

JSGS 858 – Enterprise Information Management

	UNIVERSITY OF SASKATCHEWAN CAMPUS	UNIVERSITY OF REGINA CAMPUS
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OFFICE LOCATION:		Room 334.7, 2155 College Avenue (CB)
TERM:		Winter 2023
ROOM:		Online
DATE AND TIME:		Thursdays 3:30 – 5:30 PM (SK Time).

The syllabus for this course is comprised of this document plus the document titled “JSGS Common Syllabus 2022-23” available at: https://www.schoolofpublicpolicy.sk.ca/documents/course-syllabi/jsgs_common-syllabus_2022-23.pdf

INTELLECTUAL PROPERTY ACKNOWLEDGEMENT

This course was developed by Ramona Kyabaggu.

CALENDAR DESCRIPTION

An in-depth analysis of the health information critical to health care operations, the administration of enterprise information governance with a focus on information as a strategic asset, and the important functions of health information professionals in enterprise management.

LEARNING OBJECTIVES

JSGS has developed a set of four competencies that all graduates of the MHA-HIIM will be able to demonstrate. The specific readings, assignments and activities in JSGS 856 will help you both acquire and demonstrate the ability to:

- Improve the capture, quality, and use of information to support the Canadian health care system.
- Understand the value, importance and influence of health information in policy, strategy and decision making, and to advance the use of information to inform and evaluate health policy and management decisions.

- Apply methods, techniques, and tools to analyze health care data and transform it into actionable business and clinical intelligence.
- Demonstrate cross functional leadership and develop solutions to address the diverse needs and priorities in complex and rapidly changing healthcare systems.

COURSE CONTENT AND APPROACH

This course lies at the intersection of implementation science and health informatics and information management, emphasizing context, complexity and process in implementing evidence-based practice and innovation in digital health and health information services. The course begins with a look at jurisdictional digital health governance in health systems. Still, it mainly focuses on making change happen at the enterprise level, with the health information organization as the setting of interest.

The course places a significant emphasis on practical experience gained through hands-on sessions with scenario-based problems and data. Students are expected to have a basic knowledge of the underlying statistical theories. The course focuses on the practical implementation of informatics methods and techniques using diagramming (e.g., Lucid Charts, diagram.io), data management (e.g., Tableau Prep or Excel) and information visualization tools (e.g., Tableau or R).

Each module consists of a seminar covering the module readings and in-class lectures. Live classes will be recorded for students who cannot attend in person.

REQUIRED READINGS

There is no required textbook for this course. Enrollees must sign up for the following student memberships:

- Canadian College of Health Information Management/Canadian Health Information Management Association membership (~29 CAD);
- Digital Health Canada (Free) - sign-up instructions on UR Courses.

COURSE OUTLINE

Module 1 - Digital Health and Health Information Services (January 4 - 15)

A digital health strategy should be informed, aligned with, and supported by a jurisdiction's governance structures, policies and processes. Digital health governance failure can delay or diminish benefits realization and increase the risk of financial misinvestment. This module will examine public governance and its influence on digital health maturity. It will explore different instruments that FPT governments employ to govern and administer large-scale digital health services and interventions. Key to discussions will be government strategic plans and directives, policies, standards and guidelines, and the arms-length pan-Canadian health organizations (PCHOs) mandated to transform, coordinate and support health information organizations. Leading governmental and non-governmental global actors (e.g., WHO, EU) and initiatives (e.g., Global Digital Health Partnership) in digital health and health information will also be discussed.

- Explain the broader context of digital health, including the current landscape of digital health information services and services enabled by digital health and health information
- Identify the main actors shaping jurisdictional digital health in Canada and globally

- Understand who is governing, how they govern, and what needs to be governed (i.e., services, applications, standards, interoperability, architectures, infrastructures, information, people, etc.

Live Seminar:

Thursday, January 5th, 2022 – 3:30 – 5:30 pm (Course Orientation and Introduction to Tableau Sandbox)

Thursday, January 12th, 2022 – 3:30 – 5:30 pm

Pre-work:

- Briefly introduce yourself and share your personal learning objectives in Discord.

Discord Discussion Forum #1: (answer one) – Due Jan 22nd @ 11:59 pm, SK time

- *Consider the essential services and information that health information organizations (i.e., ministries and departments of health, health agencies and authorities, health delivery organizations and research organizations) provide to Canadians. What digital health/health information governance supports do CHI and CIHI offer to these organizations? Where might these organizations still have gaps or needs that are not supported?*
- *Does the way that health systems are structured, organized and governed influence how we design digital health solutions (e.g., data architectures, information exchange, etc)? Explain. Consider Kierkegaard (2015) Holmgren and Ford's (2015) findings on the impact of governance and organizational structure on health information exchange.*
- *Describe the impact of health system governance on digital health adoption in developing contexts. Why have some low and middle-income countries been more (or less) successful in the adoption of digital health building blocks such as electronic health records and health information exchange?*
- *Share your insights about the module readings.*

Watch:

- Coiera, E. (2013). *Projects to Change the World by 2050: The Role of eHealth in Transforming Care*. [Recorded Presentation] <https://www.youtube.com/watch?v=NdWBRTc47rU>
- Bell, R. (2016). *Ontario's Digital Health Strategy* [Recorded Presentation]. Infoway Partnership Conference. <https://youtu.be/8BHgenP8Jr0>

Read:

- Baumgart, D.C. (2020) Digital advantage in the COVID-19 response: perspective from Canada's largest integrated digitalized healthcare system. *npj Digit. Med.* 3, 114.
- Broomhead, S.C., Mars, M., Scott, R.E. et al. Applicability of the five case model to African eHealth investment decisions. *BMC Health Serv Res* 20, 666 (2020). <https://doi.org/10.1186/s12913-020-05526-6>
- Coiera E. (2009). Building a national health IT system from the middle out. *Journal of the American Medical Informatics Association : JAMIA*, 16(3), 271–273.
- Daniels T. 2014. Implementing e-Health through CHI: A Very Canadian Solution to a Very Canadian Problem. *Health Reform Observer-Observatoire des Réformes de Santé*2(3):Article 1.
- Forest P, Martin D. Fit for purpose: findings and recommendations of the external review of the pan-Canadian health organizations. Ottawa: Health Canada; 2018. – *Browse Only*
- Global Digital Health Index (GDHI) [website]. <http://index.digitalhealthindex.org/map>
- Holmgren, JA & Ford EW. (2018). Assessing the impact of health system organizational structure on hospital electronic data sharing, *Journal of the American Medical Informatics Association*, Volume 25, Issue 9, , Pages 1147–1152
- Kierkegaard, P. (2015). Governance structures impact on eHealth, *Health Policy and Technology*,

Volume 4, Issue 1, Pages 39-46,

- Neufeld, D. (2011.). Canada Health Infoway. Ivey ID: 9B10E019. London, Canada: Ivey Publishing.
- Noseworthy, T. (2015). We Thought We Were on Top: A Commentary on “Implementing e-Health through Canada Health Infoway” by Tom Daniels. Health Reform Observer - Observatoire des Réformes de Santé3 (1): Article 5.
- Ricciardi, W., Pita Barros, P., Bourek, A., Brouwer, W., Kelsey, T., Lehtonen, L., & Expert Panel on Effective Ways of Investing in Health (EXPH) (2019). How to govern the digital transformation of health services. European journal of public health, 29(Supplement_3), 7–12. <https://doi.org/10.1093/eurpub/ckz165>
- Vogel, L. (2015). Infoway is shifting, not shuttering: Alvarez. CMAJ Feb 2015, 187 (2) E59-E60. Zimlich E, Rosenblum R, Salzberg CA, et al. Lessons from the Canadian national health information technology plan for the United States: opinions of key Canadian experts. J Am Med Inform Assoc 2012;19:453–9 .

Module 2 - Enterprise Information Governance (January 16 - 29)

This module frames information as an enterprise asset. It discusses the imperative for information governance as an all-encompassing, enterprise-level strategic framework under which data, electronic health record, and IT governance activities can occur. Newer areas of enterprise information governance programs, such as AI and analytics governance, are also discussed.

Module Objectives:

- Evaluate data, information and analytics governance models
- Align business needs and functional requirements
- Understand the strategic imperative for enterprise information management of the entire life-cycle of data and information assets

Live Seminar:

Thursday, January 26th, 2022 – 3:30 – 5:30 pm (SK time)

Watch:

- Armstrong, T., White, M., Bertrand, L., Minocha, K. (2021). *Evolution of Enterprise Architecture in Nova Scotia's Health Care System*. [Webinar]. Digital Health Canada [Webinar Wednesday].
- Naraei, P. *An Eye on AI at CIHI*. (2021) [Webinar]. Digital Health Canada [Webinar Wednesday].

Read:

- Borek, Alexander. (2014). Data and Information Assets (Chap 1). In Total Information Risk Management Maximizing the Value of Data and Information Assets (1 Ed.). Waltham, MA: Morgan Kaufmann.
- 'Data and Information Governance' [Online Module]
- Digital Health Canada. (2018). Canada and Shared Information Governance: Expanding on Governance Standards - Steps Enabling Canada's Digital Health EcoSystem.
- Expert Advisory Group, Pan-Canadian Health Data Strategy. (2022). Pan-Canadian Health Data Strategy. <https://www.canada.ca/en/public-health/corporate/mandate/about-agency/external-advisory-bodies/list/pan-canadian-health-data-strategy-reports-summaries.html>
- Hovenega, E.J. & Grain, H. Health data and data governance. Studies in Health Technology and Informatics, 2013; 193:67-92
- Morley, J., Murphy, L., Mishra, A., Joshi, I., & Karpathakis, K. (2022). Governing Data and Artificial Intelligence for Health Care: Developing an International Understanding. JMIR formative research,

6(1), e31623. <https://doi.org/10.2196/31623>

- Standards Council of Canada. (2021). Canadian Data Governance Standardization Roadmap. https://www.scc.ca/en/system/files/publications/SCC_Data_Gov_Roadmap_EN.pdf

Module 3 - Workflow Analysis and Process Redesign (January 30 - February 12)

This module examines the relationship between data/information, workflows, processes, and health care outcomes. Data flow mapping, workflow analysis and business process redesign are reviewed for utilization management and IM/IT systems integration and interoperability. Assignment #1 scenarios, including an option of (1) clinical care and (1) drug supply chain case, will be introduced preceding the start of the second module seminar so that students will have an opportunity for technical instruction working with mapping methods, tools and standards.

Module Objectives:

- Align business needs and functional requirements
- Use tools and techniques to model, monitor and evaluate workflows and business processes within the health care enterprises
- Apply service design methodology to improve patient flow, care coordination, information continuity and service integration

Live Seminar:

Thursday, February 2nd, 2022 – 3:30 – 5:30 pm (SK time)

Thursday, February 9th, 2022 – 3:30 – 5:30 pm (SK time)

Discord Discussion Forum #2: (answer one) – Due Feb 12th @ 11:59 pm, SK time

- *The concepts of integration and interoperability (i.e., foundational, structural, semantic or organizational/business process) are often used interchangeably. Watch '[Improving Data Interoperability and Integration to Support Value-Based Care: Lessons from Stakeholder Interviews](#)' and explain the concepts of data integration and data interoperability and their relations.*
- *Go to the Integrating the Healthcare Enterprise website [<https://www.ihe.net/>]. How are IHE's standards resources being used to improve business process interoperability and digital workflows?*
- *How might the Donabedian model of structure, process, outcome be useful for evaluating digital health services? Provide an example of measure(s) you could use to evaluate structural, process and outcomes change resulting from the adoption of a new digital solution.*
- *Share your insights about the module readings.*

Watch:

- MacPhail, M.E., Bath, C. (2021). *Building Branches – Gathering Requirements through Co-Design*. Digital Health Canada [Webinar Wednesday].
- Hall, L (Quantum). (2022). *It Takes a Village: Content Management and Team based Work Flows*. Digital Health Canada [Webinar Wednesday].
- Harvey, C., Mostaghel, A. (2022). *Using Computer Simulation to Design, Test, and Refine Hospital Capacity Plans*. Digital Health Canada [Webinar Wednesday].

Helpful Resources:

- Health information: Management of a strategic resource. Chapter 9 (Business Process Redesign pp. 343 – pp. 353); Chapter 12 (Process Improvement Tools pp. 458 – pp. 465)

- ISO 5807:1985 Information processing — Documentation symbols and conventions for data, program and system flowcharts, program network charts and system resources charts.
<https://www.iso.org/obp/ui/#iso:std:iso:5807:ed-1:v1:en>
- Office of the National Coordinator for Health Information Technology (ONC). Health Care Workflow Process Improvement. https://ecqi.healthit.gov/system/files/Comp10_Component_Guide_508.pdf
- University of Victoria. EHealth Observatory: Workflow Modelling Tools:
<https://ehealth.uvic.ca/resources/tools/WorkflowModeling/WorkflowModeling.php>
- Agency for Healthcare Research and Quality Workflow Assessment for Health IT Toolkit Available from:
http://healthit.ahrq.gov/portal/server.pt/community/health_it_tools_and_resources/919/workflow_assessment_for_health_it_toolkit/27865
 - About the tool: Singh, R., Singh, A., Singh, D. R., & Singh, G. (2013). Improvement of workflow and processes to ease and enrich meaningful use of health information technology. *Advances in medical education and practice*, 4, 231–236. <https://doi.org/10.2147/AMEP.S53307>

Readings:

- Cain C, Haque S. (2008). Organizational workflow and its impact on work quality. In: Hughes RG, ed. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Advances in Patient Safety. Rockville, MD: Agency for Healthcare Research and Quality (US); 217-244.
- Ozkaynak, M., Unertl, K., Johnson SA, Brixey JJ, Haque SN. (2016). Clinical Workflow Analysis, Process Redesign, and Quality Improvement. In *Clinical Informatics Study Guide Text and Review*, Finnell, J., & Dixon, B. (1st ed. 2016. ed.).
- Kuziemy, CE & Peyton, L. (2016). A framework for understanding process interoperability and health information technology, *Health Policy and Technology*, Volume 5, Issue 2, 196-203.
- Tolentino, DA. (2020). Subbian, Vignesh4; Gephart, Sheila M.5 Applying Computational Ethnography to Examine Nurses' Workflow Within Electronic Health Records, *Nursing Research*

Module 4 Business Intelligence in Utilization Management (February 13 - March 5) / *Reading Week (February 20 - 26)

Utilization Management (UM) is about the appropriateness of using an organization's or a service's resources, including capital and human resources, and IT (Accreditation Canada). This module covers business intelligence for UM decision support in health and health care. There will be an opportunity to practice different data visualization techniques using health care data sets in a Tableau Sandbox. Small groups are given in-class time to work on their data dashboard assignment and receive formative feedback from the course instructor.

Module Objectives

- Generate business intelligence on utilization management using open data
- Understand complex utilization management issues in health care administration
- Evaluate care access, utilization, and needs from different perspectives (e.g., equity, case costing, quality/patient safety, etc.)

Live Seminar

Thursday, February 16th, 2022 – 3:30 – 5:30 pm (SK time)

Thursday, March 2nd, 2022 – 3:30 – 5:30 pm (SK time)

Go to:

JSGS 858 Tableau Sandbox (link on UR Courses) and being reviewing training and support resources

Watch:

- Krygier, M. (2020). COVID-19 and Genomics Data in Google Cloud. [Webinar]. Digital Health Canada [Webinar Wednesday].

Readings:

Required

- Canada Institute for Health Information: Indicator Library: https://indicatorlibrary.cihi.ca/display/HSPIL/Indicator+Library?desktop=true&_ga=2.209954709.1261785772.1608318093-384899413.1598544363
- Canadian Health Information Management Association. (2016). Utilization Management in Acute Care (PPB – 0039.16).
- Fekri O, Manukyan E, Klazinga N. (2020). Appropriateness, effectiveness and safety of care delivered in Canadian hospitals: a longitudinal assessment on the utility of publicly reported performance trend data between 2012–2013 and 2016–2017 BMJ Open;10
- Perry S, Homan C. Use of case mix tools for utilization management and planning. Stud Health Technol Inform. 2009;143:496-500.
- OECD (2021), “Hospital beds”, in Health at a Glance 2017: OECD Indicators, OECD Publishing, Paris.DOI: <https://doi.org/10.1787/19991312> (read chapters or sections that are most relevant to your final assignment focus). - See also OECD Data <https://data.oecd.org/canada.htm#profile-health>

Supplemental

- Canadian Institute for Health Information, All-Cause Readmission to Acute Care and Return to the Emergency Department (Ottawa, Ont.: CIHI, 2012).
- Fertel, B. S., Hart, K. W., Lindsell, C. J., Ryan, R. J., & Lyons, M. S. (2012). Toward understanding the difference between using patients or encounters in the accounting of emergency department utilization. Annals of emergency medicine, 60(6), 693–698.
- Kreindler SA. (2017). Six ways not to improve patient flow: a qualitative study. BMJ Quality & Safety; 26:388-394.
- Kroneman M, Siegers JJ. The effect of hospital bed reduction on the use of beds: a comparative study of 10 European countries. Soc Sci Med. 2004 Oct;59(8):1731-40.
- Rotter, T., Kinsman, L., James, E.L., Machotta, A., Gothe, H., Willis, J., Snow, P., and Kugler, J. (2010). Clinical pathways: effects on professional practice, patient outcomes, length of stay and hospital costs. Cochrane Database of Systematic Reviews, 3.
- Sutherland, J. M., & Crump, R. T. (2013). Alternative level of care: Canada's hospital beds, the evidence and options. Healthcare policy / Politiques de sante, 9(1), 26–34.
- Tomzik, Kristine M. (2008). "Fraud, Waste and Abuse: What's Hiding in Your Utilization Data?." 2008 AHIMA Convention Proceedings, October 2008.
- van de Vijssel, A.R., Heijink, R. & Schipper, M. (2015). Has variation in length of stay in acute hospitals decreased? Analysing trends in the variation in LOS between and within Dutch hospitals. BMC Health Serv Res 15, 438.
- Weir, S, Steffler, M, Li, Y, Shaikh, A Wright, JG, Kantarevic J. (2020). Use of the Population Grouping Methodology of the Canadian Institute for Health Information to predict high-cost health system users in Ontario CMAJ, 192 (32) E907-E912

**Module 5 - Revenue Cycle Management, Reimbursement Methodologies and Funding Methods
(March 6 - 19)**

The revenue cycle is the process of how patient financial and health information moves into, through, and out of the healthcare facility or medical practice, culminating with the facility or practice receiving reimbursement for the services provided (AHIMA). In this module, we review the Standards for

Management Information Systems in Canadian Health Service Organizations (MIS Standards) - a set of national standards for gathering and processing data and for reporting financial and statistical data on the day-to-day operations of a health service organization for revenue cycle management. We also discuss the broader context of acute-care funding, including data-driven activity-based and value-based funding models and related methodological considerations. Issues specific to information management and evidence of impacts of the quality of financial and health data used revenue cycle management is highlighted in module readings.

Module Objectives:

- Understand the role of the health information professional in revenue cycle and financial management
- Evaluate the financial and statistical information health care facilities report to CIHI through the Management Information System
- Compare and contrast different funding models and reimbursement methodologies

Live Seminar:

Thursday, March 9th, 2022 – 3:30 – 5:30 pm (SK time)

Thursday, March 16th, 2022 – 3:30 – 5:30 pm (SK time)

Readings:

Required

- Canadian Patient Cost Database Technical Document: MIS Patient Costing Methodology, January 2019 Chum F, Ohinmaa, A, Kaul, P. (2016). Canadian Case Mixed Groups (CMG+) Costing Proxy for Acute
- CIHI: The why, the What and the How of Activity-Based Funding in Canada: A Resource for Health System Funders and Hospital Managers
- Chu F, Ohinmaa A, Kaul P. (2016). Myocardial Infarction. Journal of Health & Medical Economics: <https://health-medical-economics.imedpub.com/canadian-case-mixed-groups-cmg-costing-proxy-for-acute-myocardial-infarction.php?aid=9466>
- Trenaman L, Sutherland JM. (2020). Moving from Volume to Value with Hospital Funding Policies in Canada. Healthc Pap. 2020 May;19(2):24-35.
- University of British Columbia: Evidence and Perspectives on Funding Healthcare in Canada: <https://healthcarefunding.ca/> (Browse)

Supplemental

- Britton J. R. (2015). Healthcare Reimbursement and Quality Improvement: Integration Using the Electronic Medical Record Comment on "Fee-for-Service Payment--an Evil Practice That Must Be Stamped Out?". International journal of health policy and management, 4(8), 549–551.
- Burau, V, Dahl, HM, Jensen, LG, Lou, S. (2018). Beyond Activity Based Funding. An experiment in Denmark, Health Policy, Volume 122, Issue 7, Pages 714-721.
- Camillo, C. (2016). CHIP Data in the Medicaid Statistical Information System (MSIS): Availability and Uses. 10.13140/RG.2.1.1945.1926.
- Heslop, L. (2019). Activity-based funding for safety and quality: A policy discussion of issues and directions for nursing-focused health services outcomes research. International Journal of Nursing Practice, 25(5).
- Palmer, K. S., Agoritsas, T., Martin, D., Scott, T., Mulla, S. M., Miller, A. P., Agarwal, A., Bresnahan, A., Hazzan, A. A., Jeffery, R. A., Merglen, A., Negm, A., Siemieniuk, R. A., Bhatnagar, N., Dhalla, I. A., Lavis, J. N., You, J. J., Duckett, S. J., & Guyatt, G. H. (2014). Activity-based funding of hospitals and its impact

on mortality, readmission, discharge destination, severity of illness, and volume of care: a systematic review and meta-analysis. PLoS one, 9(10)

- Patient Classification Systems International: 2011 Case Mix Conference: Meeting abstracts. Available at <https://bmchealthservres.biomedcentral.com/articles/supplements/volume-11-supplement-1>
- Porter, M.E., and Teisberg, E.O. (2006). Redefining Health Care: Creating Value-based Competition on Results. Boston: Harvard Business School Press.
- Sutherland JM, Botz CK (2006) The effect of misclassification errors on case mix measurement. Health Policy 79:195-202.
- Sutherland JM, Liu G, Crump RT, Law M. Paying for volume: British Columbia's experiment with funding hospitals based on activity. Health Policy. 2016 Nov;120(11):1322-1328.
- Tan JY, Senko C, Hughes B, Lwin Z, Bennett R, Power J, Thomson L. (2020). Weighted activity unit effect: evaluating the cost of diagnosis-related group coding. Intern Med J.

Module 6 - Groups Presentations - Dashboards (March 20 - 26)

Live Presentations:

Thursday, March 22nd, 2022 – 3:30 – 5:30 pm (SK time)

Module 6 - Implementation Science in Digital Health and Health Information Services (March 27 - April 2)

The better use of implementation science theory to guide digital health adoption decisions, implementation processes and evaluation is covered in this module. Students will gain an understanding of selecting implementation theories, evaluating implementation barriers and facilitators, tailoring implementation policies and practices/strategies, and conducting hybrid evaluations of digital health implementation and innovation success.

Module Objectives:

- Apply implementation science to enterprise information management, including implementation considerations in technology appraisal and acquisition and the strategic implementation of digital health innovations in health service organizations
- Learn about key implementation science constructs, including 'context' and 'complexity' to better understand and operationalize implementation theory in digital health, specifically:
 - understand the implementation evaluation of complex, multifaceted digital health innovations in different health care settings;
 - understand the challenges and risks of digital health implementation and the health care implementation context as complex with emergent structures and processes, and diverse and changing workforce with differing expertise, power, and autonomy/agency.

Live Seminar:

Thursday, March 30th, 2022 – 3:30 – 5:30 pm (SK time)

Discord Discussion Forum #4 (answer one): - Due Apr 2nd @ 11:59 pm, SK time

- What does the evidence say about the effectiveness and impacts of digital health in health care? Why is it important to focus on behavioural use and actual benefits realization instead of intervention features and functions?
- How might early HTA (eHTA) help guide investment in promising digital health innovations?

- What are some of the challenges that come with de-implementing a digital health innovation? Explain using a hypothetical example of a legacy health (information) system that needs to be transitioned.
- What does *'implementation failure'* mean in the context of digital health and health information services? Why do you think large-scale Health IT/digital health projects often fail? How can health information organizations do to improve their readiness before, during, and after adopting health IT/digital health innovations to prevent implementation failure?
- Explain the *'implementation effectiveness'* versus *'intervention effectiveness'*. Can you hypothesize a link between their effects?
- Consider the stages of implementation. Why do you think the stage of sustainability is often overlooked? How can organizations move toward increasingly mature uses of digital health by planning for longer-term integration, scale-up and sustainability?
- In what ways can healthcare leaders champion and advocate for digital health? Why is health care leadership so critical to implementation success?

Readings:

Required

- Abbott, PA, Foster, J, Marin, HF, Dykes, PC. (2014). Complexity and the science of implementation in health IT—Knowledge gaps and future visions, International Journal of Medical Informatics, Volume 83, Issue 7, Pages e12-e22
- Desveaux, L., Soobiah, C., Bhatia, R. S., & Shaw, J. (2019). Identifying and Overcoming Policy-Level Barriers to the Implementation of Digital Health Innovation: Qualitative Study. Journal of medical Internet research, 21(12), e14994. <https://doi.org/10.2196/14994>
- Greenhalgh T, Wherton J, Papoutsi C, et al. Beyond Adoption: A New Framework for Theorizing and Evaluating Nonadoption, Abandonment, and Challenges to the Scale-Up, Spread, and Sustainability of Health and Care Technologies. J Med Internet Res. 2017;19(11):e367. Published 2017 Nov 1. doi:10.2196/jmir.8775

Supplemental

- Black, A. D., Car, J., Pagliari, C., Anandan, C., Cresswell, K., Bokun, T., McKinstry, B., Procter, R., Majeed, A., & Sheikh, A. (2011). The impact of eHealth on the quality and safety of health care: a systematic overview. PLoS medicine, 8(1), e1000387.
- Finnell, J., & Dixon, B. (2016). Strategic and Financial Planning for Clinical Information Systems. In Clinical Informatics Study Guide Text and Review (1st ed. 2016.. ed.).
- Gheorghiu, B., and Hagens, S. (2016). Measuring interoperable EHR adoption and maturity: a Canadian example. BMC Medical Informatics and Decision Making, 16: 8.
- Henshall, C., Schuller, T., and Mardhani-Bayne, L. (2012). Using health technology assessment to support optimal use of technologies in current practice: the challenge of "disinvestment". International Journal of Technology Assessment in Health Care, 28(3): 203-210.
- Keasberry J, Scott IA, Sullivan C, Staib A, Ashby R. Going digital: a narrative overview of the clinical and organisational impacts of eHealth technologies in hospital practice. Aust Health Rev. 2017;41(6):646-664. doi:10.1071/AH16233
- Laukka, E.; Huhtakangas, M.; Heponiemi, T.; Kanste, O. Identifying the Roles of Healthcare Leaders in HIT Implementation: A Scoping Review of the Quantitative and Qualitative Evidence. Int. J. Environ. Res. Public Health 2020, 17, 2865.
- Levin, L. (2015). Early evaluation of new health technologies: The case for premarket studies that harmonize regulatory and coverage perspectives. International Journal of Technology Assessment in Health Care, 31(4), 207-209. doi:https://doi.org/10.1017/S0266462315000422
- Mairer, C., C. (2015.). Project Hugo at LHSC: Leading Urgent Change in Healthcare. Ivey ID: 9B11C038. London, Canada: Ivey Publishing.

Module 7 - Learning Health Systems (April 3 - 11)

The module covers the importance of designing learning health systems that leverage the collection, sharing and use of information in health care practice, policy and decision making.

Module Objectives

- Develop systems, practices and processes in digital health and health information to enable learning health systems in health care
- Promote real-time, evidence-based knowledge translation and digital and data analytics literacy for learning health systems readiness

Live Seminar

Thursday, April 6th, 2022 – 3:30 – 5:30 pm (SK time)

Readings:***Required***

- Menear, M., Blanchette, M., Demers-Payette, O. et al. A framework for value-creating learning health systems. *Health Res Policy Sys* 17, 79 (2019). <https://doi.org/10.1186/s12961-019-0477-3> Morain, S., Kass, N., and Grossman, C. (2017). What allows a health care system to become a learning health care system: results from interviews with health system leaders. *Learning Health Systems*, 1(1): e10015.
- Friedman, C., Rubin, J., Brown, J., Buntin, M., Corn, M., Etheredge, L., Gunter, C., Musen, M., Platt, R., Stead, W., Sullivan, K., and Van Houweling, D. (2015). Toward a science of learning systems: a research agenda for the high-functioning Learning Health System. *Journal of the American Medical Informatics Association*, 22(1): 43-50.
- Friedman, C.P., Rubin J.C., and Sullivan K.J. (2017). Toward an Information Infrastructure for Global Health Improvement. *Yearbook of Medical Informatics*, 26(1): 16-23.
- Lessard, L., Michalowski, W., Fung-Kee-Fung, M., Jones, L., and Grudniewicz, A. (2017). Architectural frameworks: defining the structures for implementing learning health systems. *Implementation Science*, 12(1): 78.

Supplemental

- Bindman, A., Pronovost, P., and Asch, D. (2018). Funding innovation in a learning health care system. *JAMA*, 319(2): 119-120.
- Chambers, D., Feero, W., and Khoury, M. (2016). Convergence of implementation science, precision medicine, and the learning health care system: a new model for biomedical research. *JAMA*, 315(18): 1941-1942.
- Enticott, J., Johnson, A. & Teede, H. Learning health systems using data to drive healthcare improvement and impact: a systematic review. *BMC Health Serv Res* 21, 200 (2021). <https://doi.org/10.1186/s12913-021-06215-8>
- Gardner, W. (2015). Policy capacity in the learning healthcare system: comment on health reform requires policy capacity. *International Journal of Health Policy and Management*, 4(12): 841-843. |
- Krumholz, H.M. (2014). Big data and new knowledge in medicine: the thinking, training, and tools needed for a learning health system. *Health Affairs*, 33(7): 1163-1170.
- Lavis JN, Gauvin F-P, Reid R, Bullock H, Wodchis W, Hayes A. (2018). Rapid synthesis: Creating a rapid-learning health system in Ontario. Hamilton, Canada: McMaster Health Forum.
- National Academy of Medicine. The Learning Health System Series. Available at: <https://nam.edu/programs/value-science-driven-health-care/learning-health-system-series/>
- Reid, R. (2016). Embedding research in the learning health system. *Healthcare Papers*, 16(Special Issue): 30-35.
- Zelmer, J. (2016). Digital drivers in a learning health system: considerations for research innovation.

ASSIGNMENTS

The entire course will be available from the start of the classes. All assessed elements are to be submitted by stated deadlines. Each student will be evaluated on the following:

Assignment	Evaluation Type	Due	Weight
1. 3 x Discord Discussion Forum Posts + 1x Discord Participation Level (5% each)	Individual Discussion Participation	Jan 22; Feb 12; Apr 2; Apr 11	20%
2. Create a Data Flow/Work Process Map (Individual Assignment)	Individual Assignment	Feb 19	20%
3. UM Health Information Dashboard Presentation–Tableau	Group Formative Assignment (UM Part 1)	Mar 22	20%
4. UM Briefing Note	Group Final Assignment (UM Part 2)	Apr 22	40%
			100%

To support your success with Briefing Notes assigned in this course, please refer to the following JSGS Guide to Writing Briefing Notes:

<https://rise.articulate.com/share/coTHcUVvOZB68gCzEJQ2FYfWmxsrPTCd#/>

EVALUATION

The course is assessed via a combination of participation in online discussions, practical assignments, and a comprehensive written final report. Grades are assigned on the following basis: one mark is worth one mark towards your total mark for the course. Your final percentage is calculated as *marks achieved / total marks available*. The instructor will mark assignments according to the standards set in the Grade Descriptors for JSGS Courses, which can be found in the [MHA Handbook](#).

ENROLLMENT LIMIT

Class enrollment will be limited to 35 students.