

# Development of a Risk Communication Tool for Postoperative Pain – Design Requirements Indicated by Clinicians, Families & Patient Partners

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## BACKGROUND

- Approximately 1 in 5 children have persistent postoperative pain at 12 months following surgery [1], which can substantially affect their quality of life [2].
- As such, pain management has been identified as a key area for improvement at BC Children's Hospital [3].
- Although some risk factors for postoperative pain are known, there is limited evidence of the use of personalized risk calculation and communication [4], suggesting an opportunity for improvement.

## OBJECTIVE

- To gain insights into risk communication practices and obtain feedback on risk communication tool designs found in the literature.

## METHODS

- Virtual focus groups with expected end users were conducted (i.e. families, patient partners, and clinicians).
- Data were analyzed thematically using NVivo to create design requirements.
- A prototype was created using Figma to enable rapid co-design.

## RESULTS

- Nineteen participants attended six focus groups: 10 clinicians, 2 patient partners, and 7 family members. Most participants (15/19, 79%) were female, with 13/19 (68%) aged under 49 years.

Participants identified five key design requirements:

- Present risk in a non-threatening manner using human-centered design principles (e.g. color coding that accounts for color vision impairment)
- Provide risk information in a multimodal format to ensure user comprehension (e.g. visual representation of risk, text to contextualize and explain the risk score, and a severity index)
- Include the top variables in the model that contribute to the patient's risk to increase transparency
- Provide a checklist to guide the clinical conversation around risk comprehension
- Include risk mitigation strategies to empower families and provide a sense of agency over their care

**References** [1] J Pain; 2017;18(6):605–614.; [2] Pain Reports; 2017;2(5); [3] BMJ Open Qual; 2020;9(2):e000924; [4] Can J Anesth; 2019; 66:1026–1037.

# Clinicians, families, & patient partners identified key requirements for a risk communication tool for postoperative pain:

- 1) present risk in a non-threatening manner
- 2) use a multimodal format
- 3) include the top variables in the model
- 4) provide a comprehension checklist
- 5) offer risk mitigation strategies



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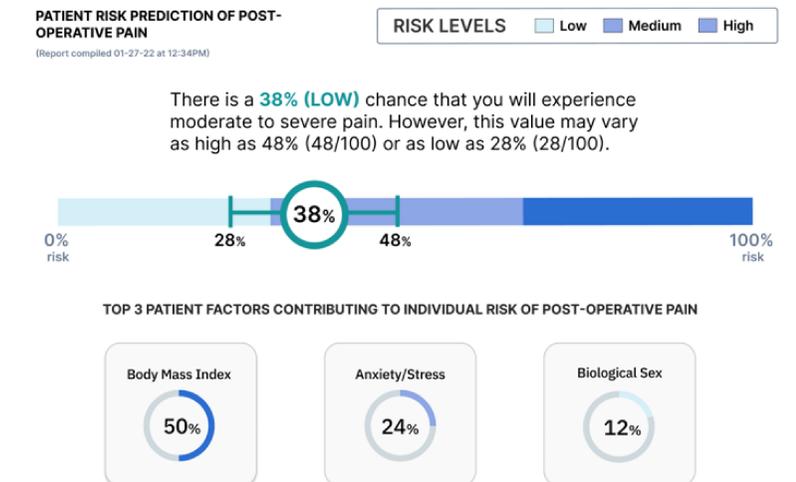
A)

PATIENT DETAILS		
Name: Jane Doe	Age: 12 years old	Visit Date: 01-27-2021
MRN: 12345678	Clinic Address: BC Children's Hospital	Visit Number: 78123678

DIAGNOSIS DETAILS	
(Last updated 01-27-2021 at 12:34PM)	
Site: Posterior spine	Status: Pre-surgery for spinal fusion
Surgery: Scoliosis repair	Diagnosis Date: 01-05-2021

B)



C)

**SUGGESTIONS FOR DECREASING PAIN AFTER SURGERY**

**Reduce stress and anxiety**  
Practicing mindfulness exercises before surgery may aid in decreasing pain following surgery.

**Improve nutrition**  
Minimizing processed foods and eating whole and healthy foods like fruits and vegetables can boost the body's recovery mechanisms.

**Increase physical activity**  
45 minutes of daily exercises in the days and weeks before surgery will increase strength and improve physical functionality after surgery.

D)

**QUESTIONS TO CONSIDER BEFORE LEAVING THE APPOINTMENT**

Are the risks of developing pain after surgery understood?

What factors contribute to the chances of developing pain after surgery?

What are the top suggestions for decreasing pain after surgery?

E)

NOTES

**Figure 1.** Risk communication tool prototype based on preliminary design requirements. **A)** Indicates patient demographics and clinical characteristics (e.g. name, age, previous medical history). **B)** Provides a color-coded risk scale (i.e., low, medium, high) with a textual statement and plot to represent the individual's level of risk, the model's uncertainty, and the top factors contributing to the score. **C)** Provides mitigation strategies for patients to decrease their chance of pain after surgery. **D)** Provides a checklist of questions for patients to consider before leaving their appointment. **E)** Provides a blank box for clinicians or families to take notes during the clinical consult.