



University  
of Victoria

Graduate Studies

Notice of the Final Oral Examination  
for the Degree of Master of Science

of

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BSc (University of Westminster, 1995)

**“Evaluating the Effect of Display Size on the Usability and the  
Perceptions of Safety of a Mobile Handheld Application for Accessing  
Electronic Medical Records”**

School of Health Information Science

Monday, September 10, 2018

1:00 P.M.

Human and Social Development Building  
Room A202

Supervisory Committee:

Dr. Andre Kushniruk, School of Health Information Science, University of Victoria (Supervisor)  
Dr. Elizabeth Borycki, School of Health Information Science, UVic (Member)

External Examiner:

Dr. Michael Prince, Studies in Policy and Practice, UVic

Chair of Oral Examination:

Dr. Elizabeth Vibert, Department of History, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

## **Abstract**

**Introduction:** While mobile device use by physicians increases, there is an increased risk that errors committed while using mobile devices can lead to harm. This mixed-method study evaluates the effects of screen size on clinical users' perceptions of medical application usability and safety when interfacing to critical patient information. In this research, two mobile devices are examined: iPhone® and the iPad®.

**Method:** Eleven physicians and one nurse practitioner participated in a chart-review simulation using an app that was an end-point to an electronic health record. Screenrecording, video-recording and a think-aloud protocol were used to gather data during the simulation. Additionally, participants completed Likert-based questionnaires and engaged in semi-structured interviews.

**Results:** A total of 105 usability, usefulness and safety problems were recorded and analysed. A strong preference was found for the larger screen when reviewing patient data due to the large quantity of data and the increased display size. The smaller device was preferred due to the devices portability when participants needed to remain informed when they were away from the point of care.

**Conclusion:** There is an association between screen size and the perceived safety of the handheld device. The iPad was perceived to be safer to use in clinical practice. Participants preferred the iPad® because of the larger size, not because they thought it was safer or easier to use. The iPhone® was preferred for its portability and its usefulness was perceived to increase with greater distance from the point of care.

**Keywords:** Clinical information systems; Electronic medical records; Physician satisfaction; Usability; Usefulness; Safety; Error; Testing; Mobile device; Screen size; Smartphone; Tablet