Background: As medical disciplines have become increasingly interdisciplinary and evidenced-based medicine is now fully embraced and practiced, the need for curricula that reflect these changes are important. The newly revised LCME standards 1.1 Strategic Planning and Continuous Quality Improvement and 8.3 Curricular Design, Review, Revision/Content Monitoring require ongoing curricular review and revision to assure accreditation compliancy.

Summary of Work: We have recently completed a comprehensive review of our curriculum and have moved from a department/subject-based curriculum structure to that of one that focuses on a systems and disease-based model. The systems-based approach allows for a more horizontally integrated curriculum in the preclinical years while the use of 115 distinct disease and eight themes, creates a mechanism that allows for tracking of vertical integration across all four years of the curriculum.

Summary of Results: The first step in the development of a quality assurance model for vertical and horizontal integration of the curriculum was to establish and empower a newly formed integration subcommittee. This subcommittee was tasked with developing a model to review, track and improve the horizontal and vertical integration of the curriculum. Our integrated curriculum is now in its second year having completed the initial identification of gaps and redundancies through a process that relies on the mapping of diseases and themes throughout the courses.

Discussion and Conclusions: This ongoing review and evaluation process has created a dynamic and active quality assurance process that allows our faculty to address issues of both horizontal and vertical integration of our curriculum at the course level.

Take-home messages: Disease states assist in integrating medical curriculum.

### Extending the theoretical framework for curriculum integration in medical education from a contextual perspective

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Background: Although curriculum integration (CI) is considered a priority in reforming medical programs around the world, many medical schools struggle integrating their curricula (Brauer & Ferguson, 2014). This is possibly a consequence of the confusion derived from diverse definitions of CI anchored in multiple learning theories. Additionally, the existing definitions pay little attention to contextual issues of the medical schools. (Hopkins et al., 2014).

Summary of Work: The study aimed to develop a theoretical framework of CI through building abstract constructs up based on in-depth studies of conditions and premises constituting the context of CI in medical schools. From a grounded theory perspective, we collected the official curriculum, interviewed curriculum designers, teachers and students, and observed learning activities in a particular medical school in Denmark. We analyzed and triangulated the qualitative data using an interpretive approach to identify and deduce key themes in CI (Auerbach & Silverstein, 2003).

Summary of Results: Four theoretical constructs emerged from the analysis: (1) multiple dimensions of CI embedded in the official institutional perspectives of learning. (2) CI as a tool to harmonize conflicting perspectives of learning in the practice of the curriculum. (3) CI also creates tensions. (4) CI is visible in students’ collaborative learning spaces.

Discussion and Conclusions: Our theoretical constructs provide an extended framework to understand CI in the specific context of a medical school. In this framework, we broaden the notion of CI from static theoretical to include dynamic and contextual.

Take-home messages: Approaching CI through the four constructs may provide medical educators insights into contextually determined conflicts, tensions and learning perspectives influencing the practice of CI.
Evidence of ‘diseases of the curriculum’: recommendations for application of Harden’s integration ladder to promote integrative learning

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Background: Almost 40 years ago, Abrahamson (1978) identified medical education problems that were due to what he coined ‘diseases of the curriculum’. From the early 20th Century, there have been calls for curriculum reform to improve medical education. In response, some undergraduate medical programmes contain a rich variety of features designed to advance integrative learning but there is little evidence of the effectiveness of these efforts. The aim of this study was to contribute to the improvement of integrative learning in medical education.

Summary of Work: Using phenomenography, I conducted 16 in-depth interviews on 25 undergraduate medical students and 10 academics. I used MAXQDA11 for data analysis: re-reading, de-contextualising and comparing transcripts until outcome space was formulated. The anatomy of awareness framework was used for structuring students’ experiences.

Summary of Results: Three categories of description made up the outcome space. The conceptions which are inextricably linked, logically related and hierarchical in degree of complexity revealed ‘diseases of the curriculum’ that prolong the development of students’ ability to integrate learning.

Discussion and Conclusions: Students embark on a long journey of integration of learning through taking steps that increase in complexity and hierarchical inclusivity. Students’ and teachers’ responses bear evidence of ‘diseases of the curriculum’. There are conceptions of content overload and demanding assessments that students consider as ‘do or die’, teachers operating in silos, and subjects that are not related.

Take-home messages: Application of Harden’s integration ladder can cure ‘diseases’ of curricula which prevent integrative learning.

The feasibility of an integrated anesthesia-surgery clerkship rotation as a learning experience for perioperative care

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Background: The current literature on medical education suggests that integrated curricula can improve the learning outcomes of medical students. This research project involves the horizontal integration of anesthesia within the surgery clerkship rotation (3rd year) at Memorial University and tests the feasibility of an integrated rotation as a learning experience for perioperative care.

Summary of Work: Twenty-six students participated in this project and were randomized into integrated (9) and non-integrated (17) groups. Student participation in the integrated group involved: 1) shadowing an anesthetist during a preoperative assessment; 2) attending the surgery; 3) assisting with delivery of the anesthetic; 4) accompanying the patient to the Recovery Room and learning about postoperative care; and, 5) following the patient’s recovery on the floor. All students completed pre- and post-rotation surveys to assess their views on anesthesia, its role in the surgical process, and the integrated experience in general. The anesthetists and surgeons involved with the integrated rotation also completed post-rotation surveys to provide feedback on the feasibility of the rotation.

Summary of Results: Of those students who participated in the integrated group, 89% felt they had a better understanding of the work of an anesthetist after the rotation. Students appreciated the hands-on experience involved in the rotation and the opportunity to learn intubation, IV-placement, arterial line insertions, and ventilating the patient. Students gained a better understanding of the surgical patient and perioperative care through the integrated rotation. However, they also reported that the integrated experience was not long enough and they wanted more clinical anesthesia experience and structure.

Discussion and Conclusions: The integrated anesthesia-surgery clerkship rotation provided students with an introduction to anesthesia which they would not have received unless they did the separate anesthesia selective in their final year of study. Further research is planned to determine the best structure of an integrated anesthesiology-surgery rotation at Memorial University.
Experiences and lessons learnt from the implementation of clinically integrated teaching and learning of evidence-based health care

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**Background**: Clinically integrated teaching and learning are regarded as the best options for improving evidence-based healthcare (EBHC) knowledge, skills and attitudes.

**Summary of Work**: We assessed experiences and opinions on lessons learnt of those involved in such programmes by conducting semi-structured interviews with 24 EBHC programme coordinators from around the world, selected through purposive sampling. Following data transcription, a multidisciplinary group of investigators carried out analysis and data interpretation, using thematic content analysis.

**Summary of Results**: Successful implementation takes much time. Student learning needs to start in pre-clinical years with consolidation, application and assessment following in clinical years. Learning is supported through partnerships between various types of staff. While full integration of EBHC learning into all clinical rotations is considered necessary, this was not always achieved. Critical success factors were pragmatism and readiness to use opportunities for engagement and including EBHC learning in the curriculum; patience; and a critical mass of the right teachers who have EBHC knowledge and skills and are confident in facilitating learning. Role modelling of EBHC within the clinical setting emerged as an important facilitator. The institutional context exerts an important influence. The most common challenges identified were lack of teaching time, misconceptions about EBHC, resistance of staff, lack of confidence of tutors, lack of time, and negative role modelling.

**Discussion and Conclusions**: Implementing clinically integrated EBHC curricula requires institutional support, a critical mass of the right teachers and role models in the clinical setting combined with patience, persistence and pragmatism on the part of teachers.

**Take-home messages**: Implementing clinically integrated EBHC curricula requires institutional support, a critical mass of the right teachers and role models in the clinical setting combined with patience, persistence and pragmatism on the part of teachers.

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Creating a medical student driven four year curricular track in innovation, quality and leadership

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**Background**: A small group of medical students brought forth a request to include a new track in the medical school curriculum. With the guidance of a Dean Educator and mentor, the medical students designed an innovative, 4 year track in Innovation, Healthcare Quality, and Leadership (IQL).

**Summary of Work**: The longitudinal track provides a blended approach to learning consisting of small group discussion, online cohort-based modules in years 1 and 2, web-based self-directed learning in year 3, guest lectures, and a capstone research project or internship. Curricular requirements and learning modalities were designed to carefully align with the demands of the traditional curriculum across the four years.

**Summary of Results**: The optional IQL track is designed to facilitate the student’s mastery of five School of Medicine defined competencies. Secondary to the interest of other disciplines the track will be available to interprofessional students in the future.

**Discussion and Conclusions**: The purpose of the IQL track is to provide additional avenues for students to learn about healthcare quality improvement and innovation; the impact of advances in the life sciences industries; and the need for effective physician-leaders to implement change in the healthcare system.

**Take-home messages**: Due to increasing financial pressures and legislative changes, the healthcare system requires physician-leaders with clinical expertise as well as skills in improving delivery systems and processes. As providers of care, student physicians enrolled in the track are uniquely positioned to impact and improve the healthcare landscape.