Pain in Elderly

Dr. Lim Huey Sing
Director, KEC Pain Management Centre
Consultant, Anaesthesiology & Pain Medicine, UCH

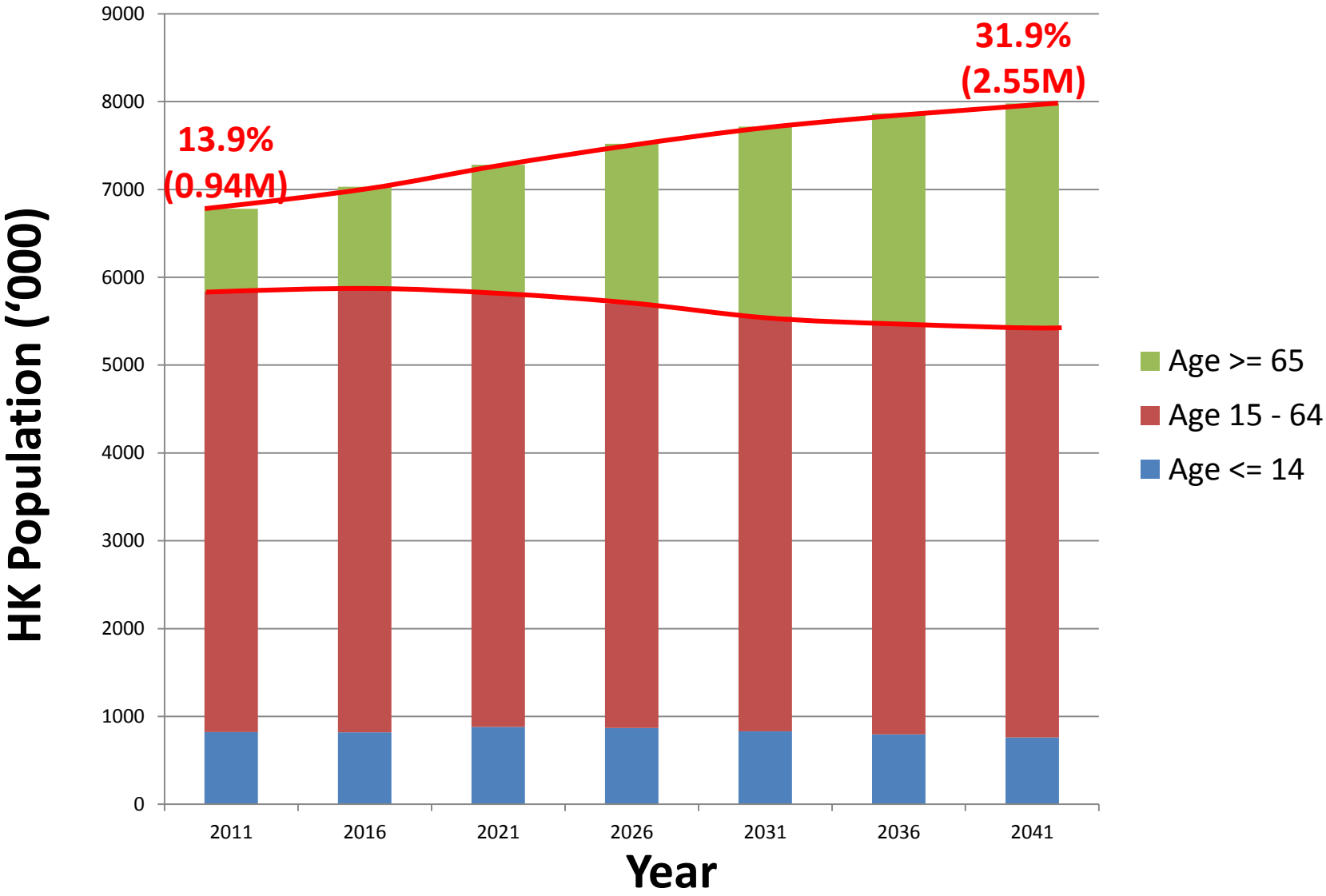
"an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"

"either aged (65 to 79 years old) or very aged (80 & over)"

"and who have had pain for greater than 3 months.''

Lynch D. Geriatric pain. In: Raj PP, ed. Practical Management of Pain. 3rd ed. St. Louis, MO: Mosby; 2000:270-271.

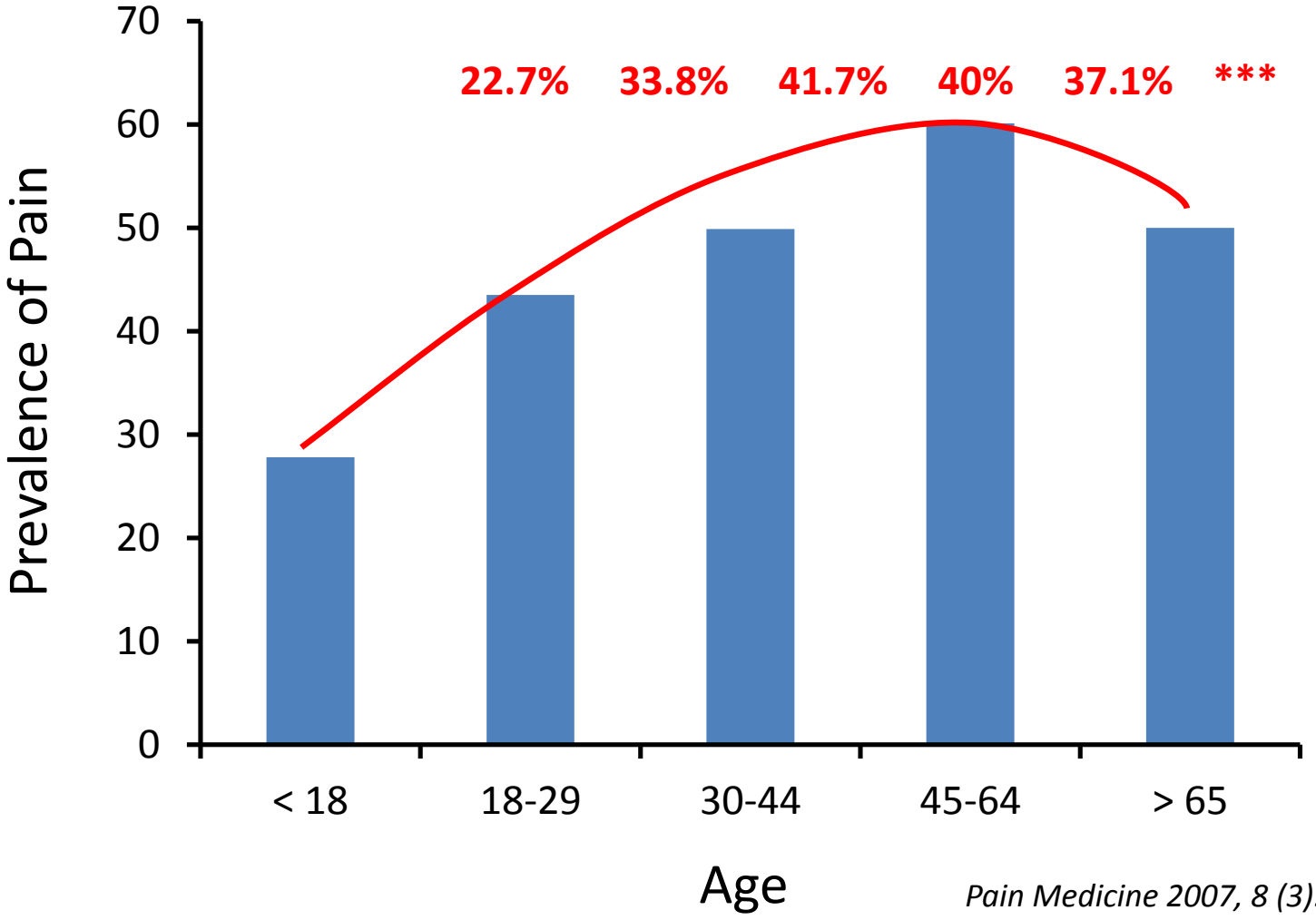
Pain in the Elderly



Census and Statistics Department (2012): Hong Kong Population Projections 2012 – 2041

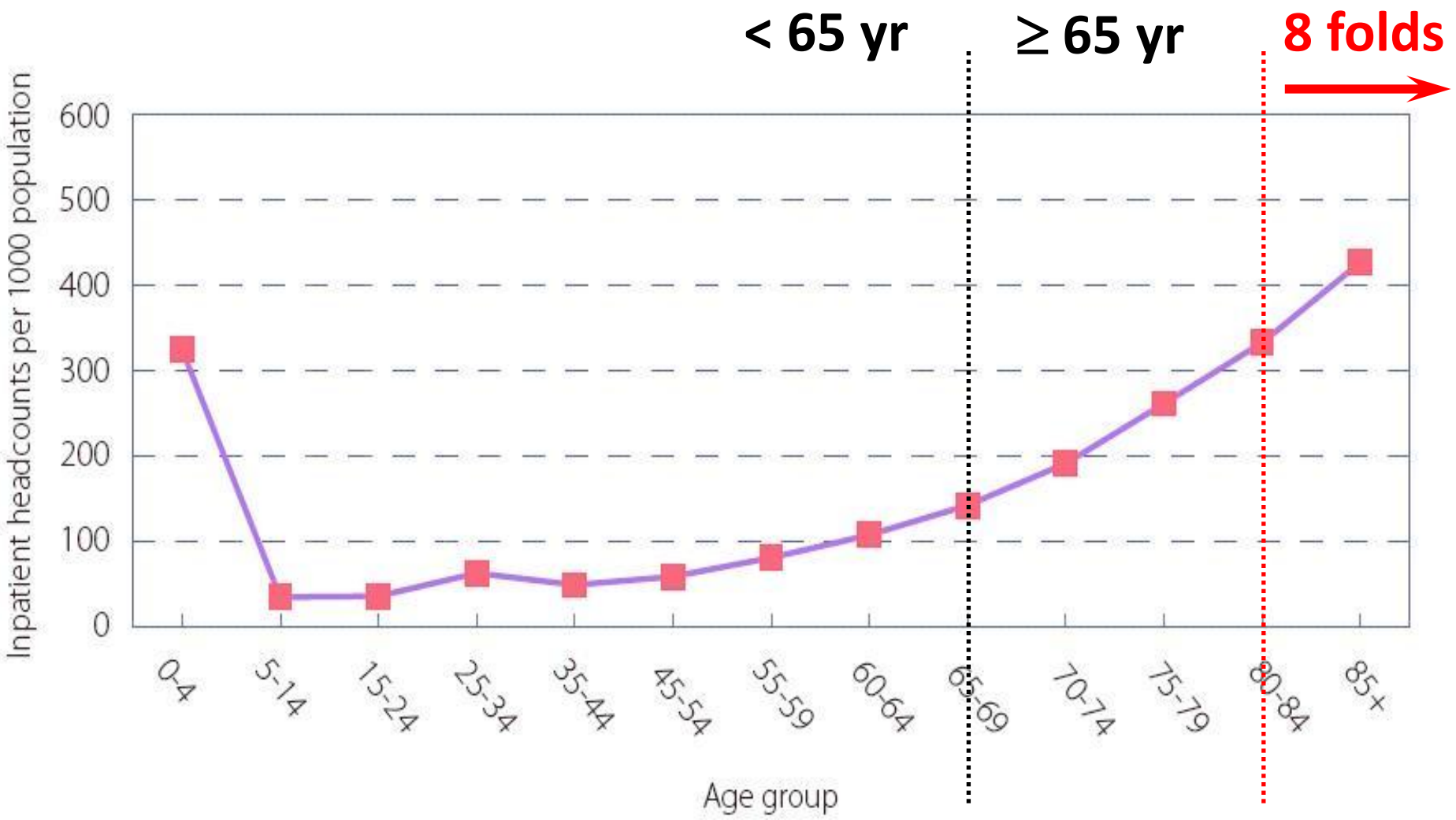
Rapidly ageing population in HK

Cross sectional telephone interview
2126 respondents (37.1%)
Overall prevalence 45.9%



Pain Medicine 2007, 8 (3): 235–242
**** Journal of Pain, 2011; 12(2): 236-245*

Prevalence of Pain ↑ with Ageing (HK)



Hospital Authority, 2009. Strategic Service Plan 2009 –2012. [online]
Available at: <http://www.ha.org.hk/upload/publication_29/250.pdf> [Accessed 11 January 2011]

Hospital Bed Occupancy 6 fold higher (HA)

- Rheumatic Disease (e.g. OA, RA)
- Cancer pain
- Angina
- Temporal arteritis
- Peripheral vascular disease
- Ischaemic pain
- Trigeminal neuralgia
- Post-herpetic neuralgia/shingles
- Atherosclerotic & diabetic peripheral neuropathy

Ochsner J. 2010 Fall; 10(3): 179–187

Common Pain Problems in Elderly

- Rapidly ageing population in HK [1]
- Prevalence of pain ↑ with age [2]
- High hospital bed utilization [3]
- Highest rate of surgical procedures [4]
- Highest incidence of painful diseases [5]
  - 50% (community) to 80% (residential aged care)

1. *Census and Statistics Department (2012): Hong Kong Population Projections 2012 – 2041*
2. *Pain Medicine 2007, 8 (3): 235–242*
3. *Hospital Authority, 2009. Strategic Service Plan 2009 –2012*
4. *American College of Surgeons: Socio-Economic Fact book for Surgery. Chicago: American College of Surgeons, 1990*
5. *J Am Geriatr Soc 1993; 41:517-522.*

Pain in Elderly is a Big Problem

Physiological process	Magnitude	Likely kinetic / dynamic consequence	Dose strategy
Whole body			
Cardiac output	↓ 0–20%	↓ central compartment volume ↑ peak concentration after bolus	▪ smaller initial bolus dose ▪ slower injection rate
Fat	↑ 10–50% then ↓	Drug specific changes in distribution volume	▪ drug specific – dose based on total body weight or lean body weight
Muscle mass/ blood flow	↓ 20%		
Plasma volume	Little change		
Total body water	↓ 10%	↓ distribution volume (water-soluble drugs)	
Plasma albumin	↓ 20%	↑ free fraction of drug	▪ potential for changes in clearance and oral bioavailability
Alpha 1 glycoprotein	↑ 30–50%	↔ hepatic clearance of high extraction drugs	
Drug binding	Drug specific	↑ hepatic clearance of low extraction drugs	▪ potential for changes in cerebral effects
		↑ cerebral uptake of drug	
Liver and gut			
Liver size	↓ 25–40%	↓ hepatic clearance of high extraction drugs	▪ minimal effect on IV bolus dose
Hepatic blood flow	↓ 25–40%	↔ hepatic clearance of low extraction drugs	▪ ↓ maintenance dose ▪ potential for changes in oral bioavailability
Phase 1 (eg oxidation)	↓ 25%	↓ hepatic clearance (some low extraction drugs)	
Phase II	Little change		

Macintyre & Upton, Acute Pain Management in the Elderly Patient Table 28.1, p 506 Clinical Pain Management: Acute Pain, Hodder Arnold.

Physiological Changes with Ageing

Physiological process	Magnitude	Likely kinetic / dynamic consequence	Dose strategy
Kidney			
Nephron mass	↓ 30%	↓ clearance (polar) drugs	▪ ↓ maintenance dose (renally cleared drugs) ▪ assume, and monitor for, accelerated accumulation of polar active (M6G) or toxic (M3G, norpethidine) metabolites
Renal blood flow	↓ 10% / decade	Little effect on opioids (parent compound)	
Plasma flow at 80 years	↓ 50%	↓ clearance of some active metabolites (eg M6G)	
Glomerular filtration rate	↓ 30–50%		
Creatinine clearance	↓ 50–70%		
CNS			
Cerebral blood flow and metabolism	↓ 20%	↓ distribution to the CNS	▪ little net effect on dose
Cerebral volume	↓ 20%	↓ apparent volume in the CNS	
Active BBB transport (efflux)	↓ (drug specific)	↑ apparent volume in the CNS	▪ ↓ bolus dose during titration
		↑ apparent increase in CNS sensitivity	▪ ↓ maintenance dose
Pain threshold sensitivity	Little change		▪ need for titration unchanged
Concentration response (opioids)	↑ 50% for some opioids	↑ response to opioids	▪ ↓ bolus dose during titration ▪ ↓ maintenance dose

Macintyre & Upton, Acute Pain Management in the Elderly Patient Table 28.1, p 506 Clinical Pain Management: Acute Pain, Hodder Arnold.

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Organ functions deteriorate

> 30 years old

Macintyre & Upton, Acute Pain Management in the Elderly Patient Table 28.1, p 506 Clinical Pain Management: Acute Pain, Hodder Arnold.

Physiological Changes with Ageing

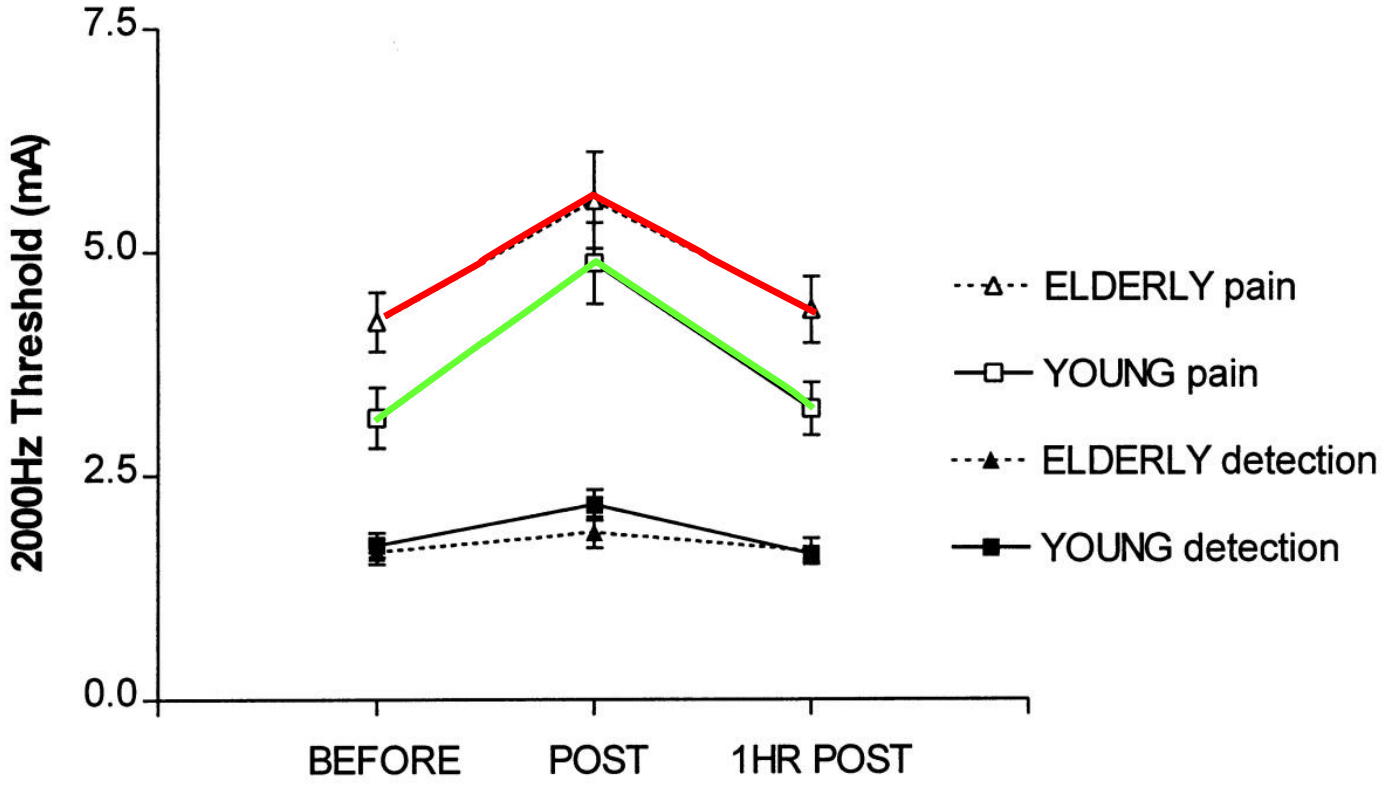


Fig. 1. Mean ± SEM detection and pain threshold values (mA) of young ($n = 15$) and elderly ($n = 15$) subjects, following 2000 Hz stimulation of the hand, before-, immediately post- and 1 h post-cold water pressor.

Washington et al. Age-related differences in the endogenous analgesic response to repeated cold water immersion in human volunteers . Pain 2000, 89 (1): 89-96

Higher Pain Threshold in Elderly

	No Pain on Presentation		Pain Intensity
	Elderly	Adult	
Peritonitis	45%	5%	------
Gastric Ulcer	33%	11%	⬇ 15%
Post-operative	------	-------	⬇ 10%-20% (per decade)
Pain Clinic	------	-------	⬇ 25% (multi-dimensional)
Pneumonia	74%	45%	------
Musculoskeletal	------	-------	Equivocal
Malignancy	74%	45%	⬇ 15% (1.5X less severe)
Myocardial	42%	18%	15 – 20% ⬇

Gibson & Helme (2001), Clinics in Geriatric Medicine, 17(3): 433 - 456

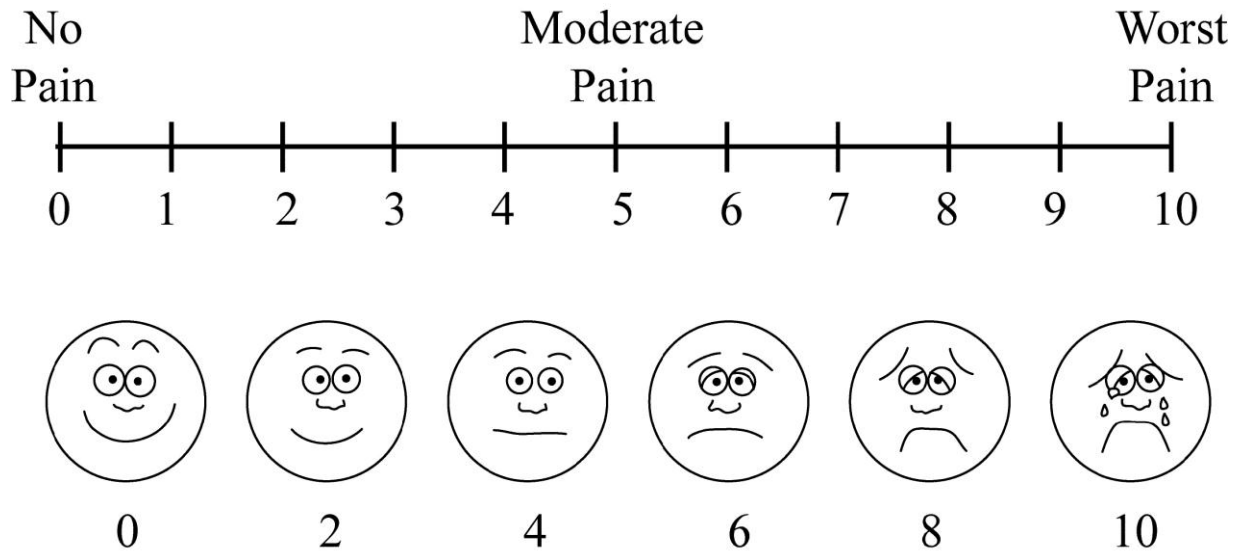
Pain Perception ↓ with Ageing

- Less Physiological Reserve
- Under-report Pain
  - ↓ Pain Sensitivity
  - ↑ Pain threshold
  - ↑ risk of undiagnosed disease or injury
- ↓ Tolerance to severe pain
  - ↑ Hyperalgesia (sensitivity to noxious/painful stimulus)
  - Prolonged CNS hyper-excitability
  - ↓ CNS plasticity in nociception
  - Prolonged dysf(n) following injury & inflammation

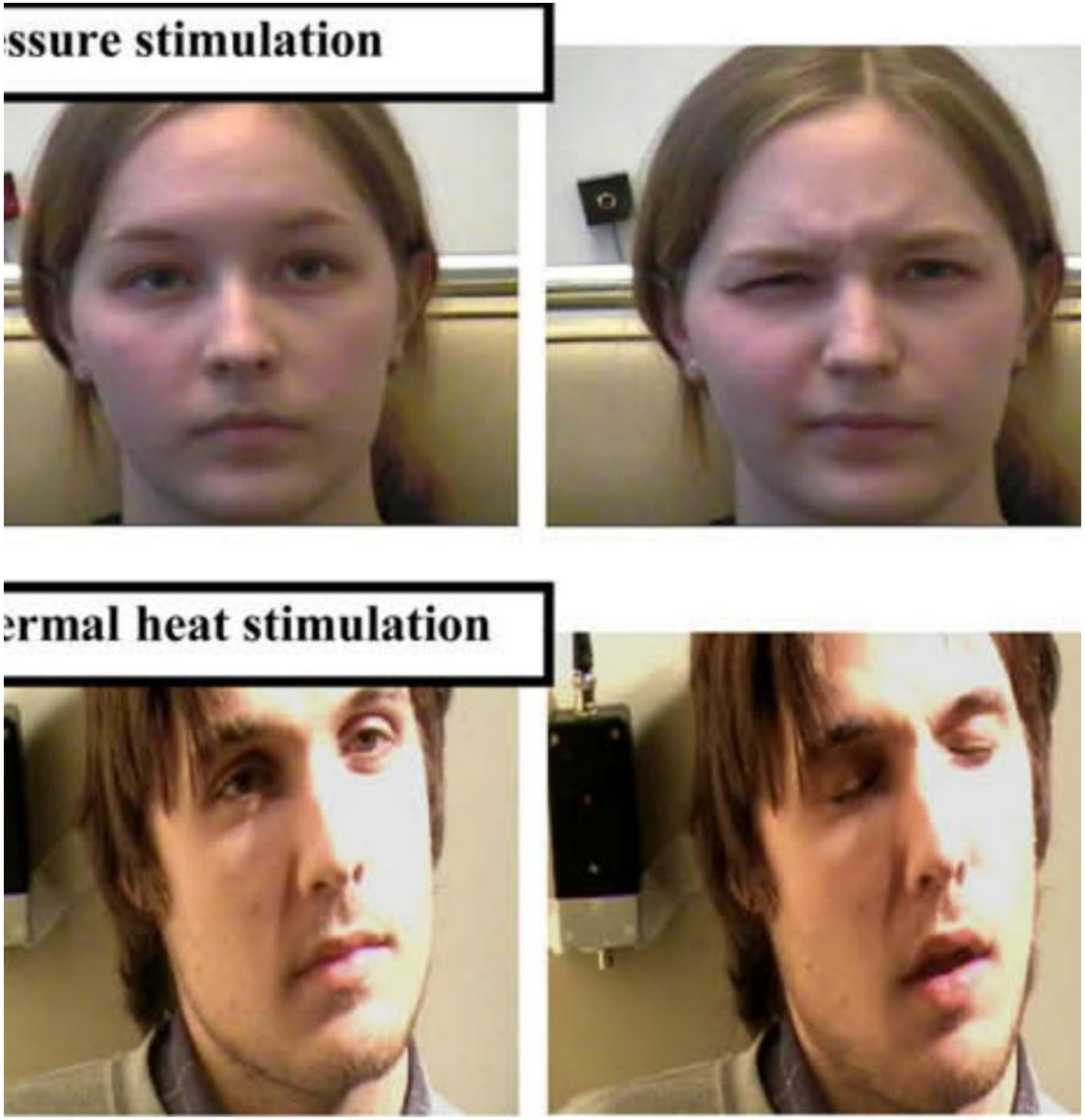
S Gibson. Pain in older people. Pain Clinical updates 2006. IASP

Elderly Prone to Severe/Persistent Pain

- Self report
  - Categorical scale preferred
  - McGill Pain Questionnaires, Brief Pain Inventory, etc
  - Affected by mental state



Self reported Pain may be affected



Baseline **Pain**

- Eye brow lowered
- Eyelid tightened/closed
- Wrinkled Nose
- Cheek raised
- Lips tightened/part

Kunz et al. PAIN 2009;145:273–275

Facial Expression of Pain

Pain Assessment IN Advanced Dementia
PAINAD

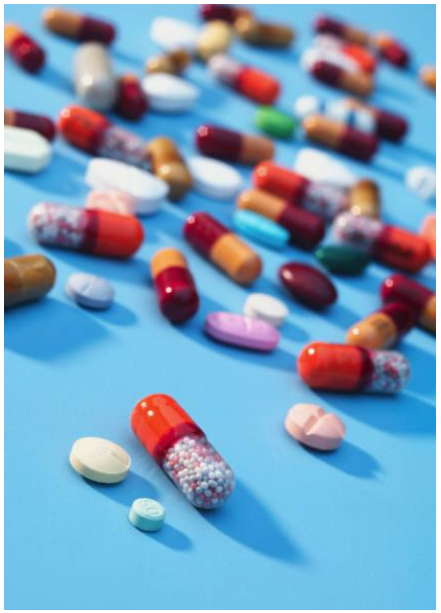
	0	1	2	Score
Breathing Independent of vocalization	Normal	Occasional labored breathing Short period of hyperventilation	Noisy labored breathing Long period of hyperventilation Cheyne-stokes respirations	
Negative Vocalization	None	Occasional moan or groan Low level speech with a negative or disapproving quality	Repeated troubled calling out Loud moaning or groaning Crying	
Facial Expression	Smiling, or inexpressive	Sad Frightened Frown	Facial grimacing	
Body Language	Relaxed	Tense Distressed pacing Fidgeting	Rigid Fists clenched, knees pulled up Pulling or pushing away Striking out	
Consolability	No need to console	Distracted or reassured by voice or touch	Unable to console, distract or reassure	

↑ Use of Behavioural Pain Assessment Tools

- Atypical Presentation (↓ GC)
  - Less frequent / severe pain in acute medical condition
- Cognitive impairment & behavioural changes
  - Communication problems
  - Collaborative info from relatives, carers & friends
  - Caregiver may misinterpret pain perception
- Attitudes, Beliefs & psychosocial
  - Attitude: Fear of addiction / tolerance / side effects
  - Beliefs: pain was inevitable, nobody will believe me
  - Psychological: anxiety, distress, depression, anger, dementia
  - Social: No $$, retirement, △ social role, bereavement, loss of friends

S Gibson. Pain in older people. Pain Clinical updates 2006. IASP

Problems in Pain Assessment & Management



- Limited treatment modality
  - Physiological changes (Altered PK & PD)
  - Comorbidities (e.g. IHD, DM, Peptic ulcer)
  - Pathological conditions
  - Poly-pharmacy (↑ Drug interaction)
- Evidence Based treatment
  - Limited studies, extrapolated from other population
- Limited access to pain treatment

S Gibson. Pain in older people. Pain Clinical updates 2006. IASP

Problems in Pain Management

- Start low, go slow
- Keep it simple
- Systemic meds: non-invasive routes first
- Acetaminophen: 1st choice for mild & mod pain
- NSAIDS
  - PRN basis
  - Long term daily analgesia
    - Avoided non-selective NSAIDs
    - COX-2 selective or non-acetylated salicylates preferred
- Adjuvants drugs
  - Neuropathic pain
  - e.g. anticonvulsants, anti-depressants, steroids

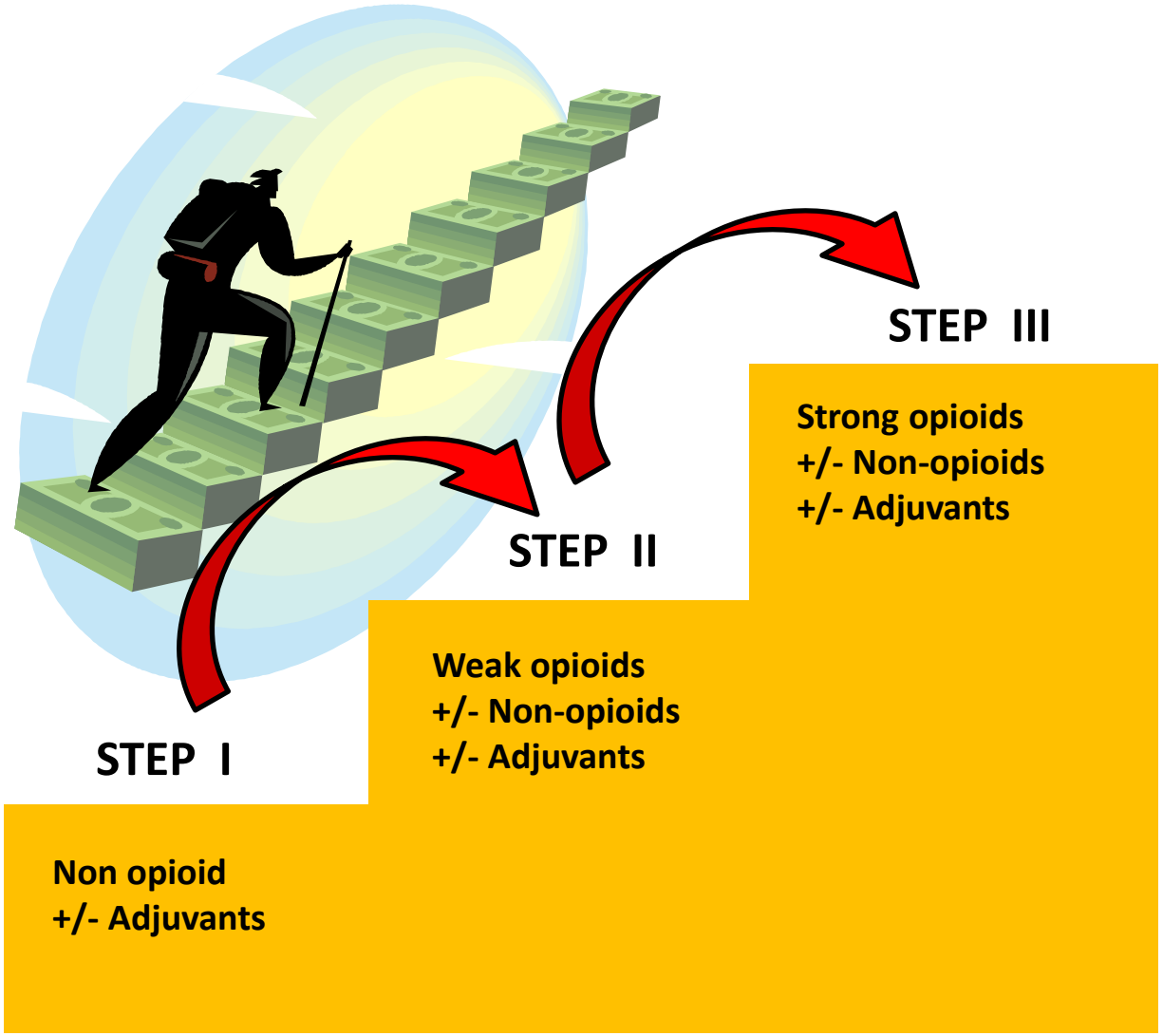
Clin J Pain 2004;20:220–226

Pharmacological Management

- Opioid analgesic
  - Mod to severe nociceptive pain
  - Background pain:
    - Round the clock, long acting/sustained release drug
  - Breakthrough pain:
    - PRN, faster onset/short acting drug
  - Prevent/treat constipation & GIT symptoms
  - Opioid Contract
  - Close monitoring & frequent re-evaluation
  - Aberrant behaviours

Clin J Pain 2004;20:220–226

Pharmacological Management



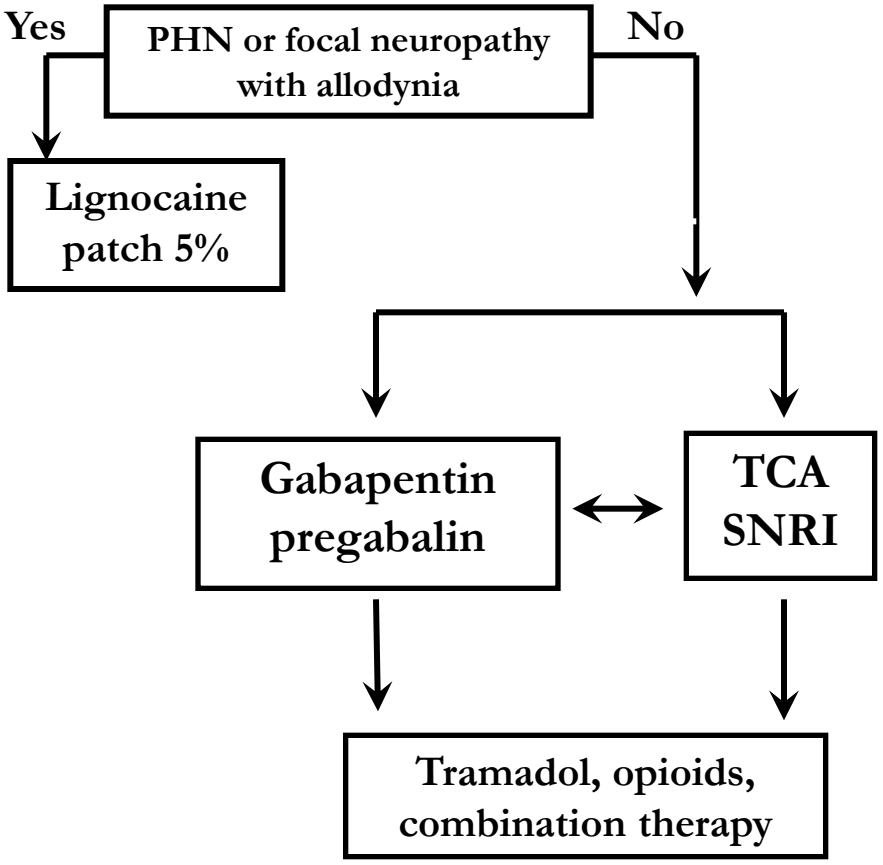
- Cancer pain
- Regular assessment
- Oral route preferred
- Round the clock
- Individualized
  - Analgesic dose
  - Pain intensity
- Adjuvant Rx PRN

Adjuvants: steroids, anticonvulsant, antidepressants etc.

World Health Organization. 1987.

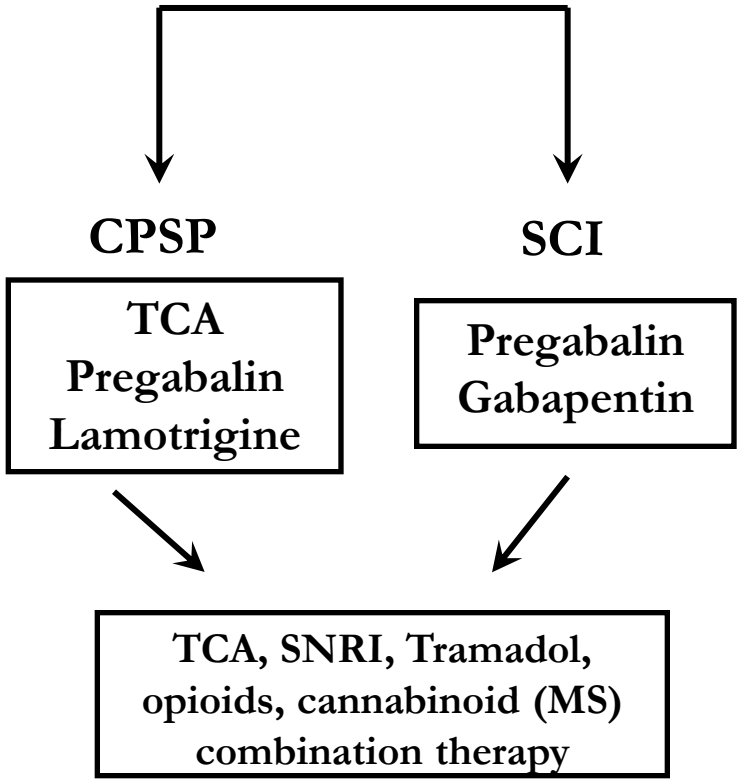
WHO Analgesic Ladder (1986)

Peripheral Neuropathic Pain



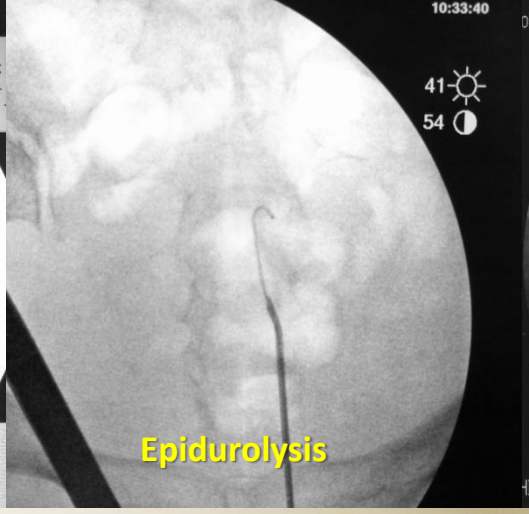
** Trigeminal Neuralgia – carbamazepine, oxcarbazepine

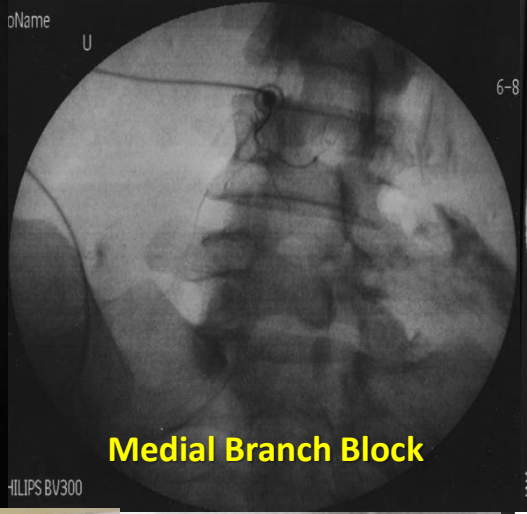
Central Neuropathic Pain

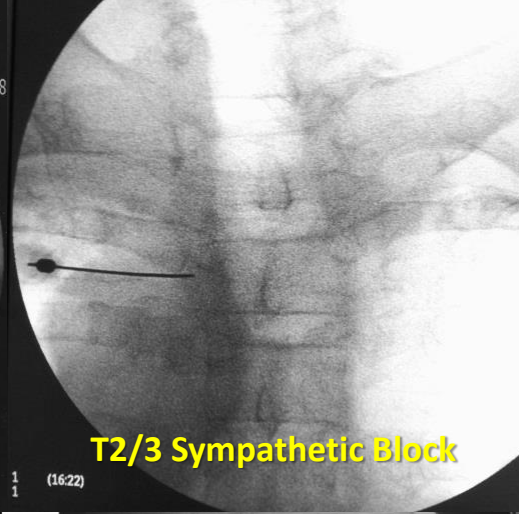


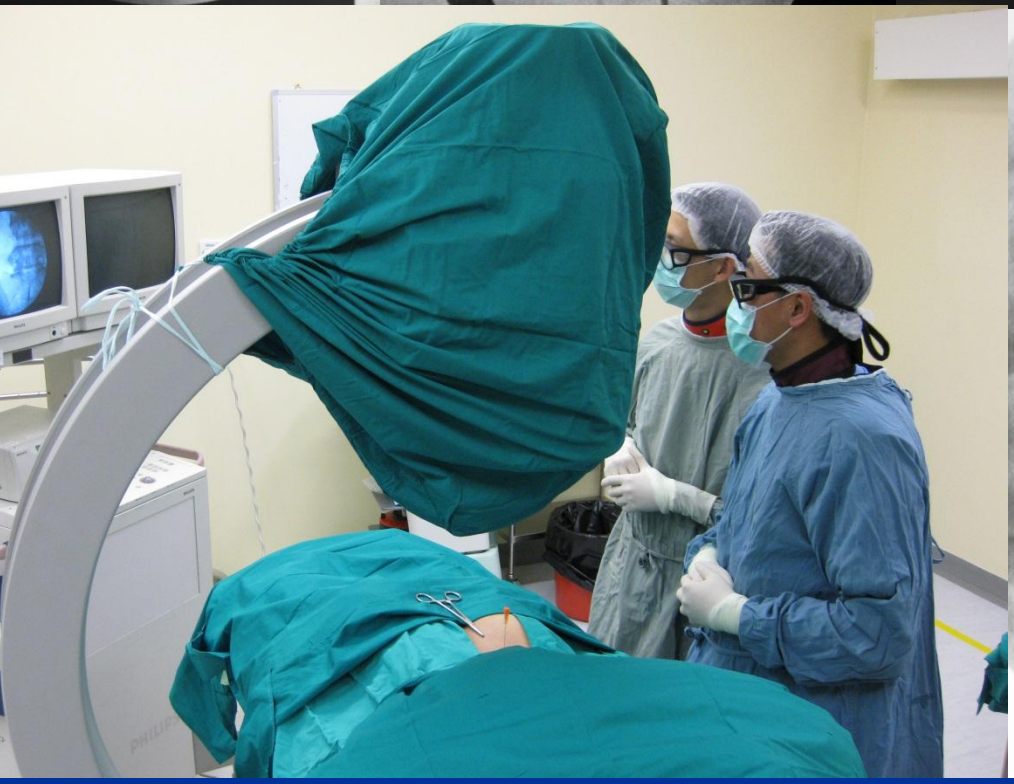
MedGenMed 2007;9:36
Pain. 2010 ;150(3):573-81

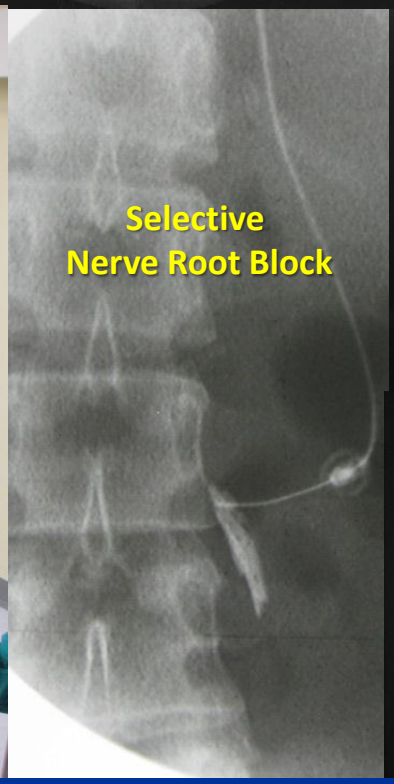
Neuropathic Pain

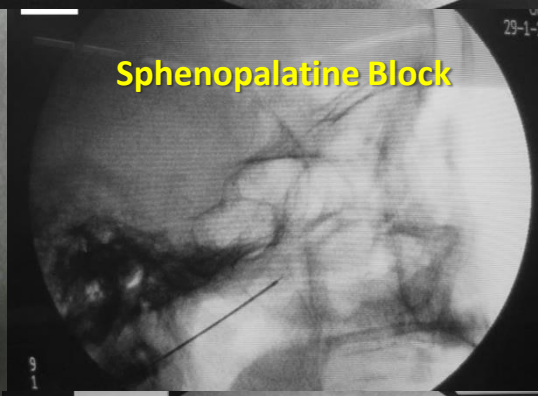


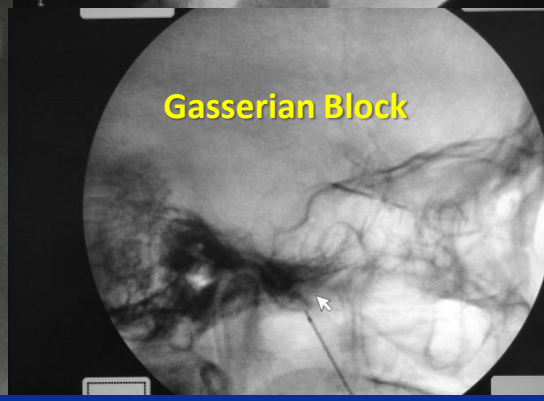




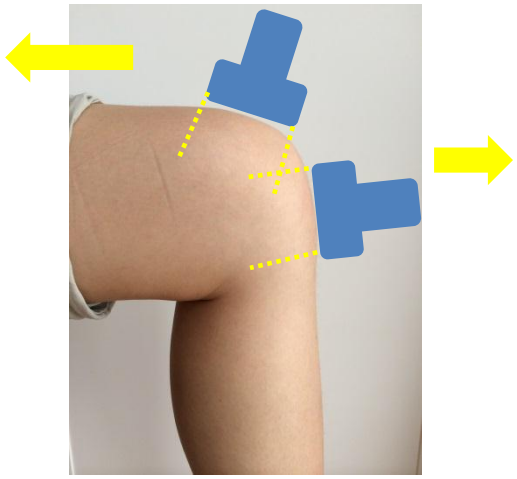


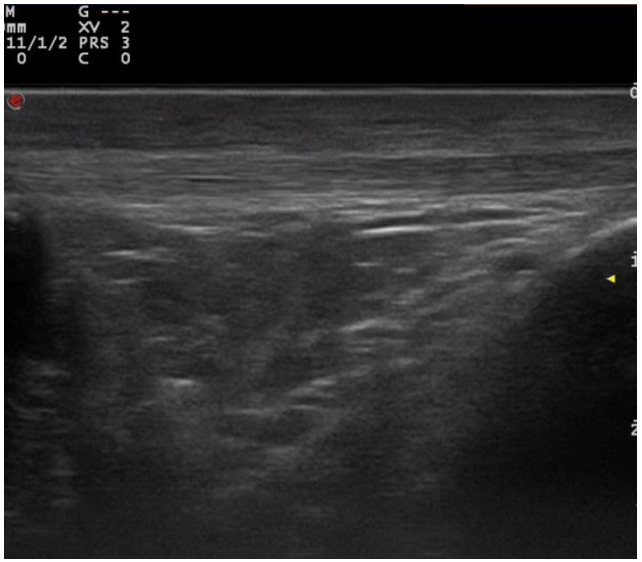


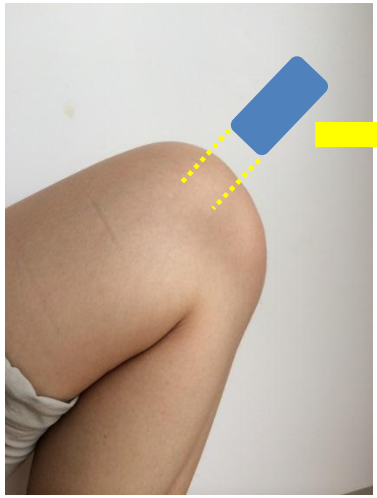


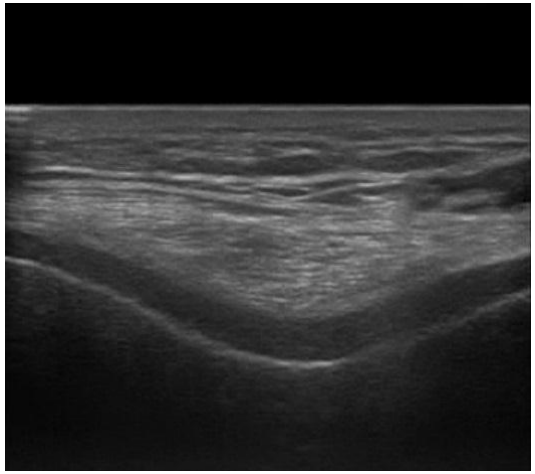


Pain Interventional Procedures

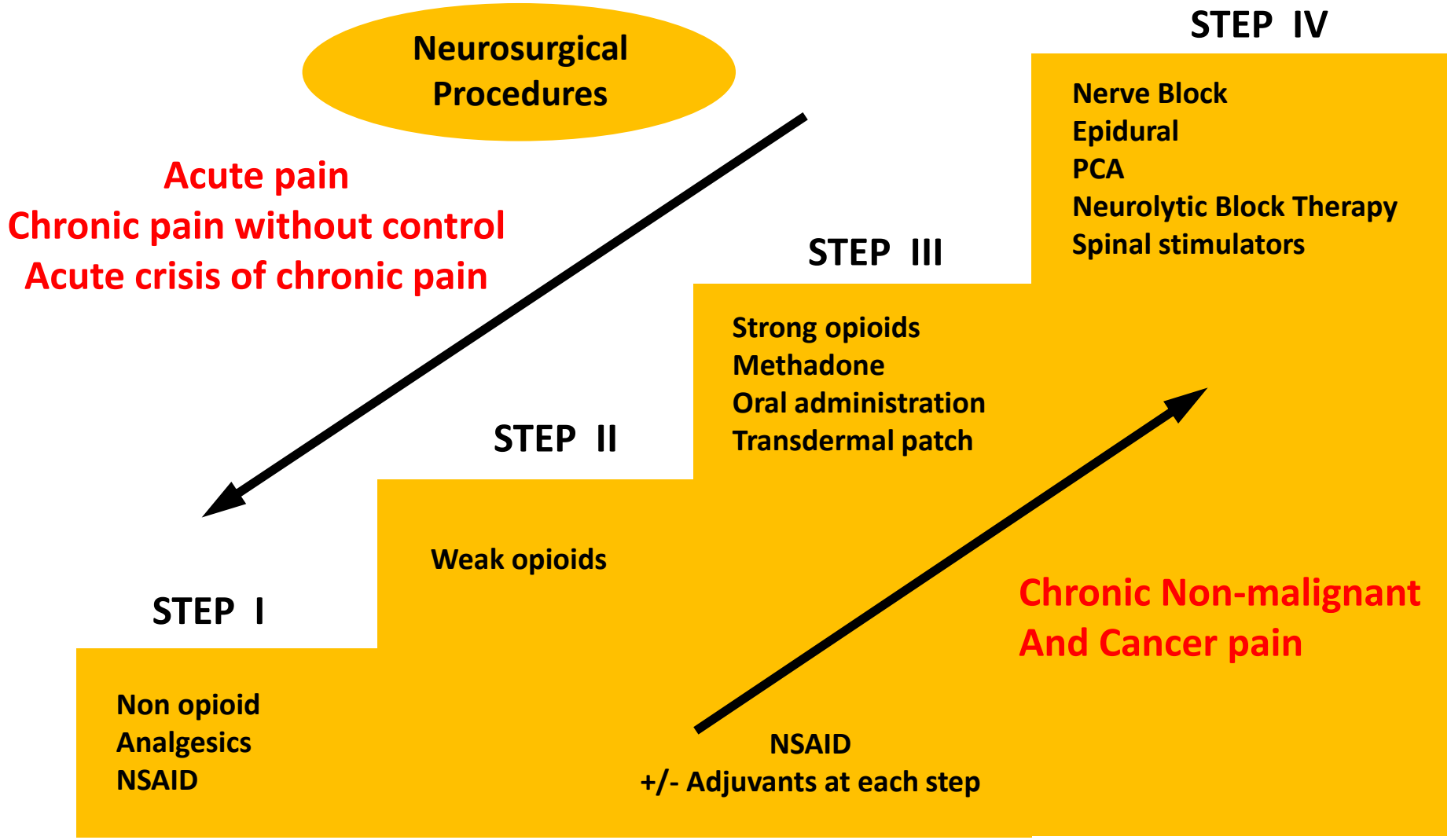








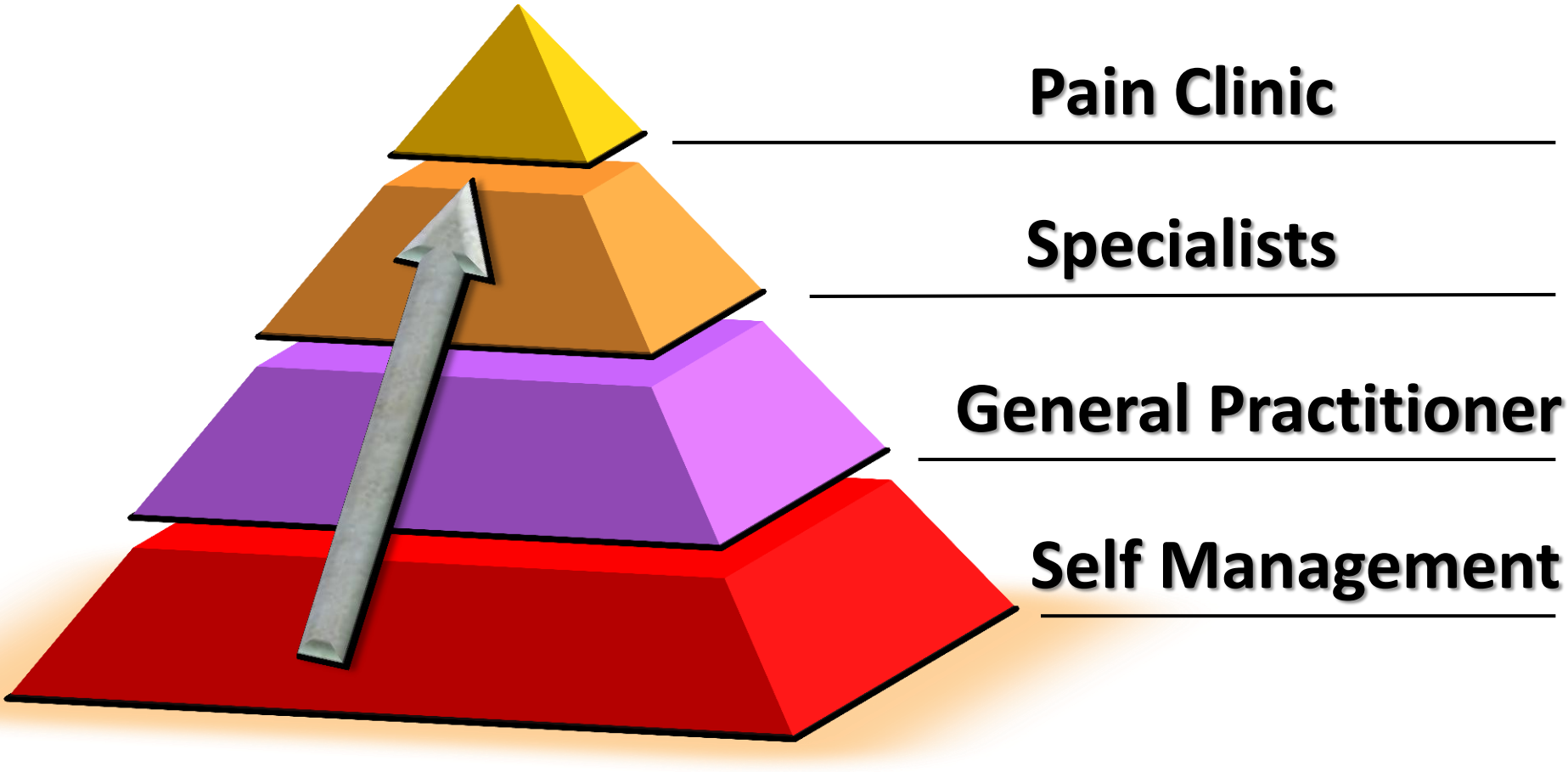
USG Diagnosis & Intervention in Clinic



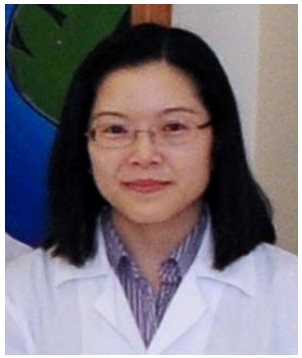
PCA (Patient Controlled Analgesia)
NSAID: Non Steroidal Anti-inflammatory Drugs

Can Fam Physician. Jun 2010; 56(6): 514–517

Modified WHO Analgesic Ladder



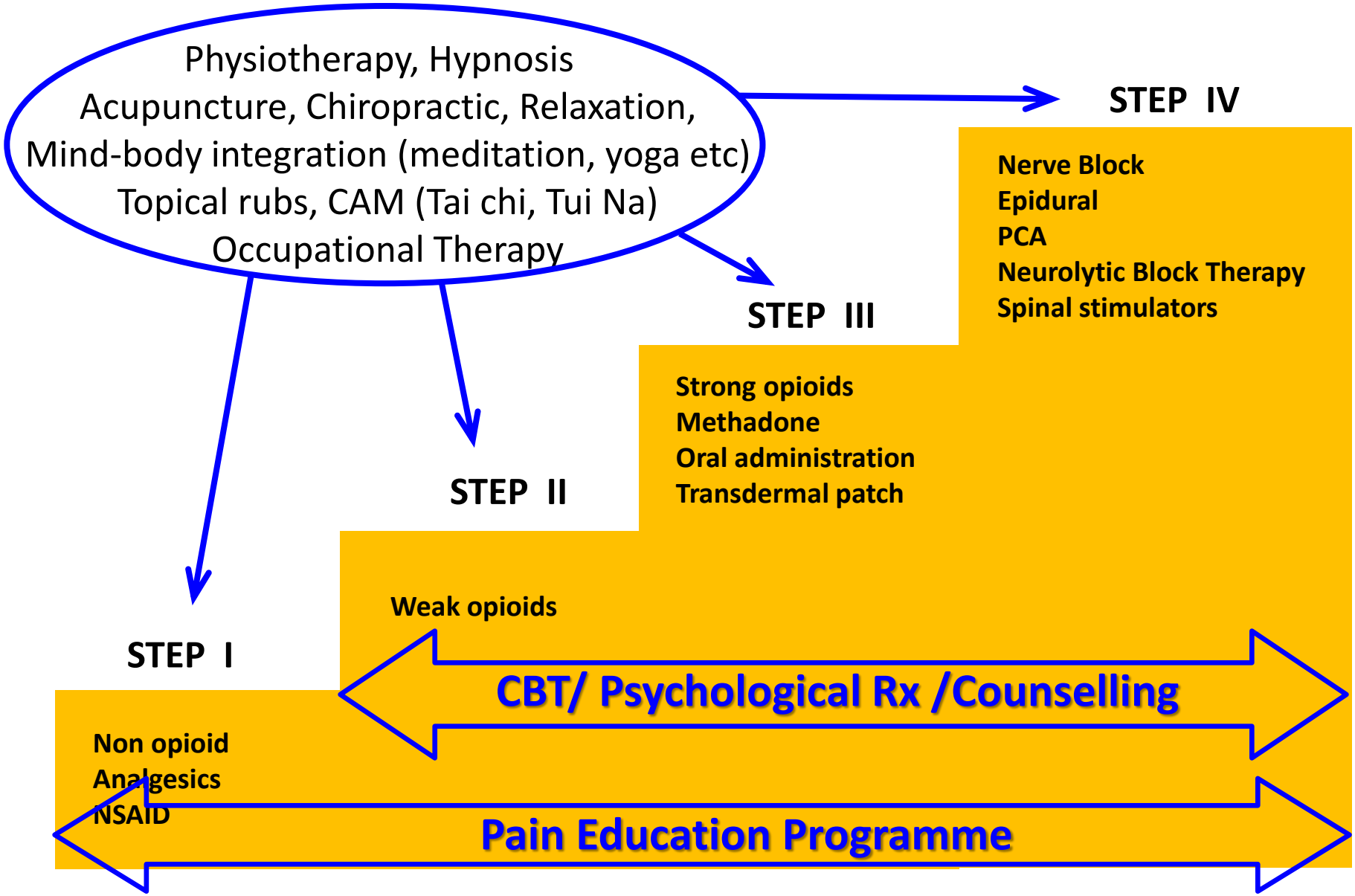
Pain Management Approaches



Multidisciplinary Pain Team

Multidisciplinary Pain Conferences

CBT / Chronic Pain Programme



J Prim Health Care. 2012 Sep 1;4(3):254-8

Modified WHO Analgesic Ladder

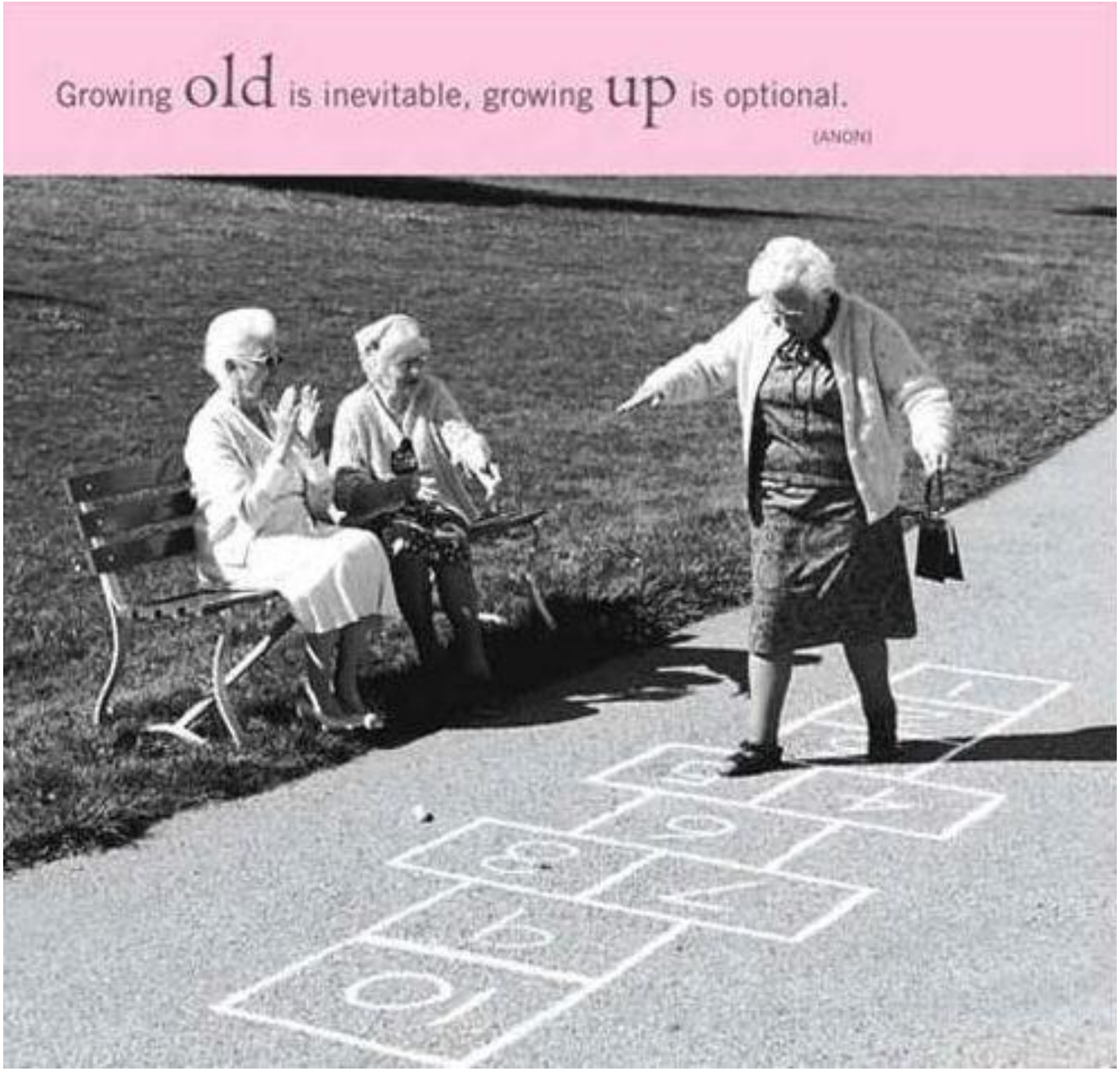
- Inadequacy in Pain Education
  - Medical students & physicians
  - “Those who have a biomedical fixation are not likely to deal successfully with chronic pain patients”
- Physicians
  - Failure to take pain seriously: “this must be in your head”
  - Willingness to treat pain aggressively: “nothing can be done”
  - “I don’t know what else to do”

Benedetti C et al. Medical education: a barrier to pain therapy and palliative care. J Pain Symptom Manage 2001;21:360–1

Barriers to Effective Pain Management

- Pain Medicine not widely recognized as a distinct specialty
- Hospital Authority
  - ? Best Model of Pain service delivery
  - ? How many pain centres are needed
  - ? Governance structure
  - ? Funding needed

Barriers to Effective Pain Management



http://www.internetmonk.com/wp-content/uploads/growing_old_inevitable.jpg

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