

**2022 SAMBA ANNUAL MEETING**  
MAY 11 - 14, 2022

**Severe Postoperative Pain: Who is at Risk?**



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**Disclosures**

- I have no financial or other interests to disclose

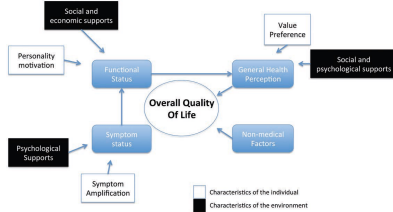
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**Objectives**

- After participating in this lecture, the audience will be able to:
  - Discuss the consequences of severe acute postoperative pain
  - Identify perioperative factors that can influence postoperative pain
  - Describe mechanisms that help identify patients at risk for severe postoperative pain

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**Patient Outcomes**



Abola et al: Anesth Analg 2018; 126(6):1874-1882.

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**Severe Postoperative Pain**



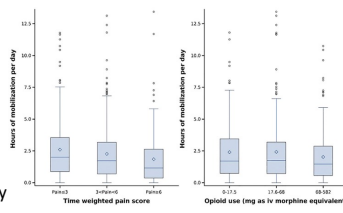
**Can lead to:**

- Poor mobility
- Decreased ventilation
- Chronic pain
- Chronic opioid use

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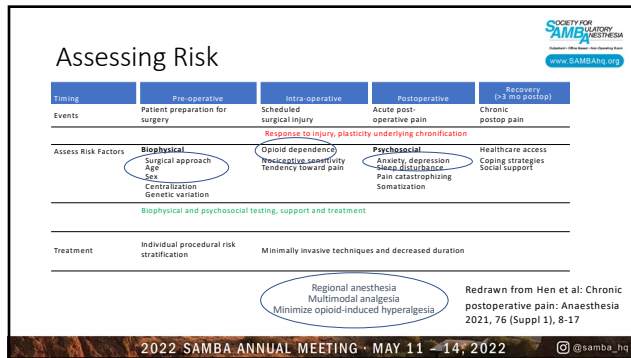
**Pain and Mobilization**

- 673 pts abdominal surgery
- Association -0.12 ( $p=0.009$ ) with postop pain scores
- No association with postop opioid use
- All postop complications occurred in pts who spent <1.7h/day sitting/standing
- Avg mobilization was 2h/day



Rivas et al: Anesthesiology 2022; 136: 115-26.

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### Preoperative Pain Evaluation

A. Psychological Measures	B. Pain Threshold Measures
Mental Health Inventory	Quantitative Sensory Testing
20-Item Stress Scale	Pain Catastrophization Scale
Anxiety and Depression Hospital Scale	Supplemental Pain Scale
Self-Assessment Questionnaire for Depression	Inhibitory Control Humoral Offset
Pain Catastrophization Scale	Generalized Anxiety Disorder 7-Item Scale
Marginalized Anxiety Depression Rating Scale	Coffman Neurotic Inhibitory Control
Anxiety: Trait Inventory	C. Measures of Pain Outcomes
Hamilton Depression and Anxiety Assessment Scale	Mulligan's Pain Questionnaire
Emotional Functional Evaluation Scale in Cancer Treatment	Visual Analogue Scale
Comprehensive Neuropathic Scale	Numerical Pain Scale
Minnesota Multiphasic Personality Inventory	Small Pain Inventory
Eyewick Personality Questionnaire	5-point Likert scale and 6-point Likert scale
Multidimensional Scale of Health Control Locus	
Scale of Impact Events	
Scale of Contribution	

Gatti. World J Surg Surg Res 2018; Vol 1 Article 1048.

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### Preoperative Pain Testing?

- Quantitative sensory testing (QST)
- Preoperative psychometric evaluation
- May predict
  - 4-54% of variance in postop pain experience
  - Development of chronic post surgical pain

Werner MU et al. Anesthesiology 2010; 112(6):1494-1502.

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### Psychometric Testing and Postop Pain

• 149 TKAs

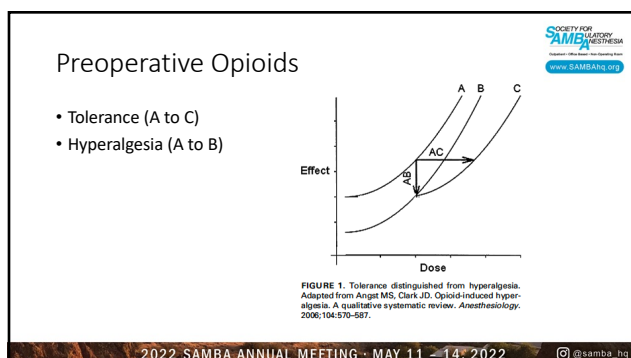
TABLE 2. Correlation Between Preoperative Variables and Visual Analog Scale Pain at Followup

Psychometric Variable	1 Month	3 Months	6 Months	12 Months
State-Trait Anxiety Index	.21	.23	.16	.38**
Beck Depression Inventory	.13	.22	.13	.43*
McGill Pain Questionnaire-sensory	.29*	.20	.13	.08
McGill Pain Questionnaire-affective	.26	-.06	.10	.13
McGill Pain Questionnaire-total score	.22	.09	.16	.11
Perceived Stress Scale	-.17	-.08	.02	-.06

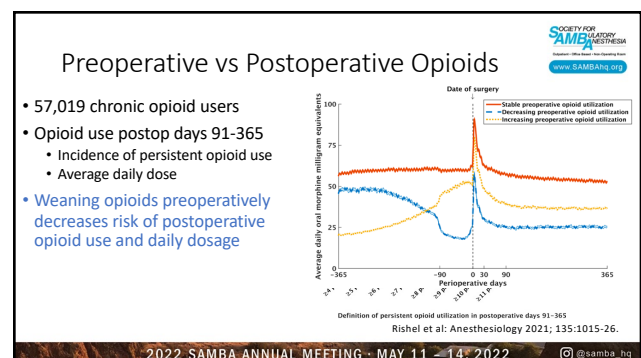
Brander et al. Clin Orthop Rel Res 2003; 416:27-36.

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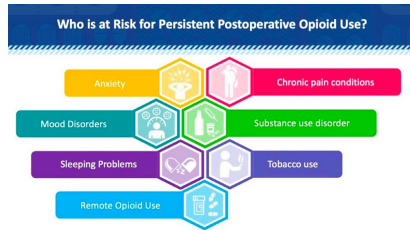


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## Perioperative Opioids



Larach et al: Anesthesiology 2022; 136(4): 594-608.

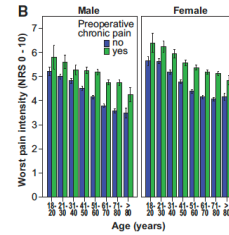
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## Preoperative Chronic Pain

- 22,963 pts undergoing various surgeries
- Chronic Pain
- Age
- Gender



Gerbershagen et al: Anesthesiology 2014; 120:1237-45.

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## Pain and Surgery Type

- >115,000 patients from 105 hospitals
- "worst pain" on POD1
- Outpatient procedures that had median score  $\geq 6$ :
  - Calcaneus ORIF; ankle fusion/reconstruction
  - Single or 2-level spinal fusion
- Some laparoscopic surgeries had pain equivalent to TKA:
  - Appendectomy
  - Extrauterine pregnancy
  - Gastric band

Gerbershagen et al: Anesthesiology 2013; 934-944.

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## Early Associations

- Among patients who underwent GA (n=1416)
- Predictors of severe postoperative pain
  - Age (younger)
  - Gender (female)
  - Surgical Procedure (abdominal/orthopedic)
  - Preoperative pain severity (numerical scale)
  - Preoperative anxiety measure (Amsterdam scale [APAIS])

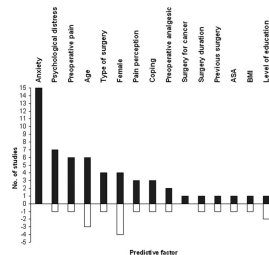
Kalkman et al: Pain 2003; 105:415-423.

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## Early Associations



- Systematic Review of Literature to assess predictors for severity of postop pain

Ip et al: Anesthesiology 2009; 111(3):657-77.

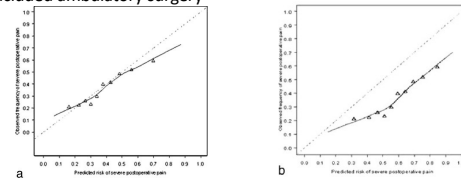
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## Multifactorial Models

- Gender, age, type of surgery, incision size, preoperative pain score, anxiety score
- Included ambulatory surgery



Janssen et al: Anesth Analg 2008; 107(4):1330-9.

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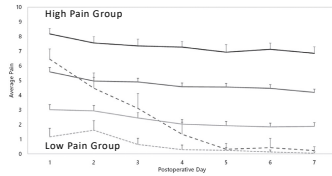
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## Predicting Pain Trajectory

### • Postop pain trajectory groups for 7 days in 360 patients

- High pain group
  - Women
  - Younger
  - High anxiety/depression
  - Pain catastrophizing
  - NOT procedure type



Vasilopoulos et al: Anesthesiology 2021; 134: 421-34.

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## Predicting Persistent Postop Pain

- 300 pts after TKA
- Incidence of persistent pain and disability 12 months after surgery: 16%
- Predictors at 6 or 12 months:
  - Preoperative pain intensity
  - Trait (predisposition to) anxiety
  - Expected pain
- Final model:
  - Preoperative pain
  - Expected pain

Rice et al: Br J Anaes 2018; 1-9. <https://doi.org/10.1016/j.bja.2018.05.070>

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## Summary

- Severe postop pain can lead to impaired recovery and increased risk of chronic pain
- Risk factors for increased postoperative pain are varied (biophysical and psychosocial) and multifactorial
- Correlations between anxiety, depression, preoperative pain, and postoperative pain exist, but assessing potential degree of impact is difficult and/or impractical

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