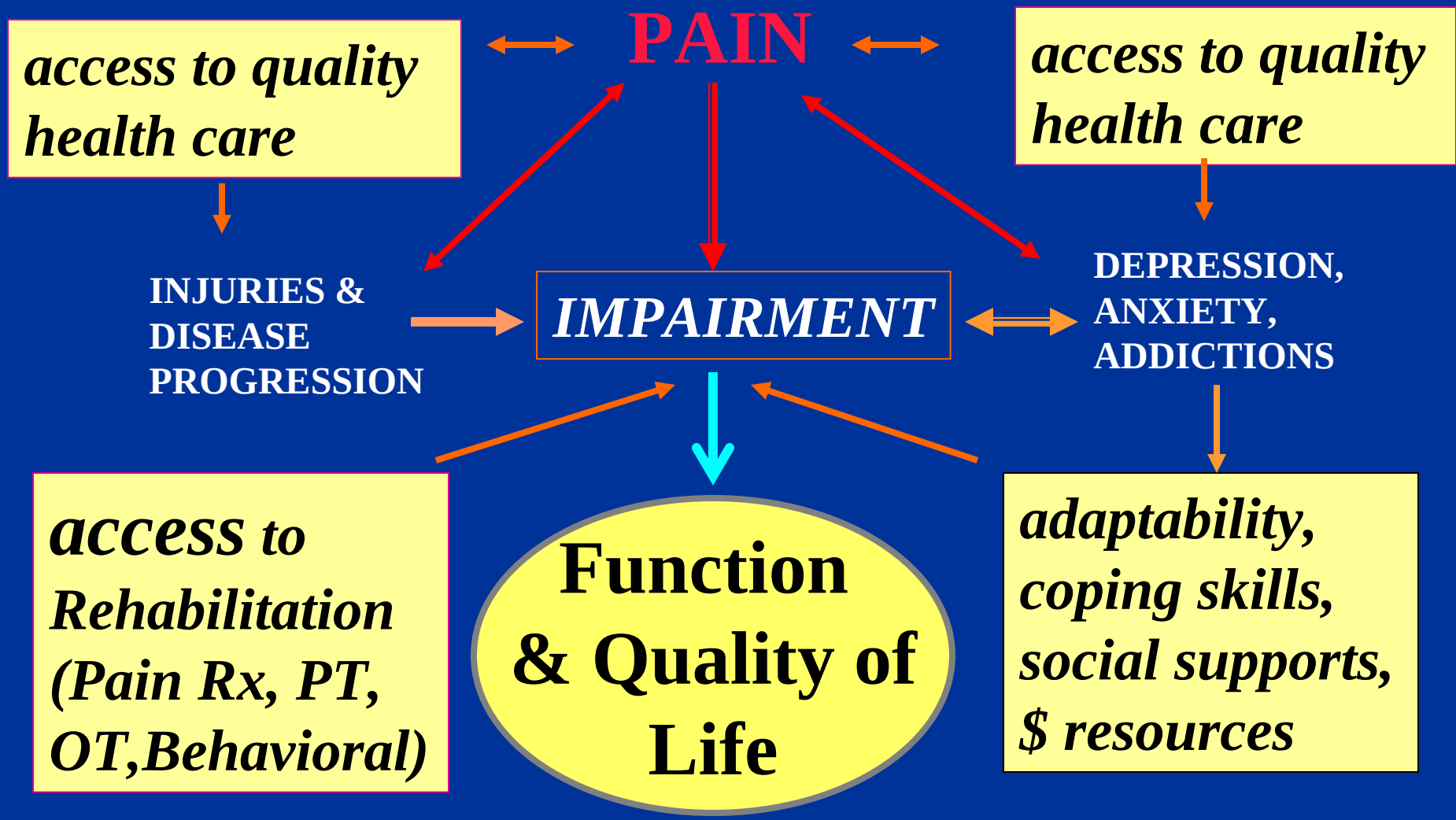
>> chronic pain disease, PTSD >> fear, distress >> immune dysfunction >>> new disease

Herpes Zoster and post-herpetic neuralgia (Shingles)



Factors Determining Outcomes in Chronic Pain

Gallagher and Verma, *Sem Clin Neurosurg, 2004*



Specific Challenges: OEF/OIF Veteran Cohort

VA programs are geared to managing chronic diseases:

- Consequences of old wounds, both physical and psychological, and lack of early treatment (secondary prevention)
  - Limb injuries and causalgia (CRPS 2)
  - Spine injuries
  - PTSD, Depression, Substance abuse
- Diseases and conditions of aging (tertiary prevention)
  - Diabetic neuropathy, Post-herpetic neuralgia
  - Osteoarthritis, spinal stenosis
  - Cancer

Challenges of OEF/OIF Veteran Cohort

VA & health system must treat post-injury pain as a priority after military discharge:

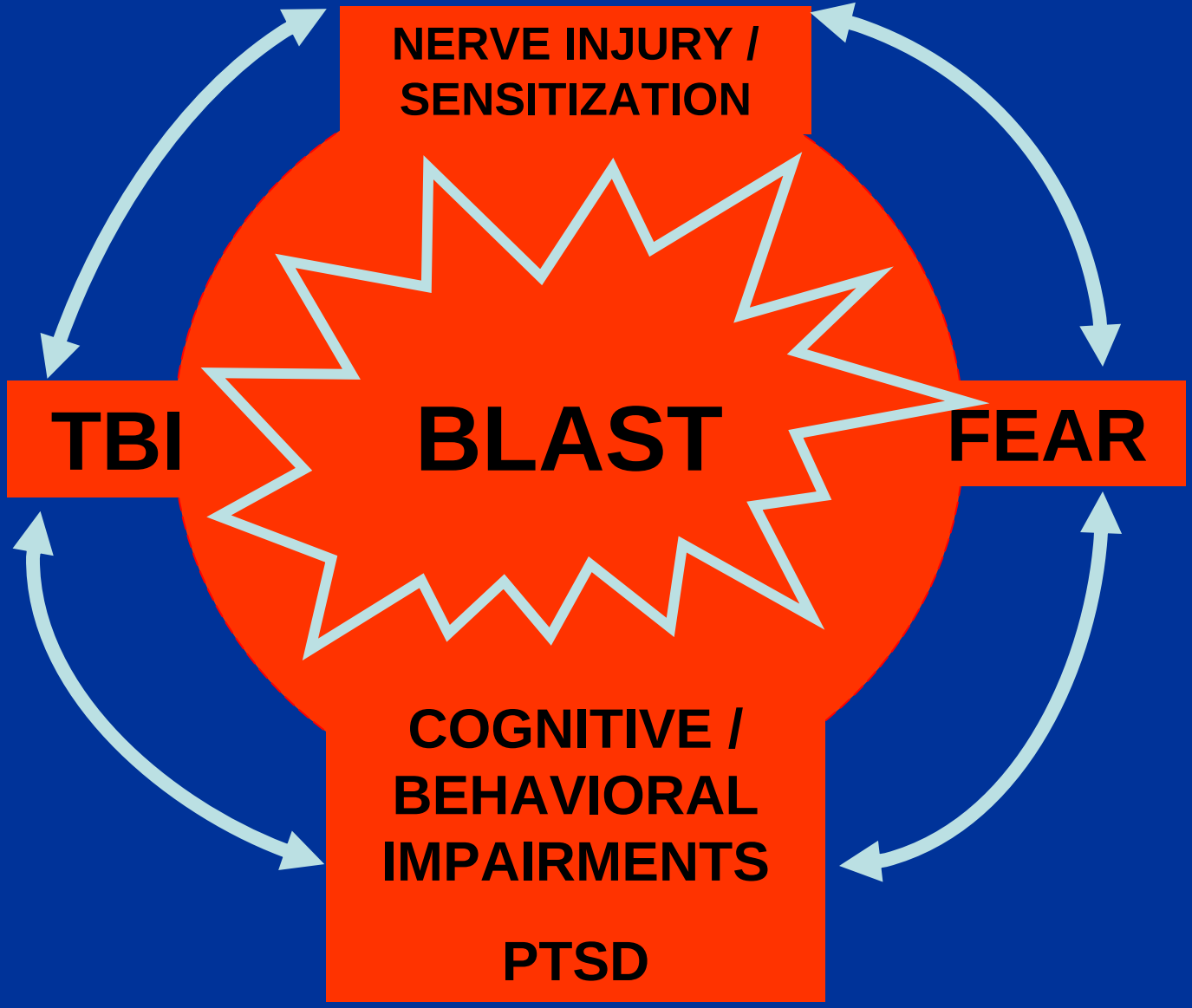
- To prevent pathophysiology:
  - Neuroplastic changes, central sensitization
  - Musculoskeletal dysfunction
- To provide effective pain control and rapid functional restoration to prevent disability

Challenges of OEF/OIF Veteran Cohort

VA & health system must treat post-injury pain as a priority after military discharge:

- To prevent social consequences:
  - Job loss
  - Relationship loss
- To prevent psychopathology
  - PTSD
  - Depression
  - Substance abuse

A New Challenge with an uncertain pathophysiology and course



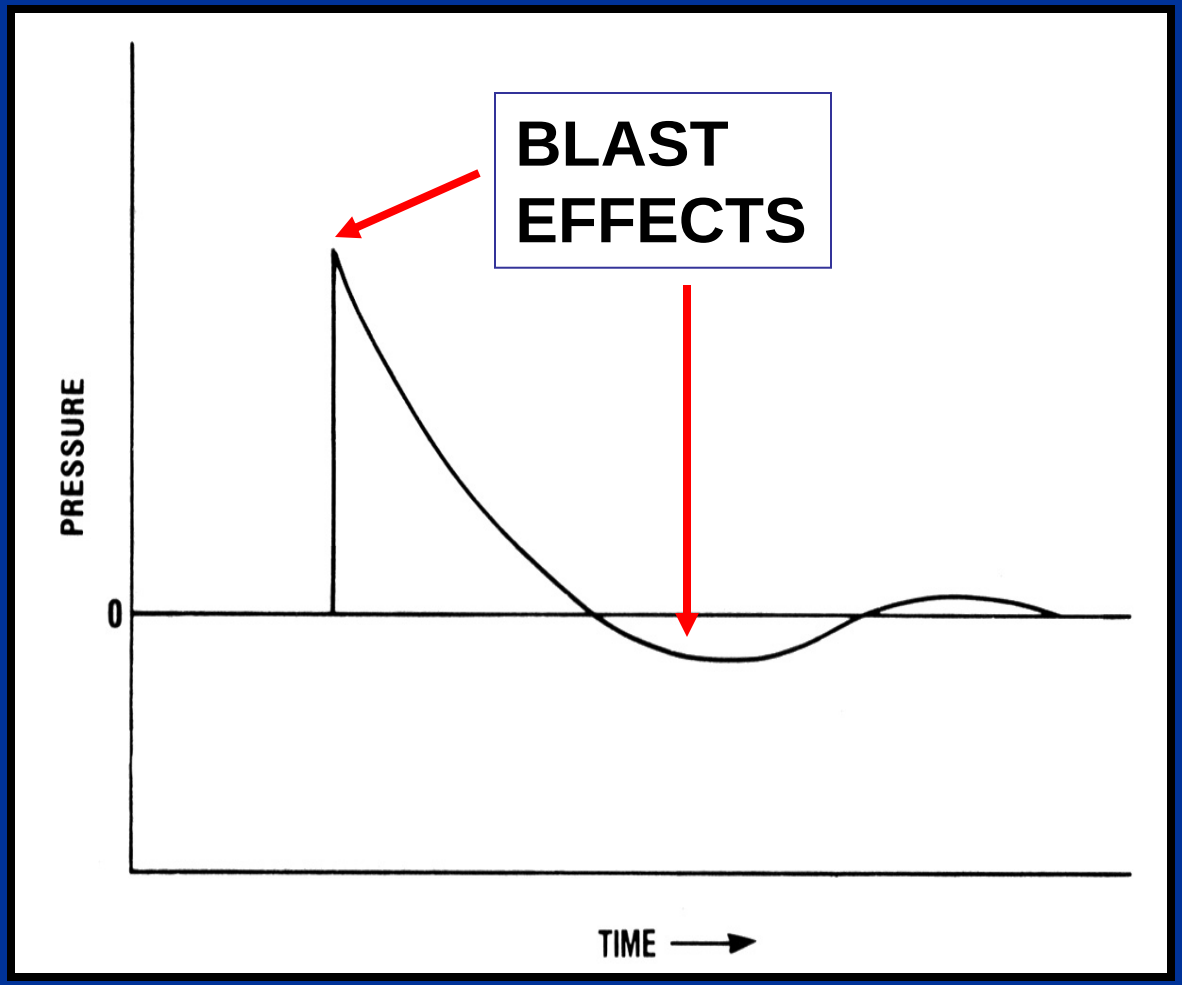
VA is not accustomed to treating survival of massive wounds from blast injuries

- head injuries causing other sensory disturbances besides pain
- disfigurement and social stigma
- cognitive and psychological damage
- neuropsychiatric impairments
- many pain generators (>95% polytrauma have pain – Clark et al 2007)

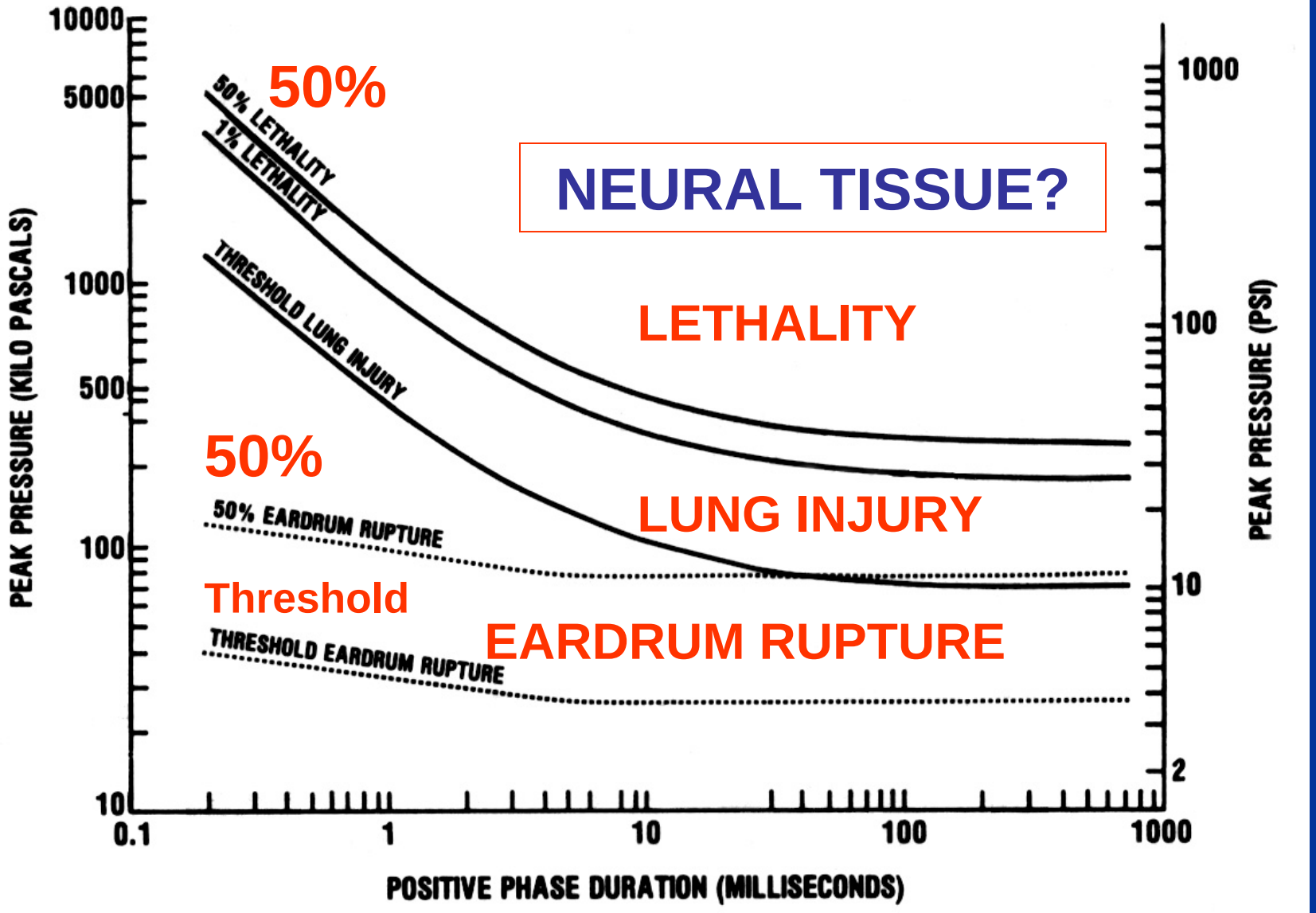
Soldiers require rehabilitation from polytrauma.

Challenges for translational research

1) Nature of injury
- Disease
- Acute injury mechanism
  - Penetrating
  - Crushing
  - Amputation
  - **Blast?**



Challenges for translational research



Does early intervention make a difference?

Castillo et al. Pain 124 (2006): 321-329

PAIN

www.elsevier.com/locate/pain

Prevalence of chronic pain seven years following limb threatening lower extremity trauma ☆

Renan C. Castillo [a,*], Ellen J. MacKenzie [a], Stephen T. Wegener [b], Michael J. Bosse [c], The LEAP Study Group [1]

567 severe single extremity trauma patients at 7 years

- **Predictors of poor outcome before injury include:**
  - Alcohol abuse 1 month before injury
  - Older age, lower education, low self efficacy (Gallagher ***Pain*** 1989)
- **Predictors of poor outcome at 3 months post-injury:**
  - Acute pain intensity, anxiety, depression and sleep disturbance

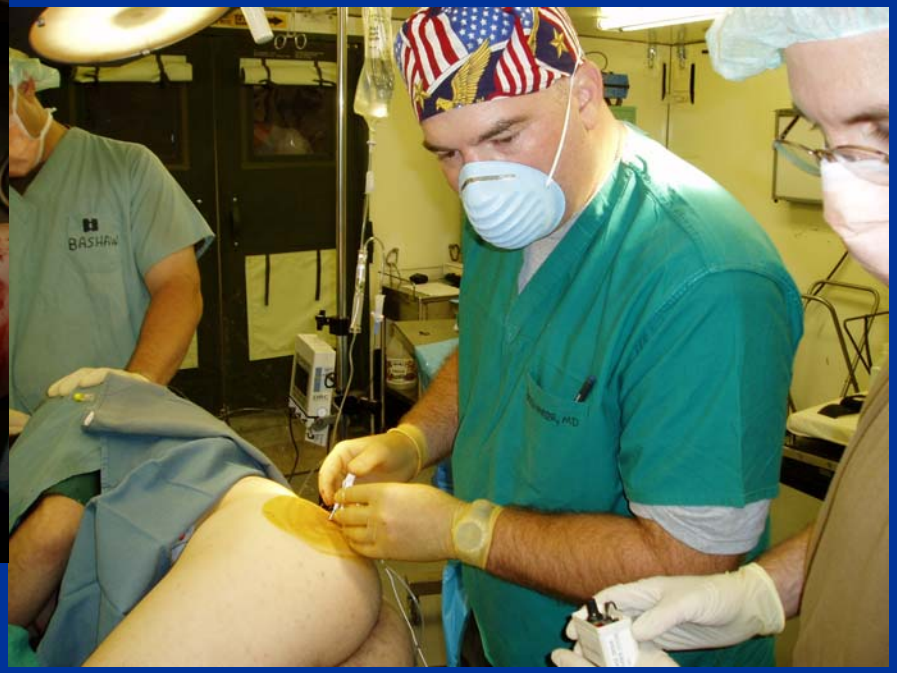
Opioid protective effect

"Patients treated with narcotic medication for pain at three months post-discharge were protected against chronic pain, despite the fact that these patients had higher pain intensity levels and were thus at higher risk."

"The results presented here appear to lend support to the theory that…

..early aggressive pain treatment may protect patients from central sensitization and chronic pain."

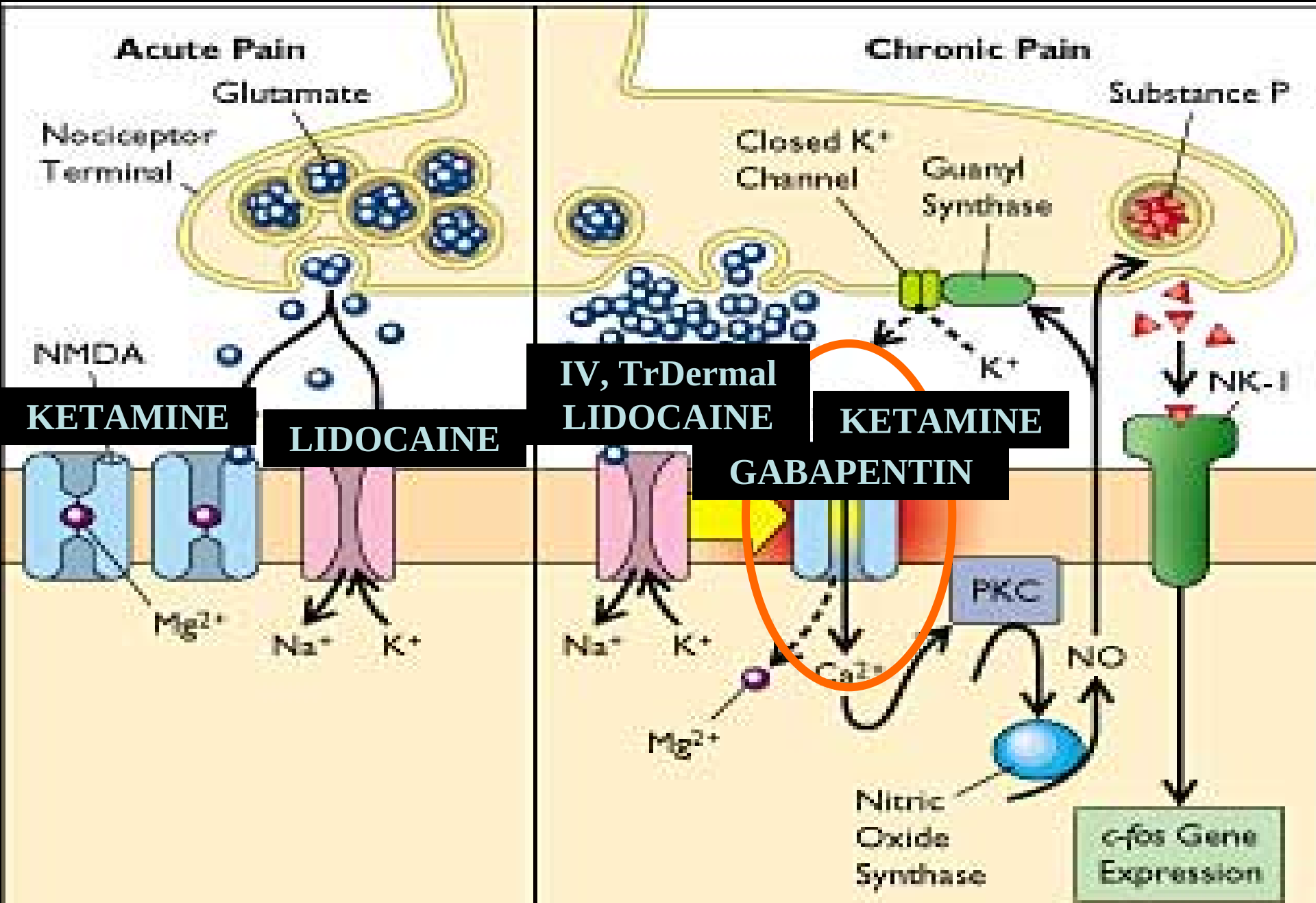
BLOCKING THE STIMULUS TO PREVENT CENTRAL SENSITIZATION



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

Courtesy of C. Buckenmaier, MD

Prevent and Treat Central Sensitization



Early, Continuous, and Restorative Pain Management in Injured Soldiers: The Challenge Ahead

Rollin M. Gallagher, MD, MPH
Rosemary Polomano, PhD, RN
Pain Medicine 2006;7(4):284-286

John Farrar, MD, PhD
David Oslin, MD
Wensheng Guo, PhD

Geselle McKnight, CRNP
Chester Buckenmaier, MD
Alexander Stojadinovic, MD

MANAGEMENT PRINCIPLES : Summary

Primary prevention

- avoid injuries and diseases

Secondary prevention

- prevent or minimize:
  - * *nociception*
  - * *neural activation of pain pathways*

- rapidly restore and maintain:
  - * *meaningful function*
  - * *quality of life*

MANAGEMENT PRINCIPLES : Summary

Tertiary prevention

Organize services to control chronic pain and restore meaningful function

* *rapid assessment*
* *effective intervention*

- primary care crisis teams with pain, mental health and social work services

- immediate access to biopsychosocial pain medicine and rehabilitation teams.

Phases of Military Care: Injured soldiers

WAR ZONE EMERGENCY CARE:

(Field Hospital / Base Hospital)

Life support, stabilization

TRANSPORT CARE

SECONDARY CARE:

(Military Hospital, Germany)

Initial surgery and further stabilization

TRANSPORT CARE

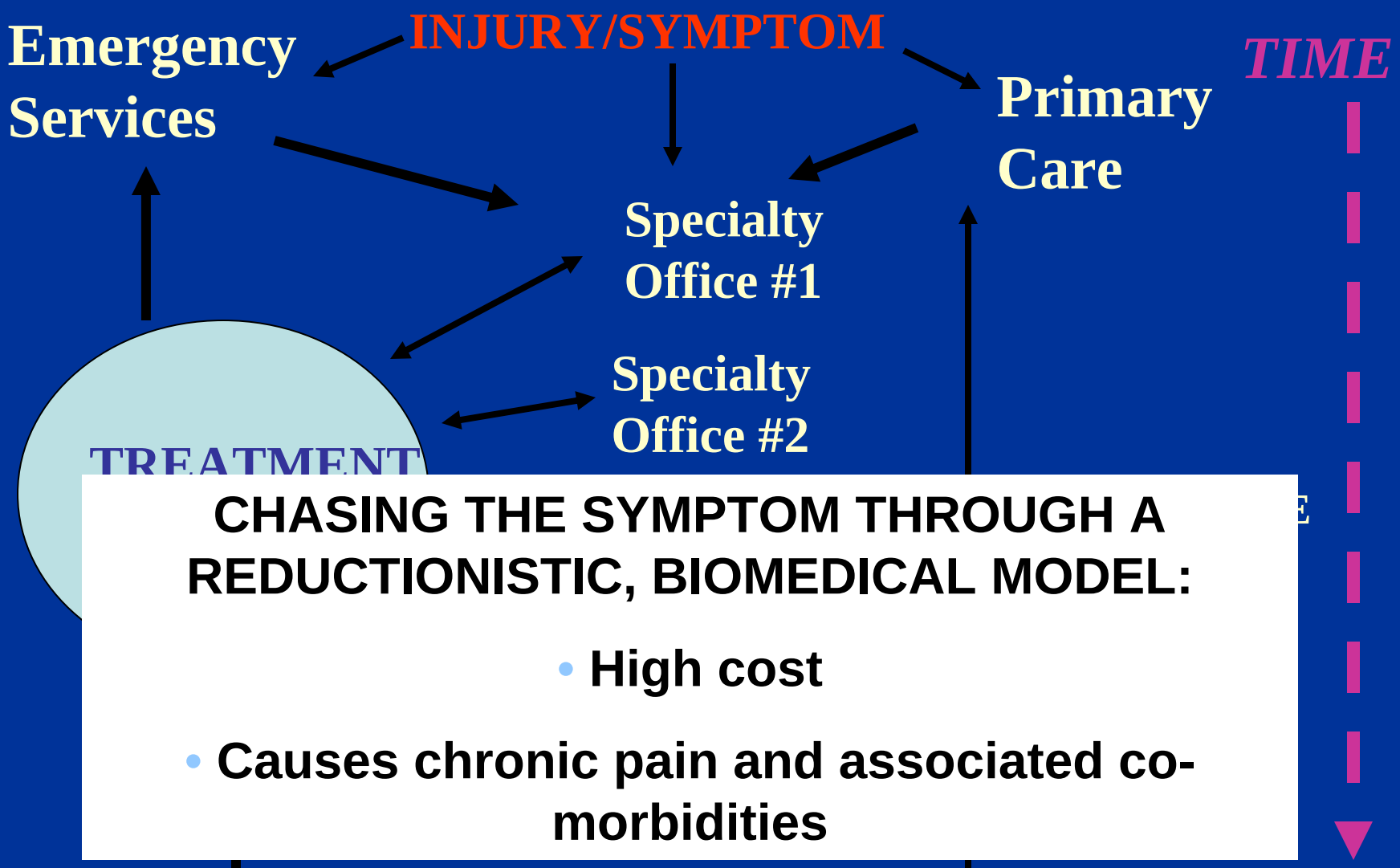
TERTIARY CARE:

(Military Hospital, USA)

Definitive injury care, restorative surgery, begin rehabilitation

Transition to Community Care:

The tertiary, sequential care model

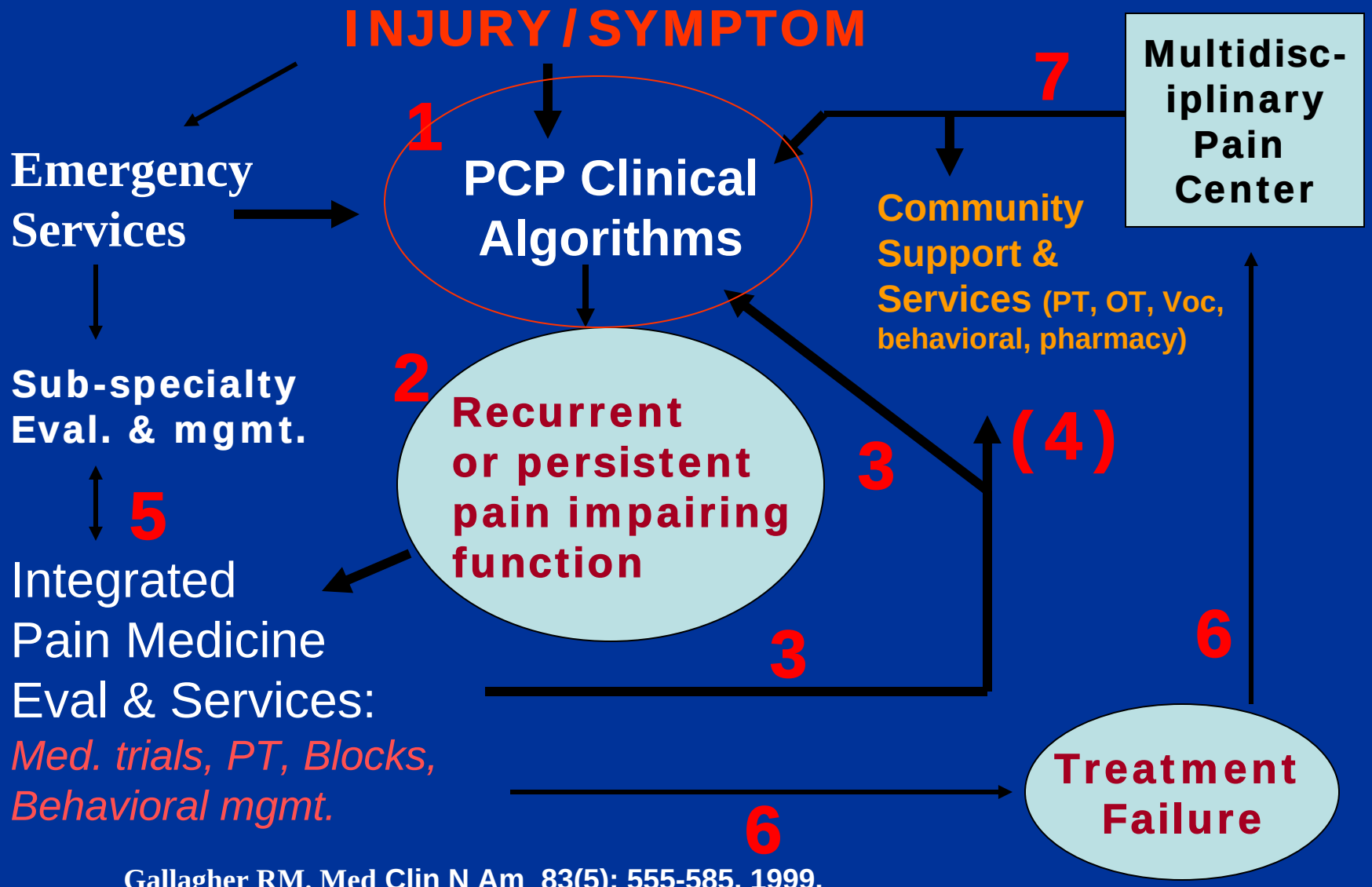


CHASING THE SYMPTOM THROUGH A REDUCTIONISTIC, BIOMEDICAL MODEL:

- **High cost**
- **Causes chronic pain and associated co-morbidities**

Gallagher RM. Med Clin N Am 83(5): 555-585, 1999.

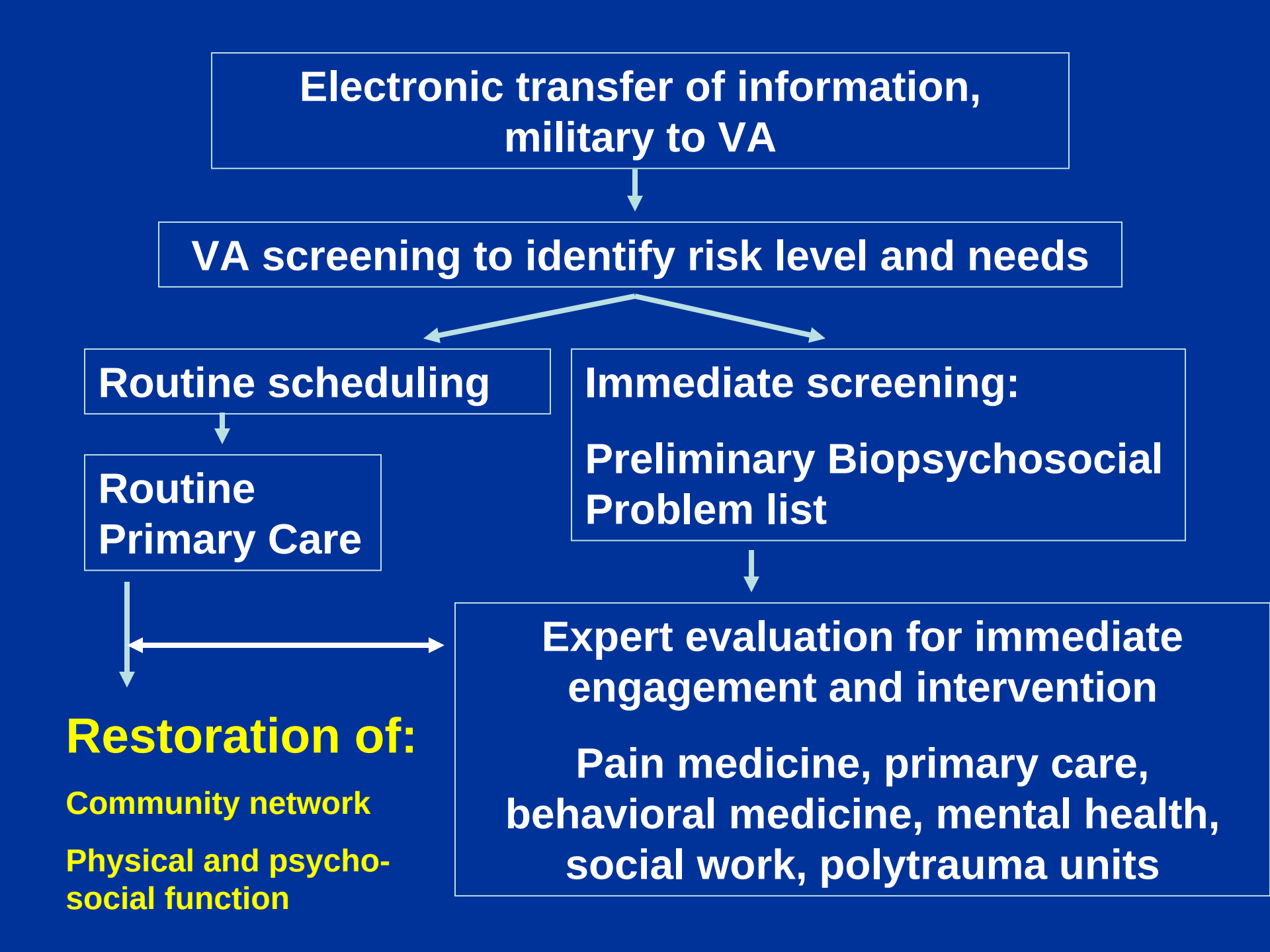
Pain medicine and primary care community rehabilitation model



Gallagher RM. Med Clin N Am 83(5): 555-585, 1999.

ORGANIZATIONAL CHALLENGES

1) FIND CASES
2) IDENTIFY THOSE AT RISK
3) PRIORITIZE TREATMENT
4) IMMEDIATELY INTERVENE AT LEVEL OF NEED
5) RESTORE FUNCTION AND PERSONAL NETWORKS


Electronic transfer of information, military to VA
VA screening to identify risk level and needs
Routine scheduling
Routine Primary Care
Immediate screening:
Preliminary Biopsychosocial Problem list
Expert evaluation for immediate engagement and intervention
Pain medicine, primary care, behavioral medicine, mental health, social work, polytrauma units
Restoration of:
Community network
Physical and psycho-social function

PRIORITY WHEN LEAVING THE MILITARY HEALTH CARE SYSTEM

CASE FINDING:

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

- emotional and interpersonal distress
- **uncontrolled pain**
- 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

When Leaving The Military
Health Care System For The VA

Management Planning

- Prioritized problem list (immediate, pivotal, background)
  - *Immediate problems* or "red flags" for crisis intervention:
    - Neurological loss: progressive compression syndromes (e.g., cauda equina syndrome)
    - Vascular comprimise
    - Infection
    - Suicidal thoughts (if you ask!)
    - Threat to: job; family; financial security; housing

When Leaving The Military
Health Care System For The VA

Management Planning

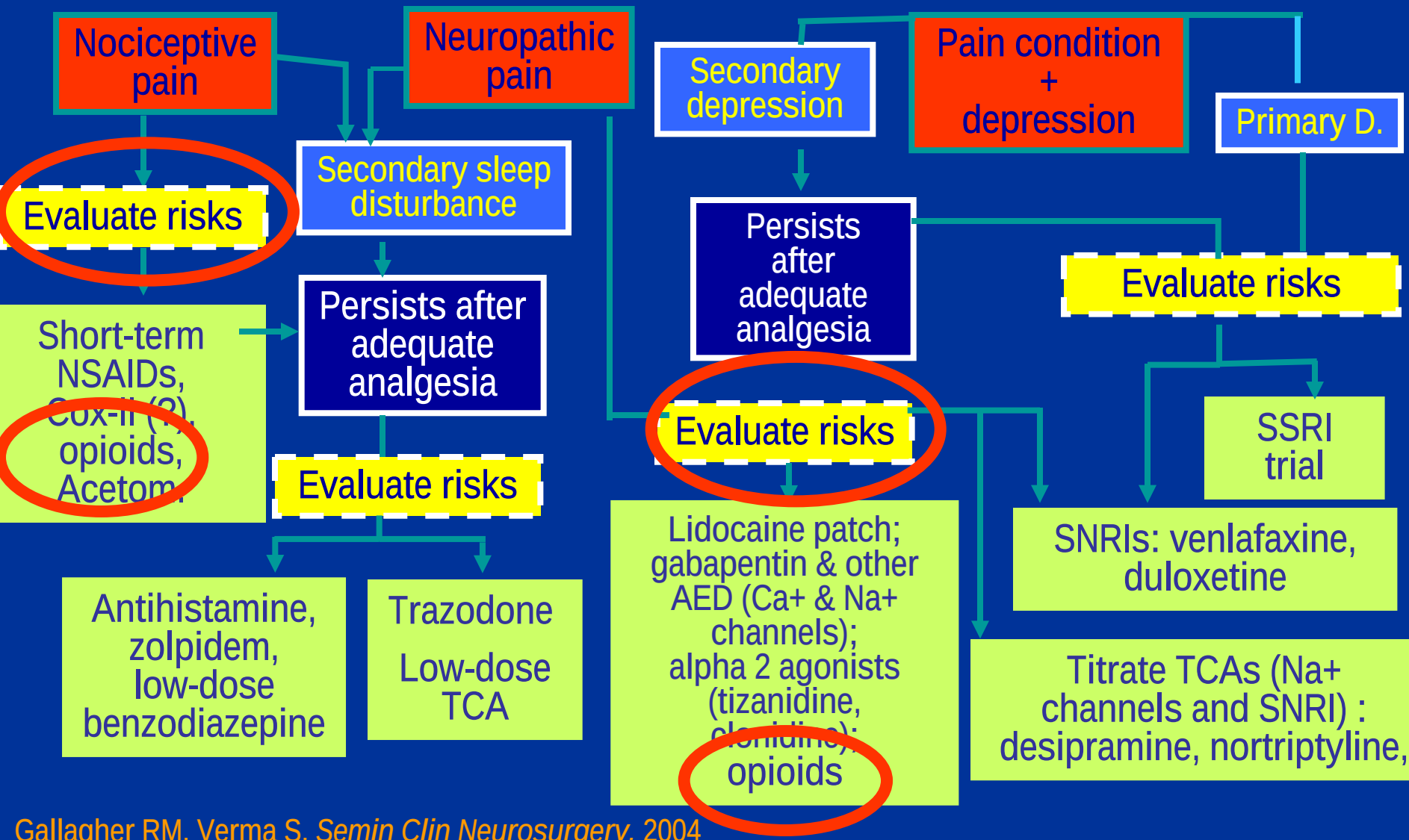
- Prioritized problem list
  - *Pivotal problems:* injuries, diseases that must be remediated for pain control and function
    - ischemia; cord compression; spondylolisthesis
    - Neurological traction (neuroma in scar)
    - Major depression
    - PTSD
    - Substance abuse

When Leaving The Military
Health Care System For The VA

Management Planning

- Prioritized problem list
  - *Background problems:* must be managed to achieve optimal functional outcomes
    - Obesity
    - Deconditioning
    - Personality disorder
    - Chronic family stress
    - Lack of education
- Goal-oriented, time-dependent management plan

Evidence-based Algorithm for Medication Selection in Pain with and without Co-Morbid Depression



Gallagher RM, Verma S. *Semin Clin Neurosurgery.* 2004

This information concerns uses that have not been approved by the US FDA.

Polytrauma pain management issues

Head injury / PTSD

Clark et al Pain Med 2008

- Seizure management
  - Anti-convulsants
  - Pain and stress control
  - Adherence
- Pain management
  - Dosing issues, substance abuse
  - Sedation, drug interactions
- Anger management
  - Quetiapine
  - Carbamazepine / lamictal
  - Avoid benzodiazepines
  - Treat depression
  - Intensive psychotherapy
  - Family counseling

DISEASE MANAGEMENT FOR CHRONIC PAIN

The Opioid Renewal Clinic: A Primary Care, Managed Approach to Opioid Therapy in Chronic Pain Patients at Risk for Substance Abuse

NL Wiedemer, PS Harden, IO Arndt, RM Gallagher. Pain Med 2007 (In press, On Line Early) doi:10.1111/j.1526-4637.2006.00254.x

Goal:

To improve the quality of pain management in primary care:

1) Educating clinicians
2) Providing clinical tools
3) Creating accessible services that support busy clinicians caring for complex patients

Staff: 0.5 FTE pharmacist; 1 FTE nurse practitioner; weekly meeting with team of medical specialists

RESULTS

335 patients

- ½ had documented aberrant behaviors
  - Of these, 45% adhered to OTA
- 49%--no aberrant behaviors
  - All adhered to OTA

Table 4 Outcomes of referred patients (N = 335)

Outcomes	Number (%)
171 (51%) documented aberrant drug-taking behaviors	
Resolution of aberrant behaviors	77 (45)
Self-discharged from ORC	65 (38)
Referred for addiction treatment	22 (13)
Consistently negative UDT (weaned from opioids)	7 (4)
164 (49%) no documented aberrant drug-related behaviors at referral	
Adherence to OTA	164 (100)

ORC = Opioid Renewal Clinic; UDS = urine drug testing; OTA = opioid treatment agreement.

Treatment Principles

- Psychotherapeutic strategies
  - CBT with modifications (Otis 2007)
    - Relaxation facilitates PTSD breakthrough
    - Avoid exposure therapy
  - Crisis family evaluation and management:
    - their pain aggravates the soldiers pain and may be too much to bear
  - Substance misuse and abuse is proxy for other psychopathology
  - Relax criteria for substance use / abuse

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ABOVE ALL, ENGAGE THE PATIENT AND MAINTAIN INTELLIGENT AND INFORMED EMPATHY – BE PATIENT

If I can stop one heart from breaking
I shall not live in vain;
If I can ease one life the aching
Or cool one pain,
Or help one fainting robin
Unto his nest again,
I shall not live in vain.

- Emily Dickinson