



PAIN IN THE OLDER PERSON AND COGNITIVELY IMPAIRED

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IUC 21 January 2022

SUMMARY

- Influence of ageing and cognitive impairment on perception of pain
- Is pain an important problem?
 - Prevalence of pain
 - Consequences
- Management of pain
 - Challenges
 - Evaluation of pain
 - Medical treatment: Specific aspects



'NORMAL' AGEING PROCESS OF SOMATOSENSORY PAIN SYSTEM

- Relation age ~ pain is still unclear
 - Reduction in afferent transmission
 - Reduction in endogenous pain inhibitory system

Little or no change in acute pain perception

- Alterations in pain threshold ~ intensity, area, modality and duration of the stimulus

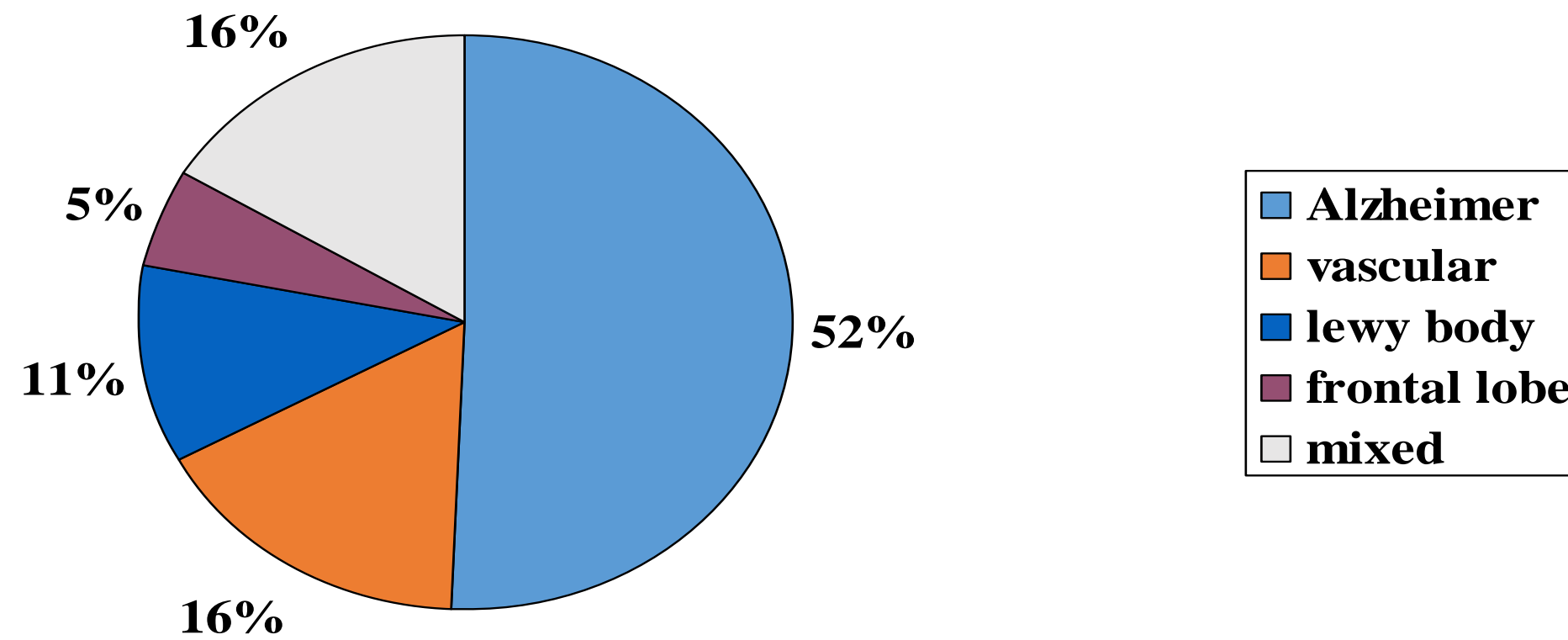
Reduced ability to detect signals harmful to the body

'NORMAL' AGEING PROCESS OF SOMATOSENSORY PAIN SYSTEM

- Longer period of central hyperalgesia
 - For comparable levels of spontaneous pain, thermal hyperalgesia and flare
- Tenderness after injury appears to be prolonged

 **Higher risk of chronic pain and decreased pain tolerance**

PAIN AND COGNITIVE IMPAIRMENT



PAIN AND COGNITIVE IMPAIRMENT

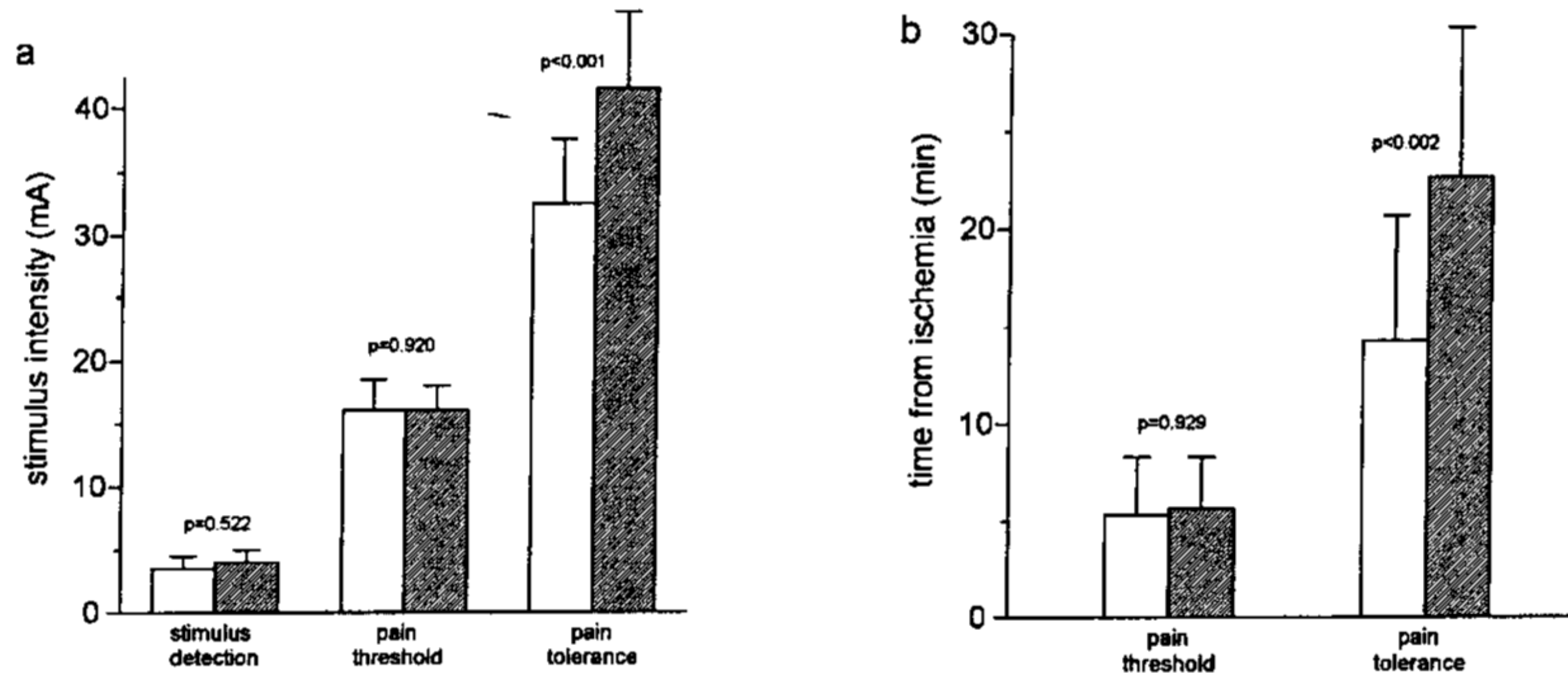
ACUTE PAIN

ALZHEIMER DISEASE

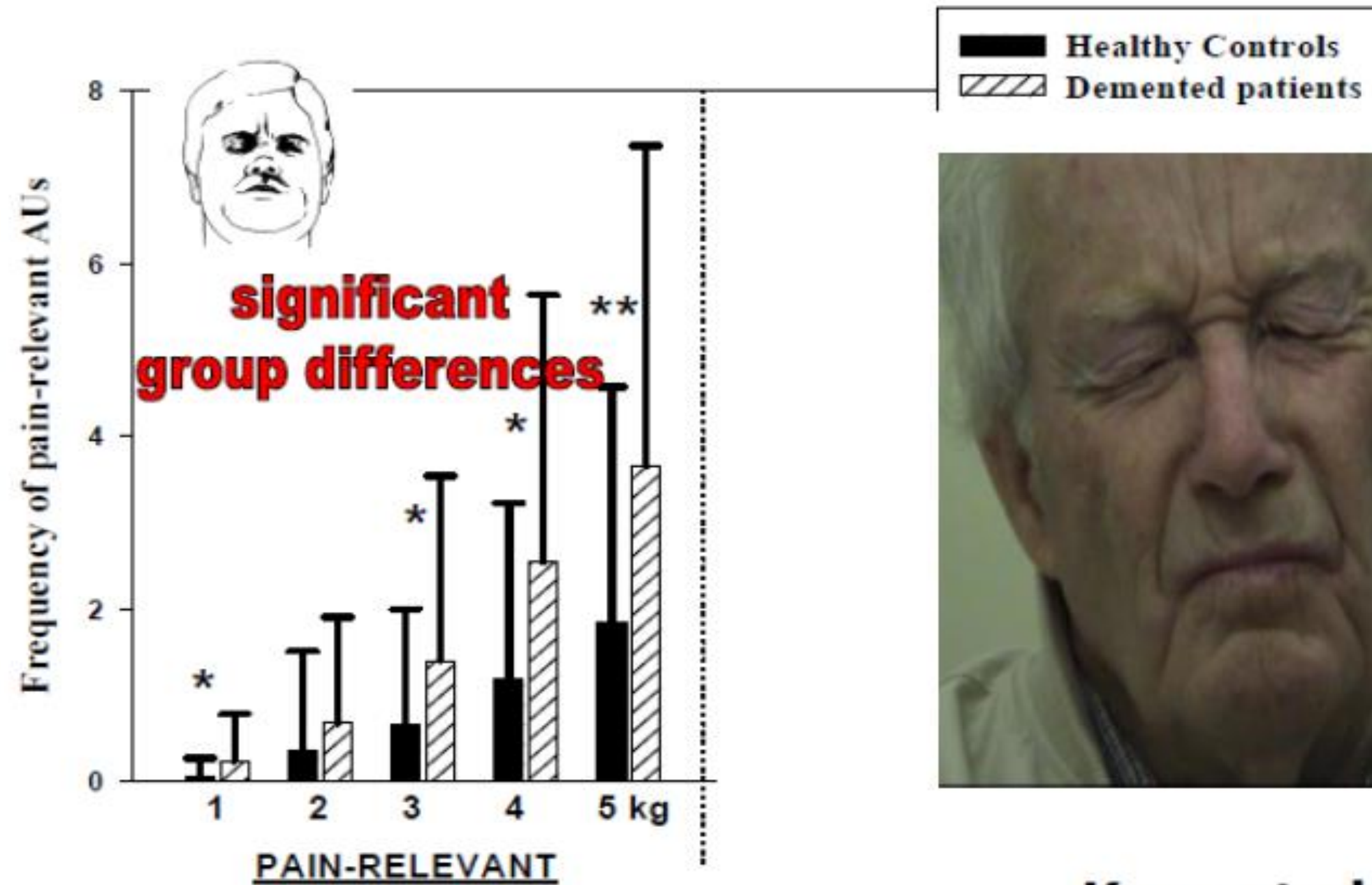
MILD to MODERATE STAGE

ALZHEIMER DISEASE AND PAIN

Pain in normal subjects (white) and in AD patients (shadow)



FACIAL EXPRESSIONS



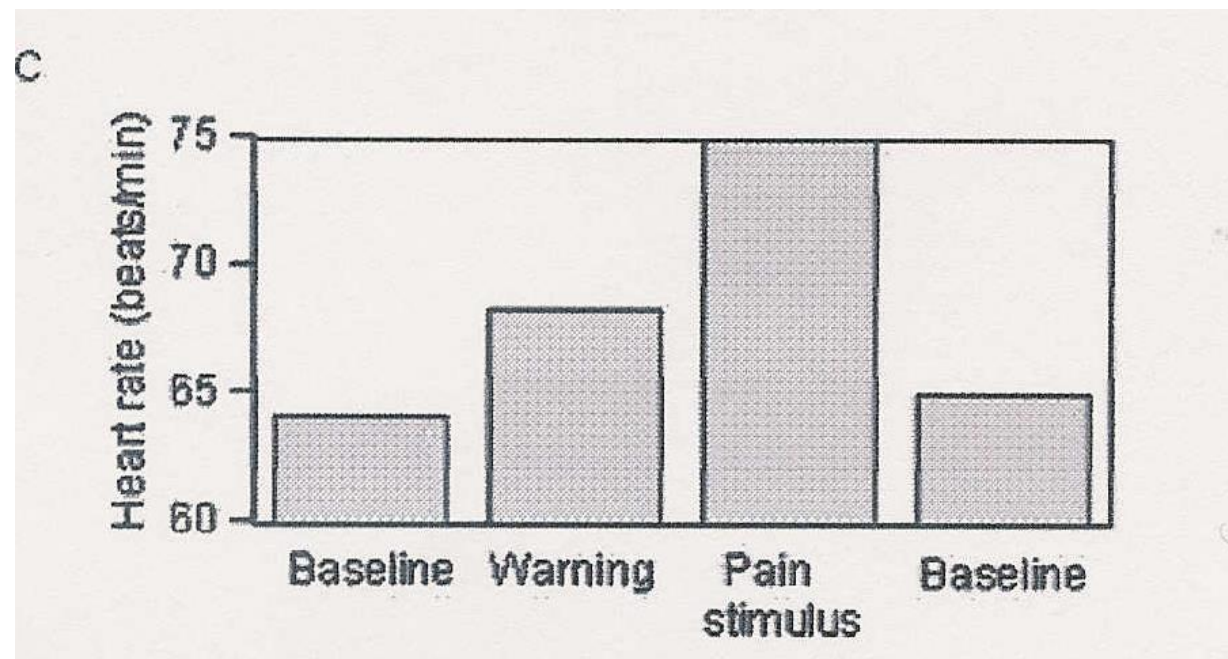
Kunz et al. 2007

Pain 133 (2007) 221–228

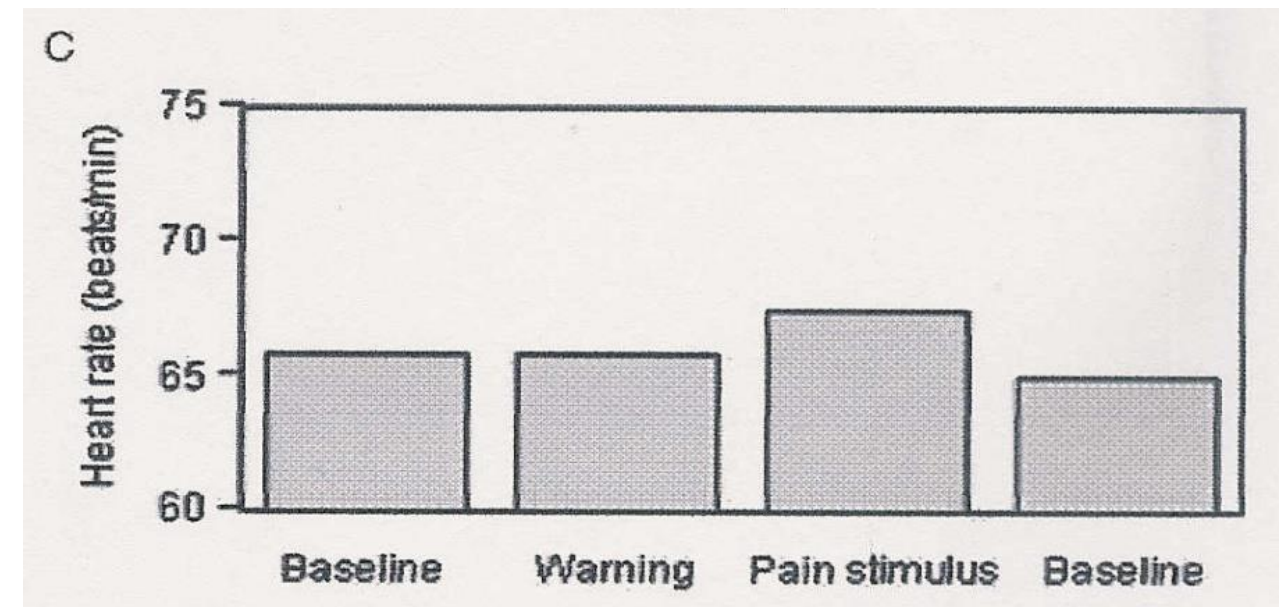
Beach et al. Clin J of Pain 2015;sept Epub ahead

AUTONOMOUS RESPONSE

MMS = 21

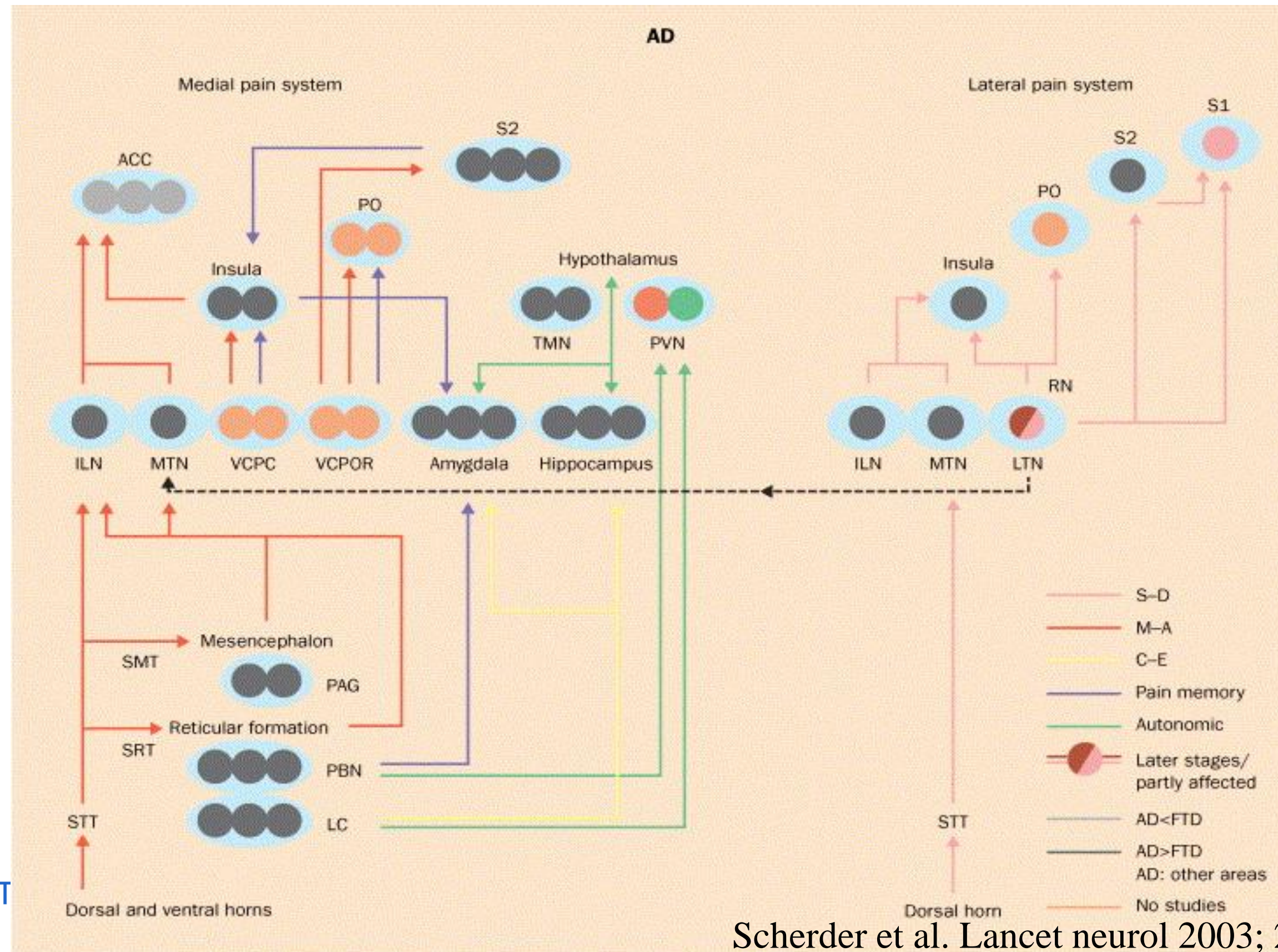


MMS = 9



Decrease in autonomic response

ALZHEIMER DISEASE AND PAIN



Scherder et al. Lancet neurol 2003; 2: 677-86

ROSA

88 years old

Moderate to severe dementia

Since three days:

- Restlessness, crying and shouting especially when moved out of the room
- Hitting and biting nurses during toileting





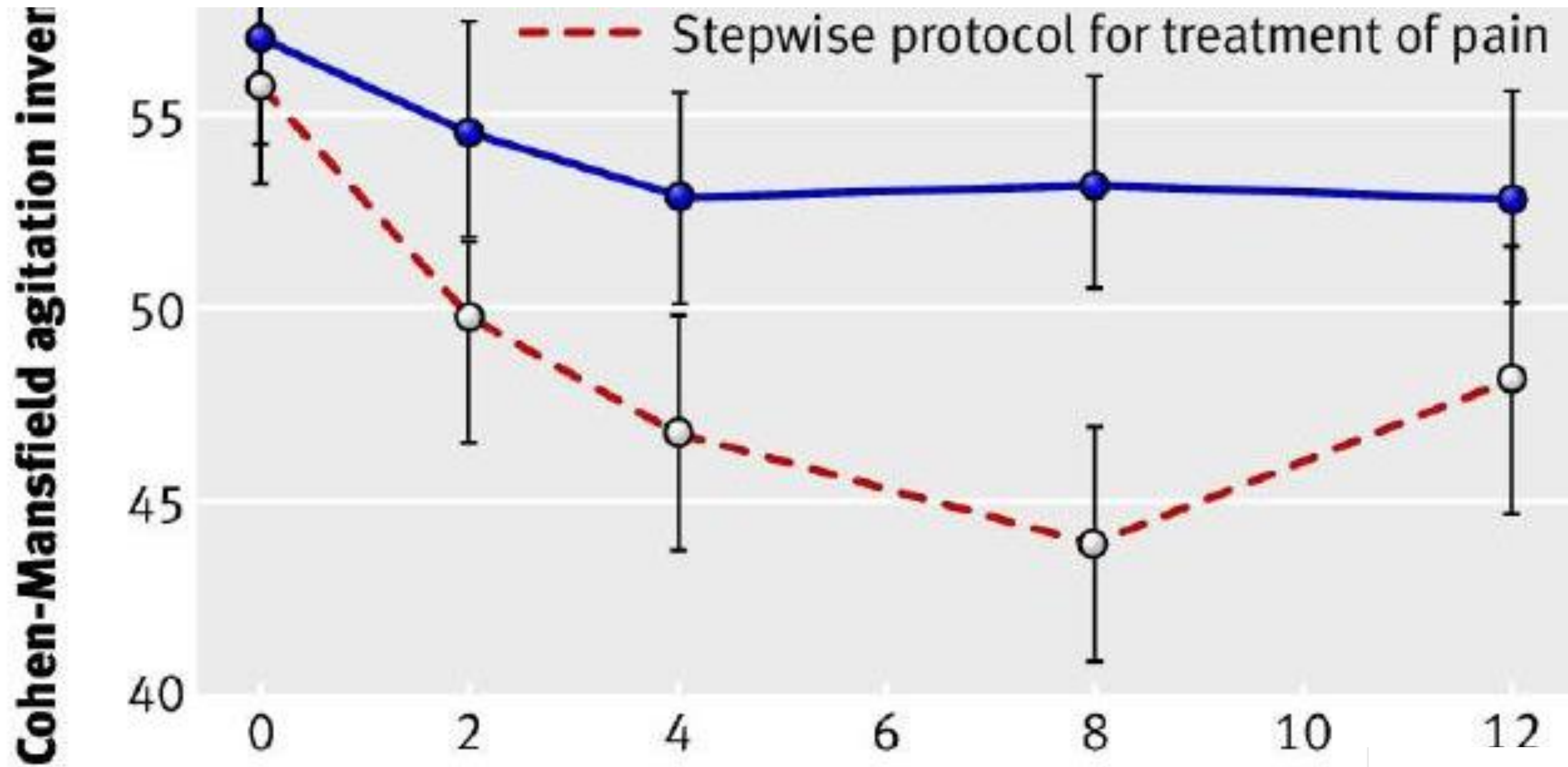
Table 3Association of pain severity with behavioral and psychiatric symptoms.^a

Symptom	No pain (n = 2284)	Mild (n = 159), OR (95% CI)	Moderate/severe/excruciating (n = 374), OR (95% CI)
<i>Behavioral symptoms</i>			
Wandering			.89)
Verbal abuse			.41)
Physical abuse			.62)
Socially inappropriate behavior			.70)
Resists care			.95)
1 or more behavioral symptoms			.24)
<i>Psychiatric symptoms</i>			
Abnormal thought process			.97)
Delusions			.45)
Hallucinations	Ref.	1.36 (0.68–2.72)	1.40 (0.87–2.26)
1 or more psychiatric symptoms	Ref.	1.35 (0.90–2.00)	1.49 (1.14–1.95)

Ref., reference; OR, odds ratio; CI, confidence interval.

^a Data are adjusted for age, gender, country, cognitive impairment, number of diseases, ischemic heart disease, stroke, falls, communication problems, and a flare-up of a chronic or recurrent condition. Data on pain severity were not collected in 5 participants.

INFLUENCE OF TREATMENT ON BD



ALZHEIMER DISEASE AND PAIN: CONCLUSION

- Severity of dementia is probably related to the tolerance of pain
- Change in anticipation and reaction on pain
 - Decrease in recognition and understanding of pain
 - Behavioural changes can be the result of pain
- Decrease in autonomic response in AD
- Increase in facial expression in AD

PAIN AND DEMENTIA

	Experimental and clinical results	
Condition	<i>Motivational-affective aspects of pain</i>	<i>Presence or intensity of pain</i>
Alzheimer's disease	↓	Relatively unaffected
Vascular dementia	↑	Not examined
Frontotemporal	↓	Not examined
Parkinson (no cogn)	↑	Not examined

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PREVALENCE OF PAIN IN OLDER PEOPLE

Table 2. Prevalence of Pain in Participants with and without Dementia

Pain	Dementia Cohort			Matched Cohort
	All Respondents, n = 802 ^a	Self-Report, n = 395 ^b	Proxy Report, n = 407	All Respondents, n = 802
	% (95% CI)			
Bothersome	63.5 (60.5–66.4)	62.7 (58.7–66.6)	64.4 (59.8–68.7)	54.5 (51.4–57.7) ^c
Activity limiting	43.3 (40.2–46.5)	40.1 (35.7–44.6)	46.6 (42.5–50.7)	27.2 (25.2–29.2) ^c

PREVALENCE OF OLDER HOSPITALISED PEOPLE WITH DEMENTIA

Table 2

Prevalence of pain in 230 older people with dementia and unplanned acute medical admission.

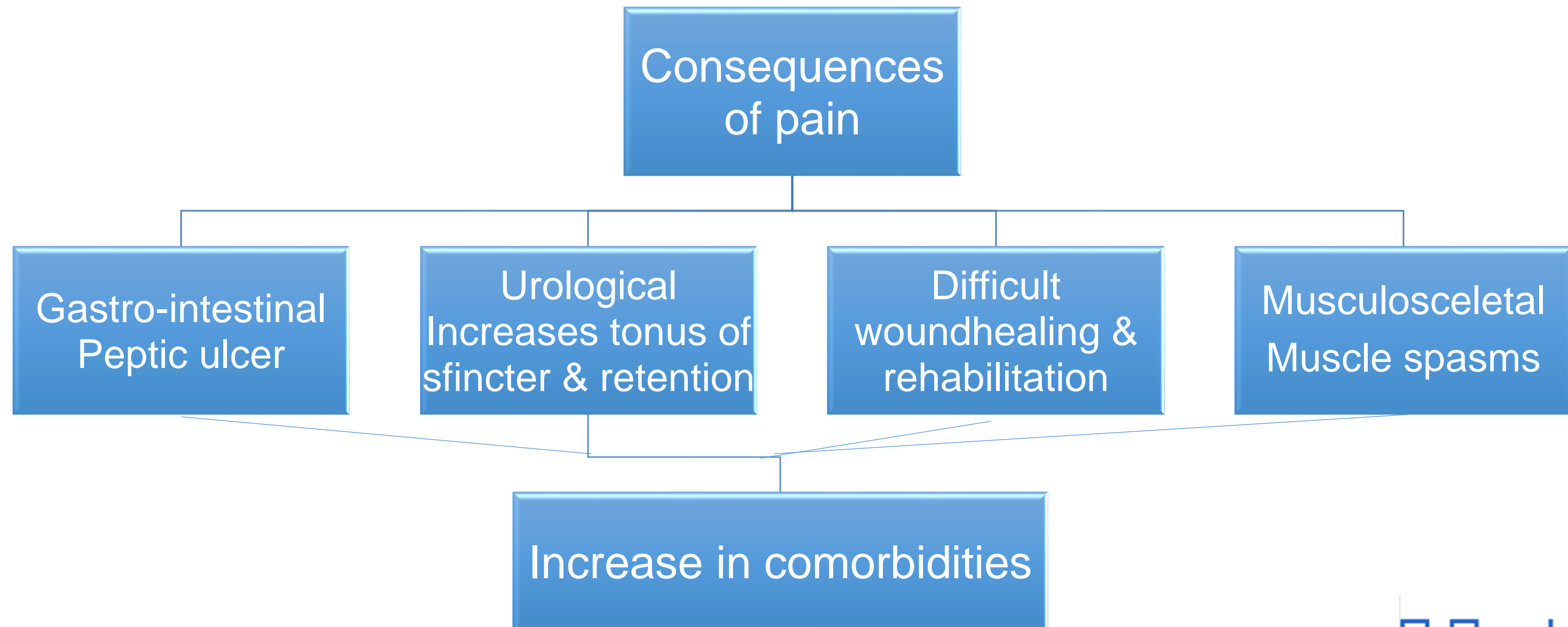
Pain	Time during admission, number (%)			
	At baseline, n = 230	At least once during admission, n = 230	All assessments n = 965*	Persistent, n = 138†
Self-reported	54/200 (27.0)	84/218 (38.5)	196/821 (23.9)	8/117 (6.8)
95% CI	(20.8, 33.2)	(32.0, 45.0)	(18.6, 27.5)	(2.2, 11.5)
PAINAD scale ≥2				
Pain during rest	22/229 (9.6)	43/230 (18.7)	68/950 (7.2)	0/135 (0.0)
95% CI	(5.8, 13.5)	(13.6, 23.8)	(5.3, 9.8)	-
Pain during movement	97/229 (42.4)	131/230 (57.0)	331/946 (35.0)	21/135 (15.6)
95% CI	(35.9, 48.8)	(50.5, 63.4)	(29.4, 39.0)	(9.4, 21.7)

* Prevalence for all assessments combined, estimated by generalised estimating equations.
† Defined in the population with 3 or more assessments, as in pain in at least 75% of the occasions.
CI, confidence interval; PAINAD, Pain Assessment in Advanced Dementia scale.

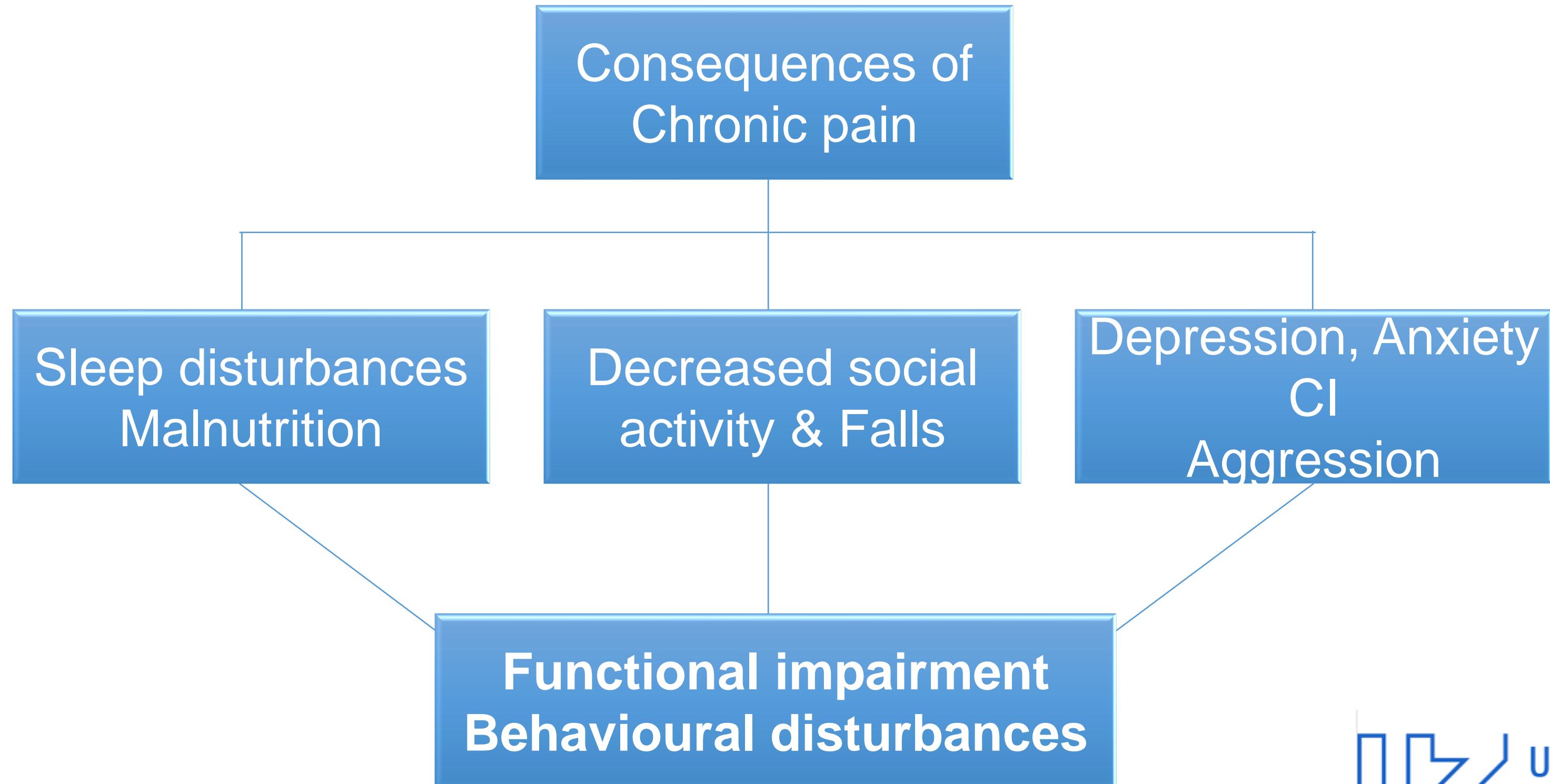
ETIOLOGY OF PAIN IN PEOPLE WITH DEMENTIA

Number of patients reporting pain, n (%)	57 (44)
Etiology of pain, n (%)	
Osteoarthritis of joints	39 (68)
Back pain (osteoporosis or osteoarthritis)	3 (5)
Skin lesion	7 (12)
Other causes	8 (14)

Pain: consequences



CHRONIC PAIN: CONSEQUENCES

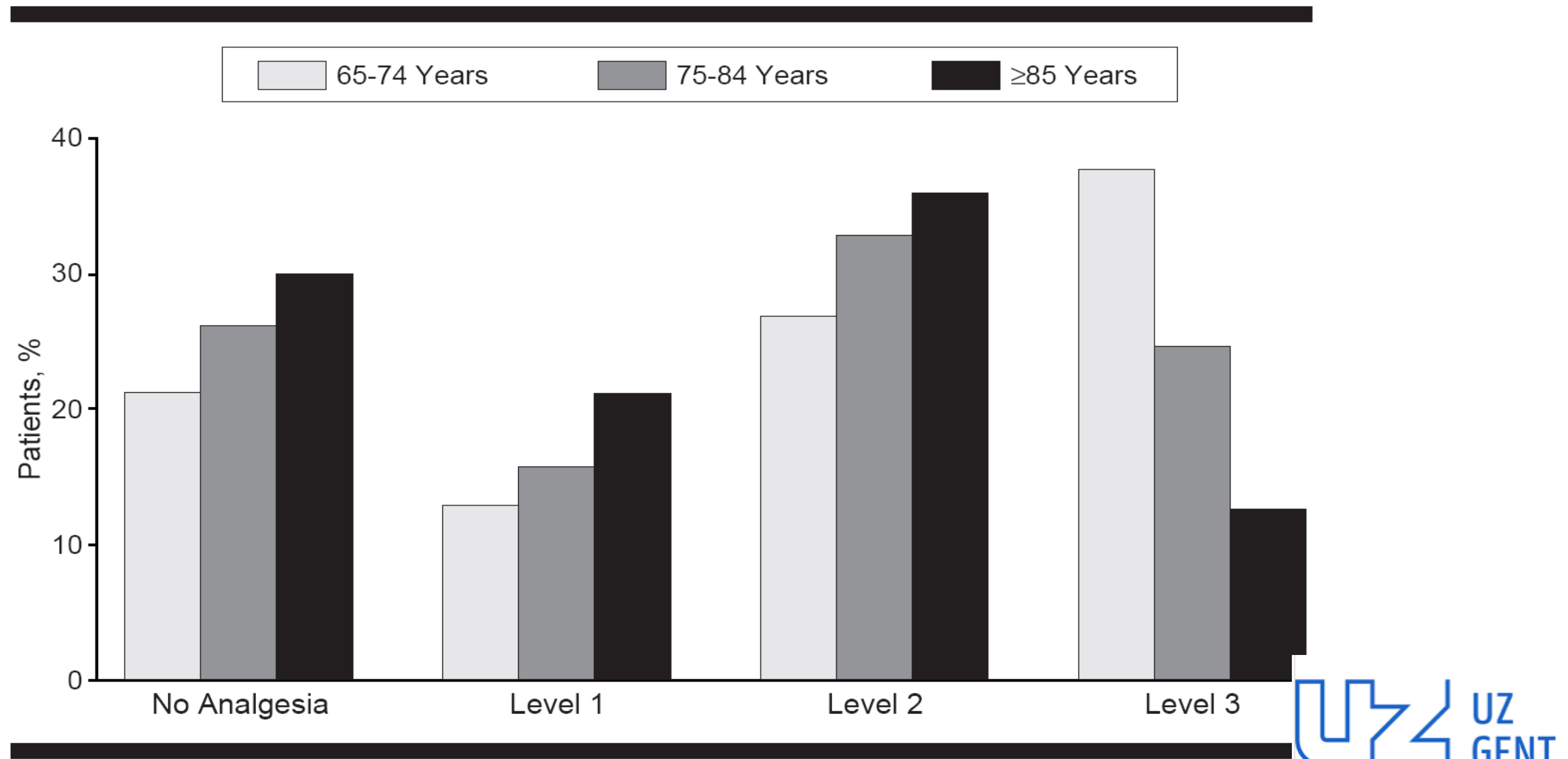


SUMMARY

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USE OF ANALGESICS IN THE OLDER PERSON WITH CHRONIC MALIGNANT PAIN



Bernabei et al. JAMA 1998;279:1877-82

UNDER-TREATMENT OF PAIN

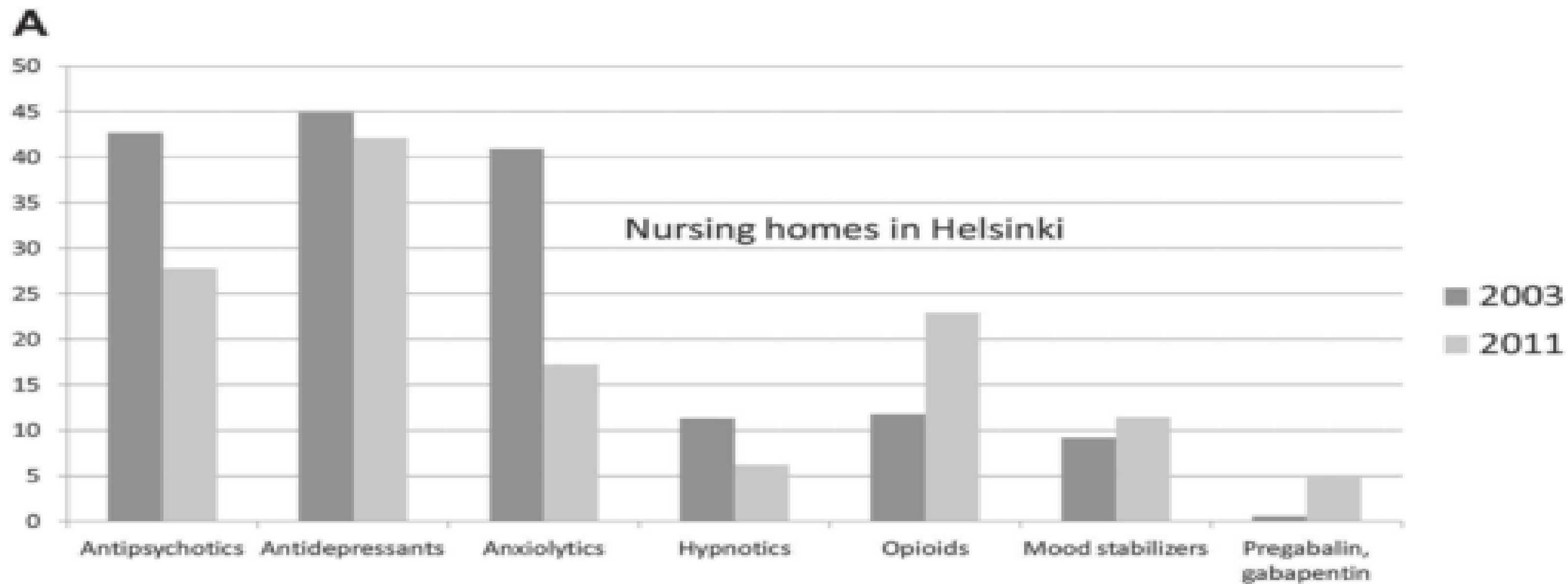
Table 2. Use of Analgesia and Report of Pain by Persons with Dementia (N = 115)

Analgesic Use*	Report of Pain [†] n (%)	
	Yes (n = 62)	No (n = 53)
None	42 (68)	45 (85)
Any	20 (32)	8 (15)
Acetaminophen	12 (60)	4 (50)
Nonsteroidal antiinflammatory drug	5 (25)	4 (50)
Weak opioid	3 (15)	0
Strong opioid	0	0

UNDER-TREATMENT OF PAIN

Table 4. Logistic Regression of Potentially Insufficient Analgesia on Pain Management Index According to Patient Demographics and Variables that Significantly Added to the Model

Characteristic	Odds Ratio	95% Confidence Interval	<i>P</i> -value
Age	1.07	1.01–1.14	.03
Male	1.06	0.40–2.82	.91
Lower education	1.04	0.71–1.52	.84
Advanced dementia*	3.08	1.05–9.10	.04
Impaired function†	2.50	1.01–6.25	.04
Depression‡	2.13	0.82–5.52	.12



UNDER-TREATMENT OF PAIN: AETIOLOGY

- Pain is perceived as unavoidable with ageing
- High incidence of adverse drug reactions (ADR)
- Pain is not recognised
 - Communication of pain (especially in mild to advanced dementia) is diminished
 - No regular assessment for pain by the caregiver

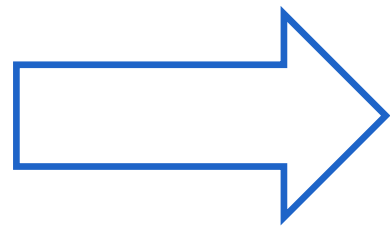


SYSTEMATIC EVALUATION

Geriatric problems	Before MGST	After MGST	Gain	p
ADL-IADL	26%(21-31)	89%(86-93)	63%(59-69)	<0.0001
Incontinence	4%(3-9)	60%(55-65)	56%(48-59)	<0.0001
Falls	35%(30-40)	46%(41-52)	11%(7-26)	0.1497
Cognition	34%(29-39)	68%(67-77)	34%(27-48)	<0.0001
Depression	13%(9-17)	49%(43-54)	46%(33-43)	<0.0001
Social	7%(5-11)	45%(44-55)	38%(35-50)	<0.0001
Nutritional	17%(13-21)	65%(60-71)	48%(45-57)	<0.0001
Pain	8%(5-11)	43%(38-49)	35%(32-42)	<0.0001
Total of suspected problems / patient (mean±SD)	1.5±1.2	4.7±1.7	3.2±1.8	<0.0001

WHEN TO SCREEN FOR PAIN?

- Assessing pain is as measuring temperature, tension
....
- To be done as older person go worse



Pain = Fifth vital sign

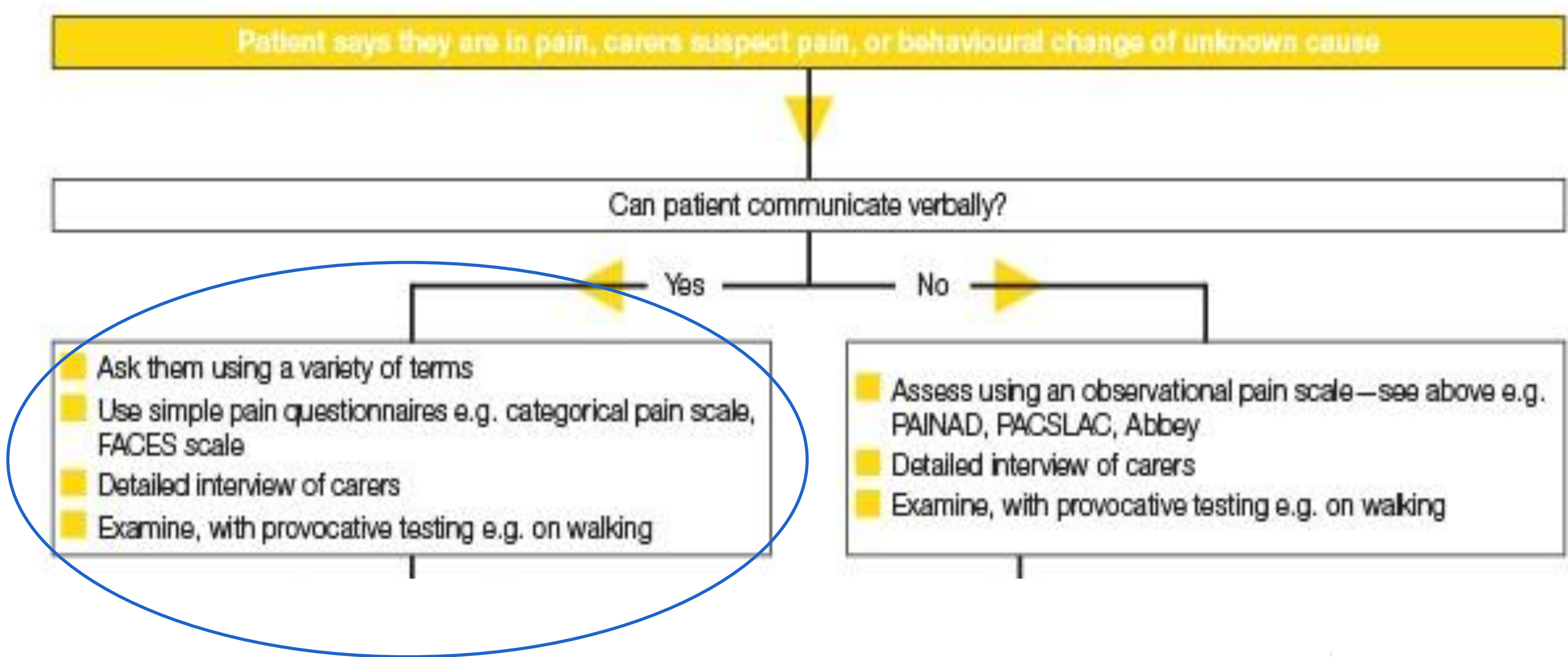
HOW TO ASSESS PAIN?

- 1/ Evaluation of pain and intensity



- 2/ Evaluation of consequences of pain
 - ADL/IADL/mobility
 - Eating/ rest at night
 - Memory/concentration/mood

ASSESSMENT OF PAIN



ASSESSMENT OF PAIN IN PEOPLE WITH DEMENTIA – SCALES

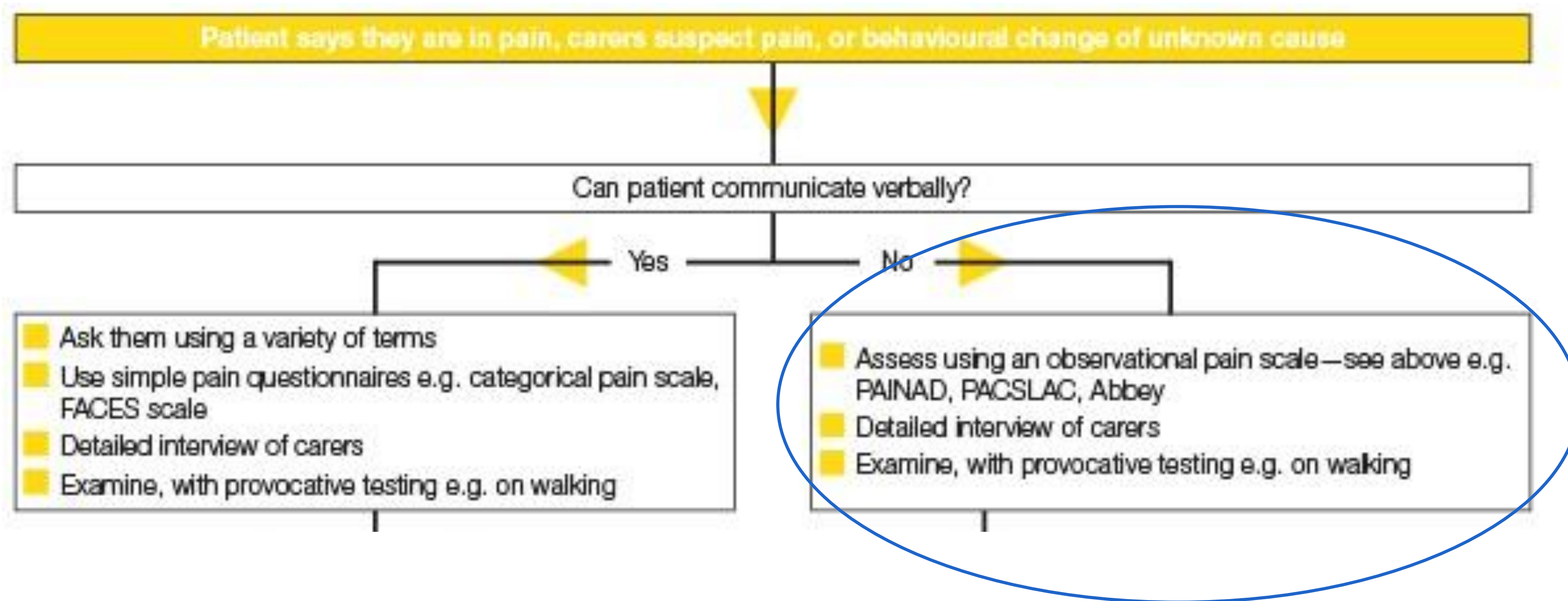
Table 3. Number and Percentage of Patients Understanding Each Scale According to the Level of Dementia (CDR)

Scale	CDR = 1 (64 Cases) <i>N</i> (%)	CDR = 2 (81 Cases) <i>N</i> (%)	CDR = 3 (15 Cases) <i>N</i> (%)	Total (160 Cases) <i>N</i> (%)
Verbal Rating Scale (VRS)	58 (91)	59 (73)	5 (33)	122 (76)
Horizontal Visual Analog Scale (HVAS)	62 (97)	64 (79)	4 (27)	130 (81)
Vertical Visual Analog Scale (VVAS)	59 (92)	60 (74)	4 (27)	123 (77)
Faces Pain Scale (FPS)	57 (89)	53 (65)	4 (27)	114 (72)

Notes: For each scale, comprehension is significantly associated with the CDR (Clinical Dementia Rating) scale.

$p < .001$ (Fisher's exact test).

ASSESSMENT OF PAIN



NON VERBAL PAIN INDICATORS

Common Pain Behaviours in Cognitively Impaired Elderly Persons

Facial expressions

Slight frown, sad frightened face
Grimacing, wrinkled forehead, closed or tightened eyes
Any distorted expression
Rapid blinking

Changes in interpersonal interactions

Aggressive, combative, resisting care
Decreased social interactions
Withdrawn

Verbalisations, vocalisations

Sighing, moaning, groaning
Grunting, chanting, calling out
Noisy breathing
Asking for help
Verbally abusive

Changes in activity patterns or routines

Refusing food, appetite change
Increase in rest periods
Sleep, rest pattern changes
Increased wandering

Body movements

Rigid, tense body posture, guarding
Fidgeting
Increased pacing, rocking
Restricted movement
Gait or mobility changes

Mental status changes

Crying or tears
Increased confusion
Irritability or distress

Panel 1: Instruments suitable for the assessment of pain in the elderly adult with dementia

- Abbey Pain Scale^{77,82-84}
- Checklist of Non-Verbal Pain Indicators (CNPI)^{78,84,85}
- Certified Nursing Assistant Pain Assessment Tool (CPAT)^{75,86}
- DOLOPLUS-2^{87,88-90}
- Discomfort Scale in Dementia of the Alzheimer's Type (DS-DAT/DS-DAT modified)⁹¹⁻⁹⁵
- EPCA-2⁹⁶
- Mahoney Pain Scale⁹⁷
- Mobilization-Observation-Behaviour-Intensity-Dementia (MOBID and MOBID-2) Pain Scale^{74,98,99}
- Non-Communicative Patient's Pain Assessment Instrument (NOPPAIN)^{52,72,85,100}
- Pain Assessment in the Communicatively Impaired (PACI)¹⁰¹⁻¹⁰³
- Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACLSAC and PACSLAC-II)^{77,73,85,104-107}
- Pain Assessment for the Dementing Elderly (PADE)^{85,108}
- Pain Assessment in Advanced Dementia (PAINAD)^{52,71,82,85,109}
- Pain Assessment in Noncommunicative Elderly Persons (PAINE)⁷⁶
- The Rotterdam Elderly Pain Observation Scale (REPOS)¹¹⁰

PAIN ASSESSMENT IN ADVANCED DEMENTIA

SCALE (PAINAD)

Items	0	1	2	Score
Breathing independent of vocalization	Normal	Occasional laboured breathing. Short period of hyperventilation	Noisy laboured 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 trouble 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.	
			Total**	

Abbey Pain Scale

For measurement of pain in people with dementia who cannot verbalise.

How to use scale : While observing the resident, score questions 1 to 6.

Name of resident :


Name and designation of person completing the scale :

Date : **Time :**


Latest pain relief given was.....at.....hrs.

Q1.	Vocalisation eg whimpering, groaning, crying <i>Absent 0 Mild 1 Moderate 2 Severe 3</i>	Q1	<input type="text"/>
Q2.	Facial expression eg looking tense, frowning, grimacing, looking frightened <i>Absent 0 Mild 1 Moderate 2 Severe 3</i>	Q2	<input type="text"/>
Q3.	Change in body language eg fidgeting, rocking, guarding part of body, withdrawn <i>Absent 0 Mild 1 Moderate 2 Severe 3</i>	Q3	<input type="text"/>
Q4.	Behavioural Change eg increased confusion, refusing to eat, alteration in usual patterns <i>Absent 0 Mild 1 Moderate 2 Severe 3</i>	Q4	<input type="text"/>
Q5.	Physiological change eg temperature, pulse or blood pressure outside normal limits, perspiring, flushing or pallor <i>Absent 0 Mild 1 Moderate 2 Severe 3</i>	Q5	<input type="text"/>
Q6.	Physical changes eg skin tears, pressure areas, arthritis, contractures, previous injuries <i>Absent 0 Mild 1 Moderate 2 Severe 3</i>	Q6	<input type="text"/>

Add scores for 1 - 6 and record here  **Total Pain Score**

Now tick the box that matches the
Total Pain Score 

0 - 2 No pain	3 - 7 Mild	8 - 13 Moderate	14 + Severe
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Finally, tick the box which matches
the type of pain 

Chronic	Acute	Acute on Chronic
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ALGOPLUS

Non - Non

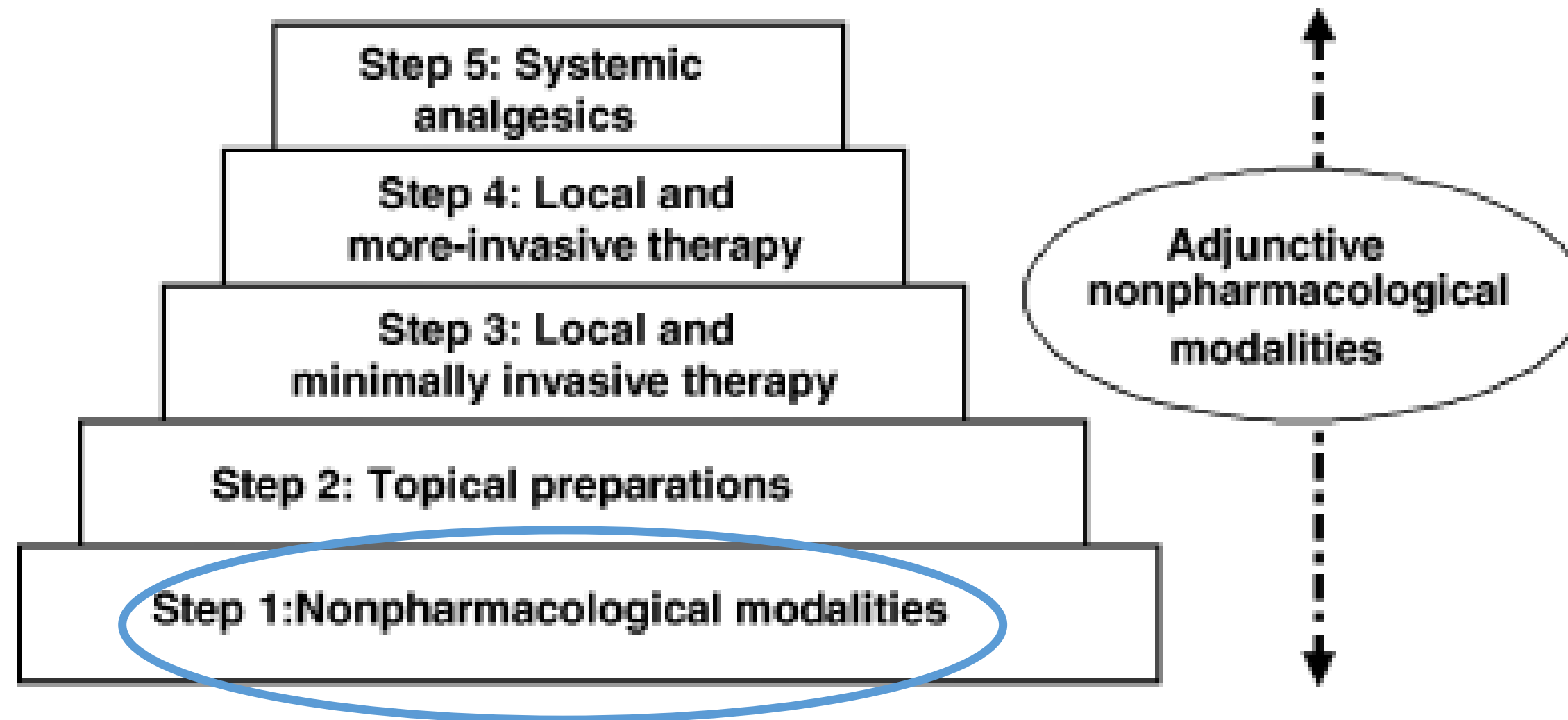
Date de l'évaluation de la douleur										
Heure										
	oui	non	oui	non	oui	non	oui	non	oui	non
1 Visage										
Froncement des sourcils, grimaces, crispation, mâchoires serrées, visage figé.										
2 Regard										
Regard inattentif, fixe, lointain ou suppliant, pleurs, yeux fermés.										
3 Plaintes										
« Aie », « Ouille », « J'ai mal », gémissements, cris.										
4 Corps										
Retrait ou protection d'une zone, refus de mobilisation, attitudes figées.										

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- Influence of ageing and cognitive impairment on perception of pain
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MANAGEMENT OF PAIN: STEPWISE APPROACH



NON-PHARMACOLOGICAL APPROACHES

Table 1. Pain management strategies: non-pharmacological approaches

Approach	Considerations
Physical therapy	
Exercise	Recommended pain management strategy Inconsistent evidence whether one type of exercise is better than another Patient preference is the primary consideration Focus on strengthening, flexibility, endurance, and balance Individual capacity limits options
Foot orthotics, patellar taping	Foot orthotics may change gait pattern/muscle activation and reduce joint loading
Manual therapy	Requires significant levels of skill and care
TENS	Consider for persistent pain when patient can provide accurate feedback
Physical modalities (eg heat)	Beneficial for acute pain as effects are transient Monitor for safety if used for patients with dementia

NON-PHARMACOLOGICAL APPROACHES

Occupational therapies

Assistive devices (eg walking frames)

Some evidence of reducing functional decline and pain interference
Can increase pain if used incorrectly

Psychological approaches

Cognitive behaviour therapy

Demonstrated benefit for pain and quality of life
Recommended if delivered by a trained professional

Complementary and alternative medicine

Acupuncture

Consider for older people as adjunctive therapy
May improve function and pain relief
Duration of long-term effects are uncertain

Massage, Tai Chi, yoga

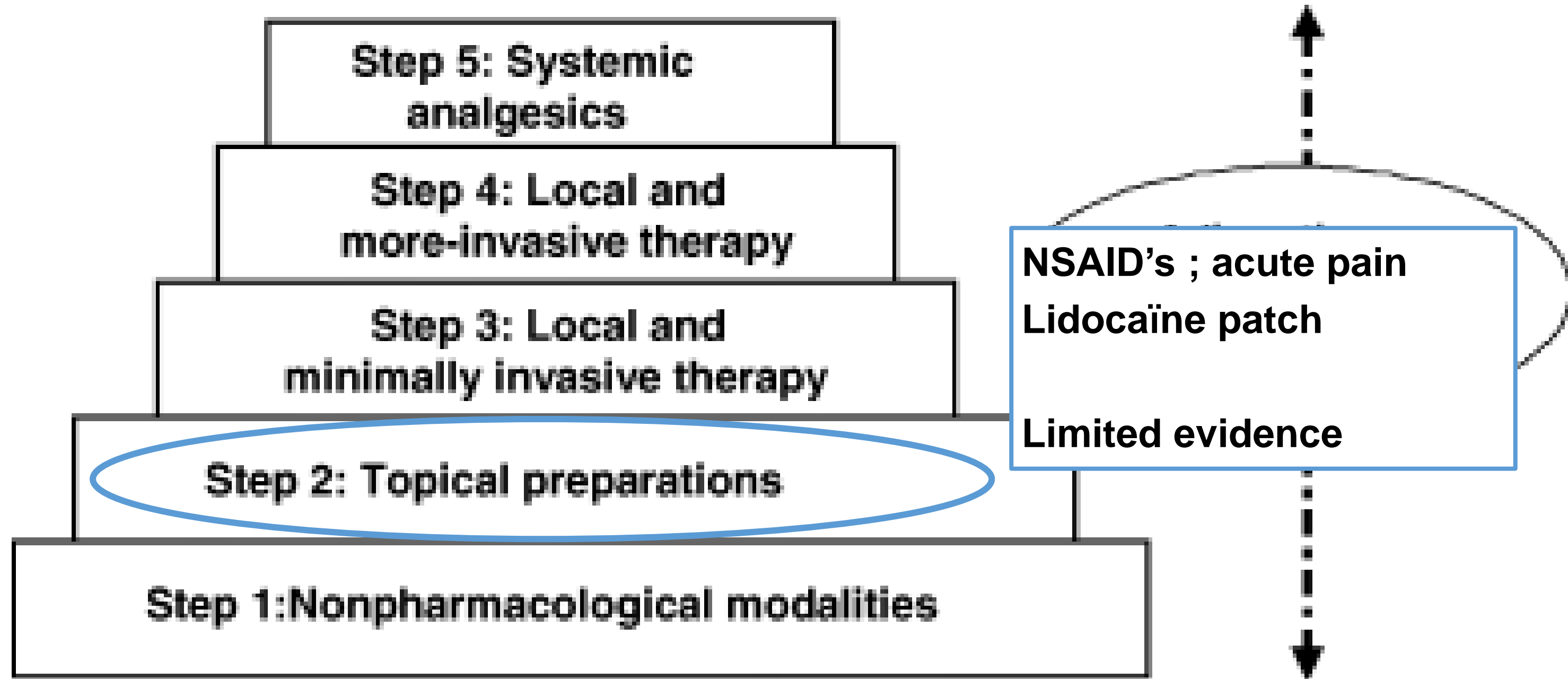
Consider for older people as adjunctive therapy
Massage may have some benefit for non-specific lower back pain

Nutritional supplements

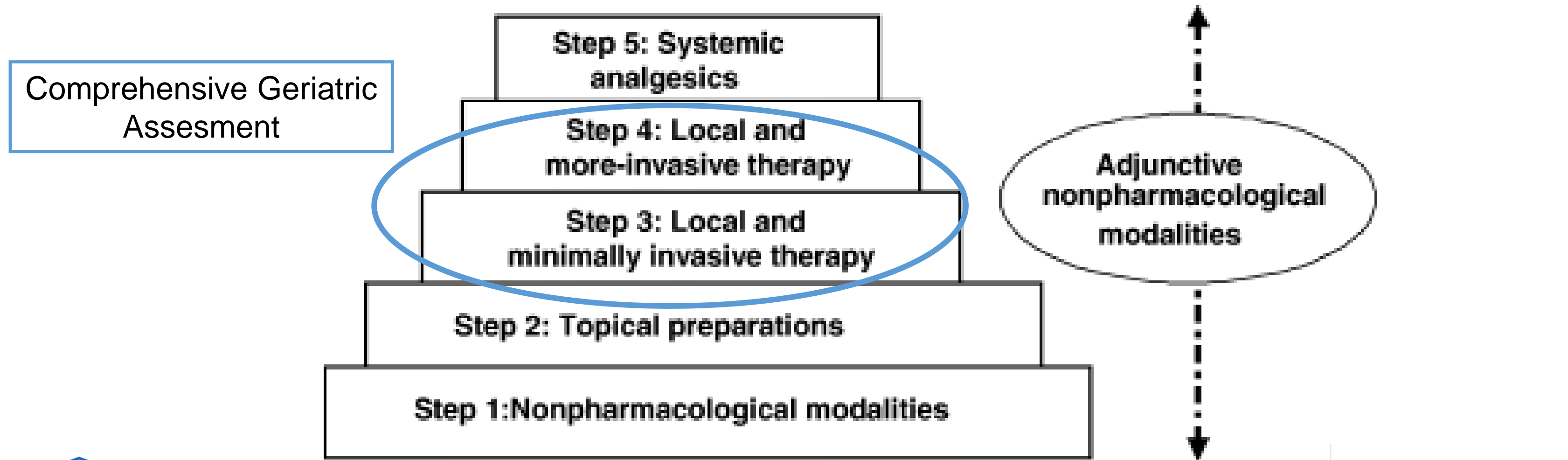
Some evidence that chondroitin and glucosamine improve pain and function in osteoarthritis

TENS, transcutaneous electrical nerve stimulation

TREATMENT OF PAIN

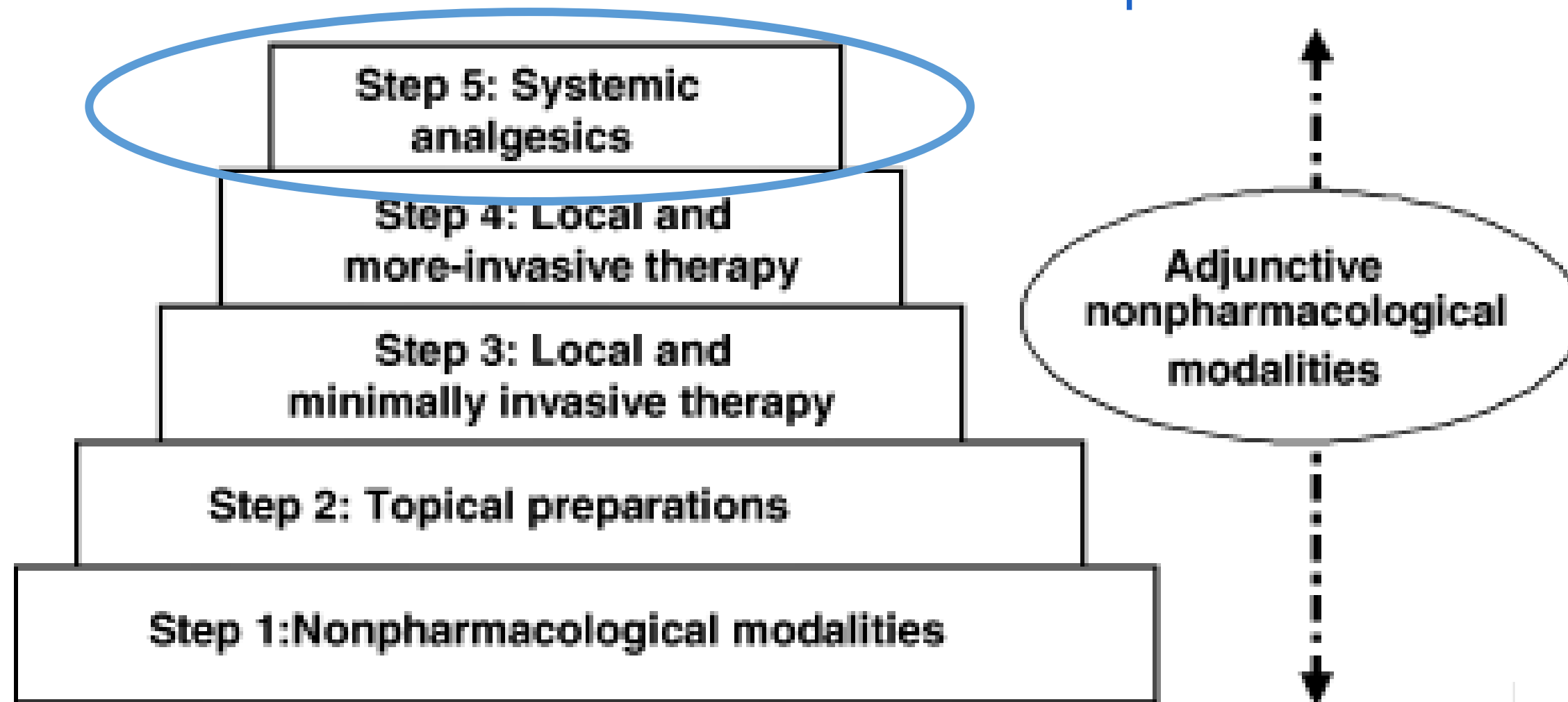


MANAGEMENT OF PAIN: STEPWISE APPROACH

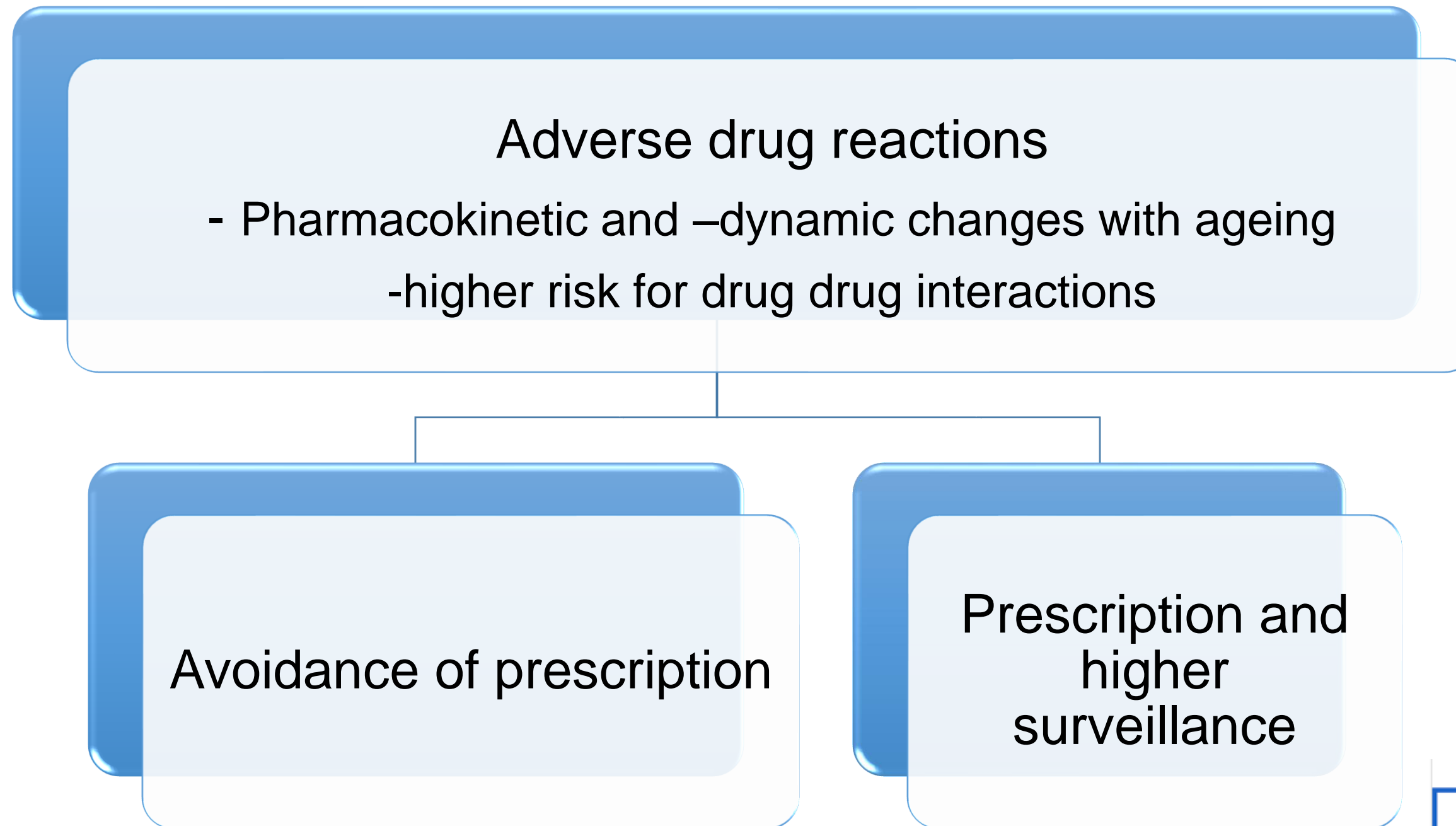


MANAGEMENT OF PAIN: STEPWISE APPROACH

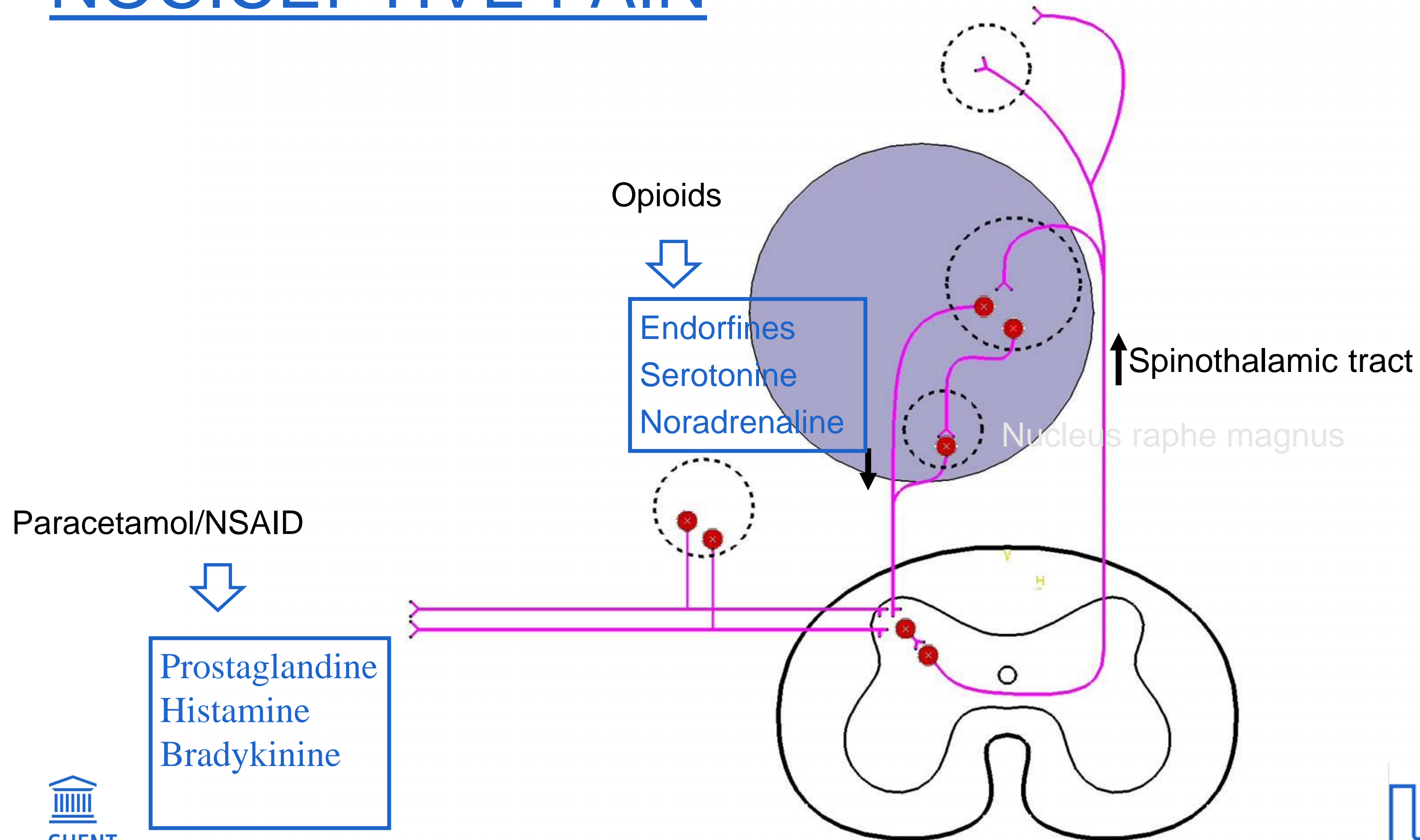
No trials in persons with dementia



UNDER-TREATMENT OF PAIN: ADVERSE DRUG REACTIONS



NOCICEPTIVE PAIN



WHO-LADDER

	Persistent Pain	Minimal invasive technic	4	Morfine Oxycodone Fentanyl
	Persistent Pain	Strong-opioid ± Non-opioid ± adjuvant	3	Buprenorphine (Hydromorphone) Tapentadol
Persistent Pain	Weak-opioid ± Non-opioid ± adjuvant		2	Hydrocodone Tramadol
Non-opioid ± adjuvant (anti-epileptic, anti-depressive)				1 Paracetamol NSAID

System	Change with ageing	Clinical consequence
Absorption and function of the GI tract	Reduced: <ul style="list-style-type: none"> • Motility of the large intestine • Vitamin absorption by active transport mechanisms • Splanchnic blood flow • Bowel surface area 	<ul style="list-style-type: none"> • Passive diffusion-little change in absorption with age
	Delayed gastric emptying and reduced peristalsis	Increased risk of GI-related side effects
Distribution	Decreased body water	Reduced Morphine, tramadol, oxycodone...
	Increased body fat and accumulation of lipid-soluble drugs	Lipid-soluble drugs have longer effective half-life e.g. phentanyl...
	Decreased serum albumin and altered protein binding	Increased potential for drug–drug interactions
Hepatic-biliary	Decreased hepatic blood flow	First-pass metabolism can be less effective e.g. morphine...
	Reduced liver mass	Phase I metabolism of some drugs might be slightly impaired
Renal excretion	Reduced renal blood flow	Reduced excretion in kidney Morphine, tramadol, oxycodone, phentanyl, gabapentine, ...
	Reduced glomerular filtration	
	Reduced tubular secretion	
Pharmacodynamic changes	Decreased receptor density	Increased sensitivity to the therapeutic and side effects opioids, ...
	Increased receptor affinity	

RECOMMENDATIONS

- Start low, go slow
- Around the clock (24hour)
- Compliance is important; inform caregiver
- For neuropathic pain, combine different classes of drugs
- Know pharmacokinetics and dynamics
- Take into account interactions and polypharmacy
- Inform caregiver regarding the side effects and advise regular monitoring

	Pitfalls	Recommendations
Paracetamol	Liver failure in malnutrition	Low dose; max 3g/24h
NSAID	Gastro-intestinal bleeding	Associate PP
	Fluid retention	Monitor arterial tension and weight – stop treatment if there is a substantial increase
	Acute kidney failure	Monitor serum creatinine after three days

EVIDENCE OF WEAK/STRONG OPIOIDS?

- No well performed studies in the elderly
- Extrapolation from studies in younger patients and specific patient groups
- Some open label studies available in older patient population showing acceptable safety

SAFETY OF OPIOIDS?

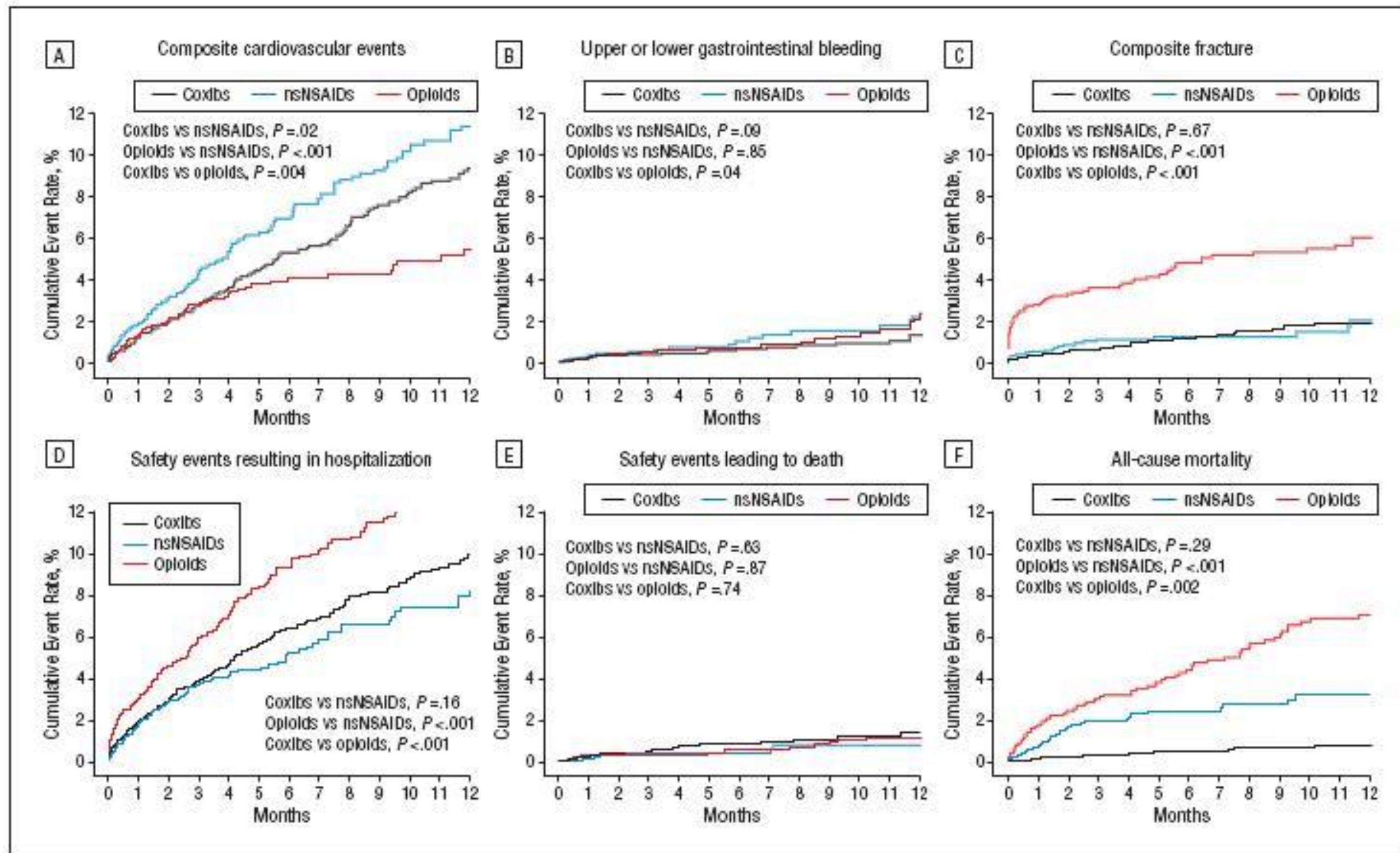


Figure. Kaplan-Meier curves for the cumulative incidence of the 6 composite safety measures. A, Composite cardiovascular events. B, Upper or lower gastrointestinal tract bleeding. C, Composite fracture. D, Any of the individual events leading to immediate death or a hospitalization with death. E, Safety events leading to death. F, All-cause mortality. Coxibs, cyclooxygenase-2 inhibitors; nsNSAIDs, nonselective nonsteroidal anti-inflammatory drugs; Opioids, opioids.

Arch Intern Med. 2010;170(22):1979-1986

	Pitfalls	Recommendations
Tramadol	Renal clearance Diminish seizure threshold Bind to serotonin receptors	Reduce dose in CKD** Avoid use in seizure patients Monitor serotonergic syndrome
Morphine	Higher plasma concentrations Renal clearance	Start low dose (2.5mg OR; 1mg IV) Reduce dose in CKD stage 3 Avoid in CKD stage 4 and 5
Fentanyl Buprenorphine	Take 2à3 patches to achieve stable plasma concentrations	Wait one week before increasing dose – foresee IR morphine for breakthrough pain (1/10 of equivalent dose)

Symptoms	Consider
Temporally side effects – disappear normally after a few days	
Sedation / sleepiness	Dose reduction of concomitant medication as anxiolytics
Hallucinations/ delirium	Dose reduction of concomitant medication as Gabapentin, Pregabaline, Amitriptyline Association of low dose haloperidol
Nausea/vomiting	Association of gastro-kineticum Domperidon, Metoclopramide, Alizapride If persistent: association of low dose haloperidol
Urinary retention	Intermittent catheterization
Persistent side effects	
Constipation	Non pharmacological therapy (fluid, exercise, fibers) To start laxatives together with the initiation of opioid therapy Macrogol, Osmotic laxatives If persistent: associate stimulating laxatives or enemas Bisacodyl, Picosulfaat If persistent: Methylnaltrexone or naloxone in combination with opioid
Risk of falling/fracture	Fall assessment and prevention Adding walking aids

TREATMENT OF NEUROPATHIC PAIN

- Inhibition of the action potential in neuron: Anti-epileptics
 - (carbamazepine, natriumvalproaat)
 - Gabapentine, Pregabaline
- Support of the non-opioid modulating neurons (serotonine en noradrenaline)
 - Tricyclic antidepressants (amitryptiline)
 - SNRI (duloxetine en venlafaxine)
- Weak and strong opioids
 - Tramadol; buprenorfine; fentanyl, oxycodon

	Pitfalls	Recommendations
Tricyclic antidepressant	<p>Anticholinergic side effects</p> <p>Cardiac arrhythmias</p>	<p>Monitor urinary retention ; glaucoma worsening cognition</p> <p>Avoid in patients with cardiac arrhythmias</p>
SNRI	Syndrome of Inappropriate ADH	<p>Monitor natremia</p> <p>Dizziness, sedation, Arterial hypertension, tachycardia</p>
Anticonvulsant therapy	<p>Renal clearance</p> <p>Side effects</p> <p>Takes 2-3 weeks before clinical effect</p>	<p>Dose reduction</p> <p>CKD3: 50%; CKD4: 25% of dose</p> <p>Avoid in CKD stage 5</p> <p>Monitor: Dizziness, sedation</p> <p>Inform patient/family</p>

THOM'S

- Pain is important in the older person
- Think about and Assess pain
- Discuss treatment plan – put achievable goals and evaluate
- Take into account changing pharmacokinetics with ageing
- Know most important side effects in the older person and teach them
- If therapy is not working, consider other influencing factors (psychosocial, financial etc ...)



Thank you for the
attention

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