

More than Meets the Eye: An Interactive 3D Model of the Eye for Enhanced Learning of the Oculomotor System

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The eye's intricate oculomotor system is conceptually difficult for students to understand both anatomically and functionally. This is especially true for the prime movers of the eye, the extraocular muscles, which are perhaps the least understood components by new students. This is problematic given that this group of muscles represents the most common site of clinical intervention in the treatment of ocular motility disorders and other diseased states. The objective of this project is to develop a novel, three-dimensional (3D) exploratory tool that may be paired with an electronic learning module creating an interactive 3D model of the human eye, extraocular muscles, and associated cranial nerves. It is hypothesized this online learning module will enhance students' anatomical understanding and functional application of the oculomotor system, compared to students using equivalent traditional educational materials. Construction of the 3D model will utilize data from the Visible Human Project (VHP) dataset that will be segmented using Amira 5.2 software. Further editing will be performed using MeshLab software. The completed model will be imported into Blender 2.5 software to generate animations of eight extraocular muscle actions, each originating from the primary position. Undergraduate medical student preference and post-test performance will be undertaken to assess the 3D learning module in comparison to the conventional 2D learning materials. Results from this study will help inform educators and technical learning specialists about the merits of interactive learning materials.

Educating anesthesia residents to obtain and document informed consent for epidural labor analgesia: does simulation play a role?

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Prior to performing epidural labor analgesia in an obstetric patient, informed consent must be obtained. There is no formal teaching at our centre for residents to learn the components of informed consent, but rather this is informally done at the bedside during patient assessment.

This study aims to assess the ability of anesthesia residents to acquire and retain knowledge regarding informed consent documentation for epidural labor analgesia, in the setting of didactic teaching versus simulation. It also assesses how well this knowledge is translated to practical clinical ability by assessing the verbal informed consent process during an interaction with a standardized patient.

Twenty anesthesia residents were enrolled and randomized to a 'didactic group' or 'simulation group'. Each resident was first presented with a written scenario and asked to document the informed consent process as they normally would in clinical practice (pre-test). The didactic group then had a presentation about informed consent, while the residents in the simulation group each interviewed a simulated patient where scenarios focused on different aspects of informed consent. All residents were then again asked to read a scenario and document the informed consent process (post-test). Six weeks later all residents interviewed a standardized patient in labor and documented the informed consent from this interaction (6 week test).

The documentation as well as the verbal interaction with the standardized patient was scored using a points system that was developed based on current literature and expert opinion from several obstetrical anaesthesiologists.

Results will be presented at the research symposium.

Training for Skills in Communication, Affiliation, and Reflection: Methods from Narrative Medicine

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Purpose

This study sought to fill the gap in knowledge regarding what specific clinical skills could be strengthened through rigorous training in Narrative Medicine (NM), focusing on the areas of communication, collaboration, professionalism, patient-centeredness, and self-awareness.

Method

Two qualitative methods (open ended survey questions/focus group) were used to collect process and outcome assessment data from twelve students enrolled in an intensive one-month NM elective. An iterative thematic analysis of both datasets was carried out by each author. Data triangulation was achieved.

Results

Response rate for the weekly survey was 91% and focus group participation was 50%. Five major findings about the role and potential of NM in medical education emerged: students develop and improve specific communication skills; enhance empathy and affiliation with others; are provided with desired and rare opportunities to reflect on themselves and the practice of medicine; report that the pedagogical approach used in NM training is critical to the dividends; and indicate that current perceptions of NM stymie the potential influence and uptake of this field.

Conclusions

Results from two modes of data collection strongly support the use of NM as a means of developing communication, affiliation, and reflective capability. The authors contend that these skills are integral to medical practice and intrinsic to several core competencies mandated by the Accreditation Council for Graduate Medical Education (ACGME) and the Royal College of Physicians and Surgeons of Canada (RCPSC-CANMEDs). The findings suggest that the process and dividends of this field can influence the culture of medical training.

Brominated flame retardants, pregnant women, and relational autonomy

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Risk of exposure to Brominated Flame Retardants (BFRs) and other household chemicals is generally not discussed in prenatal care. This study explores perceptions and knowledge of pregnant women and obstetrical care providers regarding BFRs and other household chemicals. Eleven pregnant women and 11 obstetrical care providers in Southwestern Ontario were interviewed and audiotaped. Transcripts underwent rigorous qualitative analysis using a grounded theory approach supported by NVivo 9™ software. Prominent relationships identified included: patient-professional, public-government, media, research and community. The pregnant women interviewed often put the onus to protect their future children from household chemical risks on themselves. For example, Pregnant Woman 4 commented: “I believe you should be researching it yourself because your obstetrician doesn’t have time to know, like, everyday products that you are using...” Others look to the media and government. Healthcare professionals acknowledged a need to discuss these risks with women but felt others were in a better position for this discussion. For example, Obstetrician 2 said: “We generally don’t get to see patients until they’re 30 to 32 weeks pregnant or later on in their pregnancy... I think this would really be a general public education or family physician education.” Participants in this research seemed to believe that the various bodies in these relationships have independent functions. These results suggest that a relational ethics approach to environmental risk may be appropriate. Relational ethics scholars argue that we must view individuals as social beings to understand how policies shape individual agency and understanding.

Taking a Detour: Influences of Team Interactions on Information Sharing during CTU Case Review

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Purpose

Research investigating the impact of supervisory interactions on patient care has been limited. This study explored supervisory interactions occurring during case review and examined their impact on information sharing during the case presentation.

Methods

Using a multiple case study approach, data were collected through observation and audio-recording of 19 patient cases consisting of admitting case review discussions and extraction of chart documents. Using a constant comparative approach, data were analyzed for emerging themes.

Results

Similar to existing literatures on case review, seven supervisor-trainee interaction types were identified: presenting the case, probing for further data, prompting for expected sequence of presentation, teaching around the case or related topics, thinking out loud, providing direction, and questioning of the supervisor by the learner. Additionally, we developed the term detour to describe the emerging theme of deviations from the usual progression of the case presentation. Five types of detours were identified: pausing the presentation, referring ahead to a section later in the presentation, presenting sections out of sequence, omitting a section, and truncating the presentation. These detour types varied in their potential to cause omissions of case details. These omissions could limit the team's ability to address a patient's medical problems. Factors contributing to and mitigating against the potential negative effects of detours were also identified.

Conclusions

Interactions between team members during case review have an impact on information sharing and subsequent patient discussion. Clinical supervisors and trainees can employ several strategies to support the communication of case details during the case presentation.

Assessment of performance curves for the *insight* ARTHRO VR[®] virtual reality arthroscopic simulator.

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Purpose: To inform the integration of the *insight* ARTHRO VR[®] training simulator into a curriculum for U.W.O. orthopaedic surgery residents by constructing performance curves for experts and novices performing simulated arthroscopic procedures.

Methods: This was a pilot prospective cohort study. Participants were divided into two groups by arthroscopy experience: experts ($n = 8$) and novices ($n = 10$). Each participant performed six repetitions of four procedures. Performance measures were provided by the VR simulator and included time to completion, distance covered, and roughness. Scores for each parameter were summed for every session and performance curves were constructed by plotting the group mean and standard deviation.

Results: Novices improved consistently in all parameters measured without reaching a plateau by the sixth session, while experts demonstrated a steeper initial improvement but reached a plateau as early as the second session. Experts outperformed novices in terms of time and distance covered, but by the last session, novices approached expert levels for all parameters measured. The VR simulator also demonstrated construct validity by successfully distinguishing between expert and novice groups (Mann-Whitney U Test $p < 0.01$).

Conclusions: This pilot study provided preliminary evidence to inform the integration of the *insight* ARTHRO VR[®] simulator into a training curriculum by establishing factors like the amount of training necessary to achieve an expert level of skill. While the virtual reality simulator improves the performance of novices in simulated arthroscopy, its ability to teach arthroscopic skills that are transferrable to a real operating room environment requires further study.

Evaluation of the success of a web-based module in teaching clinical examination skills of the head and neck

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Self-directed learning is becoming an increasingly important aspect of medical education. With this, computer or web-based modules are versatile teaching tools that can provide interactive activities and quizzes to aid students in the process of self-directed learning on a variety of topics. We have created an interactive web-based video module to teach head and neck clinical exam skills. Our study will determine the effectiveness of our video module as compared to the standard textbook on clinical exam, Bates' Guide to Physical Exam and History Taking, in teaching physical exam skills. We hypothesize that video learning modules are as effective as traditional textbooks for learning physical exam skills. First year medical students naïve to physical exam skills will be randomized to learn the head and neck clinical exam with either the video based module or textbook. Students will be asked to perform the physical exam once before the teaching module and once after the learning session. Their performances will be recorded and evaluated by an Otolaryngologist using a modified version of an observed student clinical exam (OSCE) rating scale. Improvement in student performances will be determined for each learning modality. Students will also complete a questionnaire describing their learning experience from either learning medium. Based on the results of this current study, it may serve as a template to evaluate other electronic resources for teaching physical examination or procedural skills.

Naturalistic Exploration of Intraoperative Challenges Faced by Surgical Experts

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1. Rationale

Research on medical expertise has traditionally focused on understanding routine problem solving patterns in order to train for efficient approaches to common problems. Currently, however, expertise research is grappling with the question of *how experts adapt to novel challenges*, and how we can better train for flexibility and innovation in the face of uncertainty.

The present study seeks to further the understanding in this area, by exploring the nature of the challenges experts encounter and the processes by which they assess and respond to challenges.

2. Methods

This study followed an ethnographic approach involving intraoperative observations and postoperative interviews with expert surgeons. Six faculty surgeons were selected through purposive sampling. Two to three surgical cases were observed per surgeon. A template analysis was implemented and NVivo qualitative data analysis software was used to apply the thematic coding structure and to support the interpretive analysis.

3. Results

Two key aspects of surgical challenges were identified: the nature of surgical challenges, and the actions performed by experts to derive information about the challenge. Intraoperative challenges manifested in three different types: judgment challenges, technical challenges and situational challenges. When surgeons found themselves 'inside' a challenge, they would seek and interpret particular patterns of cues to assess the nature of the challenge. Cue-seeking activities seemed to be specific to challenge types.

4. Discussion

The definitional distinction between different types of challenges provided by this study is new in the surgical literature, and may constitute the first part of a language for defining a taxonomy of adaptations exerted by surgical experts when facing complex situations. From an educational perspective, this language might help surgical faculty render explicit their tacit adaptive strategies for training purposes.

Obviations about critical qualitative research in long-term dementia care

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Health & Rehabilitation Sciences | Health Promotion

This presentation describes a dissertation project about to begin. It outlines briefly the rationale for critically examining the culture of dementia care knowledge in a long-term care setting, then describes the methodological framework that is proposed to catalyze the transformation of participants' perspectives of dementia care knowledge. As this critical ethnography gets underway, the student-researcher pauses to consider lessons learned and lessons needed in enacting critical qualitative research.

As such, this presentation will be of interest: to scholars faced with tricky ethical issues such as (not) observing non-consenters and of interviewing people with dementia; to theory geeks who espouse theoretical coherence amid an array of grand, macro, and micro-level theories of knowing; to qualitative data analysts thirsty for some how-tos; and to those seeking to foster and facilitate innovate spaces for transformative knowledge exchange. The presentation will conclude with wonderings about relationships in the field, multi-genred re-presentations of research findings, and the critical nature of political implications.

Comprehensive Geriatric Assessment Guide: An exploratory analysis of a medical trainee performance evaluation tool.

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Purpose.

There is little opportunity for medical students and residents to receive feedback on specific geriatric skills as medical trainees are frequently unsupervised when assessing elderly patients. Patients and their caregivers are currently an untapped source for clinical content feedback. The purpose of this study was to determine if patient-caregiver pairs could accurately complete a post-assessment evaluation of trainees' clinical performance and thus serve as a resource to enhance their assessment skills.

Method.

A Comprehensive Geriatric Assessment Guide (CGAG) was developed consisting of 36 yes/no/don't remember questions prompting the patient-caregiver to indicate what topics were actually discussed during their assessment. In 2010, two raters independently listened to audio-recordings of 10 assessments administered by medical trainees and scored the CGAG to determine inter-rater reliability. Next, 32 patient-caregiver pairs completed a CGAG after assessment by a medical trainee with their results compared to a gold-standard CGAG of the encounter.

Results.

Inter-rater reliability scores for the CGAG were near perfect (94.8% agreement). Thirty out of 36 CGAG questions had patient-caregiver and gold-standard agreement of over 80%, while 6 out of 36 questions had low agreement.

Conclusions.

Patients and their caregivers are able to recall sufficient assessment detail to provide constructive feedback to medical trainees on their assessment skills. The six questions with low agreement will be reworded to improve clarity on future versions of the CGAG. Use of CGAG during medical education may help students improve assessment performance and allow educators to track progress in geriatric competencies.

Not wanted on the voyage: Has case-based undergraduate medical education abandoned geriatric content?

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Case-based learning (CBL) is a prevalent teaching method in North American undergraduate medical schools. However, given the imminent rise in patients over the age of 65, case-based scenarios may not reflect typical patient presentations that medical students can expect to encounter in the clinical setting.

The authors conducted a systematic curriculum audit at a large research-based Canadian university that sought to determine undergraduate students' pre-clinical exposure to geriatric content. A database was created following a detailed inventory of all existing clinical scenarios used in testable coursework and learning materials during the 2008-09 academic year. From each clinical scenario information was extracted regarding patient age, gender, and presenting illness, as well as existing medical, social, cognitive, and functional issues, to determine typical patient profiles presented to students prior to clerkship.

920 clinical scenarios were identified. Mean patient age was 37.7 (SD 21.9). The most commonly presented age group was 26-45 (277 cases or 30.1% of total). Only 130 cases (14.1%) featured patients 65 or older. Patients ≥ 75 featured in 54 cases (5.87%) and of those only 11 (1.2%) were ≥ 85 years. Medical, cognitive, and functional issues were consistently underreported across all age groups; common geriatric syndromes such as delirium, dementia, and depression were reported in 20 cases (1.74%).

Older patients are critically underrepresented in case-based pre-clinical curriculum at this site. Immediate research is needed to assess whether underrepresentation of older patients is common in undergraduate medical pedagogy and, if so, what steps should be taken to increase geriatric content.

Clinical reasoning: A multi-task taxonomy

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Background

While medical reasoning research has the potential to influence clinical and teaching practice, to date, its impact has been limited by a nearly exclusive focus on diagnosis. To begin setting a new agenda for research in this field, the purpose of this study was to develop a taxonomy of reasoning tasks that a physician engages in during a clinical encounter.

Methods

A purposeful sample of 46 international researchers in the field participated in a two-phase, modified online Delphi in order to develop consensus on a list of reasoning tasks.

Summary of Results

Thirty participants responded (65%); 66% were physicians and 38% had doctoral degrees. As a result of the Delphi, 24 reasoning tasks were identified and organized into four broad categories: 1) Problem identification and agenda setting, 2) Diagnostic tasks, 3) Management tasks, and 4) Self-assessment tasks. Examples of each include: Identify active issues; identify modifiable risk factors; determine the impact of co-morbid illness on management; identify knowledge gaps.

Conclusions

The identification this taxonomy represents a first step in broadening the research agenda to embrace this list of tasks and their interactions. Results can be used to inspire new research questions such as "how do different levels of performers deal with task switching and multi-tasking during an encounter"?

Does the Collaborator Competency mean the same thing to all people? A discourse analysis of Interprofessional Collaboration

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Introduction

Interprofessional Collaboration (IPC) has become a dominant theme in healthcare and medical education. While its implementation in practice has been fraught with tension, IPC has nevertheless achieved prominence in medical education, as a key competency in Canadian and American competency-based frameworks. This study sought to better understand the tensions underlying IPC by exploring how the discourse has been constructed over the course of its rise in healthcare.

Methods

We used a Foucauldian discourse analysis methodology. For this first study, we limited our corpus to peer-reviewed literature reflecting North American constructions of IPC between physicians and nurses. Papers were retrieved through an iterative search strategy using computerized databases from Medicine and Nursing. The final corpus included 123 papers.

Results

We identified two discourses of IPC. The utilitarian discourse reflects positivism, constructing IPC as a tool for improving healthcare outcomes. The emancipatory discourse, influenced by liberation movements, constructs IPC as a tool for liberating nurses from medical dominance. Each discourse gives rise to unique objects and practices. The relationship between the discourses is neither developmental nor a simple binary opposition.

Conclusion

The presence of two dominant discourses of IPC may provide insight into the difficulties inherent in implementing IPC initiatives. Educational programs should consider whether and in what ways these discourses may underpin or complicate their curricular and assessment efforts.

Construct, content and concurrent criterion validation of a high-fidelity microsurgical training program for neurosurgical residents: a pilot study

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CONTEXT: In surgical education, traditional Halstedian training models have served well for over 100 years. However in recent years, competency-based training has generated increasing interest. In many surgical disciplines, simulation-based training will form an essential part of this new paradigm. The successful integration of these new strategies will require establishment of educational curricula that are validated, reliable and can demonstrate learning not only in the laboratory, but also in transfer to the operating room (OR). This program has been designed to evaluate the effectiveness of a novel simulation-training program in developing microsurgical skills for a cohort of neurosurgical residents.

METHODS: Using an evidence-based approach, a microsurgical skills curriculum was devised using an established model. Beginning on inanimate objects and culminating in live vascular anastomosis on an anesthetized rat, three residents developed microsurgical skills including use of the microscope, handling of delicate tissue, hemostasis and microsurgical suturing. Performance assessment is underway, through blinded expert review of video-recordings of the tasks using validated outcome measures. Upon completion of the program, participants will be evaluated on a live operative task (Carotid Endarterectomy) to determine skill transfer to the OR. Their performance will be compared with three control subjects.

RESULTS: All participants have successfully completed the training program and are now completing the operative task, with interim analysis underway. We hypothesize that a statistically significant improvement in skills will be observed within each resident over the course of the training program and when compared to controls on the operative task.

Virtual Reality Simulator of Endoscopic Third Ventriculostomy: A Needs Assessment Survey

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CONTEXT: Virtual reality (VR) simulation training, while rapidly growing in some surgical disciplines, has not yet been widely adopted in neurosurgery. With technological advances in neuroendoscopy, standard-of-care in treating obstructive hydrocephalus has become Endoscopic Third Ventriculostomy (ETV). This provides a unique avenue to introduce VR simulation-based curricula to the neurosurgical training paradigm. To do this successfully, engagement and input from key stakeholders, including experts, regarding training needs is essential.

OBJECTIVES: To conduct a national training needs assessment to guide the development of a VR simulator and curriculum for ETV.

METHODS: An online survey of Canadian neuroendoscopists to determine the key elements required in the design of an educationally relevant VR simulator for ETV is underway. Through a series of questions regarding key procedural steps, common errors/pitfalls and relevant simulation modules, these experts will provide an assessment of the training needs in this area.

RESULTS: 23 of 60 participants have completed the survey to date. Interim analyses suggest significant interest in this VR platform. Responders cited identification of 3rd ventricular floor anatomy and selection of ventriculostomy site as the most important procedural steps for ETV. Improper instrument set-up, cortical entry or trajectory and technically inadequate ventriculostomy were cited as the most relevant errors. In addition to standard ETV, excess bleeding, unsafe ETV and thickened ventricular floor modules were felt to be most beneficial to simulate.

CONCLUSIONS: The development of a this VR simulator and curriculum provides a unique opportunity to engage experts regarding the role of simulation in Canadian neurosurgical training. Interim results suggest that this needs-driven process may be effective in informing key design elements necessary to construct an educationally relevant device and educational program.

What would Aristotle say?: Reflections on phronesis as professional knowledge –practical wisdom in the health professions?

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Phronesis is generally defined as practical wisdom or knowledge of the proper ends of life. The purpose of this paper is to discuss a recent collaborative thought experiment, that became a book (Kinsella & Pitman, 2011), in which an interdisciplinary group of scholars from health, education and philosophy considered the ways in which phronesis might offer a generative possibility for reconsidering the professional knowledge of practitioners.

In Aristotle's scheme, phronesis is classified as one of several 'intellectual virtues' (Eikeland, 2008). Aristotle (1975) distinguished phronesis from the intellectual virtues of episteme and techne. In Aristotle's conception (Flyvberg, 2001) episteme is characterised as scientific, universal, invariable, context-independent knowledge. Techne is characterised as context-dependent, pragmatic, variable, craft knowledge, oriented toward practical rationality and governed by a conscious goal. Phronesis, on the other hand, is an intellectual virtue that implies ethics. It involves deliberation based on values, concerned with practical judgement and informed by reflection. It is pragmatic, variable, context-dependent, and oriented toward action.

This investigation began with a shared sense that something of fundamental importance—of moral significance—was missing in the vision of what it means to be a professional, and in the ensuing educational aims in professional schools. The project was framed around the question: "If we take phronesis seriously as an organising framework for professional knowledge, what are the implications for professional education and practice?" The purpose of this paper is to discuss some of the emergent insights generated from this investigation and the implications for health professional education.

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No 'I' in Anatomy: A Grounded Theory Approach to Group Cadaveric Dissection

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Traditionally, gross anatomy has relied heavily on cadaveric dissection. With the advent of three-dimensional teaching tools and decreasing funds for anatomical infrastructure limiting the supply of cadavers, educators have looked to non-cadaver-based teaching tools as a potentially cheap and effective replacement. Much of the research on these educational tools has focused on quantitative outcomes; content-related post-tests are often the metric for comparison. There is a paucity of research surrounding the social nature of interpersonal interaction pertaining to learning around a cadaver. Development of teamwork and communication skills are commonly reported benefits but the rigorous documentation and characterization of the skills are not offered. Using the principles of grounded theory, this study aims to identify and highlight these qualitative learning outcomes by studying the process through which students learn in groups using cadaveric dissection. Second-year undergraduate Kinesiology students will be observed during routine cadaveric dissections using recorded video and observational field notes. A period of six laboratory sessions will be allowed for the students to acclimate to the presence of observers and cameras. Students will be observed during two different laboratory sessions selected based on the amount of content, difficulty of dissection, and proximity to a class assessment. Through systematic analysis of the transcripts produced from the recorded video and the field notes, we hope to identify factors that influence the social context during the cadaver dissection laboratories. We also hope to highlight the emergent themes arising from the learning process that might better inform curricular architecture in the future.

How parents use health information, with the aid of a knowledge broker, when living with and caring for their young children with cerebral palsy

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This research aims to understand, with the aid of a knowledge broker (KB), how parents use knowledge and dissemination materials (such as those developed from the Move & PLAY study) when living with and caring for young children with cerebral palsy (CP). This research is being conducted under a grounded theory design and will take place over a 9 to 12 month period. We have recruited a KB from the Thames Valley Children's Centre (TVCC), who will be working alongside the research team to conduct an introductory workshop to introduce dissemination materials from the Move & PLAY study to parents. However, our research will not be limited to the use of Move & PLAY materials, as we are interested in all types of knowledge use. Ten to 12 parents of children with CP will be sampled from this workshop to participate in our research. Demographic data will be collected from all participants, after which the KB will be made available to parents on a weekly basis, over a three month period. After three months, a focus group will be held with the parents to understand the breadth of their knowledge use. Select in-depth interviews will be held with parents to understand the depth of such knowledge use. A weekly log will be kept by the KB, who will participate in interviews at the end of their involvement with parents to discern their role in this process. Audiotaped data will be transcribed and analyzed to produce a model on how parents use information in their daily lives. This model will be an important addition to the field of knowledge translation and childhood rehabilitation, as it has implications for the facilitation of knowledge use in the everyday lives of families with children with disabilities.

Creating a Representative Map for Arthroscopy Simulation

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Purpose: The arthroscopy challenges and restricted training hours have increased the use of simulators, but this has followed the preferences of the curriculum designers instead of a systematic analysis¹. This study aims to decompose arthroscopic procedures into individual tasks using a new tool: "Motor and Cognitive Modeling Diagram" (MCMD)². More specifically, we aim to identify teachable components of the procedures and performance metrics to incorporate into a simulation-based arthroscopy curriculum. **Methods:** A literature review was performed and preliminary hierarchical decompositions were created. Three expert surgeons were observed for 8 to 10 typical cases; they were asked to verbalize the steps and their cognitive choices. The preliminary MCMD was reviewed by the surgeons to ensure face validity of the tool.

Results: MCMDs were created for knee arthroscopies and ligament reconstructions. With the task decomposition and the qualitative data derived from the interviews, we identified teachable components of the procedures for using simulations.

Conclusions: MCMDs provide accurate representations of the motor and cognitive aspects of arthroscopy and the critical aspects of surgeries. Future research will integrate these decompositions into a simulation-based orthopaedic training curriculum at our University. Different metrics are currently being tested and used along with the MCMD.

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Representing complexity well: a story about teamwork, with implications for how we teach collaboration

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The problem

Clinicians face the daily challenge of providing good care in a system that grows increasingly complex. However, research into how healthcare teams work -- and how trainees acquire the competence of collaboration -- has struggled to represent such complexity well. Researchers need to find new ways of doing justice to this complexity, because our conceptions of teamwork have a powerful influence on what we think is possible, and where we put our attention as clinicians and educators.

The study

This presentation draws on an ethnographic study which used 162 hours of observation and 47 (field and formal) interviews to explore the collaborative activities of 39 members of a transplantation team. Data were analyzed both inductively for emergent themes and chronologically by patient case. Coding was verified through interviews with key informant/collaborators and three return-of-findings discussions.

The story

To represent the complexity in our data, we eschew the traditional genre of reporting qualitative results -- the description of themes -- for the rich and situated detail of story. A story's power resides not in its generalizability, but in its *resonance*, its ability to transport readers to their own teamwork moments and to produce a sense of déjà vu that signals shared social experience and prompts deep reflection. We present the story of Mr. Hearn, during whose care the transplant team must negotiate an array of collaborative challenges across multiple hospital services. From the story, we query and complicate some of the assumptions underpinning current approaches to teaching -- and doing -- collaboration.

Patient –centered team sampling units: an innovative methodological practice for studying healthcare teams(Virtual Poster Presentation)

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Background

Recent guidelines and consensus panels in the cardiology community advocate provision of palliative care concurrent with congestive heart failure (CHF) treatment. However, this emerging call for palliative care integration is based on research evidence derived from the study of individual patients and individual providers – their needs, preferences, attitudes and knowledge. Such work is insufficient to inform the development of educational and practice interventions that must be enacted not by isolated individuals but by members of a complex and distributed CHF care team that includes the patient with CHF and their primary care and heart specialist physicians, nurses, social workers, homecare workers and family caregivers. In order to inform integration efforts, we require research into the experiences and expectations of the CHF care team.

Methods

An approach to gathering qualitative data from across a distributed healthcare team was piloted using an innovative sampling strategy beginning with index patients and then sampling outward. Patients with congestive heart failure were interviewed and asked to identify key members of their care team. These members, including family caregivers, heart specialists and general practitioners, were also interviewed regarding the index patient's care. Transcripts are being analyzed to explore patterns in terms of attitudes, expectations, and current practices.

Results

Five team sampling units have been assembled; seven more are in progress. The team sampling units provide insight into the diverging and converging viewpoints of each of these patient care stakeholders around the issues of CHF care and palliative care integration. Role clarification and conflicting assumptions are emerging as salient. The team sampling unit is emerging as an effective, ethical and feasible method for accessing insights from across distributed healthcare team.

Engaged at the extremes: Residents' perspectives on clinical teaching assessment

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Background

Although academic centres rely on assessments from postgraduate trainees for data regarding the effectiveness of their faculty as teachers, we know little about how residents conceptualize their role within the clinical teaching assessment (CTA) process.

Methods

Using a constructivist grounded theory approach, five focus group interviews were conducted with 19 residents from an internal medicine residency program. Constant comparative analysis of emergent themes was conducted.

Results

Residents reported that they struggled throughout the academic year to meet their CTA obligations and several short-cutting strategies were described to reduce their burden. Rather than conceptualize their assessments as being a conduit for both formative and summative feedback, residents perceived CTAs as being useful for the surveillance of clinical supervisors who were perceived to be at the extremes of the teaching spectrum. Residents indicated that they devoted the most effort, including the crafting of written comments, towards the CTAs of these faculty 'outliers.' Trainees desired greater transparency in the CTA process and were skeptical regarding the anonymity and perceived validity of their faculty appraisals.

Conclusions

Multiple individual and system-based factors conspire to influence postgraduate medical trainees' motivation for generating high-quality appraisals of clinical teaching.

Crossing Over: Health Professional Practice With/In Non-Healthcare Settings

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Rationale

Nearly all health professionals interact with non-healthcare systems and settings, across disparate discourses and genres. Although inter-sector care is necessary and interprofessional practice recommended, challenges exist in the crossing over of healthcare to non-healthcare. An example of crossing over exists in public education's Program Development Teams, which require health and non-health professionals from within and outside the school system to contribute to Individual Education Plan (IEP) development. The IEP is a genre in which health professionals' recommendations are documented for implementation in educational programming. Conflicts arise when health professionals' practices are in misalignment with school system structures.

Methodology and Methods

Constructivist grounded theory methodology will be used to develop a theoretical explanation of processes involved in crossing over. We will purposively sample a number of health/non-health teams from three non-healthcare settings, beginning with public education. Data collection will include participant observation, intensive interviews, and document review. Constant comparative analysis will enable theorization of the processes of crossing over, with a focus on explication of professionals' use of tacit knowledge across genres. Rhetorical genre studies will serve as a framework through which to examine the genres of health professional practice with/in non-healthcare settings.

Expected Impact

A grounded theory of health professional practice with/in non-healthcare settings will mobilize tacit knowledge to improve health professionals' capacity to effectively cross over to non-healthcare settings. The examination of genres may facilitate development of strategies to facilitate communication across disparate discourses that otherwise serve as barriers to effective collaborative care.

An Interactive 3D Model of the Cranial Nerve and Brainstem Nuclei for Enhanced Learning of Neuroanatomy.

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Neuroanatomy is a complex sub-discipline of anatomy that requires abstract thinking and strong spatial reasoning. Traditional methods of learning neuroanatomy include investigation using dissection, light microscopy and histological staining. Often, this pedagogical approach requires students to formulate three-dimensional (3D) mental images from multiple two-dimensional (2D) cross-sections. Further, learners then need to comprehend how the structures relate to each other spatially and functionally. Previous studies demonstrate students with lower spatial abilities have difficulty learning neuroanatomy of the brainstem nuclei partly due to their inability to conceptualize brainstem topography in 3D space. A 3D model of the cranial nerve and brainstem nuclei will be constructed using magnetic resonance (MR), T1 weighted dataset and Amira 5.0 software. The nuclei will be created through a process called segmentation where 3D surfaces are generated through identification of the anatomical substrates in a series of 2D MR images. The completed reconstruction will be integrated into an online learning tool highlighting spatial orientations of each nuclei. This tool will be compared to a classical teaching approach (2D cross sections and dissections in the anatomy learning lab) to brainstem neuroanatomy. It is hypothesized that the online learning tool will have an enhanced effect on students' learning experiences and abilities as measured by a standardized test and an open-ended questionnaire. Information garnered from this study will help guide the formation of new e-learning tools that are becoming pervasive in anatomical and other basic sciences.

3-D Videography: The cutting edge of surgical skill acquisition

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BACKGROUND: The process of learning technical skills is key to the success of any aspiring surgeon. The acquisition of new skills has been shown to be influenced greatly by visual-spatial ability (VSA) and may be difficult for some learners to rapidly assimilate. In many instances, the role of VSA on the acquisition of learning a technical skill has been explored; however few studies have probed the impact of a 3-D video learning module on the acquisition of surgical skills.

OBJECTIVES: This study aims to capture spatially complex translational flaps using 3-D videography and implement the footage into an e-learning module. The second aim is to assess the role of 3-D video as a medium to support skill acquisition in novices using e-learning modules.

HYPOTHESIS: The influence of 3-D learning modules as training tools will correlate positively with VSA and thus, skill acquisition and performance compared to a 2-D video module of the same lesson.

RESULTS: No significant difference was observed between the mean score of the two video treatment groups. This is supplemented with a trend where students prefer 3-D treatments as learning tools and exhibit interest in learning additional, more complex surgical procedures in 3-D.

CONCLUSIONS: Despite a wealth of literature that suggests that 3-D correlates directly to enhanced skill acquisition, this study did not recover significant results contributing to increased performance. This topic will continue to be explored using more complex procedures which capitalize on depth perception.

Problem Solving in Interdisciplinary Teams: A pilot study with medical and business students.

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Background: Utilizing teams to solve problems in different organizational environments has become progressively more common. With increased use of business principles in hospital settings along with increased interaction between medical and business professionals in hospital decision-making, there is a need to better understand these interdisciplinary team interactions. To date, there has been no research exploring how medical and business professionals work in groups to solve problems, and little is known about how best to prepare trainees to perform in such situations.

Study purpose and methods: We propose to explore problem solving behaviour in an interdisciplinary team setting using a mixed methods design. We will use validated teamwork instruments and non-participant observation of groups of undergraduate medical trainees and Master's of Business Administration students as they work together on a time-sensitive, simulated vignette.

Each group will have 5 participants. Groups will be confronted with the following problem: should the hospital approve the use of a new, experimental, chemotherapeutic drug on a patient currently undergoing a Whipple's procedure to remove a malignant pancreas? The group will need to review pharmaceutical and economic details related to the use of this drug as well as personal and medical information regarding the patient and, based on this information, come to a consensus as to whether the use of this drug is appropriate. Following their decision, group members will participate in a semi-structured debriefing session regarding their problem-solving process.

This presentation will describe the research design of this in-progress study, the simulated vignette, and the plans for analysis.

Improving the Emergency Medicine Clerkship

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The Emergency Department (ED) is a teaching venue that offers an incomparable spectrum of undifferentiated patient presentations. There is a constant tension created when trying to balance patient flow with the learning needs of medical students and residents. Medical students have the most to learn but are often most affected by compromise when patient care demands take precedence.

The current Emergency Medicine education experience for third year UWO medical students consists of a ten clinical shift rotation in the ED at one of two teaching hospitals under the traditional apprenticeship model. Given the relatively high volume of learners and short time frame involved, it is difficult to be strategic about the cases to which clinical clerks are exposed, leaving gaps in meeting their learning objectives.

One potential solution to these problems would involve modifying the clinical clerkship to improve the experience of medical students, the experience of faculty and patient flow in the ED.

We are proposing to change the first three shifts of the clerkship into three eight hour teaching shifts attended concurrently by all six clinical clerks and supervised by one faculty member who has patient care responsibilities restricted to those encountered in this teaching. Emphasis will be placed on advanced clinical skills, incorporating the concepts of problem focused differential diagnosis and simultaneous treatment and investigation.

Impact on the medical student (logbook, focus group and rotation evaluation), impact on the teacher (interview) and impact on the department (faculty productivity with and without a clerk) will be evaluated.

Interdisciplinary doctoral supervision teams: Working together within, between, and outside of disciplinary boundaries of knowledge.

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Interdisciplinary graduate supervision is an expanding phenomenon. In response to encouragement from funding agencies, and enthusiasm from faculty and students (Rhoten, 2004), and in an acknowledgement that the search for creative and innovative solutions to complex problems is best addressed through interdisciplinary collaborations, research intensive universities are increasingly encouraging interdisciplinary projects and programs (Gibney, Copeland & Murie, 2009; Pinar 2004). The expansion of interdisciplinary research to the context of doctoral research may impact the enactment of the student-supervisor relationship, the process of forming and working with a supervisory committee, as well as the process and outcomes of doctoral research. In order to ensure that interdisciplinary doctoral supervision occurs in a positive and effective way, it is necessary to understand the distinct needs and challenges of interdisciplinary students and their supervisors, through the scholarship of this phenomenon.

Through analysis of interviews and focus groups with interdisciplinary doctoral students and supervisors, the role of different members of the research team was identified as an important component of successful interdisciplinary research. Participants discussed the process of compiling a team of supervisors, co-supervisors, supervisory committee members and examiners who were understanding and supportive of working in an interdisciplinary way. Conceptions of effective interdisciplinary teams included developing a language to bridge disciplinary differences, coming to a common understanding of expectations for the student's work, defining roles of team members, and shaping team composition to include the necessary areas of experience and knowledge.

Information Sharing to Promote Informed Choice in Prenatal Screening in the Spirit of the SOGC Clinical Practice Guideline: A Proposal for a Hybrid Model

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The 2011 SOGC Clinical Practice Guideline 261, "Prenatal Screening for Fetal Aneuploidy in Singleton Pregnancies", recommends that clinicians offer prenatal screening to all pregnant women, and provide counselling in a non-directive manner. Non-directive counselling is intended to facilitate autonomous decision-making and remove the clinician's views regarding a particular course of action. However, recent research in genetic counselling raises concerns that non-directive counselling is neither possible nor desirable, and may not be the best way to facilitate informed choice. This paper proposes an alternative model of information sharing for prenatal screening which combines attributes of the models of Informative Decision-Making and Shared Decision-Making. Our proposed model is intended to provide clinicians with a strategy to communicate information about prenatal screening in a way that facilitates a shared deliberative process, and autonomous decision-making. Our proposed model may better prepare a pregnant woman to make an informed choice about participating in prenatal screening based on her consideration of the medical information provided by her clinician and her particular circumstances and values.

Ethics education for psychiatry residents: a mixed design retrospective evaluation of an introductory course and a quarterly seminar

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Objective: This study aimed to evaluate an ethics education program for psychiatry residents at a Canadian university and to test for gender differences in its outcomes.

Method: The ethics education program for psychiatry residents at the University of Western Ontario consists of an introductory course and a quarterly seminar. The residents participate in a pre-test and post-test for the introductory course, and submit a report after the presentation for the quarterly seminar. The pre-test and post-test scores of the introductory course and the score of the quarterly seminar were quantitatively evaluated. The seminar report was qualitatively analyzed.

Results: The test scores of the introductory course improved from the pre-test to post-test ($p=0.00$). Gender difference was not statistically significant regarding the introductory course pre-test scores ($p=1.00$), score improvement between the pre-test and post-test ($p=0.95$), and seminar report scores ($p=0.14$). The findings from the seminar reports are as follows: Most residents applied principlism. Few residents had inaccurate knowledge and skills in ethical theories. Residents expressed various attitudes regarding patient autonomy, beneficence and justice, demonstrated uncertainty tolerance to varying degrees, valued the doctor-patient/family relationship, were rather critical toward peers, and considered psychiatry as unique among medical specialties in terms of ethical issues involved in practice.

Conclusions: The introductory course may contribute to the acquisition of ethics knowledge. Most residents have correct knowledge of ethical theories and skills to apply them. Residents expressed diverse attitudes concerning ethical issues.

Towards an enriched understanding of learners' responses to feedback: the potential and limitations of regulatory focus theory

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Background: Regulatory focus theory posits two self-regulation systems underlying human motivation: *promotion focus*, concerned with aspirations and accomplishments, and *prevention focus*, concerned with obligations and responsibilities. Regulatory focus theory predicts that positive feedback is motivating under promotion focus while negative feedback is motivating under prevention focus, and in experimental settings these predictions seem accurate.¹ We aimed to explore this link between regulatory focus theory and feedback response using data collected in a naturalistic setting.

Methods: In a constructivist grounded theory study, we interviewed 22 early-career academic physicians about experiences they perceived as influential in their learning, deriving a model of clinical learning in which feedback emerged as one of a number of important learning cues. To better understand how feedback becomes (or fails to become) influential, we used the theoretical framework of regulatory focus to re-examine and re-code all instances where the experience of receiving and responding to feedback was described.

Results: Feedback could be influential or non-influential, regardless of its sign (positive or negative). In circumstances where the individual's regulatory focus was readily determined, such as choosing a career (promotion) or preparing for a high-stakes examination (prevention), the apparent influence of feedback was consistent with the prediction of regulatory focus theory. However, we encountered many challenges in applying regulatory focus theory to real scenarios, including the frequent presence of a mixed regulatory focus, the potential for regulatory focus to change over time, and the competing influence of other factors, such as feedback's credibility.

Conclusions: Regulatory focus theory offers a useful, if limited, construct for understanding learners' responses to feedback in the clinical setting. The insights and predictions it offers must be considered in light of the motivational complexity of clinical learning tasks and of other factors which influence feedback's impact.

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