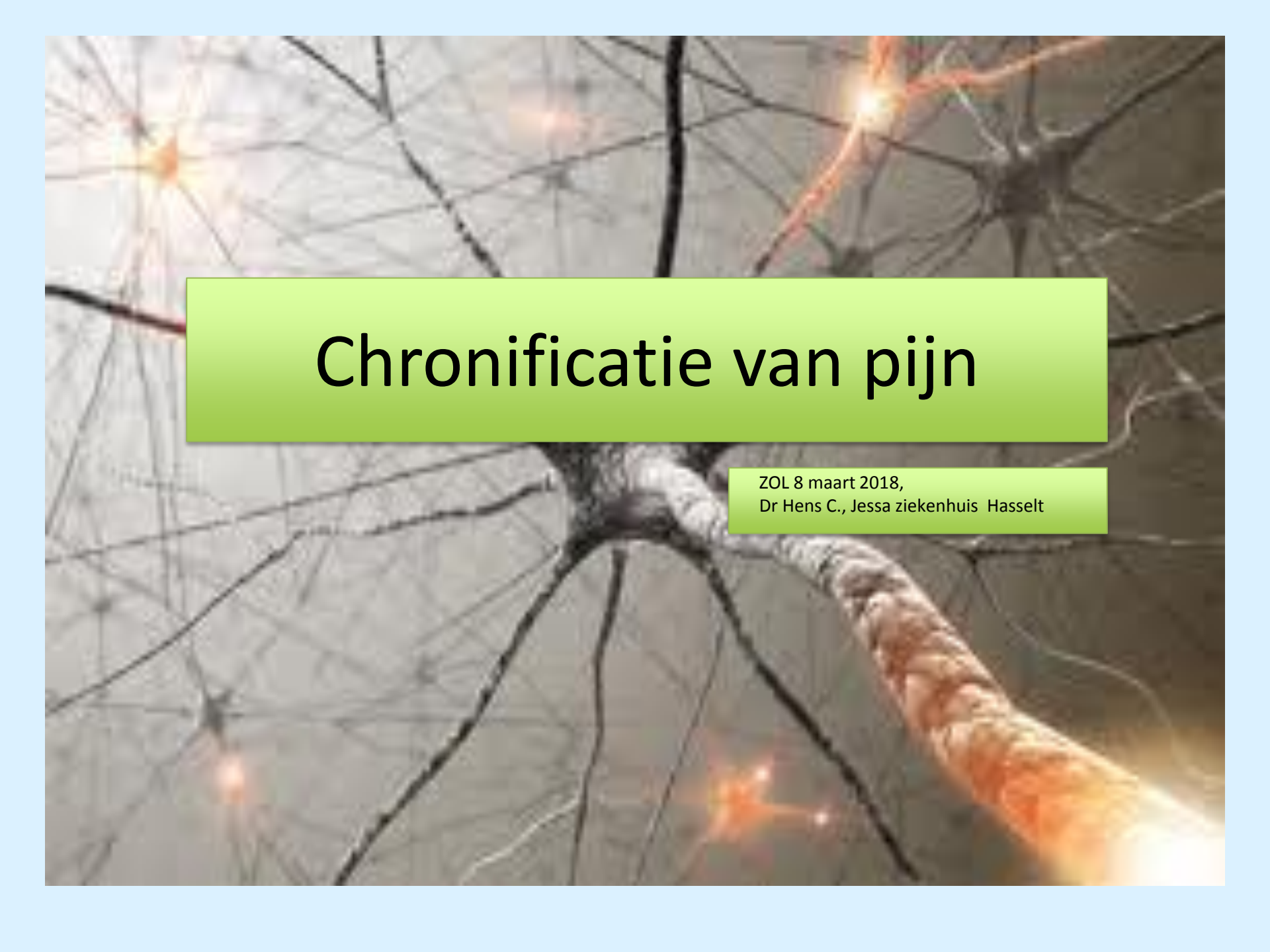


The background of the slide is a detailed illustration of a neuron. The cell body (soma) is dark and centrally located, with numerous dendrites extending outwards. Several of these dendrites are connected to other neurons at synapses, which are highlighted with bright orange and yellow starburst effects, suggesting electrical activity or signal transmission. The overall color palette is muted, with greys and browns for the neuron structure, and vibrant oranges and yellows for the synaptic highlights.

Chronificatie van pijn

ZOL 8 maart 2018,
Dr Hens C., Jessa ziekenhuis Hasselt

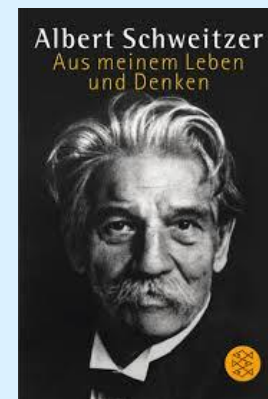
Inhoud:

1. Definitie en mechanisme
 2. Incidentie
 3. Risicofactoren
 4. Preventie en behandeling
 5. Rol van (pijn)verpleegkundigen
 6. Conclusie
- Addendum: voorbeeldcasus



“PAIN is a more terrible lord of mankind than even death itself ”

Albert Schweitzer



1. Definitie “PIJN”:

- IASP definitie

“An unpleasant **sensory** and **emotional** experience associated with **actual or potential** tissue damage, or described in terms of such damage”

- Williams and Craig

“Pain is a distressing experience associated with actual or potential tissue damage with sensory, emotional, **cognitive** and **social** components”

Acute vs Chronische pijn:

- Acute pijn heeft een beschermende functie :
 - wondheling en recuperatie bevorderen
 - overlevingskansen vergroten



- Chronic pain = maladaptive pain
 - Present in the absence of noxious stimuli
 - Does not promote healing and repair

(American Academy of Pain Medicine, 2010;11:1635-53)

of anders geformuleerd...

Acute pijn

- Symptoom
- Zinvol (wondheling , waarschuwing, survival)
- Type: voornamelijk nociceptief, slechts beperkt neuropathisch
- Aanpak : WHO ladder

Chronische pijn

- Syndroom / ziekte
- Zinloos
- Complex mechanisme : gemengd type (nocicept + neuropathisch) en verweven met biopsychosociaal model
- Aanpak: Multidisciplinair

Chronic Postsurgical Pain (CPSP)

- Thv chirurgische locatie.
- > 2 maanden post-chirurgie.
- Exclusie v andere oorzaken
- Geen voorafbestaand pijnprobleem aldaar

Incidentie: **10-50% van alle heelkunde patienten** (dagzh / long-stay)

(Curr opinion Anesthesiol 2012)

Mechanisme:

- Plasticiteit (nerve-sprouting)
- Desinhibitie, modulatie, abnormale pulsgeneratie
- Sensitisatie
 - *Perifeer*: primaire hyperalgesie , ↑ sensitiviteit in de gekwetste regio
 - *Centraal* (spinaal, dorsale hoorn): secundaire hyperalgesie,
↑ sensitiviteit buiten primair pijnlijke regio

Inhoud:

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2.Incidentie:

- CPSP: gerapporteerd door 10-50% van alle chirurgische patienten.
 - Afhankelijk v type chirurgie.
 - 30% v pat. in pijncentrum = post-chirurgisch probleem!
 - Gaat gepaard met oa. slaapdysfunctie (30%) verminderde levenskwaliteit,aktiviteitsbeperking ...
- Economische weerslag!

Incidentie volgens type chirurgie

	Incidentie CPSP	Ernstig/ Invalidierend
Amputatie	30-50%	5-10%
Borstchirurgie	20-30%	5-10%
Thoracotomie	30-40%	10%
Inguinale hernia	10%	2-4%
Hartchirurgie	30-50%	5-10%
Sectio	10%	4%

Anesthesiology 1999 Apr; 90(4): 1062-9

	Incidentie CPSP
Borstoperatie	56%
Longoperatie	52%
Galblaasoperatie	31%
Liesbreukoperatie	30%
Hartoperatie	25%

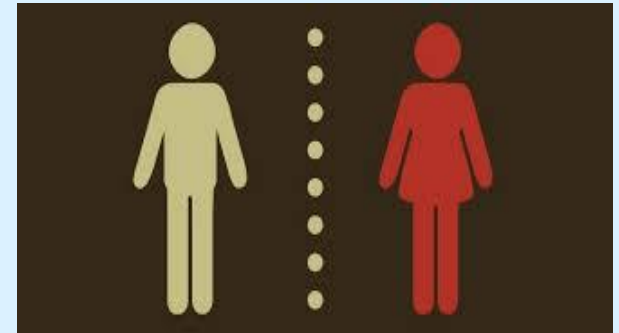
Steegers et al, NTVG 2009

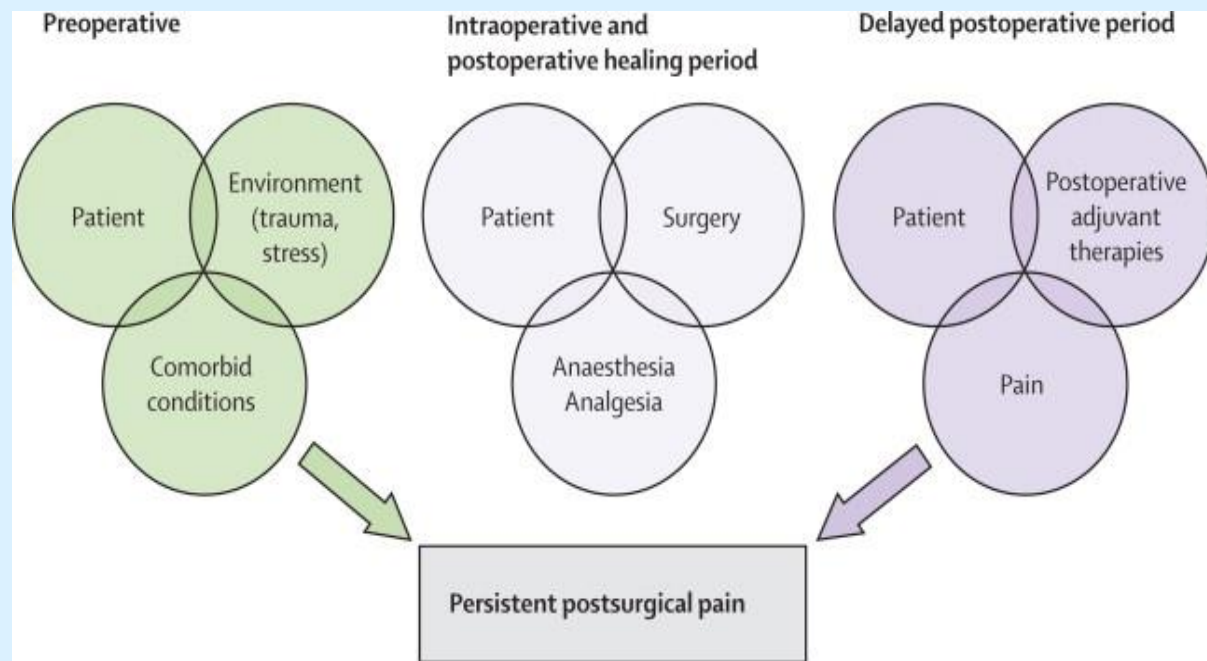
→ **Significante cijfers bij sommige “banale” dagchirurgische ingrepen?!**

Inhoud:

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3) Risicofactoren/ predictors:





Preoperative	Intraoperative and postoperative healing period	Delayed postoperative period
• Anxiety • Catastrophising • Depression • Genes • Impaired pain modulation • Life trauma • Other pain states • Sleep • Stress	• Nerve injury • Tissue ischaemia • Surgical technique • Anaesthetic technique • Pain facilitation or amplification • Proinflammatory state	• Postoperative pain-hyperalgesia • Chemotherapy or radiation therapy • Repeat surgery • Psychosocial factors

A. Detectie v preoperat. risicofactoren

Preop	Intraop	Postop
Vrouwelijk	Chirurgische techniek	Acute postop pijn
Leeftijd	Duurtijd	Imobilisatie
Comorbiditeit	Opioiden consumptie	Adjuvant chemo/RT
Psychosociale factoren <i>(fear, catastrophising, soc. Supportive environment)</i>		
Gebrek aan conitieve coping strategies		

B. TOOLS?

C. IMPLICATIES voor behandeltraject ?

B. Tools



Pain 105 (2003) 415–423

PAIN

www.elsevier.com/locate/pain

Preoperative prediction of severe postoperative pain

C.J. Kalkman^{a,*}, K. Visser^b, J. Moen^a, G.J. Bonse^c, D.E. Grobbee^d, K.G.M. Moons^{a,d}

Reduced and extended (final) model to predict preoperatively the occurrence of severe pain (VAS ≥ 8) within first hour at recovery room

	Reduced model	Extended (final) model		
	Regression coefficient (SE)	Regression coefficient (SE) ^a	OR ^a	p-Value
Female gender	0.36 (0.14)	0.22 (0.14)	1.24	0.12
Age (per year)	−0.018 (0.0046)	−0.016 (0.0047)	0.98	<0.001
Pre-operative pain (per unit)	0.16 (0.025)	0.14 (0.025)	1.15	<0.001
Type of surgery				
Ophthalmic ^b	^b	^b	^b	^b
Laparoscopic	0.36 (0.42)	0.38 (0.43)	1.46	0.37
Ear/nose/throat	0.65 (0.35)	0.59 (0.36)	1.80	0.10
Orthopedic	1.03 (0.35)	0.97 (0.35)	2.64	0.006
Abdominal	1.36 (0.38)	1.37 (0.38)	3.56	<0.001
Other	0.52 (0.34)	0.48 (0.34)	1.62	0.17
Medium/large incision size	0.28 (0.16)	0.23 (0.16)	1.26	0.15
APAIS anxiety (per unit)	^c	0.053 (0.017)	1.05	0.002
APAIS need for info (per unit)	^c	−0.080 (0.032)	0.92	0.01
Intercept (constant)	−1.86 (0.40)	−1.74 (0.46)		<0.001

SE, standard error; OR, odds ratio.

Probability of postoperative severe pain by final model = $1/(1 + \exp(-(-1.74 + 0.22 \times \text{female gender} - 0.016 \times \text{age} + 0.14 \times \text{preoperative pain} + (0 \text{ or } 0.38 \text{ or } 0.59 \text{ or } 0.97 \text{ or } 1.37 \text{ or } 0.48) \times \text{type of surgery} + 0.053 \times \text{APAIS anxiety} - 0.080 \times \text{APAIS need for info} + 0.23 \times \text{incision size})).$

^a Regression coefficient and corresponding odds ratio after bootstrapping (i.e. adjusted for overfitting).

^b Reference group.

^c Not included in the model.

Kalkmann score

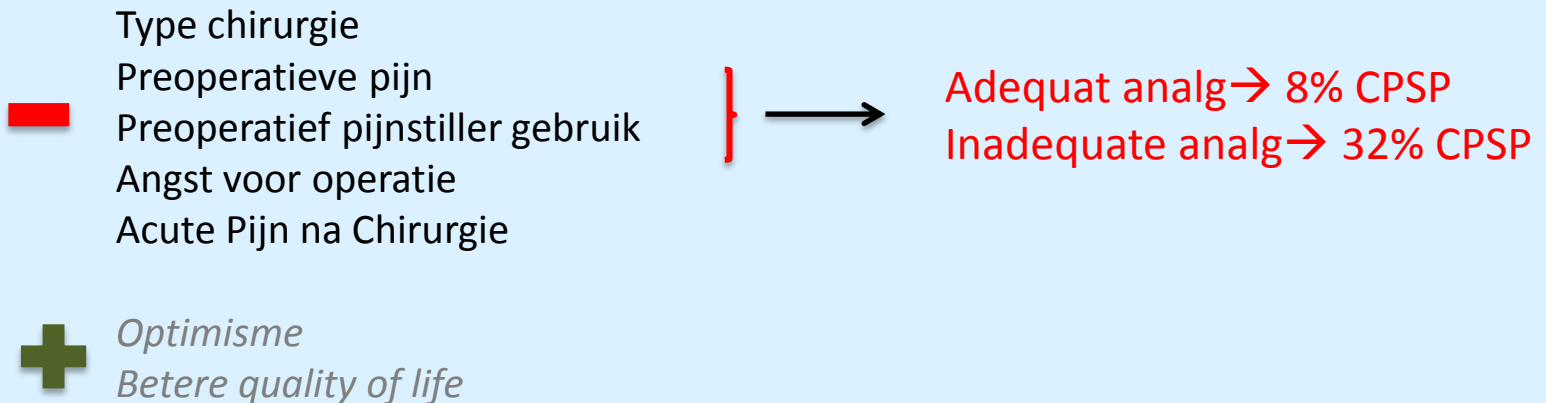
Sex	Points	Preoperative Pain score	Points	Anxiety level (APAIS)	Points	Total points	Probability of postoperative pain
Male	0	0	0	4-5	0	0	0.03
Female	3	1	2	6-7	2	11	0.05
		2	4	8-9	3	22	0.10
Age (years)		3	6	10-11	5	34	0.20
15-19	17	4	8	12-13	6	41	0.30
20-24	16	5	10	14-15	8	48	0.40
25-29	15	6	12	16-17	9	53	0.50
30-34	13	7	14	18-19	11	59	0.60
35-39	12	8	16	20	12	65	0.70
40-44	11	9	18			73	0.80
45-49	10	10	20	Need for info (APAIS)			
50-54	9			2	9		
55-59	8	Surgery type	0	3	8		
60-64	7	Ophthalmology	5	4	7		
65-69	6	Laparoscopy	8	5	6		
70-74	4	Ear/nose/throat	14	6	5		
75-79	3	Orthopedic	18	7	3		
80-84	2	Abdominal	7	8	2		
85-89	1	Other		9	1		
≥ 90	0		0	10	0		
		Incision size	3				
		Small					
		Medium-large					

ORIGINAL ARTICLE

Prevalence and Predictive Factors of Chronic Postsurgical Pain and Poor Global Recovery 1 Year After Outpatient Surgery

Daisy M. N. Hoofwijk, MD, Audrey A. A. Fiddelaers, PhD,*
Madelon L. Peters, PhD,† Björn Stessel, MD,‡ Alfons G. H. Kessels, MD,
MSc,§ Elbert A. Joosten, PhD,* Hans-Fritz Gramke, MD, PhD,*
and Marco A. E. Marcus, MD, PhD*||*

Significant predictors:



C. Implicaties voor behandeltraject ?

“Psychosocial factors appear to predict postoperative pain:
Interesting, but how can such information be used to reduce risk?”

J.W. Burns PhD, and Mario Moric

[*Techniques in Regional Anesthesia \[amp \] Pain Management 15\(3\):90-99 · July 2011 with 21 Reads*](#)

→ tot 50% reductie van CPSP door Cognitieve Gedragstherapie (CBT)??

RESEARCH ARTICLE

Open Access



Preoperative optimization of patient expectations improves long-term outcome in heart surgery patients: results of the randomized controlled PSY-HEART trial

Winfried Rief^{1*}, Melke C. Shedden-Mora², Johannes A. C. Laferton¹, Charlotte Auer¹, Keith J. Petrie³, Stefan Salzmann¹, Manfred Schedlowski⁴ and Rainer Moosdorf⁵

J Pain Res. 2015 Oct 12;8:695-702. doi: 10.2147/JPR.S91924. eCollection 2015.

FREE Full Text Article
Dovepress

PMCFull text

The Toronto General Hospital Transitional Pain Service: development and implementation of a multidisciplinary program to prevent chronic postsurgical pain.

Katz J¹, Weinrib A², Fashler SR³, Katznelzon R⁴, Shah BR⁵, Ladak SS⁵, Jiang J⁵, Li Q⁵, McMillan K⁵, Santa Mina D⁶, Wentlandt K⁷, McRae K⁴, Tamir D⁴, Lyn S⁴, de Perrot M⁸, Rao V⁹, Grant D¹⁰, Roche-Nagle G¹¹, Cleary SP¹², Hofer SO¹³, Gilbert R¹⁴, Wijeysundera D⁴, Ritvo P¹⁵, Janmohamed T¹⁶, O'Leary G⁴, Clarke H⁴.

ACT sessies , 1 preop , 3 postop

Dus mogelijkheden in preoperatieve fase:

- Heelkundige educatie
- CBT (cognitieve gedragstherapie)
- ACT (acceptance commitment therapie)
- Fysiotherapie

?

Conclusie uit multiple studies : (cfr. Dr Madelon L Peters , Universiteit v Maastricht)

- Screening: Preop meting v angst-gerelateerde emoties en cognities
- Workshops/ trainingen : Resultaten v huidige studies zijn veelbelovend maar ...
- Beperk u tot hoog- risico patienten

→ **Bedenking : Haalbaarheid? Praktische uitwerking ?**

A. Detectie v intraoperat risicofactoren

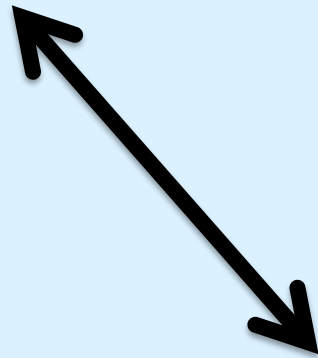
Preop	Intraop	Postop
Female	Surgical technique	Acute postop pain
Age	Duration	
Comorbidity	Opioid consumption	Immobilisation
Psychosocial factors <i>(fear, catastrophising, soc. Supportive environment)</i>		Adjuvant chemo/RT
Lack of cognitive coping strategies		

Implicaties voor behandeltraject/ strategie ?

B. Strategie

Preop	Intraop	Postop
Pre-emptief? (pregabal, Cox II, TCA) → onvold bewijs. Co morbiditeit verminderen (multidiscipl) Workshops ACT / CBT? Psychosoc support (Huisarts? Soc dienst?)	Preventief Multimodaal HLK: Techniek (minim inv. vs open) LA infiltratie ANE: - LRA - Neuraxiaal (PCEA) - Systemisch : Opiaten NSAID, paracetamol Ketamine Lidocaine Iv Magnesium Clonidine ($\alpha 2$ agonist)	Yellow Flags (MAT team, ref vplgk) Pijnprotocols: systematisch, multimodaal, PCA, pregabaline Educatie Mobilisatie

PREEMPTIEF pijnbeleid



PREVENTIEF pijnbeleid

Doel: ↓ postop pijn en consumptie v analgetica
verhinderen v sensitisatie en chronificatie

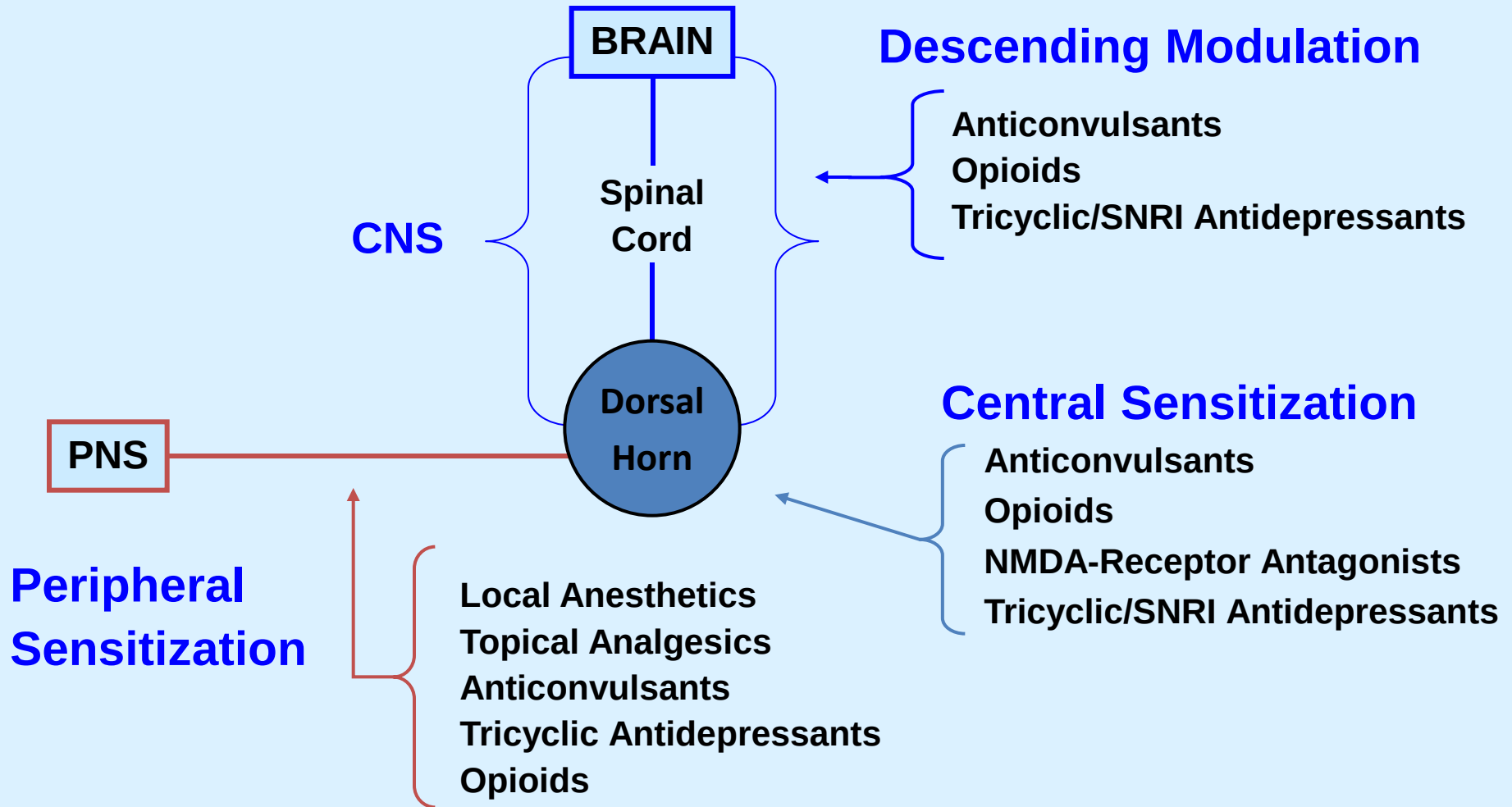
preemptief

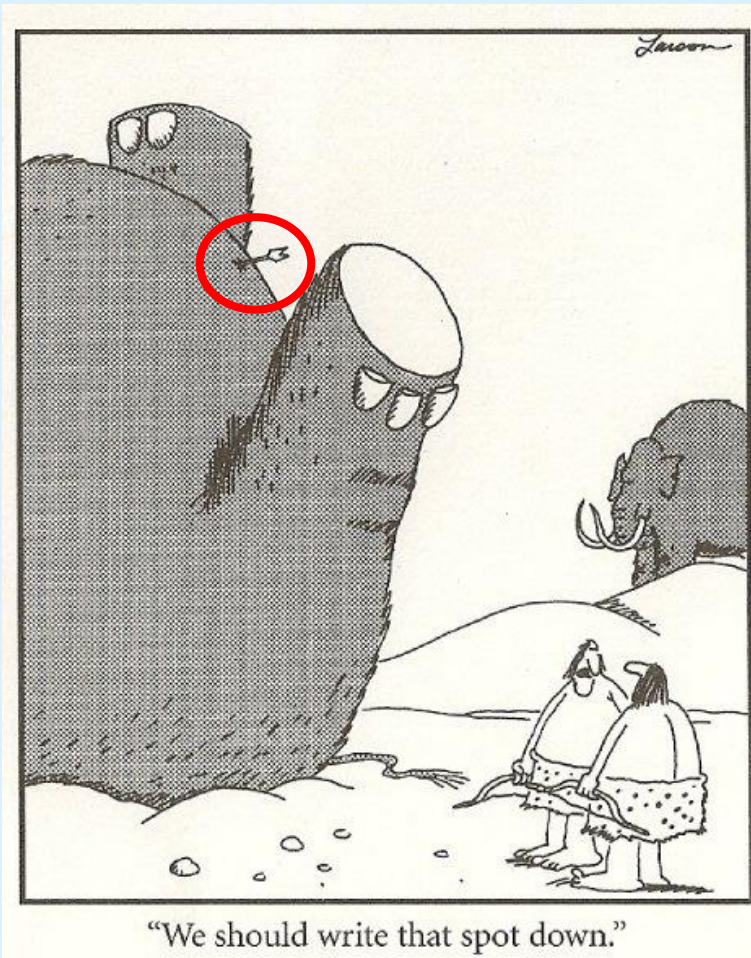
-  Centrale sensitisatie
Hyperalgesie
Allodynie
- Toediening **vòòr** insnede
- RCT's **controvers**e

preventief

-  Sensitisatie
(pre-intra-én postop)
- multimodaal schema :
Nociceptor activatie
inhibitie v activiteit v NT en receptoren
Beïnvloeding v productie v NT
- Op elk moment v
perioperatief proces

→ **Complex interactions on ≠ levels**





~~Single therapie?~~

Multimodaal !

1.Lokale - LRA - Neuraxiaal

Chirurg

LA infiltratie
wondcatheter

Anesthesist

**Patient controlled
Analgesia**

PCIA (IV)

PCEA (epid)

2.Systemisch medicatie

- Paracetamol
- NSAIDS
- Opioiden
- anti-epileptica, ketamine, lidocaine, magnesium, alfa2- agonist

WHO

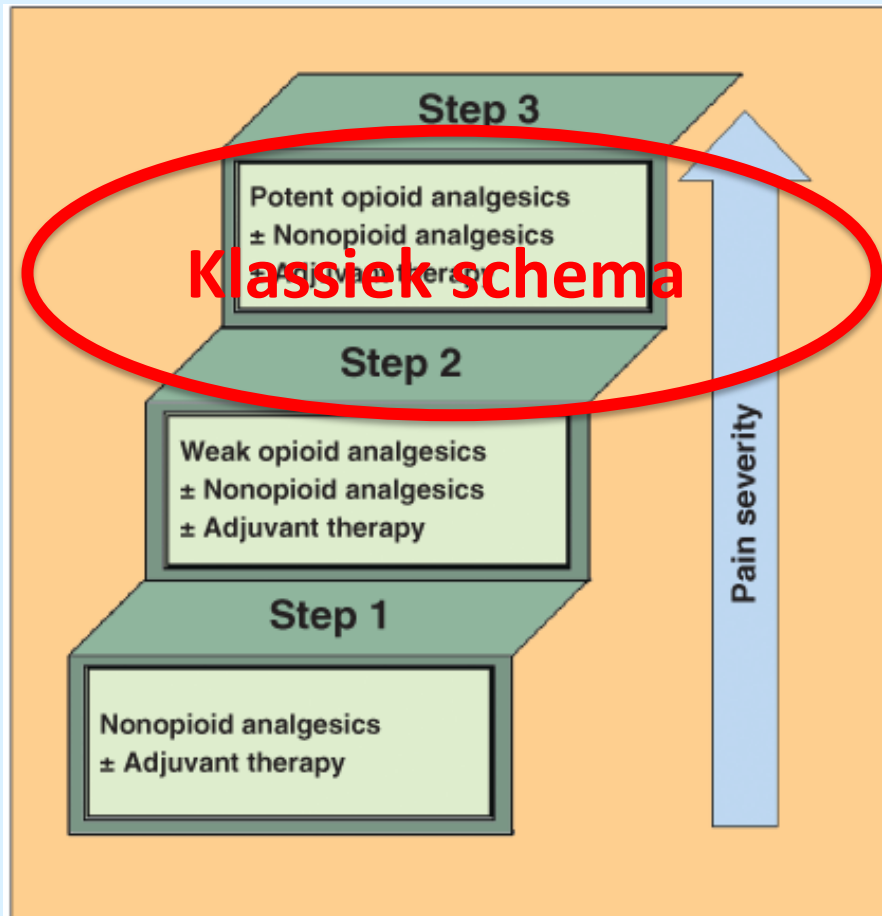
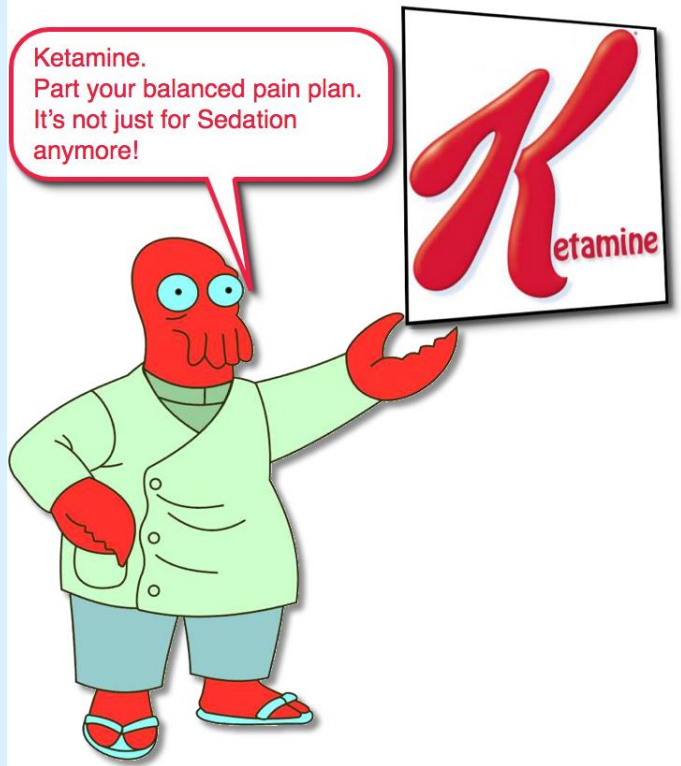


Figure 1: World Health Organization Analgesic Step Ladder—Derived from a consensus guideline published in 1982, the three-step approach to analgesic therapy for cancer pain was published in its final form in 1986.



Ketamine

Racemisch mengsel
S(+) enantiomeer

- * vermindert hyperalgesie /centrale sensitisatie
- * bolus 0,2-0,5 mg/kg , infuus 0,1-0,3mg/kg/u
- * studies : enkel grote orthoped, abdomen en thoracale ingrepen.



Lidocaine:

- * Natriumkanaal blokker
- * Bolus 2mg/kg
- Infuus: 1,5-3mg/Kg
- * EKG monitoring (arritmiëen!)
- Vnl grote open/lapscop
 abdominale ingrepen
- Vermindert opioïedverbruik,
 betere transit

Catapressan / clonidine

- Alfa2 R blokker
- 75-150 mcg bolus, 400-900 mcg / 24u drip
- Sedatief, bij ontwenning, opiaatsparend

Magnesiumsulfaat :

NMDA-R - agonist

1-2g IV

Opioiedsparend postop, zeker in combin met ketamine (-30%)

Pregabaline / gabapentine (vòòr inductie)

Voorbeeld : schema TKP

- Chronische pijn → immobilisatie → slechtere outcome
- Pregabaline 300mg voor chirurgie, 10 dagen 300mg, dag 11 en 12 150mg, dag 13 en 14 100mg ?
- Anesthesie met CSE

Anti Depressiva

- **TCA** (amitriptyline, nortriptyline Redomex)
 - Dosis:
 - Lagere dosis vs Depressie (50 mg)
 - Sneller analgetisch effect (1-7d)
 - Start low, go slow
 - Neveneffecten:
 - Sedatie
 - hypotensie
 - droge mond

Anti Epileptica

- **Gabapentine (Neurontin)**

Dosis:

- Start low, go slow
- '1800' (3x/d)
- opioïd sparend effect (?)

CI: cardiaal, glaucoom, MAO I

– Neveneffecten:

- Vermoeidheid, duizeligheid, verwardheid, ataxie, HP
- Nausea
- Oedeem (perifeer)

- **Pregabalin**

- Dosis:

- Start low, go slow
 - 150-600mg (2x/d) → GFR!

- Neveneffecten:

- cfr gabapentine

Tabel 1: Pregabaline dosisaanpassingen op basis van de nierfunctie

Creatinine- klaring (CL_{cr}) (ml/min)	Totale dagdosering pregabaline *		Doserings- schema
	Startdosering (mg/dag)	Maximumdosering (mg/dag)	
≥ 60	150	600	BID of TID
≥ 30 - < 60	75	300	BID of TID
≥ 15 - < 30	25 – 50	150	Eenmaal daags of BID
< 15	25	75	Eenmaal daags
Aanvullende dosis na hemodialyse (mg)			
	25	100	Enkelvoudige dosis ⁺

A. Detectie postoperat. risico factoren

Preop	Intraop	Postop
Female	Surgical technique	Acute postop pain
Age	Duration	
Comorbidity	Opioid consumption	Imobilisation
Psychosocial factors <i>(fear, catastrophising, soc. Supportive environment)</i>		Adjuvant chemo/RT
Lack of cognitive coping strategies		

B.TOOLS?

C. IMPLICATIES voor behandeltraject ?

- Belangrijkste postoperat predictieve factor:

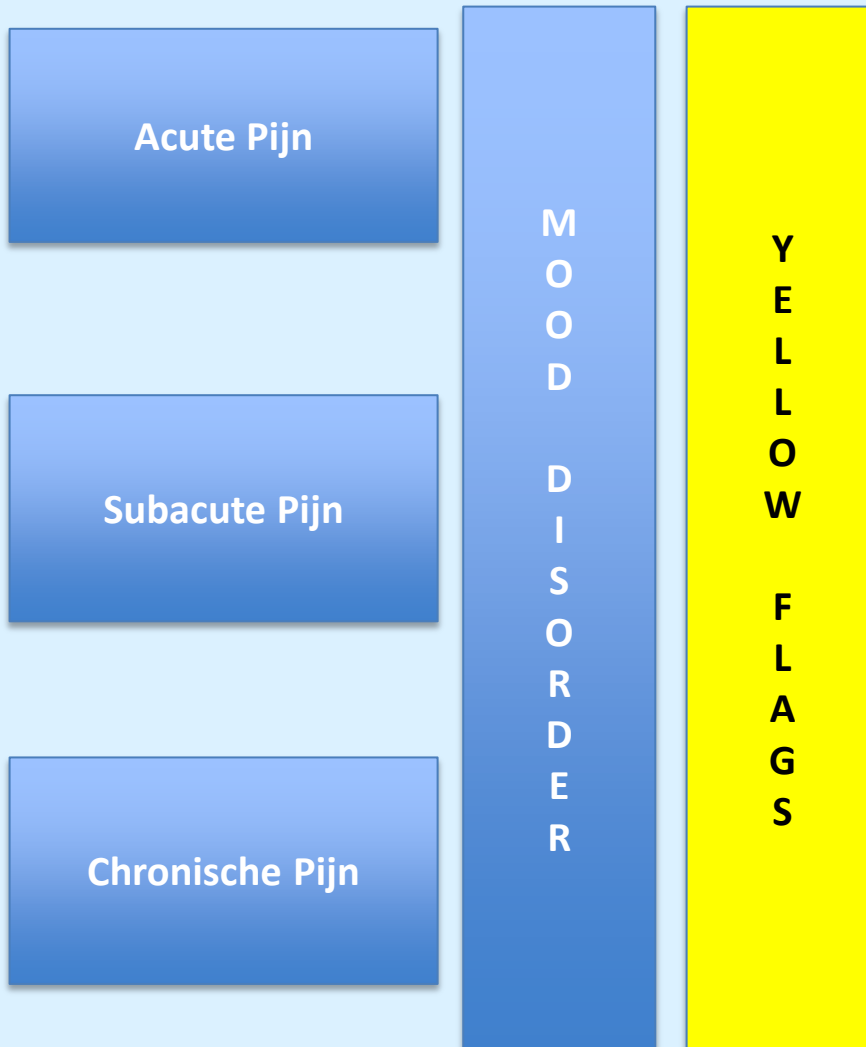
Aanwezigheid van **ernstige Acute Postoperatieve Pijn**

Anesthesiology 2000 Perkins en Kehlet



MAT /Referentie
/(pijn)verpleegkundigen

YELLOW FLAGS: biopsychosociaal



Attitudes

- towards the current problem.

Does the patient feel that with appropriate help and self management they will return to normal activities?

Beliefs → Catastrophisation

The most common misguided belief is that the patient feels they have something serious causing their problem-usually cancer. 'Faulty' beliefs → **catastrophisation**.

Compensation

Is the patient awaiting payment for an accident/ injury at work/ RTA?

Diagnosis

- or more importantly iatrogenesis.

Inappropriate communication can lead to patients misunderstanding what is meant, the most common examples being 'your disc has popped out' or 'your spine is crumbling'.

Emotions

Patients with other emotional difficulties such as ongoing depression and/or anxious states are at a high risk of developing chronic pain.

Family

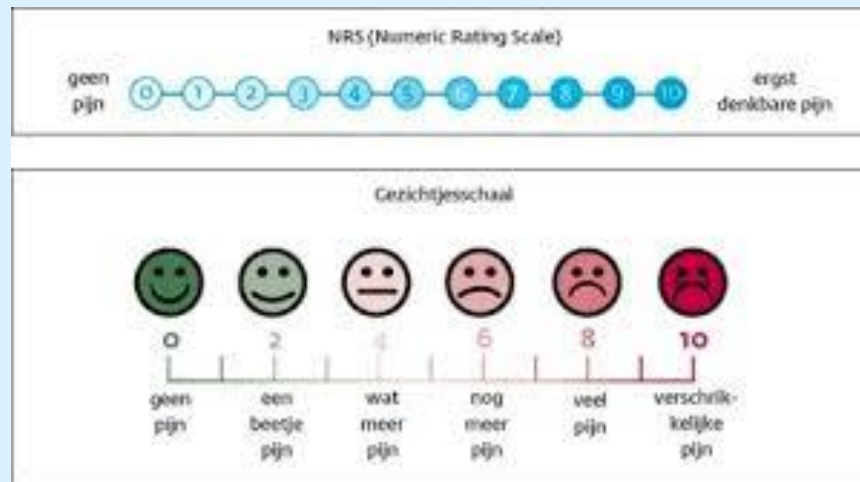
There tends to be two problems with families, either over bearing or under supportive.

Work

The worse the relationship, the more likely they are to develop chronic LBP.

B. Tools:

- Meten = weten
- Gevalideerde pijnmetingsmethodes



Anxiety and depression
score
SF36
APAIS

- Mnemonics:

Site

Onset

Character

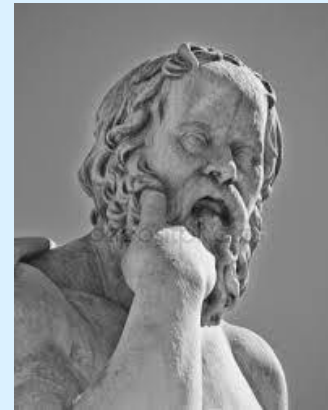
Radiation

Associations

Time course

Exacerbating /relieving factors

Severity



Rol v verpleegkundigen:



- Predictie v risico, gebaseerd op preop info + contact
- Detecteren v “**Yellow** flags” (*Fear avoidance behavior, Negative belief that pain is harmful or disabling, Excessive focusing on pain, Expectations...*).
- Registratie en meten v postop pijn
- Geruststellen en informeren v patient
- Pijnmedicatie in overleg met arts aanpassen en effect opvolgen
- MPC inschakelen zo nodig.

Behandeling:

- Systematische pijnstilling

→ **EDUCATIE VAN VERPLEEGENHEDEN!**

→ WHO ladder

→ Adjuvantia / atypische medicatie

casus

- 40J Vrouw, TKP
- **Thuismedic:**
- Bisoprolol
- Calcium
- Burinex
- Elthyroxine
- lormetazepam
- Effexor
- Marcoumar
- Xanax
- Zaldiar

ALL: -

Abusus: sig 1p/d, 2 alcohol/d

VG:

Hypertensie

Schildklierlijden

Appendectomie

PLIF

longembolen

Uw advies?

Take Home Message:



- **Preoperatief** tijdige **detectie v** risicofactoren
risicogroepen
yellow-flags
- **Intraoperatieve multimodale en multidisciplinaire** approach.
- **Postoperatief** : Optimaal **pijnbeleid/ protocols**.
→ Inschakelen **v MAT team** bij risicofact.
- Ontspoorde pijn? → Multimodale therapie om ingestelde chronische pijn te behandelen en verdere exacerbatie (psycho-sociale weerslag) te voorkomen.
→ Inschakelen **v MPC** zo nodig.

Communication is the key to succes..



Bedankt voor uw aandacht !