

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, frequency of hospital visits, opioid consumption, and overall trust in the healthcare system [2]. Pain management has been identified as a key area for improvement at BC Children's Hospital (BCCH) [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 substantial improvement.

OBJECTIVES. As part of a larger project to develop individualized pediatric pain risk prediction, we aim to design an easy-to-use communication tool, for use by clinicians and families, to present a child's risk of developing postoperative pain. In this study, we aimed to identify the requirements of our expected end-users for this tool and establish a means to visualize the inherent uncertainties resulting from the use of risk prediction models.

METHODS. We conducted focus groups with families (parents of children who had recently undergone surgery or a diagnostic procedure at BCCH), patient partners (with lived pediatric surgical experience), and clinicians (with expertise in postoperative pain), to gain insights into current risk communication practices and obtain feedback on example risk communication tool designs found in the literature. Focus group sessions were held virtually using Zoom videoconferencing, were conducted separately by participant type (clinicians or families/patient partners) in groups of 3-4 participants, and lasted approximately 1-hour. Data were analyzed thematically using NVivo (QSR International, Melbourne, Australia) to create design requirements. A prototype was created using Figma (Figma Inc, San Francisco, CA) to enable rapid co-design of future iterations.

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 indicated that risk is typically communicated verbally to patients and their families using severity descriptions and/or a numerical representation, which may be contextualized, and that risk communication tools were seldomly used in practice. Participants believed that families should be provided with risk information and subsequently allowed time to reflect and follow up with questions or concerns. Participants identified five key design requirements 1) present risk in a non-threatening and non-frightening manner using human-centered design principles (e.g. color coding that accounts for color vision impairment); 2) provide risk information in a multimodal format to ensure user comprehension (e.g. visual representation of risk, clear and concise text to contextualize and explain the risk score, and a severity index); 3) include the top variables in the model that contribute to the patient's risk to increase transparency; 4) provide a checklist to guide the clinical conversation around risk comprehension; 5) include educational resources and risk mitigation strategies to empower families and provide a sense of agency over their care. A prototype was designed based on these preliminary requirements (Figure 1).

CONCLUSIONS. Co-design workshops will soon be held to gather and apply participant design ideas, get feedback regarding the current prototype and re-design, followed by tool usability evaluations. Although further work is needed, designing and implementing risk communication tools into clinical practice may help to alleviate the discrepancy between the accessibility, utilization, and comprehension of personalized risk information by patients, families, and healthcare professionals.

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.

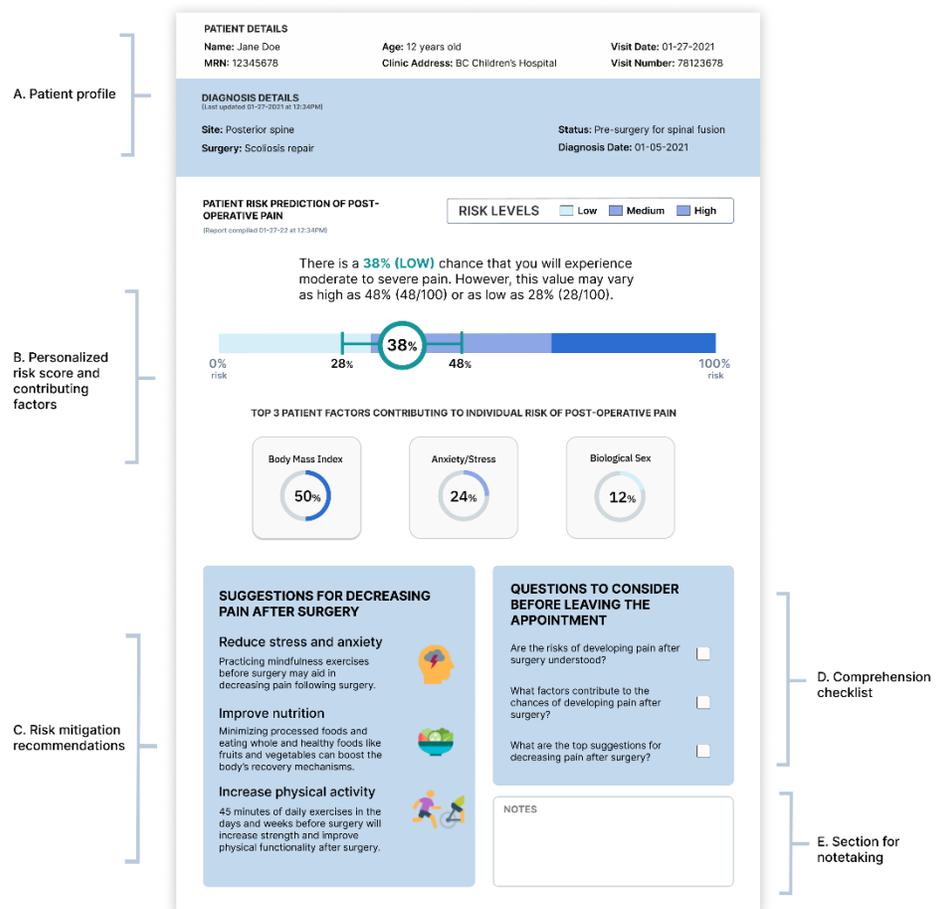


Figure 1. Prototype design based on preliminary requirements.