







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



Gibson et al. J Clin Pain 2004;20:227-239 Edwards et al. Pain 2003;101:155-165





'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



Gibson et al. J Clin Pain 2004;20:227-239 Edwards et al. Pain 2003;101:155-165





PAIN AND COGNITIVE IMPAIRMENT









■ Alzheimer vascular lewy body ■ frontal lobe

PAIN AND COGNITIVE IMPAIRMENT

ACUTE PAIN

ALZHEIMER DISEASE

MILD to MODERATE STAGE







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





Benedetti et al. Pain 1999;80:377-382



pain tolerance

FACIAL EXPRESSIONS

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AUTONOMOUS RESPONSE



Decrease in autonomic response



Benedetti et al. Pain 2004; 111: 22-29



ALZHEIMER DISEASE AND PAIN





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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













Kolanowski et al. JAMDA 2015;16:37-40

Table 3

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

Symptom	No pain (<i>n</i> = 2284)	Mild (n = 159), OR (95% Cl)
Behavioral symptoms Wandering	Socially inappro	opriate behavi
Physical abuse Socially inappropriate beha	Resis	sts care
Resists care 1 or more behavioral symp	Dalı	ioiono
Psychiatric symptoms	Deit	ISIONS
Abnormal thought process Delusions	Abnormal th	ought process
Hallucinations	Ref.	1.36 (0.68-2.72)
T or more psychiatric symptoms	KeI.	1.35 (0.90-2.00)

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.



Tosato et al. Pain 2012;153:305-10



INFLUENCE OF TREATMENT ON BD



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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 a	nd clinical re
Condition	Motivational-affective aspects of pain	Presence of po
Alzheimer's disease	Ļ	Relatively
Vascular dementia	↑	Not ex
Frontotemporal	Ļ	Not ex
Parkinson (no cogn)	↑	Not ex



Scherder et al. BMJ 2005;330:461-464





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PREVALENCE OF PAIN IN OLDER PEOPLE

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

		Dementia Cohort		
	All Respondents, n = 802 ^a	Self-Report, n = 395 ^b	Proxy Report, n = 407	Matched Cohort All Respondents, n = 802
Pain		% (9	5% CI)	
Bothersome Activity limiting	63.5 (60.5–66.4) 43.3 (40.2–46.5)	62.7 (58.7–66.6) 40.1 (35.7–44.6)	64.4 (59.8–68.7) 46.6 (42.5–50.7)	54.5 (51.4–57.7) ^c 27.2 (25.2–29.2) ^c



Hunt et al, JAGS 2015: 1503-11





PREVALENCE OF OLDER HOSPITALISED **PEOPLE WITH DEMENTIA**

680 E.L. Sampson et al. • 156 (2015) 675–683

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.

Cl, confidence interval; PAINAD, Pain Assessment in Advanced Dementia scale.



PAIN®

ETIOLOGY OF PAIN IN PEOPLE WITH DEMENTIA

Number of patients reporting pain, n (%) Etiology of pain, n (%) Osteoarthritis of joints Back pain (osteoporosis or osteoarthritis) Skin lesion Other causes



Pautex et al. JAGS 2006;54:1040-5



57 (44)

39 (68) 3 (5) 7 (12) 8 (14)



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CHRONIC PAIN: CONSEQUENCES

Consequences of Chronic pain

Sleep disturbances Malnutrition

Decreased social activity & Falls

Functional impairment Behavioural disturbances



Kolanowski et al. JAMDA 2015;16:37-40

Depression, Anxiety Aggression



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USE OF ANALGESICS IN THE OLDER PERSON WITH **CHRONIC MALIGN PAIN**



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

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UNDER-TREATMENT OF PAIN

Table 2 Use of Analgesia and Report of Pain by Persons x

	Report of Pain [†] n (%)	
Analgesic Use*	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



Shega et al, JAGS 2006: 1892-7

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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
Age	1.07	1.01–1.14
Male	1.06	0.40-2.82
Lower education	1.04	0.71-1.52
Advanced dementia*	3.08	1.05-9.10
Impaired function [†]	2.50	1.01-6.25
Depression [‡]	2.13	0.82-5.52



Shega et al, JAGS 2006: 1892-7









Pitkala et al. JAMDA 2015; Epub ahead

i	
	■ 2003
	= 2011
od stabilizers Pregabalin, gabapentin	
ርሆ	

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



why you're limping. You lost the heel off your shoe."





SYSTEMATIC EVALUATION

Geriatric problems	Before MGST	After MGST	Gain	р
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



Pepersack T, et al. JNHA 2008;12:348–352.



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





bservational pain C, Abbey	scale-see above e.g.
of carers	
vocative testing e	e.g. on walking
1993 - 1993 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 - 1995 -	
	$\Box \Box \Box / Uz$

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 interpers Aggressive, combative Decreased social inter Withdrawn
	Verbalisations, vocalisations Sighing, moaning, groaning Grunting, chanting, calling out Noisy breathing Asking for help Verbally abusive	Changes in activity Refusing food, appet Increase in rest perio Sleep, rest pattern ch Increased wandering
IIIII GHENT UNIVERSIT	Body movements Rigid, tense body posture, guarding Fidgeting Increased pacing, rocking Restricted movement Gait or mobility changes	Mental status chang Crying or tears Increased confusion Irritability or distress



sonal interactions ve, resisting care eractions

patterns or routines tite change bds hanges

les

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

- Abbey Pain Scale⁷²⁸²⁻⁸⁴
- Checklist of Non-Verbal Pain Indicators (CNPI)74.84.85
- Certified Nursing Assistant Pain Assessment Tool (CPAT)⁷⁵⁸⁶
- DOLOPLUS-2^{87,88-90}
- Discomfort Scale in Dementia of the Alzheimer's Type (DS-DAT/DS-DAT modified)⁹³⁻⁹⁵
- EPCA-2⁹⁶
- Mahoney Pain Scale^{sy}
- Mobilization-Observation-Behaviour-Intensity-Dementia (MOBID and MOBID-2) Pain Scale⁷⁴⁹⁸⁹⁹
- Non-Communicative Patient's Pain Assessment Instrument (NOPPAIN)^{5372,85100}
- Pain Assessment in the Communicatively Impaired (PACI)¹⁰¹⁻¹⁰³
- Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACLSAC and PACSLAC-II)^{273,85104-107}
- Pain Assessment for the Dementing Elderly (PADE)⁸⁵¹⁰⁸
- Pain Assessment in Advanced Dementia (PAINAD)^{53,71,83,85,109}
- Pain Assessment in Noncommunicative Elderly Persons (PAINE)⁷⁶
- The Rotterdam Elderly Pain Observation Scale (REPOS)¹¹⁰

Hadjistravopolous et al. Lancet Neurol 2014;13:1216-27



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**	70
				<u>U7</u> 2
			Warden et al, 2001.	





	Abbey Pain Scale For measurement of pain in people with dementia who cannot verbali								
How	How to use scale : While observing the resident, score questions 1 to 6.								
Name	of resident	:							
Name	and design	ation of pe	rson complet	ting the s	cale :				
Date	:		Tin	ne :					
Lates	t pain relief g	given was.						at	
Q1.	Vocalisatio	n 	alaa aadaa						01
	Absent 0	Mild 1	Moderate 2	2 Seve	ere 3				-
Q2.	Facial expr	ession							oo
	eg looking	tense, from	wning, grima	cing, lool	king frigh	tened			uz
	Absent U	Whid I	moderate .	z sev	ere s				
03	Change in	hadu lann							ſ
Q3.	eg fidgetin	g, rocking	, guarding pa	rt of bod	y, withdra	awn		(Q3
	Absent 0	Mild 1	Moderate 2	2 Seve	ere 3				l
Q4.	Behavioura	al Change	an refuelne	10 00t all	antina i		natio		Q4
	Absent 0	ea contusi Mild 1	Moderate 3	toeat, an 2 Seve	eration i ere 3	n usuai	patter	nis.	l
Q5.	Physiologi	cal change	•						05
	eg temper	ature, puis fluebing (e or blood pr	essure o	utside no	ermal lir	nits,		
	Absent 0	Mild 1	Moderate 2	2 Sevi	ere 3				
Q6.	Physical cl	hanges							06
	eg skin tea	ars, pressu aiurice	ire areas, artl	nritis, cor	ntracture	s,			
	Absent 0	Mild 1	Moderate 3	2 Sevi	ere 3				
Add	scores for	1 - 6 and r	ecord here	(\Longrightarrow	Tot	tal Pa	in Score	
Now	tick the her	, that mat	abaa tha		-				
Tota	I Pain Score	s unat mat	ches the						-
			≓> _\) - 2 pain	3 - Mil	d I	8 Mor	-13 derate	Se
						_			
Fina	lly, tick the	box whict	n matches		ſ	Chro	aic	Acuto	
the	ype or pain		<u></u>			Chro		Acute	
			<u></u>		L				
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			publis document may	pe reproduced	with this action	owiedgemer	or refained	,	





<u>ALGOPLUS</u>

HOIL - LIGHOIL .

Date de l'évaluation de la douleur										
Heure										
	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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MANAGEMENT OF PAIN: STEPWISE APPROACH





Weiner D. JAGS 2004;52:1020-22

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 e Patient preference is the primary considerat Focus on strengthening, flexibility, enduranc Individual capacity limits options		
Foot orthotics, patellar taping	Foot orthotics may change gait pattern/mus		
Manual therapy	Requires significant levels of skill and care		
TENS	Consider for persistent pain when patient ca		
Physical modalities (eg heat)	Beneficial for acute pain as effects are trans Monitor for safety if used for patients with de		



Gibson et al. AFP 2015;44:198-203



exercise is better than another

tion

e, and balance

scle activation and reduce joint loading

an provide accurate feedback

sient

lementia



NON-PHARMACOLOGICAL APPROACHES

Occupational therapies	
Assistive devices (eg walking frames)	Some evidence of reducing functional decline and pain interapies Can increase pain if used incorrectly
Psychological approaches	of these
Cognitive behaviour therapy	Demonstrated benefit for some care Recommended if one with professional
Complementary and alternative medi	icine an interier
Acupuncture	deterioration Lor for older people as adjunctive therapy May improve function and pain relief Duration of long-term effects are uncertain
Massage, Tai Chi, yoga Cognu	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 stimula <u>IIIIIII</u> GHENT UNIVERSITY	ation Gibson et al. AFP 2015;44:198-203



TREATMENT OF PAIN





Wolff et al. Acta Neurol Scand 2011;123:295-309.

MANAGEMENT OF PAIN: STEPWISE **APPROACH**





Weiner D. JAGS 2004;52:1020-22



MANAGEMENT OF PAIN: STEPWISE APPROACH



Step 1:Nonpharmacological modalities



Weiner D. JAGS 2004;52:1020-22

UNDER-TREATMENT OF PAIN: ADVERSE DRUG REACTIONS





NOCICEPTIVE PAIN



Spinothalamic tract

s raphe magnus





vasive 4	Morfine Oxycodone Fentanyl
3	Buprenorphine (Hydromorphone) Tapentadol
2	Hydrocodone Tramadol
1	Paracetamol NSAID

System	Change with ageing	Clinical con	
Absorption and function of the GI tract	Reduced: • Motility of the large intestine • Vitamin absorption by active transport mechanisms • Splanchnic blood flow • Bowel surface area	• Passive diffu	
	Delayed gastric emptying and reduced peristalsis	Increased risk	
	Decreased body water	Reduced MC	
Distribution	Increased body fat and accumulation of lipid-soluble drugs	Lipid-soluble	
	Decreased serum albumin and altered protein binding	Increased pot	
II	Decreased hepatic blood flow	First-pass me	
Hepatic-billary	Reduced liver mass	Phase I metab	
	Reduced renal blood flow	N	
Renal excretion	Reduced glomerular filtration	Reduced ex	
	Reduced tubular secretion	Kittitey	
Pharmacodynamic	Decreased receptor density	Increased sen	
changes	Increased receptor affinity		

sequence

ision-little change in absorption with age

- of GI-related side effects
- orphine, tramadol, oxycodone...
- drugs have longer effective ha phentanyl...
- ential for drug-drug interactions
- tabolism can be less effective morphine...
- olism of some drugs might be slightly impaired
- Morphine, tramadol, oxycodone, ohentanyl, gabapentine, ...

sitivity to the therapeutic and side effects

opioids, ..

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	
Paracetamol	Liver failure in malnutrition	Lo
NSAID	Gastro-intestinal bleeding	As
	Fluid retention	Mo we a s
	Acute kidney failure	Mo thr



Recommendations

- w dose; max 3g/24h
- ssociate PP
- onitor arterial tension and eight – stop treatment if there is substantial increase
- onitor serum creatinine after ree 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?





cyclooxygenase-2 inhibitors; nsNSAIDs, nonselective nonsteroidal anti-infla

	Pitfalls
Tramadol	Renal clearance Diminish seizure threshold Bind to serotonin receptors
Morphine	Higher plasma concentrations Renal clearance
Fentanyl Buprenorphine	Take 2à3 patches to achieve stable plasma concentrations
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Recommendations

Reduce dose in CKD** Avoid use in seizure patients Monitor serotonergic syndrome

Start low dose (2.5mg OR; 1mg IV) Reduce dose in CKD stage 3 Avoid in CKD stage 4 and 5

Wait one week before increasing dose – foresee IR morphine for breakthrough pain (1/10 of equivalent dose)

Symptoms

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Temporally side effects – disappear no	rmally after a few days
Sedation / sleepiness	Dose reduction of concomitant medic
Hallucinations/ delirium	Dose reduction of concomitant media Gabapentin, Pregabaline, Amitrip Association of low dose haloperidol
Nausea/vomiting	Association of gastro-kineticum Domperidon, Metoclopramide, Ali If persistent: association of low dose
Urinary retention	Intermittent catheterization
Persistent side effects	
Constipation	Non pharmacological therapy (fluid, of To start laxatives together with the in Macrogol, Osmotic laxatives If persistent: associate stimulating lat Bisacodyl, Picosulfaat If persistent: Methylnaltrexone or nal
Risk of falling/fracture	Fall assessment and prevention Adding walking aids

- cation as anxiolytics cation as tyline
- izapride haloperidol

- exercise, fibers) itiation of opioid therapy
- xatives or enemas
- loxone in combination with opioid

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



AGS guideline 2009



	Pitfalls
Tricyclic antidepressant	Anticholinergic side effects
	Cardiac arrhythmias
SNRI	Syndrome of Inappropriate ADH
Anticonvulsant therapy	Renal clearance
	Side effects Takes 2-3 weeks before clinical effect

UTTI EILUTTI

Recommendations

Monitor urinary retention ; glaucoma worsening cognition Avoid in patients with cardiac arrhytmias Monitor natremia Dizziness, sedation, Arterial hypertension, tachycardia **Dose reduction** CKD3: 50%; CKD4: 25% of dose Avoid in CKD stage 5 Monitor: Dizziness, sedation Inform patient/family

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 ...)



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hank you ion

