

Accelerating Innovations into CarE – Market Access Program (AICE-MAP)



Evaluating a new device for hand therapy - the FEPSim®: a feasibility and usability study

PROJECT FAST FACTS

PARTNERS: Karma Machining and Manufacturing, University of Alberta Faculty of Rehabilitation Medicine, Glenrose Rehabilitation Hospital, Royal Alexandra Hospital

AWARD: \$150,000

AWARD DATE: November 1, 2019

PROJECT DURATION: 18 months

THE PROBLEM

Musculoskeletal disorders of the upper limb affect functioning in everyday life and are correlated with a low quality of life. At present, it is a challenge to meet the hand therapy needs of Albertans because there are limited options in the clinic for measuring force of wrist flexion/extension and pronation/supination, particularly in functional activities (e.g. turning a door handle, using a can opener, opening a jar). Work simulation devices exist but are prohibitively costly for most clinics. Standard force gauges require custom setup to measure rotational movements, limiting reliability of rehabilitation protocols and the development of ranges of normal strength to measure therapeutic outcomes.

THE SOLUTION

The FEPSim® (flexion, extension, pronation, and supination simulator) medical device, developed by Karma Machining & Manufacturing Ltd., an Alberta-based small-medium sized enterprise (SME). The device enables hand and wrist rehabilitation, adjustable to the patient's capabilities during the rehabilitation process. The FEPSim® has not yet been tested in a healthcare setting.

PROJECT OBJECTIVES

Karma Machining & Manufacturing, and the University of Alberta Faculty of Rehabilitation Medicine, are working together to trial the FEPSim® device with patients at the Glenrose Rehabilitation Hospital and Royal Alexandra Hospital. The goals of the trial are to:

1. Explore the clinical effectiveness of the FEPSim® device compared to standard care for people with injuries of the forearm, wrist, and hand.
2. Examine the cost effectiveness of the FEPSim® device compared with standard care interventions.
3. Investigate the usability of the FEPSim® device by therapists.

"Market Validation is everything! AICE-MAP allows Karma the opportunity to put prototypes in the market (hands of patients) and assess the effectiveness of the device. The medical device market can be very challenging and having this support is vital to our diversification strategy."

– Darryl Short, CEO, Karma Machining & Manufacturing Ltd.

"The results of this project will inform the development of evidence-based best practice standards for clients with impairments in the forearm, wrist, and hand. The outcomes will guide healthcare professionals and the healthcare system in implementing the FEPSim® device."

– Dr. Antonio Miguel Cruz, University of Alberta

ABOUT THE AICE-MARKET ACCESS PROGRAM

AICE - MAP is designed to accelerate health innovations that face evidentiary hurdles in achieving market access. The Program supports small to medium-sized enterprises and real-world testing sites in carrying out clinical trials and feasibility studies of innovative health technologies. Successful Projects are designed to generate key evidence that will facilitate commercial progression and market adoption. If you'd like to learn more, please check out our [AICE website](#).

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