

Talk the talk and walk the walk

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What is the scale of the problem

- Prevalence varies between studies
- 10% of people in USA report pain on more than 100 days a year
- 70 million Americans report chronic pain at a cost of 100 billion USD
- Canada prevalence 29%
- Australia 17.1% in males and 20% in females
- Scotland 50.4% of responders, 46.5% prevalence in the general population
- 64% of land mine survivors report chronic pain
- The 1 year prevalence for CLBP in an American sample is 19.1% Prevalence of CLBP in Nigeria is 16.4
- The vast majority of patients with chronic spinal (87.1%) report at least one other co-morbid condition, including other chronic pain conditions (68.6%), chronic physical conditions (55.3%), and mental disorders (35.0%)

The pain management crisis

- Poor evidence
- Poor recognition of new specialty
- Inadequate training
- Bio – psychosocial model – are we forgetting the bio?
- Funding of services favouring cheap and cheerful back street shacks
- Access to multidisciplinary care
- The opioid crisis



We love our patients and know that you all have relatives, friends, co-workers, neighbors, and kids who could reap the benefits from coming in to see us...now YOU could reap a nice benefit as well ... dinner for two to Pappas Steakhouse! Every time you refer a new patient to any CORE location between now and the end of May, your name will be entered into a drawing for a gift certificate to pappas steakhouse! *(example: refer 10 new patients and your name is entered into the drawing 10 times!)*

PAPPAS BROS.
Steakhouse
KNOWN FOR QUALITY

Refer and Win!

The patient who wins our spring referral drawing will enjoy dinner for two on us!

(ask the office for details)

The 3 P's and the Question mark

- Pathology
- Patho-physiology
- Psycho-social pathology
- Other unidentifiable factors

Pain patterns

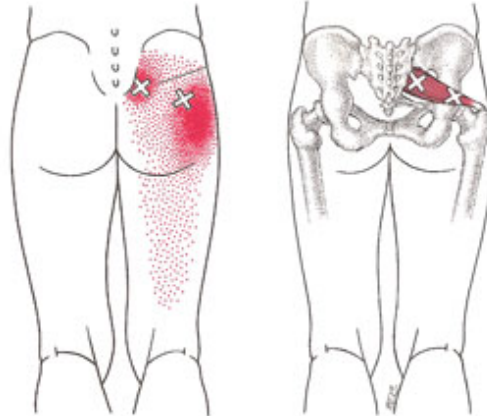
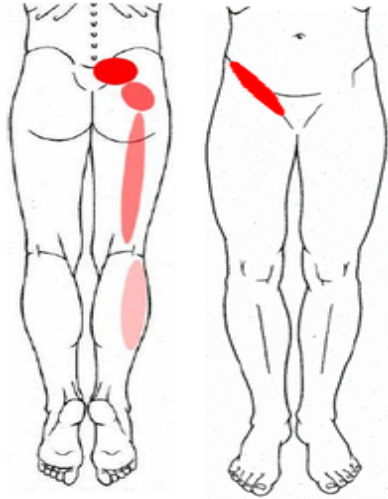
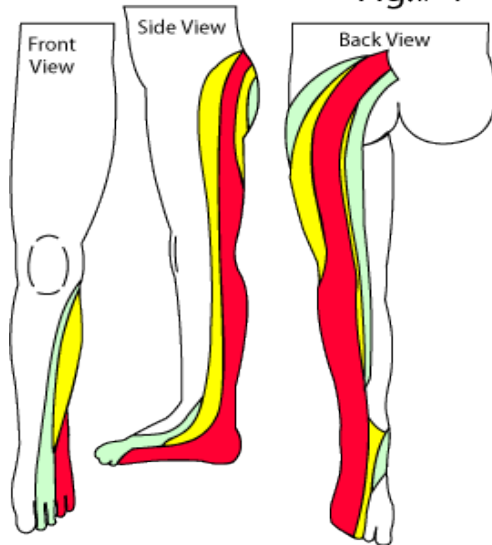


FIGURE 1

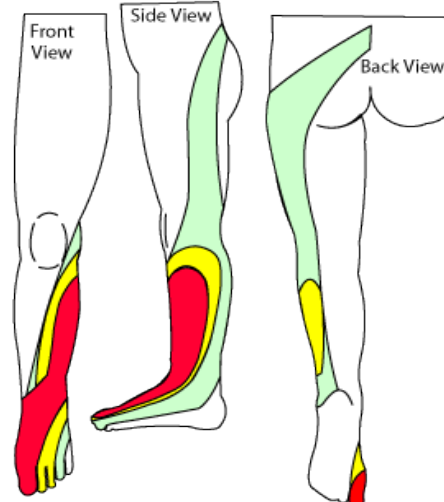
Pain Referral Patterns from Lumbar L4-5 and L5-S1 Facet Joint Injections. On the left are areas of pain drawn by asymptomatic subjects following injection of hypertonic saline into the facet joints, and on the right are areas of pain drawn by patients with chronic back and leg pain who had similar injections. The different methods of shading indicate different patients. (From Mooney V, Robertson J. The facet syndrome. Clin Orthop Rel Res 1976; 115:149-156.)

Fig.# 4



- S1 Pain Zone for 75% of the Population
- S1 Pain Zone for 50% of the Population
- S1 Pain Zone for 25% of the Population

Fig.# 5



- L5 Pain Zone for 75% of the Population
- L5 Pain Zone for 50% of the Population
- L5 Pain Zone for 25% of the Population

MAYBE UNDER ACTIVE THYROID.
HEART BYPASS BECAUSE OF ATHEROSCLEROSIS.

A MID-HEAD LOW NOISE NOW PRESENT

TINNITUS SUDDENLY WORSENERD
(NERVES OF HEARING - DEAD)
ON LEFT SIDE.

TINNITUS ALSO
NOW IN RIGHT EAR
DRY EYES

BOTH SHOULDERS
PAINFUL ON USE & AT REST

SOME NECK PAIN
CRACKS WHEN FLEX

HEART BYPASS
NOW HAS
(BREATHLESS)

PANCREAS DIVESUM
DIABETIC ON INSULIN.
SUSPECT DORSAL PORT
IS BLOCKING

GOLFERS
ELBOW'S

FREQUENT GUT PAIN
ADHESIONS ?? BLOCKAGES
SWOLLEN NERVE'S
SAME RADIATES
PAIN

BACK - FRONT

TENDER
ELBOW
JOINTS

DMG
SUGGESTS
CARPAL
TUNNEL

PAIN IN HIP AND
SURROUNDING MUSCLES
EVEN PRODUCING
PAIN IN TESTICLES
& SCROTUM ??

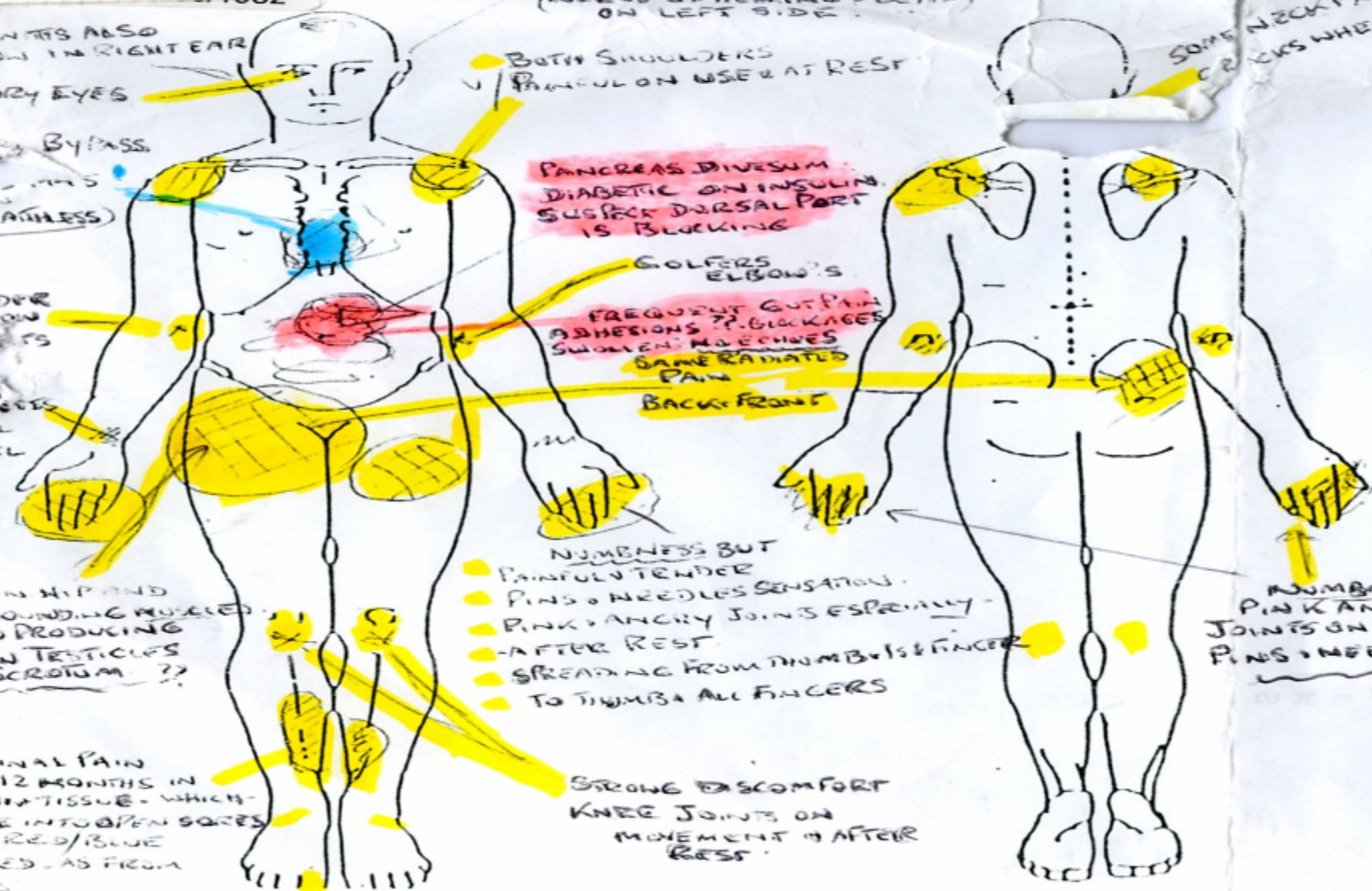
- NUMBNESS BUT PAINFUL/TENDER
- PINS & NEEDLES SENSATION.
- PINK & ANGRY JOINTS ESPECIALLY -
- AFTER REST.
- SPREADING FROM THUMB & FINGER
- TO THUMB & ALL FINGERS

NUMBNESS
PINK ANGRY
JOINTS ON REST
PINS & NEEDLES

ORIGINAL PAIN
FOR 12 MONTHS IN
FLESH TISSUE - WHICH
BROKE INTO OPEN SORES
DEEP RED/BLUE
& PILES - AS FROM
VEINS

STRONG DISCOMFORT
KNEE JOINTS ON
MOVEMENT AFTER
REST.

"VASCULITIS? LUPUS? HANSON'S?"



Sensitisation

- **Peripheral**
- Sensitising soup
- Decreased thresholds
- Cross depolarisation, ectopic discharges
- Expansion receptive fields
- Change in channel expression
- Sprouting
- **Central**
- Similar mechanisms
- Wind up
- LTP
- Decreased inhibitory activity

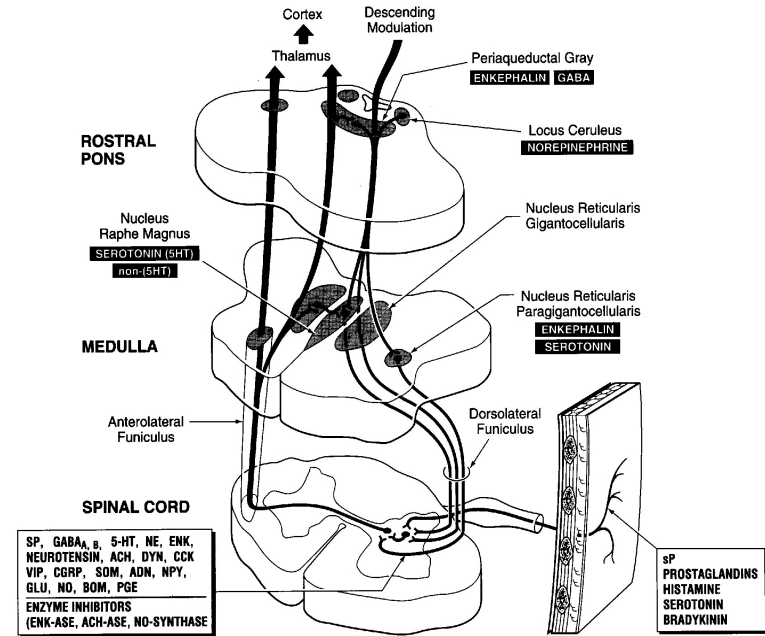


FIG. 23.1-18. Simplified schema of afferent sensory pathways (*left*) and descending modulatory pathways (*right*). Stimulation of nociceptors in the skin surface leads to impulse generation in the primary afferent. Concomitant with this impulse generation, increased levels of various endogenous algogenic agents (substance P, prostaglandins, histamine, serotonin, bradykinin) are detected near the area of stimulation in the periphery. Primary afferent nociceptors relay to projection neurons in the dorsal horn, which ascend in the anterolateral funiculus to terminate in the thalamus. En route, collaterals of the projection neurons activate multiple higher centers, including the nucleus reticularis gigantocellularis (NRG). Neurons from the NRG project to the thalamus and also activate the nucleus raphe magnus (NRM) and periaqueductal gray (PAG) of the midbrain. Descending fibers from the PAG project to the NRM and reticular formation adjacent to the NRM. These neurons activate descending inhibitory neurons which are located in these regions and travel via the dorsolateral funiculus to terminate in the dorsal horn of the spinal cord. Descending projections also arise from a number of brain stem sites including the locus ceruleus (LC). A number of neurotransmitters are released by afferent fibers, descending terminations, or local interneurons in the dorsal horn and modulate peripheral nociceptive input. These include substance P (SP), gamma aminobutyric acid (GABA), serotonin (5-HT), norepinephrine (NE), enkephalin (ENK), neurotensin, acetylcholine (ACH), dynorphin (DYN), cholecystokinin (CCK), vasoactive intestinal peptide (VIP), calcitonin-gene-related peptide (CGRP), somatostatin (SOM), adenosine (ADN), neuropeptide Y (NPY), glutamate (GLU), nitric oxide (NO), bombesin (BOM) and prostaglandins (PGE). Inhibitors of enzymes such as enkephalinase (ENK-ASE), acetylcholinesterase (ACH-ASE) and nitric oxide synthase (NO-SYNTASE) may act to modify the action of these neurotransmitters.

So is it all in my head, doctor?

Spinal and cortical reorganization

H Flor – Adv. Neurol 2003, EMBO2002

H Flor – Exp Brain Res 1998

Baliki – J. Neurosci. 2006

Wunderlich – Neurosurgery 98

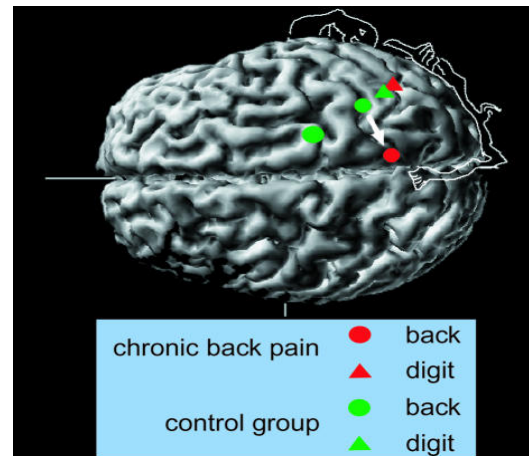
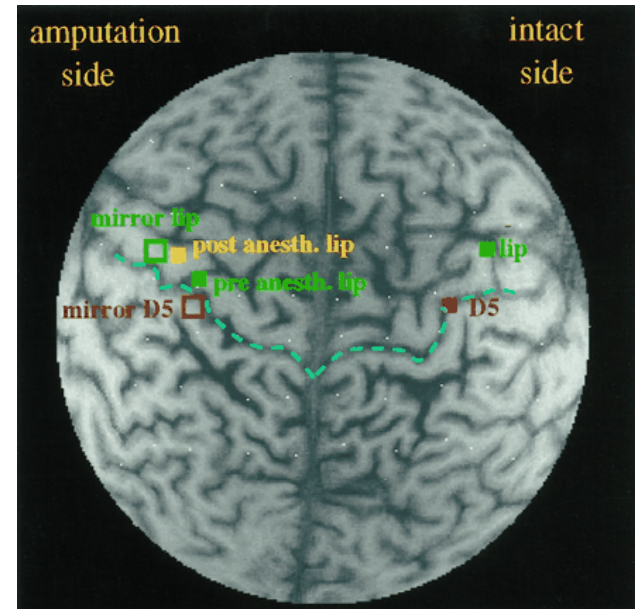
Montova – Eur J Neurosci 98

Other changes

Grey matter loss (5-11%=10-20 years of aging; 1.3cm³)

Apkarian – J Neurosci 2004

Biochemical changes in PFC, ACC, thalamus on MR Spectroscopy (Siddall 2006)



Psychopathology

Talk the talk and walk the walk

- Beliefs on the nature and progress of disease– maladaptive thinking, catastrophising
- Attitudes
 - fear avoidance
 - Pavlovian behaviour
- Coping
 - active – internal locus, power freaks
 - passive – external locus, die is always cast
- Disability, Illness behaviour
- Expectations
- Somatiform disorder
- Personality disorder, psychiatric disease

Talk the talk and walk the walk

- Identify barriers to treatment
- Identify modifiable behaviours
- Decide on type of treatment
- Establish goals and limitations
- Holiday package

Chronic pain box of remedies

- TCA
- SSRI
- SNRI
- AED
- Topical
- Transdermal
- Opioids

TCA / non-TCA

- Watson 1982
- Pain relief and relief of depression are independent effects (Max 1987, Sindrup 1992)
- High incidence of side-effects
- Increased risk of successful suicide
- SSRI – Paroxetine
- SNRI – effective for neuropathic pain
- SSRI+NRI – no RCT, case reports support analgesic effect

Mechanism of action

- Facilitation of descending serotonergic and noradrenergic modulatory pathways
- Na channel blocker
- NMDA channel blocker
- Sympatholytic effect
- Opioid receptor analgesia

AED

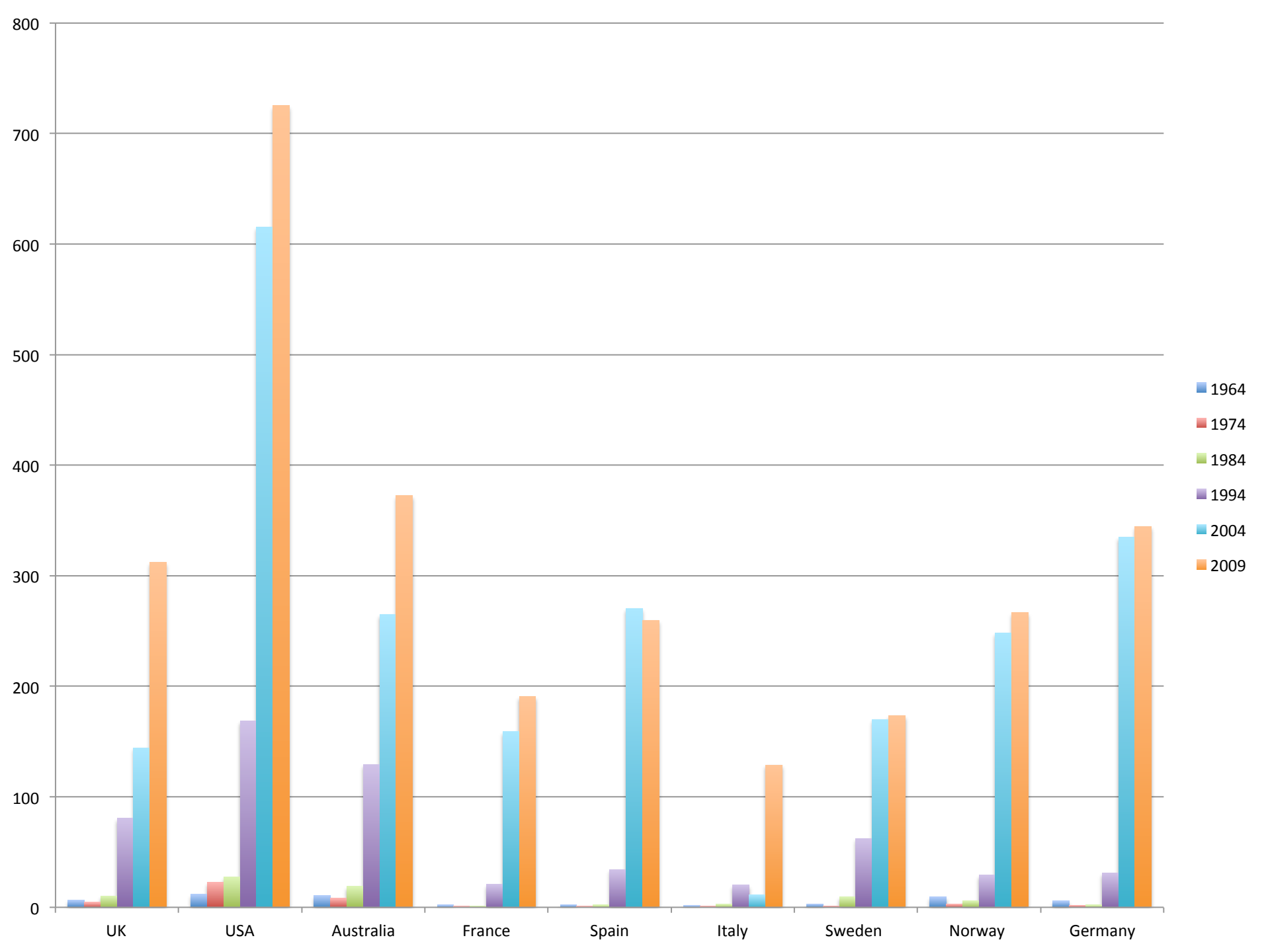
- Compared only in TGN
- No role in musculo-skeletal pain or nociceptive pain (except Gabapentin)
- Share multiple mechanisms
- Interaction with opioid receptors appears non-contributory to analgesia

WHO ladder

- Simple analgesics
- Weak opioids
- Strong opioids

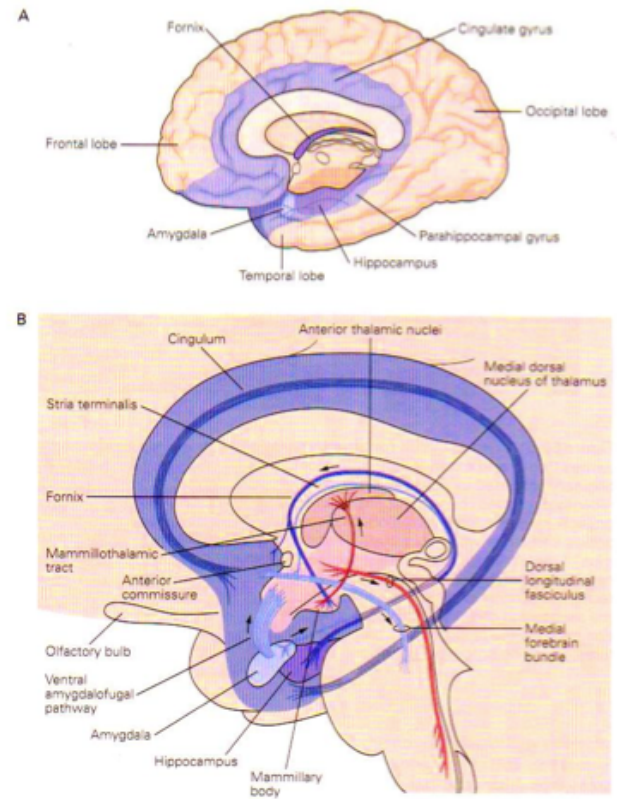
Etiological treatment, DMR

Adjuvant analgesics should be used at each step
– NSAIDs, Coxibs, steroids, biphosphonates



Abnormal drug use

- Positive reinforcement
- Dopaminergic mechanisms
- Glutamine mechanisms
- Opioid receptors changes
- Hormonal mechanisms
- Structural changes
- Genetic susceptibility



Procedural interventions

- Diagnostic
- Prognostic
- Temporizing
- Therapeutic
 - temporary
 - permanent
 - destructive procedures
 - vertebroplasty
 - neuromodulation
 - neurosurgical procedures
 - lesions (DREZ, cordotomy)
 - stimulation
- To minimize harm

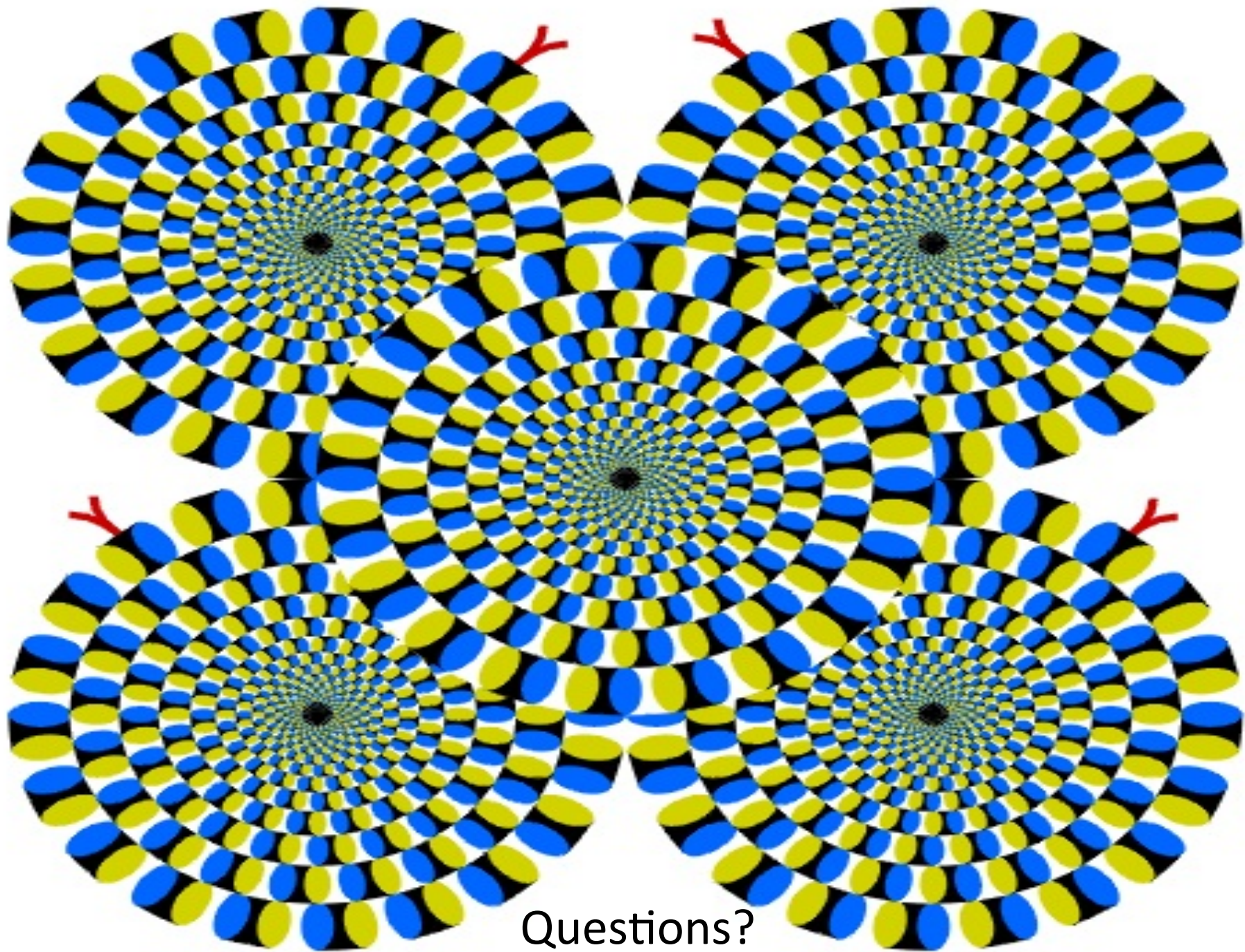


Survival strategy

- Investigate and label (establish a diagnosis)
- Refer
- Pain vs distress
- Psychological assessment (ABCDE)
- Multidisciplinary approach
- Set a management plan – goals, limitations
- Prevent medication overload and misuse
- **Aeger Aegertore Non Meum**
- Full circle

In conclusion

- Whatever the pathology we are dealing with a complex group of patients
- The degree of pathophysiology influences the outcomes from therapy
- Personal and institutional prejudice
- Political agendas



Questions?