



Information and News



In previous newsletters we highlighted the School's research and teaching in emerging areas such as data science and AI in healthcare. In this issue we include work being conducted by our students and faculty in the area of human factors in healthcare. Human factors in healthcare, and specifically human-computer interaction, has and will continue to be an area of critical importance in moving health informatics forward and is one focus of our work.

Model Program



HINF undergraduate students! Check the model program to make sure you are on track!

[BSc - Health Information Science](#)

[BSc - Combined Major Computer Science and Health Information Science](#)

Have questions? Contact our undergraduate advisor, Helen Monkmon: hinfugadvisor@uvic.ca

Awards and Recognitions

Research in the News!



Dr. Helen Monkman and Leah MacDonald (BSc Health Information Science 4th year undergraduate research assistant) are investigating online laboratory (lab) results from a human factors perspective. Their first publication from this study (in press) revealed that despite having a sample of people ($N = 25$) who reported using online lab results often, many of them overlooked abnormal results.



Dr. Elizabeth Borycki received a 5 year grant from the **Natural Sciences and Engineering Council (NSERC)** to **Develop a Method for Creating and Validating the Safety of Interface Designs**. The research advances the science around safety heuristics, and human factors clinical simulations to develop evidence-based User Interface Designs.



Dr. Elizabeth Borycki has received a 5 year **Michael Smith Foundation Health Research BC Health Professional Investigator Award** to **Improve the Safety of Health Information Technology: From International Knowledge to Local Application**. This research is focused on developing, validating and testing approaches to evidence-based health information technology safety and covers a range of human factors research around system safety.



Dr. Andre Kushniruk and Dr. Elizabeth Borycki received funding from the Federal Digital Supercluster to investigate the human factors of an AI application in terms of usability, workflow and implementation for the project **Point of Care Dermatology Intelligent Network**. The project focuses on a new mobile solution for supporting family physicians and dermatologists caring for patients who may have skin cancer.

Faculty and Student Publications



Human Factors: Consumer Informatics and User Engagement

Lo B, Zhang T, Leung K, Mehta R, Kuziemy C, Booth RG, Chyjek A, Rossetti SC, McLean D, **Borycki E**, McLay D, Noble J, Carter S, Strudwick G. Identifying Best Approaches for Engaging Patients and Family Members In Health Informatics Initiatives: A Case Study of The Group Priority Sort Technique. *Res Involv Engagem.* 2020 May 18;6:25. <https://doi.org/10.1186/s40900-020-00203-8>

Monkman H, Kushniruk A, Borycki E, Sheets D, Barnett J, Nøhr C. The Medium Is the Message: How Do Canadian University Students Want Digital Medication Information? *Life (Basel).* 2020 Dec 10;10(12):339. <https://doi.org/10.3390/life10120339>

Monkman H, Kushniruk AW, Borycki EM, Sheets DJ, Barnett J. Differences in Memory, Perceptions, and Preferences of Multimedia Consumer Medication Information: Experimental Performance and Self-Report Study. *JMIR Hum Factors.* 2020 Dec 1;7(4):e15913. <https://doi.org/10.2196/15913>

Pinkney, S., Van Rooij T., Longstaff, H., Verchere, B., **Borycki, E., Kushniruk, A.**, Gorges, M., Portales-Casamar W., Virani A., Wasserman W., Amed S. (2001, June 2-5). Trustsphere A Trusted, Secure and Privacy Respecting Healthcare, Environment Realized for Everyone: User Engagement to Build the Trust Layer in Digital Health for Type 1 Diabetes. *The Official Journal for Advanced Technologies and Treatments for Diabetes* A-141

Human Factors: Data Science and Artificial Intelligence

Kushniruk, A., Borycki, E. (2021). The human factors of AI in healthcare: Recurrent issues, future challenge and ways forward. In Househ, M., Kushniruk, A. W. and Borycki, E. M. (Eds.). *Multiple Perspectives on Artificial Intelligence in Healthcare Opportunities and Challenges.* New York: Springer.

Kushniruk, A. W., Borycki, E. M. (2019). Big data challenges from a human factors perspective. In Househ, M., Kushniruk, A. W., Borycki, E. M. (Eds.). *Big Data, Big Challenges: A Healthcare Perspective.* New York: Springer.

Human Factors: Literacy and User Experience

Lesselroth B, **Monkman H**, Adams K, Wood S, Corbett A, Homco J, **Borycki EM**, Spier R, **Kushniruk AW**. User Experience Theories, Models, and Frameworks: A Focused Review of the Healthcare Literature. *Stud Health Technol Inform.* 2020 Jun 16;270:1076-1080. <https://doi.org/10.3233/SHTI200327>

Monkman H, Griffith J. A Tale of Two Inspection Methods: Comparing an eHealth Literacy and User Experience Checklist with Heuristic Evaluation. *Stud Health Technol Inform.* 2021 May 27;281:906-910.

<https://doi.org/10.3233/SHTI210310>

Monkman H, Macdonald L, Griffith J, Lesselroth B. A User Experience and eHealth Literacy Inspection of a Lab Test Interpretation Mobile App for Citizens. *Stud Health Technol Inform.* 2021 May 27;281:947-

951. <https://doi.org/10.3233/SHTI210318>

Monkman H, Schmidt T, Nøhr C. Online Medication Information for Citizens: A Comparison of Demands on eHealth Literacy. *Stud Health Technol Inform.* 2020 Jun 16;270:1026-1030.

<https://doi.org/10.3233/SHTI200317>

Human Factors: Patient Journey Mapping

Borycki EM, Kushniruk AW, Wagner E, Kletke R. Patient Journey Mapping: Integrating Digital Technologies into the Journey. *Knowledge Management & E-Learning: An International Journal*, 521-535.

<https://doi.org/10.34105/j.kmel.2020.12.029>

Joseph AL, Kushniruk AW, Borycki EM. Patient journey mapping: Current Practices, Challenges and Future Opportunities in Healthcare. *Knowledge Management & E-Learning: An International Journal*, 387-404.

<https://doi.org/10.34105/j.kmel.2020.12.021>

Kushniruk AW, Borycki EM, Parush A. A Case Study of Patient Journey Mapping to Identify Gaps in Healthcare: Learning from Experience with Cancer Diagnosis and Treatment. *Knowledge Management & E-Learning: An International Journal*, 405-418.

<https://doi.org/10.34105/j.kmel.2020.12.022>

Kushniruk AW, & Parush A. Editorial: Visualizing User Experience and Stories: From Customer Journeys to Patient Experience Mapping. *Knowledge Management & E-Learning: An International Journal*, 380-386.

<https://doi.org/10.34105/j.kmel.2020.12.020>

Monkman H, Kushniruk AW, Borycki EM, Sheets D, Barnett J, Park H. Opportunities for Improving How and When Canadians are Informed About New Prescription Medications. *Knowledge Management & E-Learning: An International Journal*, 427-447.

<https://doi.org/10.34105/j.kmel.2020.12.024>

Park H, Monkman H, Wenger A, Lesselroth B. Portrait of Ms. Diaz: Empirical Study of Patient Journey Mapping Instruction for Medical Professional Students. *Knowledge Management & E-Learning: An International Journal*, 469-487.

<https://doi.org/10.34105/j.kmel.2020.12.026>

Human Factors: Safety

Borycki, E. M., Kushniruk, A. W. Big data and patient safety. In Househ, M., Kushniruk, A. W., Borycki, E. M. (Eds.). *Big Data, Big Challenges: A Healthcare Perspective*. New York: Springer, 2019.

Borycki, E., Kushniruk, A. AI and patient safety: Issues and challenges. In Househ, M., Kushniruk, A. W., Borycki, E. M. (Eds.). *Multiple Perspectives on Artificial Intelligence in Healthcare Opportunities and Challenges*. New York: Springer, 2021

Borycki EM, Kushniruk AW, Kletke R, Vimarlund V, Senathirajah Y, Quintana Y. Enhancing Safety During a Pandemic Using Virtual Care Remote Monitoring Technologies and UML Modeling. Yearb Med Inform. 2021 Apr 21.

<https://doi.org/10.1055/s-0041-1726485>

Lesselroth B, Park H, **Monkman H**, Duncan A, Thompson G, Yarnall R. Designing Shift Handoff Software: Clinical Learners and Design Students Collaborate Using the "Design Thinking" Process. Stud Health Technol Inform. 2021 May 27;281:974-978. <https://doi.org/10.3233/SHTI210311>

Walsh JM, **Borycki EM, Kushnriuk AW.** The Effects of Electronic Medical Record Downtime on Patient Safety and Care, Downtime Mitigation and Downtime Planning. International Journal of Extreme Automation and Connectivity in Healthcare. 2020, 2(1), e2577-4808 <https://doi.org/10.4018/ijeach.2020010110>

Human Factors: Usability

Campbell JL, **Monkman H.** The Application of a Novel, Context Specific, Remote, Usability Assessment Tool to Conduct a Pre-Redesign and Post-Redesign Usability Comparison of a Telemedicine Website. Stud Health Technol Inform. 2021 May 27;281:911-915. <https://doi.org/10.3233/SHTI210311>

Paton C, **Kushniruk AW, Borycki EM,** English M, Warren J. Improving the Usability and Safety of Digital Health Systems: The Role of Predictive Human-Computer Interaction Modeling. J Med Internet Res. 2021 May 27;23(5):e25281. <https://doi.org/10.2196/25281>

Human Factors: User Experience/Engagement

Lesselroth B, **Monkman H,** Adams K, Wood S, Corbett A, Homco J, **Borycki EM,** Spier R, **Kushniruk AW.** User Experience Theories, Models, and Frameworks: A Focused Review of the Healthcare Literature. Stud Health Technol Inform. 2020 Jun 16;270:1076-1080. <https://doi.org/10.3233/SHTI200327>

Human Factors: User Interface Design

Senathirajah Y, Kaufman DR, Cato KD, **Borycki EM,** Fawcett JA, **Kushniruk AW.** Characterizing and Visualizing Display and Task Fragmentation in the Electronic Health Record: Mixed Methods Design. JMIR Hum Factors. 2020 Oct 21;7(4):e18484. <https://doi.org/10.2196/18484>

Faculty Presentations



Borycki, E. M. (June 29, 2021). Health technology: The state of the art in safety science. Centre for Biomedical and Health Informatics Research Seminar Series. June 29, 2021, Mt Sinai Health System, New York, New York, United States.



Minshall, S. (2020, May 12). Presentation Research + Innovation Showcase: Mobile App Display Size vs Usability.

<https://digitalhealthcanada.com/event/research-and-innovation-showcase-mobile-app-display-size-vs-usability-and-safety-for-retrieving-medical-records/>



Kannry, J., **Kushniruk, A.W.** (November 5, 2021). Human Factors Engineering with Usability Testing, Clinical Informatics Professional Development (CIPD) Didactic Webinar Series, Mt Sinai Hospital, New York, New York.



Kushniruk, A.W. (October 8, 2021). Usability Engineering in Healthcare: Moving from the Lab to the Virtual World, Seminar Series, Mt Sinai Health System, New York, New York.

Books, Toolkits and Tools

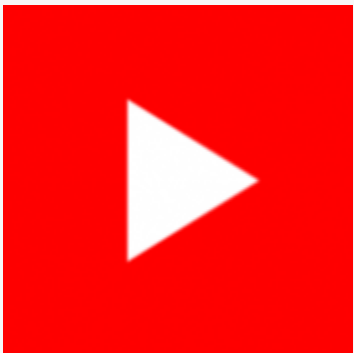


Faculty edit a special issue on “Visualizing User Experience and Stories: From Customer Journeys to Patient Experience Mapping” (edited by: **Andre Kushniruk** and **Avi Parush**)
<https://www.kmel-journal.org/ojs/index.php/online-publication/issue/view/48>



The Electronic Medication Reconciliation Group. Paper to electronic MedRec implementation toolkit, 2nd Edition. ISMP Canada and Canadian Patient Safety Institute. 2017 (faculty authors include: **Borycki, EM, Kuo, MH, Kushniruk, AW, Monkman H**). [https://www.ismp-canada.org/download/MedRec/PtoE/Paper to Electronic MedRec Implementation Toolkit.pdf](https://www.ismp-canada.org/download/MedRec/PtoE/Paper%20to%20Electronic%20MedRec%20Implementation%20Toolkit.pdf)

Professional Development



Human Factors - **Human Factors & AI in Healthcare** - **Dr. Andre Kushniruk**

[To Learn More](#)

Experiential Learning and Co-op



Spotlight on International and Provincial Co-ops!



Zikai Hao worked remotely for an International Work Term with Seven Informatics Ltd. in Oxford in the United Kingdom. Zikai worked on the The cityEHR. The cityEHR is an open source Electronic Health Record (EHR) product, developed and supported by a team based in Oxford, UK. As part of his work term he:

1. Develop a clinical model for a Fracture Liaison Service.
2. Use tools in cityEHR to create a Mandarin language variant for that model.
3. Co-ordinate the work of other academic centres in making further language variants.

Co-op Hiring

Considering a Co-op student? Typical Health Information Science Co-op jobs include:

- + Business applications analyst
- + Clinical applications student
- + Go-live support
- + Health business consultant
- + Health data analyst
- + Health systems analyst

The hiring process is simple. If you are interested in learning more about hiring please contact the Health Information Science Co-op office hiscoop@uvic.ca



Co-op Funding Opportunities

Co-op Funding Update: BioTalent

The Federal government's Student Work Placement Program (SWPP) provides up to 50% of the student's wages (to a maximum of \$5,000) or 70% (to a maximum of \$7,000) for students from underrepresented groups which includes female STEM students, first year students, indigenous students, student with a disability, visible minorities and newcomers to Canada.

SWPP has 12 funding partners who deliver the funding across Canada based on industry sector. Each funding partner has different application processes and there are some slight differences in criteria.

- Consider applying to [BioTalent Canada](#)

Employers, uncertain if your job qualifies? Contact Colleen at 1-866-243-2472, ext. 218 or askme@biotalent.ca

- You have to apply for the funding before the student starts their job.

- Multiple grants are possible eg. Hire two students and receive two grants.
- Student eligibility: This Federal program is only available to students who are Canadian citizens, Permanent Residents or students who have refugee status. International students are not eligible for this funding.

Employers have told us that the application process takes 15-20 minutes to complete. Grants are allocated on a first-come, first-served basis so you are encouraged to apply as soon as possible. Should you not find a suitable student for your position, simply inform the funding partner that you do not need the grant.

Donors



Denis and Pat Protti Endowment Award

In 2004, a group of generous donors came together to honour Denis and Pat Protti's contributions to the Canadian healthcare system.

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We acknowledge and respect the lək̓ʷəŋən peoples on whose traditional territory the University of Victoria stands, and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

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