Conference Research Abstracts
Résumés de recherche de la conférence

From Caring for Patients to Protecting Our Planet: Advocacy in Residency Education
Enseigner la promotion de la santé : de la prise en charge des patients à la protection de notre planète
Since 2012, the *Journal of Graduate Medical Education* (JGME) and the Royal College of Physicians and Surgeons of Canada have jointly selected the Top 3 Research in Residency Education papers from abstracts submitted to the annual International Conference on Residency Education (ICRE).

The submitted research paper abstracts provide a forum for those who use systematic scholarly methods to evaluate educational programs, identify new phenomena, define aspects of training, and assess competence.

Each year, more than 100 abstracts are submitted and undergo 2 rounds of peer review. Three abstracts are selected and announced prior to ICRE and are presented at a juried session during the conference. A Top Research in Medical Education Award is given out. Commencing with ICRE 2014, the selection of the Top 5 Resident Research papers was included in the award process.

Winning abstracts are published in the December issue of JGME and are available online to readers via the journal’s website (www.jgme.org).
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Exploring the Hidden Curriculum in the University of Alberta Postgraduate Obstetrics and Gynecology Residency Training Program

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Introduction: The hidden curriculum (HC) is a set of implicit messages reinforced daily through social and behavioral influence, representing an undeniable force in resident education. Following accreditation of the University of Alberta obstetrics and gynecology residency training program, concerns relating to the HC were identified. Our objective was to understand what the HC is, how it is created, and yield this understanding for positive change within our department.

Methods: A focused ethnographic study was undertaken. An initial department-wide survey was distributed to gauge understanding of the HC and to inform focus group discussions. Focus group discussions were then held within cohort-based resident groups and staff physicians. These were audio recorded and transcribed verbatim. Transcripts and field notes were analyzed through an inductive iterative approach using latent content analysis, concurrent with data collection using qualitative data handling software (Quirkos 2.3 TA). Thematic analysis was triangulated between co-investigators. Rigor was ensured through responsiveness and verification throughout, and observation was concurrent through the investigators’ emic view in the research. Themes were then acted on through various interventions concurrent with data collection. Ethics and operational approval was obtained locally.

Results: Unique HC themes for residents included: “tension between service and learning” and “reactive symbiosis” between residents; and for staff included: the toll of cognitive dissonance caused by chasing an unidentified cultural ideal. Both groups desired transparency but had trepidation in navigating implementation. Unique to obstetrics and gynecology is the impact nurses have on influencing the HC. Interventions have focused on promoting a just and well culture through transparency, celebration, and quality improvement initiatives.

Conclusion: HC themes were used to refine curriculum and implement initiatives for change within the program in an iterative fashion. The results of this study may be used to highlight commonalities and identify differences that can be used broadly within postgraduate medical education.
An Analysis of Association Between ACGME Accreditation and Patient Quality Outcomes in US Hospitals From 2017 to 2019

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Introduction: Patient outcomes are a potential quantitative measure of the value of national accreditation for GME training programs. Annually, the US Centers for Medicare & Medicaid Services (CMS) pays Accreditation Council for Graduate Medical Education (ACGME)–accredited institutions $15 billion to support physician training. No known prior analysis has explored the association between ACGME accreditation and patient quality outcomes; our study utilized CMS and ACGME data to attempt to determine the existence of such a relationship.

Methods: An observational cross-sectional study was conducted via secondary quantitative analysis. Hospitals (CMS n=4700, ACGME n=744) were mapped and the following quality measures were evaluated: mortality rates from heart failure (HF), pneumonia, and chronic obstructive pulmonary disease (COPD); complication rates due to pressure ulcers, postoperative sepsis, or pulmonary embolism and deep vein thrombosis (PE/DVT); hospital acquired condition (HAC) rates for central line bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), and Clostridioides difficile (C. diff) infections; and Star Ratings from CMS. The significance of the difference in outcomes was tested using the Mann-Whitney U test for each quality metric.

Results: Differences in the outcomes between the ACGME-accredited and non-accredited hospitals were statistically significant for 8 out of the 10 quality metrics. ACGME-accredited hospitals perform significantly better ($P<.05$) in HF mortality, C. diff infection, CAUTI, and CLABSI rates. Accredited hospitals perform significantly worse ($P<.05$) in COPD mortality, PE/DVT complications, pressure ulcer rates, and Star Ratings. Pneumonia death and sepsis rates were not statistically significantly different ($P>.05$).

Conclusion: The findings from this research do not preclude the existence of a benefit of ACGME accreditation in relation to patient quality outcomes. Patient quality metrics will continue to be one of the most prominent factors in assessing patient care, and while the federal government spends billions annually supporting physician training in ACGME-accredited programs, additional research is warranted to investigate further the causality of this relationship.
Rethinking Program-Applicant “Fit”: A Defensible Way to Include Alignment in Holistic Review During Residency Selection

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Introduction: Program-applicant “fit” is commonplace in GME selection. However, there remains little consensus on what is meant by “fit” and the current use in selection incurs potential bias. This study evaluated if a standardized method (the Duet assessment) would provide a sound way of assessing program-applicant value/priority alignment during residency selection.

Methods: 10,399 applicants, 134 programs (5 specialties) completed Duet in 2021-2022 and 2022-2023 US graduate medical education selection cycles. Duet alignment scores (0->100) are calculated by comparing applicants’ ratings of 7 characteristics in each of 3 categories (Academics, Culture, Clinical Experience) to that of a program’s Duet profile (based on program representatives’ Duet responses). Reliability of Duet was evaluated using a consistency index (CI). Additional analyses were conducted to examine (1) the distribution of characteristic usage within each category; (2) same program, variability across different applicants; and (3) same applicant, variability of scores for different programs.

Results: Reliability, across cycles and categories, showed that 95% to 99% of applicants and program representatives had a CI < 0.69. Variability analyses: (1) for applicants and programs, all characteristics appeared at least once in the top or bottom 3 rankings; (2) the applicant alignment range was computed for each program and the mean of those ranges was 89.2 (2021-2022) and 92.8 (2022-2023); and (3) the alignment range was computed for each applicant relative to their programs, the mean of those ranges was 38.1 (2021-2022) and 50.8 (2022-2023).

Conclusion: The analyses support Duet reliability and consistency. Duet scores show a wide range across applicants applying to the same program and a moderate range for the same applicant in relation to different programs. The Duet suggests a defensible way of assessing program-applicant alignment and shows potential for use in residency selection.
Enhancing Equity in the GME Selection Process: Altering Response Format to Reduce Demographic Differences

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Introduction: Although a diverse physician workforce is integral to reducing inequalities in health care, racial minorities remain underrepresented in the physician population. The Association of Professors of Medicine suggests that programs make an explicit effort to increase minority representation at every stage, including selection to residency. Situational Judgment Tests (SJTs) have been used during selection, and this study examines if adding an AV response format to the typed response will further reduce group differences among graduate medical education (GME) applicants.

Methods: 182 US GME applicants to various specialties completed an SJT (with typed and AV responses). Effect sizes (Cohen’s d) were used to examine subgroup differences for typed vs AV responses and, when possible, to other standardized tests. Comparisons were conducted for race, income, native/non-native English language, rural/non-rural, applicants’ disability status, and gender.

Results: Group differences were reduced when using AV responses. Specifically, White relative to (1) Asian applicants (0.38 to 0.20), (2) Black/African/Caribbean/African American applicants (1.41 to 0.21), and (3) Hispanic/Latinx/Spanish applicants (0.60 to 0.14). AV score differences were smaller for low-income (0.59 to 0.06), native and non-native English speaking (1.53 to 0.21), rural and non-rural applicants (0.36 to 0.01), and for disability status (0.46 to 0.29). Gender differences, however, were more prominent in AV than typed (0.57 and 0.12, respectively) with females scoring higher. All SJT scores were smaller than USMLE Cohen’s d, where the data was available.

Conclusion: Incorporating AV responses with the text responses can further decrease disparities in selection, while SJTs overall have notably smaller differences than other standardized tests like the United States Medical Licensing Examination, which will provide programs with a measure of other core attributes (e.g., professionalism) necessary for physicians as outlined by CanMEDS and the Accreditation Council for Graduate Medical Education.
Validity Evidence for the Interpretation and Use of SJT Scores for Selecting Australian Specialist Medical Trainees

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Introduction: The Royal Australasian College of Physicians (RACP) identifies attributes such as communication and teamwork as core competencies of professional practice. However, accurately assessing applicants on these attributes during selection remains challenging. In 2022 the RACP piloted a Situational Judgement Test (SJT), based on the theory of planned behavior to measure these attributes in RACP applicants. Given both the high stakes and potential value that accurate and fair measures of these attributes could yield, we required a rigorous process to evaluate the validity evidence for interpretation and use of the SJT scores as part of the selection process. This report describes the evaluation of validity evidence for the explanation and generalizability inferences.

Methods: We used Kane’s framework of validity inferences to develop an Interpretation/Use Argument for the SJT scores, and the Rasch model as the theoretical lens for evaluating the validity evidence for interpreting SJT scores as measures of the targeted attributes. Winsteps software was used to analyze item and candidate scores. We assessed the validity evidence against Kane’s inferences of explanation (construct) through analysis of model fit, and generalizability through analysis of reliability indices.

Results: 287 applicants completed the SJT assessment. Data showed good fit to the Rasch model indicating evidence of psychometric unidimensionality (ie, the candidates’ scores on the SJT may be explained as a measure on the targeted construct). The data also showed good levels of generalizability with a person separation statistic of 0.83 (similar to Cronbach’s alpha) and candidates could be reliably separated into 3 statistically significant bands of performance at low, middle, and high.

Conclusion: The results demonstrate promising evidence for the interpretation and use of SJT scores to support the identification of high and low performing applicants on the targeted construct of professionalism.
Predictors for Success and Failure in International Medical Graduates: A Systematic Review of Observational Studies

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Introduction: International medical graduates (IMGs) are an important part of the international physician workforce and exploring the predictors of success and failure for IMGs could help international and national physician labor workforce planning.

Methods: We searched Medline, PubMed Cochrane Central Register of Controlled Trials, BIOSIS Citation Index, CINAHL, Embase, ERIC, DARE, Global Health, LILACS via Global Index Medicus, Health Technology Assessment Database, Web of Science, Science citation index, Clinical Trials.gov, PsycINFO, Scielo, and grey literature for studies that explored the predictors of success and failure in IMGs. We reported baseline probability, effect size (in relative risk (RR), odds ratio (OR) or hazard ratio (HR), and absolute probability change for success and failure.

Results: Twenty-four studies (373,784 participants) reported the association of 93 predictors of success and failure for IMGs. Female sex, English language proficiency, being graduated ≤5 years, and higher score in USMLE step 2, Clinical Problem-Solving Test and Situational Judgment Test were associated with success in qualifying examinations. IMGs who got higher scores on USMLE Step 2 Clinical Knowledge and in-training examination in postgraduate years 1, 2, and 3 were more likely to succeed in American Board of Family Medicine certificate. IMG residents who previously completed internship were more likely to pass Royal College of Physicians and Surgeons of Canada examination on first try (absolute success increase rate 16%, 95% CI 3%-20%). IMGs and candidates who attempt PLAB part 1, ≥4 times vs first attempters, and candidates who attempt PLAB part 2, ≥3 times vs first attempters were more likely to be censured. Patients of non-US IMG vs US medical graduates had significantly lower mortality than US graduates and patients of non-US IMGs had lower mortalities than patients of US IMGs.

Conclusion: This study informed factors associated with success and failures for IMGs. Rigorously conducted studies are required on this topic.
The Predictive Validity of a National Selection Process for Postgraduate Surgical Training

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Introduction: Postgraduate training selection processes should conform to a predictive paradigm, identifying candidates who will become competent medical professionals. This study investigates the ability of a highly centralized, multimodal, national selection process to predict the future performance of surgical trainees, in the workplace and in the simulated environment.

Methods: A retrospective analysis of prospectively collected data from successful applicants to the Royal College of Surgeons in Ireland (RCSI) Core Surgical Training (CST) program from 2016 to 2020 inclusive was undertaken. Assessment data, attrition rates, and rates of progression to Higher Specialist Training were recorded over a 2-year follow-up period. Selection decisions were based on a composite score derived from technical aptitude assessments, undergraduate academic performance, and a 4-station multi-interview. CST performance was assessed using workplace-based and simulation-based technical and non-technical skill assessments. Associations between selection and assessment measures were explored using binary logistic regression, Pearson correlation, and multiple linear regression analyses.

Results: Data was available for 303 successful applicants. Composite scores were associated with increased likelihood of progressing to HST (Exp(B) 1.09, 95% CI 1.05-1.13, \(P<.001\)). Total score was weakly associated with performance across all CST assessments (\(r 0.23-0.34, P<.001\)). On multivariate logistic regression analysis, technical aptitude scores at application were the strongest predictor of future operative performance assessment scores both in the workplace (B 0.31, 95% CI 0.14-0.48, \(P<.001\)) and simulated environments (B 0.57, 95% CI 0.33-0.81, \(P<.001\)). The “interpersonal skills” interview station was the strongest predictor of future performance in simulated non-technical skill assessments (B 0.55, 95% CI 0.22-0.87, \(P<.001\)).

Conclusion: Performance at the time of national selection, measured across technical and non-technical domains in a multimodal fashion, is associated with future performance in the workplace and in simulation-based assessments.
Is There a Link Between Assessor Personality Traits and Assessor Stringency?

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**Introduction:** Assessor stringency/leniency (ASL)—an assessor’s tendency to award low or high scores—has repeatedly been shown to have significant impacts on learner scores and is constant over time within a given assessor. Underlying drivers of ASL are unknown and some authors have proposed that it may be tied to personality traits, but research in this area has been limited. We sought to explore a possible relationship between assessor personality traits and ASL.

**Methods:** This study was conducted in the emergency departments of 2 teaching hospitals in Ottawa, Canada. Full-time emergency physicians (EPs) were invited to complete a validated personality questionnaire—the IPIP-NEO-120—which generates a percentile score for each of 5 personality traits. Separately, all end-of-shift assessments completed between July 1, 2021, and June 30, 2022, were collected, and ASL was quantified for each assessor using the previously developed mean-delta method (in brief, the mean difference between the scores an assessor awards to learners and those learners’ average scores is calculated for each assessor). Finally, we evaluated the relationship between ASL and personality traits using linear regression.

**Results:** There were 184 learners, and 2127 completed assessments during the study period. Twenty-five EPs (out of a possible 69 full-time EPs) completed the personality questionnaire, and there was a wide distribution of percentiles for each personality trait. ASL was approximately normally distributed for the population of all EPs, as well as those EPs who completed the questionnaire. There was a trend toward a relationship between ASL and extraversion ($P=.0721$, $R^2=0.1339$) but this was non-significant. There was no meaningful relationship between any of the other personality traits and ASL.

**Conclusion:** We found no significant relationship between assessor personality traits and ASL and conclude that it is unlikely that personality traits are an educationally important determinant of ASL.
Provision of Narrative Feedback in Surgery: Perspectives of Surgical Faculty Members

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Introduction: The implementation of competency-based medical education (CBME) emphasizes the importance of narrative feedback. However, there are ongoing challenges with narrative feedback quality, delivery, and documentation. Previous studies suggest that both verbal and narrative feedback effectiveness is influenced by resident-attending interactions, resident receptivity, engagement, feedback-seeking behavior, and timing of these interactions. This study explored faculty surgeons’ perspectives on the provision of narrative comments within the surgical environment, discrepancies between verbal and written commentary, barriers to providing effective narrative feedback, and potential solutions.

Methods: This study utilized a qualitative description approach, conducting 30-minute semi-structured interviews with faculty surgeons from 5 surgical specialties at a Canadian University, including orthopedic, general, plastic, vascular, and otolaryngology-head and neck surgery. Interviews were recorded over Zoom, transcribed using the software Otter.ai, and coded using the NVivo 12 qualitative data analysis software. A thematic analysis was conducted utilizing Braun and Clarke’s 6-phase model to produce, review, and define themes within the interview transcripts.

Results: Fifteen faculty surgeons participated in this study. Several discrepancies between verbal and narrative feedback provided were identified by the faculty. First, most feedback is provided verbally. Narrative feedback is typically only provided on entrustable professional activities (EPAs) to supplement verbal feedback in cases where a resident has performed exceptionally well or poorly. Some of the barriers to providing narrative feedback more frequently include time constraints in triggering and completing EPA forms, residents not actively seeking feedback, or residents displaying difficulty in receiving constructive feedback. Moreover, 73% of surgeons interviewed reported not receiving sufficient training in providing narrative feedback, highlighting a need for ongoing faculty training.

Conclusion: The results suggest major discrepancies remain between verbal and narrative feedback provided to trainees. If narrative feedback is relied upon for CBME, ongoing training for surgical faculty in providing narrative feedback and a decision-aid tool could be of great utility.
Home Field Advantage? Comparing the Quality of EPA Observations Completed On-Versus Off-Service

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Introduction: There is increasing evidence to suggest that supervisors exhibit different assessment behaviors when supervising off-service versus on-service residents. As programs of assessment rely on collecting robust performance data to inform high-stakes decisions about resident progress and promotion, it is important to examine the quality of such inputs. Therefore, this study compared the quality of entrustable professional activity (EPA) assessments generated for residents on-service versus off-service.

Methods: This retrospective database study compared the quality of on- and off-service EPA assessments as measured by the Quality of Assessment of Learning (QuAL) score, a previously published measure of EPA quality that has demonstrated strong psychometric characteristics including reliable scores and the ability to discriminate assessments based on utility. Fifty EPA assessments (25 on- and 25 off-service) were rated for 5 different EPAs (3 non-procedural and 2 procedural) by 3 blinded raters. QuAL scores were analyzed using a factorial ANOVA.

Results: Mean QuAL scores for EPAs completed on-service were significantly higher than those completed off-service with (3.57±1.07 vs 2.67±1.01, P<.001). Post-hoc analysis demonstrated that this was true for the following EPAs: resuscitating/coordinating care (P=.003); airway management/ventilation (P<.001); and managing emergency mental health conditions (P=.007).

Conclusion: This study provides insights for educators about how data from on- versus off-service environments differ, which potentially can impact downstream, high-stakes decisions made by competence committees. Our study suggests that currently on-service EPA assessments are of higher quality. Future work should explore whether or not faculty development initiatives could improve assessment quality completed by physicians in other specialties. If not, consideration could also be given to the use of other assessment tools for when residents are off service.
Operationalizing Subspecialty Training in the Competence by Design Model: A Case Study of Lived Experiences

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Introduction: With the transition and implementation of competency-based medical education (CBME) and the Royal College framework Competence by Design (CBD), residency training programs must align theoretical constructs to practice. Some unique factors associated with subspecialty programs are highly subspecialized entrustable professional activities (EPAs) and a short period to operationalize the 4-stage CBD model. Exploring lived experiences of leaders within subspecialty programs may help bridge the theory practice gap. This project describes the lived experiences of leaders in implementing CBD in subspecialty programs at Queen’s University.

Methods: This grounded theory study recruited program directors, CBME leads, educational consultants, and resident leads across subspecialty programs. A total of 16 participants completed semi-structured interviews which were audio recorded and transcribed verbatim. The data were analyzed using open, axial, and selective coding.

Results: Programs had varied approaches in CBD development and emphasized the need for ongoing refinement. Common challenges included assessment completion, administrative burden, software use, and developing the CBD stages. Strengths included frequent assessment, formal documentation of performance, and enhanced accountability. A challenge unique to subspecialty training in psychiatry was the “overlap year,” where in postgraduate year 5 the resident is enrolled officially in a psychiatry program while completing subspecialty requirements. Participants shared recommendations which included faculty development, and iterative process in developing EPAs, and flexibility with timelines and stages.

Conclusion: This study shared the lived experiences of key program stakeholders as they helped transition their subspecialty program to CBD. Some strengths as theorized were evident and participants had several recommendations for program leaders to operationalize CBD implementation.
Bias in Observed Assessments in Medical Education: A Scoping Review

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Introduction: Observed workplace-based and non-workplace-based assessments are integral to competency-based medical education (CBME). Research has revealed that these assessments may pose biases against equity-seeking groups of learners. Previous literature reviews aimed at investigating the role of bias within these assessments are limited and of narrow scope, focusing on a single specialty or a single identifiable characteristic. Resultantly, there is limited evidence available to understand bias in CBME.

Methods: We endeavored to map literature investigating bias arising from 6 observable social identity characteristics (SIDC) of trainees: gender (binary), gender non-conformance, race/ethnicity, religious expression, physical disability, and age. Seven databases were searched for articles investigating observed assessments in undergraduate, postgraduate/graduate, and continuing medical education (UGME, PGME, and CME, respectively). Double-independent screening of title and abstract, and full-text review was performed on citations published from January 1, 2008, to June 15, 2022. Conflicts between the 2 primary reviewers were resolved by consensus or in collaboration with a third author.

Results: Our search captured 2787 unique publications. Forty-one were completed in PGME and further analyzed. All but one investigated gender bias; none investigated gender non-conformance, physical disability, or religious expression. A quantitative design was utilized by the majority of the studies. General surgery and internal medicine were the most frequently studied specialties. Intraoperative autonomy measures and clinical examinations were the most common types of assessments explored for bias in workplace-based and non-workplace-based settings, respectively. Bias favoring men was more often found in assessments of intraoperative autonomy, whereas bias in clinical examinations favored women or was not present.

Conclusion: As evidenced by this review, there are numerous gaps in literature related to the study of bias arising from certain SIDC, and conflicting evidence of its impacts. Our results will guide the research agenda for understudied SIDC to facilitate the fulfillment of equitable assessments.
Programmatic Teaching: Exploring Contextual Adaptations That Realize the Value of CBME for Learners

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Introduction: The value proposition of competency-based medical education (CBME) is the improvement of medical education through more developmental approaches to learning. But the work of implementing a curriculum as intended is an ongoing exercise in aligning core values with practice. According to Schwab, the interests of learners, teachers, and context must be considered at all stages of the process, or the curriculum will be out of joint. In the case of Competence by Design (CBD), there have been unintended consequences resulting in high stress for residents. What can we learn from the process of implementing CBD that can help realize the value of CBME for these learners?

Methods: This qualitative study explored how CBD translated to practice from the perspectives of 18 implementation leads at national, institutional, and program levels, representing 9 specialty training programs in 5 academic centers. In depth, semi-structured interviews inquired into participant experiences of the work and workarounds required to design and enact the curriculum. Schwab’s theory of curriculum making guided a deductive approach to coding and thematic analysis.

Results: In previous work, we found 3 “disconnects” when the interests of teachers, learners, and contexts were overlooked throughout the process of implementation: assessment from teaching, assessment from learning, and assessment from meaningful use of data for entrustment. In this analysis, we identified 6 “fixes” to these disconnects that some programs used to enact CBD in alignment with intended values. Adaptations to support a developmental approach to learning included: shared responsibility for teaching, gradual release of responsibility for assessment, tailoring the context for learning, tailoring individual learning plans, purposeful use of technology, and longitudinal coaching.

Conclusion: Together these adaptations to CBD to support learning constitute a framework for programmatic teaching. This study contributes a model for adapting CBME to context that can realize the value for resident doctors.
Coaching Models Are Not “One-Size-Fits-All”

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Introduction: Competence by Design (CBD) advocates coaching as a way to harness the benefits of feedback, yet how exactly feedback and coaching intertwine to facilitate learning remains unclear. We have developed a pattern system of feedback conceptualizations to examine how different approaches and practices of “feedback” may be related. Pattern system analysis is a novel approach to examining concepts such as feedback by inductively developing a holistic palette of pattern elements that, in combination, can capture all of the various instances of it. Not only does such an approach obviate the need for universal definitions, but it also allows for erstwhile conceptually different approaches to be modeled and compared.

Methods: To explore the link between coaching and feedback and the utility of our pattern system, the aim of this study was to examine 3 postgraduate coaching models through the lens of our pattern system. We analyzed the Relationship, Reaction, Content, Coaching (R2C2) framework, the CBD Coaching Model, and the American Medical Association Coaching in Graduate Medical Education model using a modified framework analysis using our pattern system.

Results: Despite being developed from a similar literature, each model had a discrete syntax of pattern elements. R2C2 and CBD coaching included both in-the-moment and longitudinal coaching, but they diverged around the role of assessment, sensors, and judgment. Certain elements cited in model development, such as self-directed assessment seeking, unintended behaviors, emotion, and attention, were not explicitly addressed in the models themselves. Idealized forms of most elements related to feedback response (goal setting, self-efficacy, intention to change, self-monitoring, action, outcome) were, by comparison, well captured in all 3 models but were difficult to analyze further without substantive examples.

Conclusion: In summary, the pattern system for feedback has been very useful in clarifying important points of divergence between models, and in appraising their relative strengths and weaknesses.
Recognizing the Value of Longitudinal EPA-Based Assessment Data in Internal Medicine Training

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Introduction: Competency-based medical education (CBME) relies on aggregation of frequent, low-stakes, workplace-based point-of-care assessments (POCAs) to make high-stakes summative decisions on learners. In large, hospital-based programs, the number of POCAs required for these decisions can be difficult to achieve. Longitudinal assessment offers a readily available approach to collect data that could supplement POCAs to facilitate summative decision-making. We aimed to determine the suitability of using entrustable professional activity (EPA)-based entrustment scores obtained from longitudinal assessments by comparing them to those obtained from POCAs.

Methods: All CBME assessment data for Core of Discipline (COD) EPA 1 in the Queen’s Core Internal Medicine program between 2019 and 2022 was collected. A multivariate analysis using a random-effects regression model was used to compare entrustment ratings on longitudinal assessments and POCAs; both approaches used an identical 6-point entrustment scale. A paired t-test was done to assess differences in scoring by resident.

Results: The dataset included 3382 unique assessments across 119 unique learners. In the multivariate analysis the difference in mean score between the assessment approaches was 0.057 (95% confidence interval of -0.08 to 0.19, \(P=.414\)). The variables most influential of entrustment scores were (1) the role of the assessor (resident or faculty) and (2) how the assessment was initiated (by the resident, faculty, or program). The paired t-test showed a mean difference of 0.058 that was not statistically significant (95% confidence interval -0.03 to 0.14).

Conclusion: Entrustment scores obtained from longitudinal assessment data from Core Internal Medicine residents performing COD EPA 1 were not significantly different from their POCA data. This longitudinal data should be included in programmatic, summative entrustment decision-making as it may reduce the reliance on high volumes of workplace-based POCA data without compromising the quality of assessment.
Using Prospective Electronic Journals to Explore the Intended and Unintended Consequences of Competency-Based Medical Education Among Pediatric Residents

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Introduction: Recent reports from Canadian academic institutions are providing important insights into the resident experience following competency-based medical education (CBME) implementation and have suggested important unintended consequences of CBME such as increased administrative burden. Since pediatric residency programs transitioned in July 2021, half of the residents in McMaster University’s Pediatrics Residency Program are in CBME streams and half are in non-CBME streams for the 2022-2023 academic year. With this, our objective was to compare the resident experiences in these 2 streams with respect to observation, feedback, and assessment.

Methods: We studied the resident physicians within the McMaster Pediatrics Residency Program (n=37), in both CBME (n=22) and non-CBME (n=15) streams using a prospective study design. Electronic journals (e-journals) were distributed to the resident body in November 2022 and residents recorded occurrences of feedback, direct observation, and assessments for a 2-week period. Residents also recorded time spent mapping, planning, sending, and following up on their entrustable professional activities (EPAs) and other assessments.

Results: The response rate was 56.8% (21 of 37) with full responses from 10 CBME and 11 non-CBME residents. Using Holm-Bonferroni-corrected Mann-Whitney U tests, the e-journal data showed that CBME residents had attempted significantly more assessments ($P<.01$) and had 10% more expired or incomplete assessments, although this difference was not found to be significantly different ($P=.09$). During the 2-week period, the CBME residents spent significantly more time on their assessments than the non-CBME residents (126 minutes versus 28 minutes, respectively, $P<.01$).

Conclusion: Given the significantly increased time spent on assessments in the CBME cohorts, it is important to further investigate the administrative burden of this curriculum and its implications for resident well-being. Further research is needed to explore the changes to both the quality and quantity of feedback, observation, and assessment in the context of CBME.
Editor’s Perspectives of Reporting Guidelines in Health Professions Education

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Introduction: Health professions education (HPE) journal editors appear divided about the use and value of reporting guidelines. Reporting guidelines provide advice on (and can improve) communicating elements of research; thus, complementing basic principles of scientific writing. Editors play a key role in decisions to improve scientific information arising from their journals, yet editors’ perspectives of reporting guidelines in HPE are unknown.

Methods: With experts and comparison to curated journal lists (e.g., AAMC Regional Groups on Educational Affairs Medical Education Scholarship List of Journals) we identified 105 journals that published HPE research. Twenty-three were “core” HPE journals (e.g., majority or all content HPE-focused). We systematically searched journal websites and in duplicate extracted information related to reporting guidelines (e.g., demographic information, extent of promotion or endorsement etc.). Via an online survey, we then invited Editors-in-Chief of the identified journals, to share their perspectives, level of knowledge/understanding, and reasons for or against endorsement.

Results: Website review found that only 44 (42%) mentioned at least 1 reporting guideline. Of the 23 “core journals,” only 9 mention at least 1 reporting guideline. Of the survey respondents, 83% were Editors-in-Chief, 12% were Editors, and 5% were others. The majority held the current position for 10+ years (38%). Eighty-two percent indicated awareness of reporting guidelines prior to our survey. Although 95% of respondents “Generally, support reporting guidelines as a tool for authors,” only 28% “strongly agreed” when asked if they were confident reporting guidelines would increase transparency of reporting of research. Asked if the journal planned to acknowledge or promote the use of reporting guidelines in the future, 60% responded as “unsure.”

Conclusion: Despite broad awareness of reporting guidelines, HPE journal editors remain uncertain of their use. Until we understand the uncertainty more fully, what position reporting guidelines should hold (if any) in advising HPE researchers cannot be advanced.
The Use of Virtual Nominal Groups in Research and Education: An Extended Scoping Review

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Introduction: The Nominal Group Technique (NGT) is a consensus group method used to synthesize expert opinions when empiric evidence is lacking and has been used to develop curriculum, assessment tools, and entrustable professional activities. Given the global shift to virtual meetings during the COVID-19 pandemic, the extent to which researchers leveraged this for the NGT is unclear. This scoping review explores the use of the virtual NGT in research and education.

Methods: The review followed the Arksey and O’Malley framework. Eight cross-disciplinary databases were searched and date-limited using the onset of the COVID-19 pandemic to the present (January 2020 to July 2022). English-language reports that included 4 virtual NGT stages (idea generation, round-robin sharing, clarification, and voting) were eligible for inclusion. Data extracted and results were combined via quantitative and thematic analyses. Media Synchronicity Theory (MST) informed analysis. In addition, the corresponding authors of selected studies were surveyed.

Results: Of 2589 citations, 32 references were included. Articles covered health care (28 of 32) and health care education (4 of 32). The platforms used most were Zoom, Teams, and GoTo but were not reported in 44% of studies. Only 22% commented on the benefits/challenges of moving the NGT virtually. Of those authors (16 of 32) who responded to our survey 44%, 36%, and 19% felt that the virtual NGT was superior, comparable, or inferior to an in-person NGT, respectively. Benefits included geographical and scheduling flexibility and technological restrictions (e.g., having to unmute may have facilitated structured interactions). Conversely, some participants had trouble using the platform potentially impacting the richness of discussions.

Conclusion: The virtual format appears to have maintained the foundational principles of the NGT. A virtualized consensus group method may also afford greater equity and access in the research process. In practice, however, whether virtual meetings impact the richness of discussions and subsequent study results should be considered.
Hidden in Plain Sight: A Qualitative Study on the Impact of Microaggressions on Professional Identity Formation of Residents

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Introduction: The development of a strong professional identity in medicine has important consequences for patient care, as proper identity formation impacts a physician’s confidence, well-being, and performance. In non-medical professions, exposure to discrimination and stigma impacts how individuals construct their professional identity. Our study aims to explore how microaggressions from peers impacts the professional identity formation of resident physicians.

Methods: We conducted semi-structured interviews with Queen’s University residents between July 2021 and November 2022. Participants were recruited utilizing both the purposive and snowball sampling of residents who self-identified as having experienced microaggressions. Specific themes in the interview guide reflected conceptual frameworks on professional identity formation, and included exploration of themes such as socialization, role modeling, and hierarchical structures. Inductive thematic analysis guided the iterative data collection and analysis.

Results: We interviewed 18 residents from 5 specialties. Overall, participants perceived that experiencing microaggressions impacted their sense of belonging in medicine and had a negative impact on participants’ progression in residency due to feelings of perceived incompetence, exhaustion at work, and missed opportunities. Barriers in addressing microaggressions included fear of personal and professional repercussions, and a sense of futility that reporting would lead to tangible change. More education about microaggressions, increasing transparency on reporting microaggressions, access to diverse mentorship, and creating a safe space to debrief may help mitigate the negative impacts of microaggressions on professional identity formation.

Conclusion: Our study suggests that microaggressions between peers are a barrier to trainees’ socialization into the medical profession, as they may lead to feelings of exclusion and exhaustion that impact clinical performance. Education on how to identify, report, and respond to microaggressions may help to improve the learning environment for vulnerable trainees.
Implementation of a Self-Identification Questionnaire in Resident Selection

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Introduction: Socially accountable resident selection must be designed to promote diversity and reduce inequities in access to residency positions. Providing candidates an opportunity to self-identify as members of equity-seeking groups is an important first step. With the endorsement and support of the Canadian Resident Matching Service (CaRMS), 8 programs at Dalhousie University included for voluntary completion a self-identification questionnaire (SIQ) for applicants to self-identify as members of equity-seeking groups.

Methods: The implementation and outcome of the SIQ was evaluated post-match. Programs provided objective data on resident selection (e.g., number of files reviewed) and information about how the SIQ was utilized in decision making. Selection committee members completed an online survey to describe their satisfaction with the SIQ and its perceived impact. Finally, residents who were selected in each of the participating programs completed an online survey to assess their experience with the SIQ.

Results: Programs reported that 14% to 50% of applicants submitted an SIQ. The tool was commonly employed to move candidates up the rank-order list. Programs observed a modest or unclear impact on diversity, but committee members described the experience of using the SIQ as valuable. They provided suggestions for overcoming unintended administrative burdens and facilitating SIQ integration in group decision making. Most resident survey respondents were aware of the SIQ and had a good understanding of how it would be utilized. All felt that the SIQ represented an important opportunity for members of equity-seeking groups and those who did felt comfortable completing it.

Conclusion: Providing the opportunity for applicants to self-identify as members of equity-seeking groups is integral to improving the diversity of the resident population. This pilot project provided important information about the feasibility and value of this approach. In considering the perspectives of the program, selection committee members, and resident applicants, a thorough understanding of the initiative, its benefits and pitfalls are provided.
A Resident Equity, Diversity, and Inclusion Committee: Transforming Consciousness and Structures

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Introduction: There is increasing awareness of equity, diversity, and inclusion (EDI) disparities within health care and medical education systems. Excellence within postgraduate medical education is contingent on diverse residents and faculty, and the development of programs, policies, and curricula designed to empower trainees to address individual and systemic discrimination, marginalization, and exclusion. The University of Toronto (UofT) Paediatric Residency Program established a Resident EDI Committee to identify and address issues within the program in a meaningful and actionable manner.

Methods: At its inception, a set of principles were created to guide committee goal setting, reporting, accountability, member selection (focused on representation of traditionally marginalized voices), and a consensus-based decision-making process. Through these principles, the committee developed a multi-faceted change strategy to integrate anti-racism and anti-oppression practices into the residency education framework through (1) curricular design and implementation; (2) cross-program collaboration; (3) community partnership-building; and (4) recognition of resident excellence.

Results: The committee has implemented an EDI curriculum within the residency program academic half-day that covers core EDI topics such as Indigenous health and anti-racism and anti-oppression frameworks. The committee has also established a national network of paediatric residents and subspecialty fellows to share EDI practices and initiatives. The committee has also partnered with a local Indigenous health center to improve health care access for systemically excluded communities. Finally, the committee has proposed an EDI award for trainees to formalize the value of EDI work.

Conclusion: To best address EDI disparities within health care and medical education systems, postgraduate training programs must look toward models for change, which rely on transforming individual consciousness as well as working to transform overarching systems and structures. Through a 4-level implementation strategy, the UofT Paediatric Resident EDI Committee has successfully worked to empower resident agencies to disrupt normalcy through resistance of inequitable or oppressive practices.
“It’s Kind of a Hidden Code”: An Exploratory Study of Residents’ Experiences Caring for People With Sickle Cell Disease on the Internal Medicine Wards

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Introduction: Painful vaso-occlusive episodes (VOEs) are responsible for 90% of acute health care visits for patients with sickle cell disease (SCD). Yet, there is little medical education literature on SCD and pain management. While it is known that anti-Black racism leads to poorer outcomes for patients, the medical education literature around in-patient care is lacking.

Methods: To determine the training experiences and gaps in knowledge, skills, and attitudes of internal medicine residents who care for patients with SCD, we conducted a qualitative study using in-depth, one-on-one interviews with medicine residents at the University of Toronto. We developed a semi-structured interview guide to explore experiences caring for patients with SCD, the perception of bias in in-patient care for SCD, and education around SCD and VOEs. Both purposive and snowball sampling were used. Interviews were recorded and transcribed. Concurrent analysis allowed us to look for thematic saturation. Research ethics approval was obtained.

Results: Twelve interviews were completed. Five participants identified as female and 10 described having significant exposure to patients with SCD. Preliminary findings after 5 transcriptions analyzed show: (1) Patients with SCD are treated differently than other in-patients, whether this is operationalized through an unspoken hidden code between providers or through racial biases; (2) For many residents, trust between them and their patient is paramount: patients with SCD have historically distrusted physicians and health care; (3) Residents find SCD pain assessment and management to be challenging; and (4) There is little SCD and pain education during residency and much of pain management is learned from cancer or palliative medicine.

Conclusion: We noted educational deficiencies in the largest SCD center in Canada. Our findings support wider literature that demonstrates an inadequate focus on SCD in medical education. We are currently developing a new curriculum focused on management of VOEs including implicit bias training.
Best Practices for Increasing Diversity in US Graduate Medical Education Training Programs: A Scoping Review

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Introduction: Graduate medical education (GME) programs continue to struggle with recruiting and retaining a diverse workforce, and contemporary ACGME Common Program Requirements expect that training programs will implement “policies and procedures related to recruitment and retention of minorities underrepresented in medicine (URiM) and medical leadership,” without providing guidance on how GME programs should accomplish this. Many initiatives have been developed to address this need, but there is no blueprint for best practices. This scoping review describes these best practices for increasing diversity in US GME training programs.

Methods: Searches of PubMed, Google Scholar, Embase, PsycInfo, ERIC, Cochrane Reviews, Cochrane Trials, CINAHL, Scopus, and PROSPERO electronic databases identified all relevant English language studies reporting interventions associated with increased racial/ethnic diversity in GME training programs published through January 2022. Two reviewers extracted and independently validated the data, with a third reviewer to adjudicate any discrepancies.

Results: Twenty-seven papers met criteria for inclusion, 25 of which described residency programs, and 2 described fellowship programs. Holistic candidate review was an intervention utilized by the most programs (48%), followed by strategic selection committee reform and reduced emphasis on United States Medical Licensing Examination Step 1 scores (44%). These were likely to be highly impactful approaches requiring some resource investment, but generally accessible to most programs. A third of programs reported explicit institutional diversity/inclusion messaging as part of their intervention. We identified highly impactful interventions requiring greater resource investment including funded clerkships and mentorship programs which may not be accessible to some programs. Most programs reporting increases in URiM trainees used combined interventions. Most studies reported overall changes in match rates instead of proportion changes in URiM trainees at each recruiting stage.

Conclusion: We summarized interventions at various GME recruiting stages; ongoing efforts are needed to sustain recruiting gains, assess long-term outcomes, and identify the most effective recruiting and retention strategies.
What Is the Experience of Emergency Medicine Residents and Staff Regarding Gender Bias in the Emergency Department?

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Introduction: Women physicians face discrimination, harassment, and disrespect from patients, allied health, and their colleagues. In the current medical culture, gender bias is frequent and tolerated by women during training and medical practice. Even though 42% of Canadian physicians are female, gender bias continues to plague female physicians’ experiences in medicine. Gender bias disproportionately affects female physicians when it comes to career advancement, compensation, and job satisfaction. The aim of this study is to learn about emergency medicine residents’ and attendings’ experiences of gender bias in the emergency department.

Methods: We used a phenomenological approach. Our study was guided by the feminist theory framework. Purposeful sampling was used to recruit 11 participants. Semi-structured telephone interviews were conducted. Interviews were transcribed verbatim and analyzed using thematic analysis.

Results: Thematic analysis revealed the following themes: (1) Gender bias is most often experienced by women, and the most common example is in regard to role misidentification; (2) Everyone demonstrates gender bias, including patients, nurses, residents, and staff; (3) People perceive that gender bias toward females decreases over time, but it is unclear whether this is actually a result of the appearance of age, seniority, familiarity with your team, or the ability to advocate for oneself and develop skills to deal with bias; (4) Gender bias creates challenges for female residents and staff on a daily basis (the opposite is true for males); and (5) Physicians recognize that gender bias is an issue and have identified and/or implemented potential strategies to limit gender bias.

Conclusion: These themes highlight the fact that gender bias is prevalent and recognized in trainees and staff physicians in the emergency department. This data may be utilized to inform support and strategies to optimize the experiences of residents and faculty in the emergency department.
The Resident Interest Group in Social Advocacy: Creating a Collaborative Space for Advocacy in the University of Toronto Core Internal Medicine Program

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Introduction: The Resident Interest Group in Social Advocacy (RIGSA) in Internal Medicine Program at the University of Toronto was co-founded by a resident lead in collaboration with peers and faculty after identifying the need for a collaborative space for residents with interests in equity, diversity, and inclusion (EDI).

Methods: The team of 25 residents identified 3 themes related to their educational experiences: (1) the tendency to discuss anti-oppression in discrete moments of time rather than as a lens or framework; (2) the gap between knowing the theory of anti-oppression and having the skillset to implement it into practice; and (3) challenges centering the patient voice. Academic half-days (AHDs) and guidelines were developed to address these identified themes. The workshop AHDs use an intersectional approach with peer facilitators who have lived experiences of identified themes.

Results: AHDs providing learning spaces (1) to safely practice skills for disruption, while acknowledging power dynamics faced by medical learners in educational spaces and (2) to focus on lived experiences of patients, were developed and have been delivered twice a year in Core Internal Medicine Programs across the postgraduate years. The AHDs on “Practical Skills for Allyship” and a Black Health Day including patient partners with sickle cell disease received exceptionally positive feedback. “Guidelines for Inclusivity,” outlining strategies for teachers to incorporate EDI principles into formal and informal teaching sessions, were also developed. These guidelines have been disseminated locally and nationally.

Conclusion: These educational innovations have empowered residents to employ a pragmatic approach to social advocacy while centering the patient perspective.
Creating “Guidelines for Inclusivity”: A Resident-Driven Project to Inform Teaching Sessions at the University of Toronto

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Introduction: The Resident Interest Group in Social Advocacy (RIGSA) at the University of Toronto (UofT) is a team of internal medicine residents implementing scholarly projects related to social advocacy. With recent progress in understanding and implementing equity, diversity, and inclusion (EDI) in medical education, many faculty members are inexperienced with incorporating these principles into teaching. The concept of “Guidelines for Inclusivity” provides a framework for incorporating EDI principles in all teaching activities.

Methods: The RIGSA team held multiple discussions with residents and faculty members to explore areas where additional EDI training may be beneficial. Key “principles for use” were created to highlight the goals and intent of the project. Guideline drafts were reviewed by multiple faculty stakeholders and leaders experienced in EDI principles and medical education.

Results: The guidelines prompted questions to facilitate reflection (e.g., “What are key health inequities in your specialty?”), principles for inclusive language, suggestions for formatting clinical cases, and collated resources in various subspecialties highlighting impactful research incorporating EDI frameworks. The guidelines were published in March 2022 and have been disseminated across the UofT Temerty Faculty of Medicine and Canadian internal medicine residency programs.

Conclusion: Understanding and applying EDI principles is an essential competency to contemporary medical practice. The RIGSA team suggests that anti-oppression and EDI frameworks should inform all teaching activities. The “Guidelines for Inclusivity” introduce key principles for clinical educators in a concise format. We are now in the process of identifying ways to incorporate feedback from teachers into future iterations of the guidelines.
“Disadvantaged from the Start”: An Intersectional Exploration of Experiences of Inclusion and Exclusion in Residency Training Programs

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Introduction: Although postgraduate medical education programs across North America have committed increasing resources to equity, diversity, and inclusion (EDI) issues, trainees continue to experience discrimination and harassment. Excavating the mechanisms for how discrimination is perpetuated is critical to meaningfully addressing these EDI issues and aligning institutional priorities, learner experiences, and patient care. We undertook an intersectional qualitative thematic analysis exploring resident experiences of inclusion, exclusion, and discrimination in paediatrics, neurosurgery, and plastic surgery postgraduate residency training programs.

Methods: Participants were recruited using purposive and snowball sampling. We conducted semi-structured interviews that explored broadly participant identities, their perceived relevance to training, and experiences of inclusion, exclusion, and discrimination. Interviews were conducted until saturation was reached. Initial coding was completed by 2 research team members with access to all transcripts. An anonymized coding summary was then shared with the research team for a second layer of deductive analysis. We used intersectionality theory as an analytic lens to identify how different social and professional identities related to the awareness, experiences, and mechanisms of discrimination.

Results: Twelve participants were interviewed. Exclusion experiences were related to degree of discordance between the participant’s identities and the dominant identities in their program. For example, women of color from non-dominant religious backgrounds reported exclusion experiences along all 3 identity axes. Participants identified that their exclusion experiences stemmed from implicit assumptions and biases grounded in a patriarchal, Eurocentric medical culture, which manifested as unintentional microaggressions rather than explicitly exclusionary discourse and practice. Resident experiences were misaligned with programs’ formal EDI commitments. Many participants reported that their marginalized identities advantaged them in caring for patients with similar identities.

Conclusion: Aversive racism, through social dominance, implicit bias, and in-group favoritism, mechanistically accounts for ongoing trainee discrimination experiences. Addressing these mechanisms is important for improving equity and inclusion in learning environments.
A Peer Mentoring Program for Educators: Harnessing the Step-Back Consultation Method for Faculty Development

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Introduction: Mentorship and community have positive impacts on faculty development and career satisfaction. Though traditional mentoring involves a mentor and protégé, peer mentoring may have advantages, especially among individuals with shared interests. While educators across disciplines share challenges, there are few opportunities for interdisciplinary crosstalk. In our educational context, we recognized that faculty educators often felt isolated within departmental and other administrative siloes. Our objective was to build an interdisciplinary faculty development program built around peer mentorship to foster career development, collaboration, and a community of clinician-educators.

Methods: We adapted the Step-Back Consultation method of problem-solving professional challenges. Peer educators meet in groups of 4 with a facilitator, initially focused on career goals and challenges. Small-group sessions of 4 and 12 months allow updates and additional consultation. A large-group session at 8 months focuses on educational scholarship. We performed thematic analysis of factors leading to applying. Program evaluation includes surveys of participants, with plans for monitoring future academic outputs and collaborations.

Results: Sixteen educators, chosen from 28 applicants in 11 clinical departments, joined the pilot cohort. Motivators to participate included: optimizing time, new roles, joy in teaching, personal growth, scholarly skills, ameliorating burnout, improving teaching skills. After 2 sessions, participants had achieved on average 68% of short-term goals set in the first session. Nine of 9 respondents rated the program “excellent” or “very good,” and 8 of 9 reported that the sessions had done very/extremely well at building community among educators. Participants expressed interest in additional sessions on educational research, networking, and clinical teaching skills.

Conclusion: Early results support the effectiveness of the step-back peer mentoring process for educational faculty development across disciplines. Future measures of academic productivity and sustained community-building will be instructive. We plan to expand this program within the medical school’s program in faculty development in the coming year.
Introduction: Simulation education continues to be a key method for interprofessional collaborative learning; however, it is not without pitfalls. One key consideration is that simulation can perpetuate structures of power and systemic discrimination if not intentionally planned to advance justice. We created an advanced simulation education program that taught faculty how to implement simulation pedagogies in ways that advanced and addressed social justice themes.

Methods: We combined curated didactic teaching on hidden curriculum, microaggressions, and other social justice related topics for scenario design as well as created simulation scenarios that incorporated actual events experienced by learner’s preceptors and patients and ensured the scenarios were as interdisciplinary as possible. Using a pre-post test methodology (n=42) we established a baseline for comfort and confidence for simulation education learning objectives and then again after the program was held.

Results: Statistical comparisons revealed that learner comfort, confidence, and intent to integrate EDIIA (equity, diversity, inclusion, indigeneity, and accessibility) considerations in simulation education increased. Additionally, learners offered narrative exposition that they tremendously enjoyed the program and the process of acting out the scenarios as catalyzing means for having important justice-advancing conversations.

Conclusion: It is clear that programs like this are foundational steps in creating a justice orientation in health professions education. We offer our experiences as a catalyst for other programs to begin, sustain, and redouble their efforts for advancing justice for their health professions education offerings.
Assessment of Burnout in Obstetrics and Gynecology Residents: A Longitudinal Cohort Study

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Introduction: Resident burnout has been increasing in prevalence with rates reported as high as 75%. Unfortunately, limited insight exists into the contributing factors and manifestations of burnout in obstetrics and gynecology residents. To date, there are no longitudinal studies which evaluate burnout in a Canadian context. As a result, the goal of this study was to characterize the extent, impact, and evolution of burnout.

Methods: To assess burnout, we used the Maslach Burnout Inventory questionnaire, which categorizes burnout into the domains of depersonalization (DP), personal accomplishment (PA), and emotional exhaustion (EE). As part of our study, we recruited residents from McMaster University from June 2020 to October 2022. Additionally, demographic factors, current stressors, and self-identified factors contributing to burnout were collected. Over 3 cycles, 81 unique responses were obtained with a 60% retention rate, and the data was analyzed using descriptive and inferential statistics.

Results: Our results demonstrated self-reported burnout scores increased from 8% to 21%. This corresponded to increased domain-specific average burnout scores with EE increasing from 25.5 to 34.6 (35%), DP increasing from 9.9 to 13.9 (40%), and PA increasing from 36.3 to 38.9 (9.6%), representing a transition from moderate to high across all domains. Contributing factors were both personal and professional with call burden, complexity of the specialty, work-life balance, and job prospects being the highest reported. Contrastingly, protective factors included boundary setting, resilience, and a positive outlook. Interestingly, career regret remained consistent at 8%.

Conclusion: As a result of our study, we developed an understanding of program-specific factors contributing to resident burnout through narrative and quantitative data. In doing so, we provided residents with unique insights allowing for the development of personalized interventions. Additionally, this analysis provided our program with quantifiable insights with the goal of implementing systemic changes in the coming years.
Integration of Planetary Health in Undergraduate and Postgraduate Medical Education: A Scoping Review

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\textbf{Introduction:} Climate change is a public health emergency. Health care providers need to adapt care to this reality and contribute to mitigating our carbon footprint. For many residents, education in planetary health does not exist. To understand how to incorporate planetary health into residencies, we performed a scoping review to explore the inclusion of planetary health in medical education.

\textbf{Methods:} A search strategy developed with a health sciences librarian was run on 6 databases from inception to February 2022: Medline, Embase, APA PsycINFO, CINAHL, Global Health and Scopus. The framework outlined by Arksey and O’Malley (2005) was implemented to select studies that described the implementation of planetary health within undergraduate and postgraduate medical education. Commentaries were included if they outlined what a potential curriculum would entail. Extracted data was grouped thematically based on competencies described, key considerations for curricular development, and anticipated barriers.

\textbf{Results:} After screening a total of 2564 studies, 43 studies were included, of which 11 were observational studies, 21 were commentaries, 3 were reviews, and 8 were qualitative studies. Twenty-seven studies involved medical education, while 14 discussed multidisciplinary education including veterinary medicine and nursing education. Two studies discussed planetary health education for staff physicians. Reported competencies were varied but included the dissemination of climate health literacy and its application to clinical practice. Key considerations for curricular development included longitudinal implementation, interprofessional collaboration, and experiential learning through case-based discussions or quality improvement projects. Barriers to implementation included time constraints and the lack of knowledgeable educators.

\textbf{Conclusion:} Our scoping review highlights themes to help faculties and accreditation bodies implement and advocate for planetary health within resident education. We recommend all residency programs incorporate sustainability (i.e., triple bottom line) into quality improvement projects. Opportunities for longitudinal integration into residency curriculums should also be identified.
Who Will Be Our Future Educators? Family Medicine Resident Practice Intentions

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Introduction: Continuity of care is central to the Triple C competency-based curriculum. The cornerstone of family medicine resident educational experiences take place in clinic-based longitudinal care settings. The Department of Family Medicine at the University of Alberta has been experiencing increasing difficulty recruiting preceptors in longitudinal care settings. The reasons for this are unclear. It has been suggested that newer generations of family physicians are more inclined to narrow their scope of practice and/or work in settings outside of clinic-based longitudinal care. In this study, we examine the future practice intentions of family medicine residents who traditionally become future preceptors.

Methods: An online survey was completed by University of Alberta family medicine residents enrolled in the residency program as of December 2022 (sample size = 80). Outcome measures included self-reported data on family medicine residents’ intentions and perceptions around pursuing a career involving clinic-based longitudinal care.

Results: Eighty (52.2%) residents responded to the survey, 67.6% were female. When asked to choose the top 3 areas of medicine that they were primarily interested in practicing, clinic-based longitudinal care was the most common (66.3%), followed by acute care/hospitalist (48.8%) and specialty/focused clinics (30%). 72.6% reported that prior to entering residency they had anticipated that they “definitely” or “probably” would take on a patient panel; however, when asked about their intentions in the next 5 years, that number decreased to 38.8%.

Conclusion: This study provides a real-time snapshot of the intentions and the perceptions of the incoming cohort of family physicians in Alberta, Canada. Less than 40% of current residents intend to take on a patient panel in the next 5 years. This may aggravate current shortages of preceptors in clinic-based longitudinal medicine and the sustainability of training family medicine residents within the Triple C curriculum.
Medical Humanities “In the Weeds”: How an Integrated Arts and Humanities Curriculum Shapes the Experiences of Internal Medicine Interns

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Introduction: Many medical training programs now include arts and humanities curricula to improve learner well-being. However, studies of these programs rarely assess learning outcomes, which threatens continued investment in these curricula. To promote future curricular development, we investigated learning outcomes over the course of 1 year to understand how and why internal medicine interns applied lessons from an integrated arts and humanities-based curriculum throughout their postgraduate year 1 (PGY-1).

Methods: Fourteen internal medicine PGY-1s who participated in a yearlong arts and humanities curriculum in 2021-2022 volunteered for this study (13 completed the study). At 5 separate time points throughout the study, interns recorded audio diary entries in response to the prompt “What did the medical humanities activity of this block have to do with entering the field of internal medicine?” We conducted hourlong semi-structured interviews with each participating intern in early winter 2021 and late spring 2022. Transcripts of 54 audio diary entries and 27 semi-structured interviews were coded iteratively and in a constant comparative fashion, informed by prior conceptual frameworks.

Results: Based on our data, an arts and humanities curriculum shaped residents’ experiences with respect to how interns thought and their peer relationships throughout the year. Interns noted increased attention to both concrete ways of thinking (“seeing multiple perspectives,” “slowing down” for analytic thinking) and abstract ways of thinking (“remembering what is important to them,” “embracing creativity,” “seeing the patient as a full person”), with the latter more highly valued by 10 of 13 intern respondents. Interns also appreciated sessions as opportunities to find solidarity with peers in relationships increasingly recognized as vital throughout the year.

Conclusion: The results demonstrate the value of an arts and humanities curriculum for molding abstract ways of thinking and enhancing well-being through formation of sustaining relationships with peers through artistically mediated discussion of shared experiences during internship.
Learning to Lead: Implementation of a Transition to Senior Resident Workshop

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**Introduction:** The transition from junior to senior resident roles can be challenging with increased responsibility and expectations. Senior residents are expected to demonstrate advanced competencies of many of the CanMEDS Roles, such as Collaborator, Leader, Scholar-Teacher, Communicator, and (specialty-specific) Medical Expert. We aim to describe a model to help residents prepare for undertaking senior resident responsibilities, as it relates to leadership, collaboration, communication, and teacher/scholar competencies.

**Methods:** A synchronous leadership development workshop was developed for postgraduate year 1s from several large postgraduate medical education programs; 12 residents from 3 programs attended the initial iteration. Workshop topics included psychological safety, teaching across the continuum, feedback, and collaboration across programs. Workshop participants completed pre- and post-workshop questionnaires about their preparedness for assuming senior resident roles. Immediately and 6-months post-workshop, feedback about the workshop was obtained. Thematic analysis of qualitative responses and descriptive analysis of quantitative responses occurred.

**Results:** Identified themes from responses in pre- and post-workshop questionnaires included: (1) variability in program-specific orientation to the senior resident role; (2) EDI and psychological safety were newer concepts and difficult to incorporate into day-to-day teaching; and (3) participants demonstrate a superficial understanding of some leadership topics. This format provides an opportunity for residents to learn from and with each other.

**Conclusion:** Focused leadership education for residents as they transition to senior resident roles can provide an opportunity to reinforce key topics, build community across programs and ensure residents are appropriately prepared for their roles in contributing to a safe clinical learning environment. Dedicated attention to leadership topics for senior residents may be important to support a safe clinical learning and working environment.
Exploring Developmental Readiness and Organizational Factors on Leader Development, Practice, and Effectiveness in Postgraduate Medical Education

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**Introduction:** There are multiple pathways and curricular approaches to leader and leadership development among learners and physicians. This project explored individual and organizational factors shaping leader developmental readiness (LDR), and the relationship between leader readiness, efficacy, practice, and effectiveness.

**Methods:** An online survey (98 residents) measured 2 constructs of LDR (ability and motivation) and organizational supports for leader development, personal leadership efficacy, and leadership effectiveness. Ability included self-awareness (SA) and meta-cognitive ability (MCA), and motivation included learning goal orientation (LGO), developmental efficacy (DE), and motivation to lead (MTL). Separate one-way ANOVAs and correlations were run to explore the relationships. Additionally, interviews (12 residents) explored the impact of organizational factors contributing to leader development and success. Thematic analysis (using NVIVO) was carried out to explore emergent themes.

**Results:** No significant differences were observed (ps>.05) between groups for LDR constructs of ability and motivation for gender, postgraduate year, or past leadership training. Significant main effects were observed for, (1) age and ability (SA and MCA) \[F (1,97)=6.19, P=.01\), and (2) perceived organizational support for leadership development, ability, and motivation (ps<.05). In post hoc analysis, time spent in formal leadership roles (residents with > 24 months) and motivation, approached significance (P=.058). High levels of support from other residents and faculty resulted in significantly increased development for motivation, but not ability. Finally, ability and motivation to develop were positively associated with transformational leadership behaviors, leader efficacy, and leader effectiveness (ps<.05). Thematic analysis revealed 3 major areas contributing to leadership development and success, including (1) effective mentorship; (2) formal leadership education and experiences; and (3) support and promotion of resident wellness.

**Conclusion:** Understanding learners’ developmental readiness, impact of individual and organizational factors on this development, and how leader development interacts with learner readiness is informative for leader and leadership development programs for individuals and organizations.
036 This session has been withdrawn.
Working More Than 9-5: Supporting the Return to Work of Medical Parents

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Introduction: The challenges of returning to work as a parent are well recognized, regardless of profession. The Royal College of Physicians in Ireland (RCPI) is a national Irish training body for postgraduate clinical medical education. Acknowledging the demands faced by modern parents, including lack of childcare, recurrent childhood illness, and sleep deprivation, the RCPI Faculty of Paediatrics sought to establish formal, peer-directed supports for the 265 trainees enrolled within its training schemes.

Methods: This pilot project was an iterative process with multiple workstreams. The primary objective was to create a peer-led network to support and promote well-being and enable trainees to participate in meaningful change. A working group of trainees directed the project. Three main approaches were adopted: (1) Webinars reviewing common challenges (e.g., moving a family abroad, infant sleep, balancing breastfeeding with long shifts, and alternative training pathways); (2) Coffee mornings to meet with the working group and other trainees; and (3) Creation of a formal policy to proactively support breastfeeding parents within pediatric hospitals/units.

Results: Three webinar sessions and coffee mornings have been held with highly positive subjective feedback and attendance of over 50 trainees. The webinar has been expanded to trainees throughout all faculties of the RCPI. Individual parents who have requested support returning to work have been linked with senior mentors via the working group. A transitional phase of returning to on-call and out of hours shifts is now being formalized in certain paediatric units with on-site dedicated pumping facilities.

Conclusion: This initiative has far-reaching implications for trainee well-being, providing a clear pathway of support and advocacy within the RCPI. We anticipate that this approach will also aid with retention of dedicated trainees in their chosen specialty, assisting and mentoring them through the challenges of early childhood parenting and a demanding, vocational career.
Providing Education in Safe Settings: A Framework for Postgraduate Programs to Promote Resident Clinical Care Safety and Wellness

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Introduction: There is a lack of formal guidance for postgraduate education to address trainee clinical care safety and risk management. We identified this fundamental need in psychiatry residency and are committed to ensure resident training and learning occurs in safe clinical settings.

Methods: Involving residents in developing our clinical care safety and wellness framework could support reporting of resident assault and safety concerns. We collaborated with residents and created a Resident Safety Sub-Committee (RSS) and a Safety Training Framework at a Canadian psychiatry department. Our goal is to provide residency training with an approach to building resident safety culture.

Results: The RSS developed and disseminated safety guidelines and safety checklists to residents and supervisors at each training site. If a safety incident was reported, the RSS would conduct an incident review and provide suggestions to the site for safety improvements. In 2016-2020, 4 reviews were performed. Recommended safety improvements included having monthly testing/audit of panic/safety alarms for residents; developing a system to flag high-risk inpatients on patient charts; and modifying physical layout of inpatient units to ensure safety. The RSS also conducted site safety assessments regularly. The RSS created a site safety review template with predetermined safety criteria. A training site is deemed to be adherent (green-coded), mostly adherent (yellow-coded), or not adherent (red-coded) to the safety guidelines. In 2016-2020, the RSS conducted 26 site safety assessments, with 17 green, 9 yellow, and none being red. The RSS offered site recommendations, such as extending safety procedures to outpatient and day-hospital service; re-locating weighted furniture to dedicated patient interview rooms; and including wellness resources/offerings available in resident/site orientation.

Conclusion: The RSS and Safety Framework provides a novel approach to address resident safety during training. Involving residents can provide a forum to address barriers to reporting and promote resident well-being.
Learning Environment Evaluations in Postgraduate Medical Education: An Exploration of Individual Factors Impacting Ratings

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**Introduction:** The learning environment (LE) contributes to student academic success and general well-being. This project explored the impact of various individual factors (age, gender, postgraduate year [PGY], racialized identity, experiencing or witnessing intimidation/harassment [I&H], and health status) on resident perceptions of their LE.

**Methods:** In November 2022, medical residents (n=142) completed the Scan of Postgraduate Educational Environmental domains (SPEED) survey (Schonrock-Adema et al, 2015), which explores LE perceptions across 3 domains: (1) Content (e.g., clear learning objectives, relevant content, constructive criticism); (2) Atmosphere (e.g., student involvement, emotional support, affiliation or bonding, support by teachers); and (3) Organization (e.g., order, rule clarity, teacher control, student influence, innovation). One-way ANOVAs were used to explore differences between groups on LE domain ratings.

**Results:** No significant main effects were observed across LE domains for age, gender, or identifying as racialized (ps>.05). There were however significant impacts observed between groups for PGY, I&H, and personal health status (ps<.05). Specifically, post hoc comparisons showed lower LE ratings for residents in later years of training (PGY-4+) when compared to earlier years across all 3 domains. Residents who experienced I&H had lower LE ratings for content and organization domains when compared to those who did not witness or experience I&H; experiencing or witnessing I&H resulted in significantly lower LE atmosphere ratings when compared to residents who did not. Finally, those residents who identified their health as poor/fair showed significantly lower LE ratings across all domains when compared to residents in good or excellent health.

**Conclusion:** These results demonstrate the negative effects of I&H and individual health, as well as year of training on residents’ reporting of their LE. Explicit attention and deliberate improvement efforts to reduce I&H and improve individual health would have immediate benefits to resident learning.
Impact of COVID-19 on Family Medicine Resident Well-Being and Social Networks

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Introduction: The COVID-19 pandemic has led to significant disruptions in medical education globally. While there has been increasing literature surrounding the impact of COVID-19 on the acquisition of clinical skills among residents in training, there is a paucity of data on its effect on resident social networks and well-being. This study aims to provide insight on the ongoing impact of COVID-19 on the well-being and social support networks of family medicine residents over the course of the pandemic.

Methods: A mixed-methods longitudinal analysis was conducted using an existing national survey instrument, the Family Medicine Longitudinal Survey, modified to query COVID-19 impact. Survey items included 5-point Likert-scale questions and open-ended short answer questions. Participants included 238 graduating family medicine residents between 2021 and 2022. Likert-scale responses and multiple-choice questions are reported as summary statistics. Short answer responses underwent thematic analysis. Main outcome measures include resident perception of impact of COVID-19 on well-being and relationships with peers and teachers.

Results: Survey response rate was 81.8% (126 of 154) in 2021 and 74.6% (112 of 150) in 2022. Significant themes for both cohorts included: negative impact on well-being, social isolation, decreased interactions and relationships with peers, and difficulty establishing relationships with teachers. In 2022, 78% of residents reported a negative impact on their personal well-being due to social isolation and 43% reported a loss of interpersonal relationships.

Conclusion: Graduating family medicine residents in the 2021 and 2022 cohorts perceived negative impacts of the pandemic on their well-being as a result of social isolation and decreased relationships with co-residents and teachers. This study provides insight on the ongoing impact of COVID-19 on the experiences of family medicine residents beyond curricular losses. This includes residents’ perspectives on the path forward, such as administrative changes. These results may serve to inform programmatic initiatives to mitigate these impacts.
Deconstructing “Burnout”: A Critical Discourse Analysis of “Burnout” in Postgraduate Medical Education in North America

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Introduction: In 2022, exponential growth in “burnout” research culminated in its adoption into the International Classification of Diseases (ICD)-11. Yet, despite increased efforts to address “burnout,” surveys report “burnout” rates have increased among trainees. While studies have examined what “burnout” is, when is it occurring, and how much “burnout” is occurring, few have asked the “why” questions. In this study, we aimed to address why “burnout” persists, despite efforts to ameliorate it.

Methods: Using a Foucauldian critical discourse analysis, this study aimed to identify discourses that mobilize “burnout” in postgraduate medical education (PGME). The archive from which the discourses were constructed included over 500 academic articles, policy documents, autobiographies, materials from conferences, blogs, vlogs, and Reddit threads, among others, during the period from 1974 to 2018.

Results: Three discourses of “burnout” were identified. Burnout-as-illness sees “burnout” as an illness, suggesting that any individual can “Burn-Out” and offering solutions to individuals only. Burnout-as-occupational-stress is the dominant discourse, is based on ICD’s definition, and mobilizes health system responses to “burnout.” However, it conflates issues of practicing physicians with those of residents. Finally, burnout-as-existentialism sees “burnout” as a process of meaning making, where identity formation is part of “burnout.” This discourse arose mostly outside academic sources. Words present in all 3 discourses were “professionalism” and “disillusionment.” There were few studies that quantified minority or black students, with no studies that examined neurodiverse, disabled, or Indigenous students, nor those from other intersectional groups. Of the studies that quantified “burnout” in women, no sociocultural or sociohistorical reasons were given. Finally, the majority of studies were from the United States.

Conclusion: Efforts to ameliorate “burnout” require critical reimagining. Without understanding how students derive meaning from their lives, “burnout” may persist—because as a profession, medicine does not understand “burnout” in PGME well enough to mitigate its effects.
The Impostor Phenomenon: Longitudinal Trends in Impostor Phenomenon in Residents at the University of Toronto

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**Introduction:** The impostor phenomenon refers to self-doubt in one’s abilities, despite evidence to the contrary. This phenomenon is prevalent in residents and shown to impact physician wellness. There is a knowledge gap in how residents experience impostor phenomenon throughout the academic year. This study captures resident impostor phenomenon scores over 1 year to identify periods of highest risk. We hypothesized rates and severity of impostor phenomenon would be highest during transition between academic years.

**Methods:** Residents within the Department of Medicine at the University of Toronto were recruited using departmental and divisional email lists as approved by the University of Toronto research ethics board (protocol #41967) during the study period of January-December 2022. The severity of impostor phenomenon was measured using the Clance Impostor Phenomenon Scale (CIPS). A CIPS score \( >60 \) reflects severe impostor phenomenon. Baseline characteristics and CIPS scores were collected using REDCap electronic surveys. Participants completed the CIPS every 3 months for 1 year. Mixed model regression was used to test the association between CIPS score and time of year.

**Results:** Ninety-one participants (19\% response rate) with a total of 240 CIPS scores were included in the analysis. Participants were mainly between 25 and 30 years old (72.5\%), general internal medicine residents (49.5\%), and junior residents (50.5\%). The mean CIPS score at the beginning of the academic year was 71.8 (SD=13.2, range 49.0-93.0) and high CIPS scores were observed throughout the academic year with 80.4\% of all CIPS scores >60. CIPS score was not significantly associated with time of year (point estimate: 0.21; 95\% CI -0.02-0.45; \( P=.0812 \)).

**Conclusion:** Residents demonstrate severe and persistent impostor phenomenon throughout the academic year. Programs to address impostor phenomenon should be consistently available throughout the year and not just at transitional times (i.e., the beginning of the academic year).
Psychological Safety in the Clinical Learning Environment: Exploring the Discrepancies Between Faculty Members’ and Trainees’ Experiences and Perspectives in a Pediatric Residency Program in Canada

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Introduction: Psychological safety (PS) is an issue of growing interest and remains an unfamiliar concept in health professions education. Exploring the construct may help medical educators working on the clinical teaching units (CTUs) improving PS in the clinical learning environment (CLE), aligning their behaviors toward PS and improving trainees’ learning experience. The objective of this research project is to explore the discrepancies between residents’ and faculty members’ perspectives and experiences about PS in the CLE of a general pediatric residency program in Canada.

Methods: The project was based on a mixed-methods, sequential design. First, a survey targeting residents and attendings from one pediatric teaching hospital was conducted, utilizing a validated instrument on PS. Then, semi-structured individual interviews were conducted with participants from the same population, selected using purposeful sampling. Questions based on the quantitative survey results were embedded in the interview guide as a point of interface between both components. Thematic analysis was used to explore and organize participants’ perspectives and experiences about PS.

Results: Nineteen residents in pediatrics and 21 pediatricians participated in the survey. No statistically significant differences were found between both groups. Twenty people, 11 residents and 9 pediatricians, participated in the individual interviews. Four themes were identified as areas of potential discrepancies between both groups: (1) Organization, roles and hierarchy; (2) Attending’s leadership on the CTU; (3) Evaluation paradigm; and (4) Culture and climate in the CLE. We described how these themes were related to the perspectives and experiences from both groups, in regard to the main dimensions of PS.

Conclusion: In this project, we described 4 areas where discrepancies can be found between residents’ and attendings’ experiences and perspectives regarding psychological safety in the clinical learning environment: Organization, roles and hierarchy; Attending’s leadership; Evaluation paradigm; and Culture and climate.
044 This session has been withdrawn.

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Introduction: Recent studies report disproportionate representation of the intrinsic CanMEDS roles in the milestones across specialty entrustable professional activities (EPAs). Little is known about how quality improvement and patient safety (QI/PS) have become incorporated into these guiding documents, despite their integration as a cross-cutting competency in CanMEDS. We sought to examine how postgraduate specialties translate QI/PS from CanMEDS into the newly defined standards for Competence by Design.

Methods: We conducted a cross-specialty document analysis to examine the integration of QI/PS throughout a purposive sample of 12 EPA guides. We first applied summative content analysis methods to characterize the extent that QI/PS were integrated into the EPA guides before conducting a focused interpretive analysis to allow for a deeper examination of the documents.

Results: We identified several patterns in how, where, and when QI/PS is incorporated throughout the specialty EPA guides. QI/PS content was often referenced in the milestones and positioned in relation to clinical activities and processes (e.g., handover). References relating to PS were more common than QI. Specialties varied in how PS was positioned as a passive, reactive, or proactive component of clinical practice. Fewer specialties had discrete EPAs where QI or PS was a primary focus. References to QI were commonly limited to the milestones and concentrated toward the Transition to Practice stage. Applications of QI were often limited to EPAs relating to the scholarly project, where QI was positioned as an acceptable activity.

Conclusion: Our cross-specialty analysis of EPA guides has identified nuances in how QI/PS are conceptualized, contextualized, and positioned as part of Competence by Design. These findings offer early insight into the extent QI/PS may be emphasized across postgraduate specialty training and may be useful to inform ongoing iterations of the EPA guides.
Residents, Responsibility, and Error: How Residents Learn to Navigate the Intersection

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Introduction: As a competency of Canadian postgraduate education, residents are expected to “demonstrate the ability to promptly disclose medical errors, take responsibility for and steps to remedy mistakes.” How residents, vulnerable through their inexperience and hierarchical team position, navigate the highly emotional experience of medical error is underexplored. The purpose of this study was to better understand how residents experience medical error and learn to become responsible for patients who have experienced a medical error.

Methods: Using a constructivist grounded theory methodology, 19 residents, from a breadth of specialties and years of training at Schulich School of Medicine in London, Ontario, Canada, were recruited to participate in semi-structured interviews between July 2021 and May 2022. The interviews probed their experience caring for patients who had experienced a medical error. Data collection and analysis were conducted iteratively with themes identified through constant comparative analysis.

Results: Participants described their process of developing a personal understanding of error that evolved throughout residency. They learned to manage error primarily through role modeling, both positive and negative. The demands of residency, including heavy workload, fatigue, and constantly changing environments, were felt to heighten their risk of making errors but also challenge their ability to find support through an emotionally trying time.

Conclusion: Teaching residents to avoid making errors is important, but it cannot replace the critical task of supporting them both clinically and emotionally when errors inevitably occur. A better understanding of how residents learn to manage and become responsible for medical errors exposes the need for formal training as well as timely, explicit discussion and emotional support both during and after the event. Improving residents’ early career experience navigating error can shape future behavior as role models and teachers for those that follow.
“Nothing Comes To Mind…”: Challenges With Identifying One’s Own Role in Preventable Poor Outcomes and Poor Behavior and the Impact on Quality Improvement Initiatives

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Introduction: Preventable poor outcomes occur across all health care settings and form the basis of many quality improvement (QI) and patient safety initiatives. They have a devastating impact on patients and families and entail significant financial costs to health care systems. While QI initiatives often focus on systems issues, health care professionals’ attitudes regarding the role of interprofessional communication, conflict, and team psychological safety remain largely unexplored with respect to their impact on preventable poor outcomes. This study sought to explore the role that these social factors play in preventable poor outcomes in obstetrical care teams.

Methods: In this intervention-primed, constructivist grounded theory study, members across all 5 professions providing intrapartum care at one academic center attended an interdisciplinary workshop on improving their fetal health surveillance interpretation, response, communication, and teamwork skills. Eighteen participants (2 obstetrics, 2 residents, 4 family medicine, 4 nurses, 6 midwives) then completed semi-structured interviews that were audio-recorded and transcribed verbatim.

Results: Participants described errors other team members had made with ease, as well as incidences where they were the recipients of poor treatment from colleagues but were rarely willing to recall or acknowledge their own role in poor outcomes or poor behaviors within the team setting. Poor behavior and poor outcomes were most often noted in members outside of the participant’s own professional group, while strong intraprofessional psychological safety was emphasized by participants.

Conclusion: In this obstetrical team setting, individuals struggled to see their role in poor outcomes. QI initiatives aimed at reducing poor perinatal outcomes caused by suboptimal team performance may be of limited efficacy if individual team members struggle to admit or acknowledge their own role in these poor outcomes, as well as the role that their own profession may play. It may be beneficial to develop quality improvement or professional development activities that address this cognitive dissonance.
Development and Evaluation of the Quality Referral and Consultation Education Curriculum at the University of Saskatchewan

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Introduction: There is a need for better communication and “handover” when patients transition between generalist and specialist care. The Quality Referral and Consult Education (QRCE) program was developed at the University of Saskatchewan to facilitate effective communication and collaboration during referrals and consults, to enhance safe patient care. This study reports on curriculum development and evaluations to determine its effectiveness.

Methods: The curriculum was developed using Kern’s 6-step approach. A multi-phased evaluation plan based on Kirkpatrick’s 4 levels is being performed. This study reports level 1 and level 2 findings. Descriptive statistics were used for reporting quantitative data.

Results: The QRCE curriculum, developed through iterative collaborations between the postgraduate medical education office, the Saskatchewan Ministry of Health, and the program directors, consists of an introductory session at the Boot Camp for incoming residents, 2 online modules (“Effective Consultation in an Acute Care Setting” and “How to Make an Effective Written Consultation”), and an interdisciplinary workshop co-facilitated by senior residents from family medicine and Royal College programs. Residents were highly satisfied (M=4.13/5.00) with all curricular components (level 1-reaction), reported a higher awareness of available resources (M=3.97/5.00), an increased knowledge level of how to complete a quality referral/consult (M=4.04/5.00), and felt better prepared for future referrals/consults (M=3.99/5.00) (level 2-learning). The modules have been modified based upon evaluation findings.

Conclusion: Ongoing work on levels 3 and 4 evaluations will inform curricular changes and help determine the impact. Future directions include adapting the curriculum for other health care professionals. These activities will help to ensure success of the curriculum and further help to standardize and improve the referral/consult process across various health care professionals.
Quality of Narrative Feedback for Entrustable Professional Activities Assessed Over the First 5 Years of CBME Implementation in the Surgical Foundations Curriculum at Queen’s University

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Introduction: Competency-based medical education (CBME) requires ongoing formative assessments and feedback on learners’ performance. We assessed the evolution and quality of narrative feedback provided to residents in the Surgical Foundations curriculum over a 5-year period of CBME.

Methods: We performed a retrospective cross-sectional study of assessments of entrustable professional activities (EPAs) in the Surgical Foundations curriculum at Queen’s University from 2017 to 2022. We collected variables pertaining to the assessor, resident, and assessment. Two raters independently evaluated the quality of narrative feedback using the Quality of Assessment of Learning (QuAL) Score (0-5).

Results: A total of 3,900 assessments were completed by 2108 (54.1%) attendings, 1570 (40.3%) residents/fellows, 130 (3.3%) allied health care, 42 (1.1%) medical students, and 15 (0.4%) unidentified. Most assessments were triggered by residents (3248 of 3850, 84.4%) with 509 of 3850 (13.2%) triggered by programs and only 93 of 3850 (2.4%) triggered by the assessor. 2229 out of 3900 (57%) assessments had narrative feedback documented with a mean±SD QuAL score of 2.16±1.49. Of these 2229 assessments, 1614 (72.4%) provided evidence about the resident’s performance, 951 (42.7%) provided suggestions for improvement, and 499 of 2229 (22.4%) connected suggestions to the evidence. The narrative feedback quality improved over 5 years from 1.89±1.52 in 2017 to 2.25±1.49 in 2022 (R=0.003; P<.05). The quality of narrative feedback provided by attendings was significantly lower (2.02±1.47) than those provided by trainees (2.32±1.51) and allied health care (2.42±1.29) (P<.001). The quality of narrative feedback was higher when the resident was not entrusted (2.35±1.66 vs. 2.13±1.45, P<.05), when they were assessed in an acute care (2.15±1.53) or procedural setting (2.23±1.43), and if they were being assessed on clinical management (2.52±1.70) and discharge planning decisions (2.23±1.19).

Conclusion: The frequency and quality of narrative feedback on EPA assessments in Surgical Foundations curriculum was fair. These findings can facilitate faculty development.
Harassment in Surgery: Still a Long Way to Go

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Introduction: Harassment in surgery is pervasive. Previous literature has consistently reported greater harassment for women surgeons and surgical trainees. In Canada, the intersection between gender, career stage, specialty, and experiences of harassment is less understood. The objective of our study was to survey Canadian surgeons and surgical trainees to gain a greater understanding of experiences of harassment across genders, career stages, and multiple specialties.

Methods: A cross-sectional, online survey was distributed to Canadian residents, fellows, and practicing surgeons in general surgery, plastic surgery, and neurosurgery through their national society email lists, and social media posts. There were 202 survey respondents (129 staff, 60 residents, 11 fellows, 2 retirees). Chi-square tests were employed to assess differences in incidence, type, and perpetration of harassment experiences between categorical groups. The odds of experiencing harassment were calculated using logistic regression analysis.

Results: Women were 3.5 times more likely to report being harassed compared to men (95% CI 1.82-6.78, \( P < .001 \)). Women were more likely to be harassed by colleagues (\( P = .02 \)) and patients/families (\( P < .001 \)) compared to men. Residents were 2 times more likely to report being harassed compared to fellows/staff (95% CI 1.01-3.97, \( P = .04 \)). There were no significant differences in self-reported harassment between the 3 specialties. There was no significant difference between current residents’ reported incidences of harassment (62.5%) and fellow/staff recollections of their experiences of harassment during residency (59.2%).

Conclusion: Despite successful efforts to increase the recruitment of women in surgery, the incidence of gender-based harassment remains high. Further, present harassment prevalence remains largely unchanged from staff recollections from their residency. Despite the limitations of possible recall and non-response bias, our findings highlight the continuing need to implement systemic changes to improve surgical culture to continue to attract the best and brightest to the field.
La Disparité Entre les Résidents Chirurgicaux et les Chirurgiens Enseignants Québécois dans la Perception de la Supervision

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Quelles sont les différences entre les résidents chirurgicaux et les chirurgiens dans la perception de l’enseignement ? Les résidents en chirurgie passent la majorité de leur formation dans une salle opératoire afin d’acquérir les connaissances et les habiletés techniques nécessaires pour devenir autonome. Le rôle du chirurgien comme pédagogue prend une grande importance dans la formation chirurgicale. Par ailleurs, d’importantes implications pédagogiques peuvent résulter d’une incongruence dans la perception de l’enseignement entre le superviseur et le supervisé. Ainsi, cette étude vise à évaluer les divergences de perception entre les chirurgiens et leurs étudiants. Pour ce faire, une étude descriptive quantitative a été effectuée grâce à questionnaire basé sur une échelle de Likert auprès des résidents et chirurgiens des programmes d’orthopédie, chirurgie générale et chirurgie plastique des différents centres de la province de Québec. Ce questionnaire se base sur le modèle de compagnonnage cognitif et les niveaux de supervision chirurgical (environnement, pré-opératoire, opératoire, post-opératoire). 34 résidents et 59 chirurgiens ont complété le questionnaire. Les deux groupes sont comparés à l’aide d’un test de Mann-Whitney. Une différence significative est rapportée au niveau pré-opératoire ($P=.011$, IC [-3.41, -0.59]). De plus, des différences significatives sont observées au niveau de l’articulation et la réflexion $P=.018$ (IC [-5.81, -0.57]) et $P=.009$ (IC [-0.95, -0.14]), respectivement quant aux dimensions du compagnonnage cognitif. Les résultats obtenus démontrent une atteinte en ce qui a trait à la préparation du résident avant de mettre les pieds dans une salle d’opération. Bien qu’ils s’agissent de résultats représentant une perception globale, ceux-ci démontrent une surestimation des chirurgiens dans leur perception auto-évaluative de la supervision accordée. Une population avec une taille d’échantillon plus importante permettrait de subdiviser le groupe selon les années de résidences et évaluer si des différences se retrouvent selon l’étape de la formation.
In Search of a Definition of “Trust” by Teachers and Trainees in Postgraduate Surgical Education: A Study From India

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Introduction: Trust is an important aspect of the teacher-trainee relationship in postgraduate surgical education. Teachers need to trust trainees to carry out patient care and trainees need to trust teachers for their learning. In this study we explored the way teachers and trainees define trust and what determines their decision to trust the other.

Methods: The study was done using an interpretative phenomenological analysis approach. Semi-structured interviews of 45 to 60 minutes duration were conducted with 15 teachers and 12 residents from general surgery. The interview guide was developed after a thorough review of the literature on trust and piloted before implementation. The transcribed interviews were coded using interpretation-focused coding strategy, and the codes were then transformed into categories and themes.

Results: The duration of experience of the teachers ranged from 1.5 to more than 25 years. Trainees had completed one and half years of the course. Most teachers defined trust as a belief in the trainees’ ability and their integrity. An expectation, a reliance on, and having confidence in were some other terms listed. Trainees also defined it as a belief in the teacher’s intent to do good to them and patients. Teachers based their decision to trust trainees on their attitude to work, work efficiency, readiness to carry out instructions, and professional behavior. Trainees looked for a caring attitude toward them, professional competence, including surgical skills and decision making, and approachability.

Conclusion: Both teachers and trainees most often defined trust as a belief in the other. While teachers looked for ability and integrity in the trainee when deciding to trust them, trainees mentioned teachers’ professional competence and their benevolence toward them as the most important determinants of their trust.
A Team-Based Simulation Model for Training Communication Skills in Cardiac Surgery Residents

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**Introduction:** Cardiac surgery is highly dependent on the successful interaction between surgeon, anesthesia, and perfusion to ensure a successful patient outcome. Despite this recognition, few team-based training programs currently exist. We demonstrate a simulation model to train communication skills among cardiac surgery team members.

**Methods:** Nine groups consisting of a surgical trainee, cardiac anesthesiologist, perfusionist, scrub nurse, and surgical assistant underwent a high-fidelity porcine model cardiopulmonary bypass simulation. Each scenario included a trigger point representing a cardiopulmonary bypass catastrophe. Simulation sessions were video and audio recorded. Videos were transcribed and analyzed for 6 communication patterns: direction, status, alert, permission, explanation, and goal sharing. Communication was categorized into 4 types: open loop, call-back, closed loop, series, and characterized as substantive, insubstantive, directed, and indirected. T-test was used to compare pre- and post-trigger for communication patterns; a P value <.05 was considered statistically significant.

**Results:** A total of 1083 verbal sequences were transcribed, grouped into 411 verbal exchanges of 2 or more subteams. Status was the most frequent communication pattern overall (45.1%, n=380), followed by direction (27.6%, n=233). Only the surgical trainee, anesthesiologist, and perfusionist used all forms of communication. There was no statistically significant difference between communication pattern pre- and post-trigger except for fewer directions being given post-trigger by the surgical trainee (P=.009). The most common communication type was call-back (49.7%, n=245). Communications were substantive (74.6%, n=306), but were indirect (82.0%, n=406).

**Conclusion:** Our results demonstrate that as task complexity increased post-trigger, the surgical trainee provided fewer direction to the other surgical team members. Our study also identified that the team is at risk for communication breakdown by not using closed-loop communication and directed communication. Identifying knowledge gaps (lack of surgical direction) and communication flaws in a safe, simulated environment can help prepare trainees for the operating room.
Assessing Ophthalmologic Emergencies: An Evaluation of an Online Ophthalmology Curriculum for Trainees in the Emergency Department

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Introduction: Emergency medicine and family medicine residents commonly deal with eye emergencies, which requires comfort and competence with various ophthalmic presentations and slit lamp functionality. The purpose of this educational study was to assess trainee comfort with ophthalmic clinical presentations, and to evaluate a novel ophthalmology online curriculum designed for emergency medicine residents and family medicine residents working in the emergency department. The module includes 2 parts: a narrated presentation that reviews photographs of clinically important ocular presentations from a curated image database, and a slit lamp instructional video demonstrating clinical anterior segment examination techniques.

Methods: The multi-part module and 2 accompanying surveys were presented to residents in emergency medicine and family medicine at Queen’s University, Kingston, Ontario. Respondents were asked to rate their confidence or comfort level with a variety of ophthalmic presentations and slit lamp use and respond to knowledge-based questions before and after completion of the online module.

Results: Sixty-two trainees completed the pre-module survey, and 49 completed the post-module survey. In terms of ophthalmology training, 28 of the 62 respondents (45%) reported completing an ophthalmology clinical rotation during their medical school training; only 2 of 62 (3%) had completed an ophthalmology clinical rotation in their residency. Respondents consistently rated a higher level of comfort with ophthalmic presentations after completing the module; the largest percentage change related to diagnosis of an open globe (37% pre-module, 92% post-module). The following skills also improved after completion of the module: respondent comfort level with slit lamp use, confidence in identification of patients requiring urgent ophthalmic care, and comfort with the key elements of an ophthalmic history.

Conclusion: Primary care trainees benefitted from a targeted ophthalmology online module by increasing their comfort and confidence with ophthalmic presentations and slit lamp use.
How Best to Teach Virtual Care: A Needs Assessment

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Introduction: Virtual care delivery has increased significantly over the past few years. Research has focused on the efficacy of virtual care, patient perspectives, and health care provider experiences. There is a paucity of research examining how best to prepare medical learners for delivering virtual care. Therefore, this needs assessment was conducted to identify strategies and recommendations for teaching medical learners about virtual care delivery.

Methods: For these qualitative needs assessment, 15 physicians across a variety of subspecialties were recruited to participate in semi-structured interviews. These interviews lasted about 30 minutes and focused on identifying strategies they used for teaching residents and medical students how to conduct care virtually and documenting needs for developing a resource focused on teaching faculty how to teach their medical learners about virtual care. The interviews were audio recorded and transcribed verbatim. All completed transcripts were uploaded into NVivo software for coding and analyzed thematically.

Results: A total of 5 themes were identified: (1) Best practices for virtual care encounters; (2) Managing the patient and provider relationship; (3) Overcoming challenges with solutions; (4) Teaching practices; and (5) Assessment practices. Faculty emphasized the need to clearly outline measures taken to ensure privacy and develop a rapport with the patient, including starting with introductions. Challenges related to space, technology, time, structure, scheduling, triaging for learner level, and triaging for appropriate care. Recommendations for teaching practices included suggestions for setting up the learning environment, coaching, modeling, and observing/listening to the learners. Lastly, the faculty shared ways to assess learners, including modifying entrustable professional activities to align with virtual encounters.

Conclusion: These findings will inform the development of a module focused on how best to teach medical learners to conduct virtual care. The module will be designed for faculty but may also be applicable to residents, medical students, nurses, and other health care professionals.
Are Patients Seen by a Supervised Learner in the Emergency Department More Likely to Have Unscheduled Return Visits?

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Introduction: As a part of graduated independence throughout training, emergency medicine (EM) residents gain increasing responsibility for the management of patients, all under the supervision of an attending physician. While attending involvement varies based on the trainee’s experience and performance, a patient may be managed differently if seen by an emergency department (ED) attending physician only. Preliminary research out of a single site suggests patients seen by learners have a higher rate of 72-hour unscheduled return visits (URVs). The objective of this study was to determine if patients seen by learners had higher URVs than those seen by an ED attending only, using a regional dataset.

Methods: ER visits across 3 academic, 3 urban, and 3 suburban hospitals from July 1, 2015, to June 30, 2018, were included. Patients returning within 72 hours of ED discharge were identified. High frequency users (top 5%) were excluded. Anonymized data on patient and visit characteristics were extracted. We used ANOVA (alpha=0.05) to compare URVs among learners vs attending physicians, as well as among the following prespecified subgroups: type of hospital, triage acuity score, patient age, patient sex, and learner year of training. Bonferroni post-hoc comparisons were performed.

Results: There were 1,387,831 visits over 3 years, cared for by 302 ED attendings and 63 residents. There was no difference in URVs between attendings and learners, nor did URVs differ by learner year (both P>.05). Learners did not have higher URVs compared to attending physicians in any subgroup studied (age, sex, type of hospital, or acuity score).

Conclusion: As ED residents gain independence in decision-making, we found no impact on URVs. With URVs as one proxy for patient safety, our results suggest being seen by a supervised trainee is as good as being seen by an attending alone.
Check, Please! Clinical Support as “Checking-In” Within Supervisor-Learner Dyads

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Introduction: Indirect supervision is necessary for developing autonomy but receives few accolades and little attention. Studies tend to focus on either the oversight activities of the supervisor or the help-seeking behaviors of the learner but have not examined the interaction between the two. If we are to foster effective learning environments within our clinical workplaces, we must better understand how clinical support is manifested through interactions between supervisors and learners.

Methods: We undertook a collective case study of 13 internal medicine attending-senior medical resident dyads working on clinical teaching unit inpatient wards at 3 metropolitan hospitals. We studied the interactions integral to providing and receiving clinical support by conducting ethnographic field observations accompanied by sequential interviews. Concurrent analysis informed iterative cycles of data collection from 2018 to 2022. We examined clinical support within each dyadic relationship as well as across the dyads using constant comparison.

Results: Attendings and residents used discourses of “checking-in” to describe clinical support. This included double-checking to ensure accuracy, checking on the output of others to monitor unobserved tasks, scheduled checkpoints and impromptu check-ins for strategic coordination, checking to see how others think to support learning, checking in with updates to share information, and checking in to get reassurance or verification before proceeding. Notably, the purpose of checking in was not always aligned between the supervisor and resident.

Conclusion: With methods that focus on dyadic relationships, we replicated previous findings on indirect supervision and help-seeking. In addition, the checking-in discourses unify concepts from clinical oversight, such as routine, responsive, and backstage oversight, with teaching and learning techniques and team communication strategies. Reframing clinical support in the language of checking in needs further study for its potential in securing additional oversight without losing face, making communication expectations more explicit, and normalizing the development of collegial, non-hierarchical relationships.
058 This session has been withdrawn.
Introduction: Little is known about how to best engage, train, and support residents wishing to pursue academic careers as clinician scholars in the domains of education scholarship, quality improvement, medical humanities, social sciences, and creative professional activities. The Clinician Scholar Program (CScholP) was developed at the department of psychiatry at the Temerty Faculty of Medicine, University of Toronto as a novel approach to enhance residents’ professional development in these domains. To inform curriculum development, we conducted a needs assessment of residents and fellows in the 2021-2022 academic year to understand their interests, experiences, and needs regarding the CScholP.

Methods: Our needs assessment used a mixed-methods approach. An online questionnaire was disseminated to all 229 residents and fellows in the department of psychiatry in spring 2022. Virtual semi-structured interviews with 17 survey respondents were conducted to expand on topics explored in the questionnaire. Descriptive statistics and thematic analysis were applied to quantitative and qualitative data, respectively.

Results: Of 49 questionnaire respondents (21.4% response rate) and 17 interviewees, the majority were in postgraduate year 1-3. From the questionnaire, 73.5% were interested in pursuing research/scholarship in one or more CScholP domains during residency and 67.3% wished to incorporate this into future independent practice—a decision that interviewees felt was dependent on practice setting and work-life balance. The questionnaire identified time constraints as primary barriers to participation in research/scholarship during residency. Interviewees described protected time and flexibility in schedules as methods to overcome this barrier. Key perceived enablers to participation included financial support, adequate mentorship, and greater exposure to the CScholP domains.

Conclusion: As the CScholP welcomes its first cohorts, our needs assessment highlights important considerations in curriculum development to support developing clinician scholars moving forward. Such findings can be applied in the development of similar clinician scholar programs across all fields of residency education.
Identifying Resident Competencies for Point-of-Care Ultrasound in Anesthesia Using a National Delphi Method

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Introduction: Point-of-care ultrasound (POCUS) is an important diagnostic tool that allows for rapid bedside assessment and guidance of patient care. POCUS has now been incorporated into most Canadian anesthesiology residency programs; however, little consensus exists regarding the best methods to teach and assess competency in basic perioperative POCUS. The purpose of this investigation is to define national resident competencies for basic perioperative POCUS proficiency.

Methods: This study adopted a Delphi method with experts (n=25) across Canada. An online survey was circulated to academic anesthesiologists teaching POCUS at all 17 Canadian medical schools. Participants with a derivative list of competencies obtained from the national curriculum document of the Royal College of Physicians and Surgeons of Canada had the opportunity to refine, delete, or add competencies. A total of 3 rounds were completed during 2022-2023. Items with <50% agreement were discarded; those with 50%-79% agreement were revised based upon the qualitative feedback provided, and items with ≥80% agreement remained unrevised.

Results: A total of 74 competencies were identified from the national curriculum document. These competencies spanned across 19 clinical domains. After circulating the 74 competencies for round 1, 56 were accepted without changes, 15 competencies were revised, 3 discarded, and 4 new competencies were added. Based upon round 1, a total of 19 competencies were circulated for round 2 after which 12 were accepted, none were deleted, and 7 clinical competencies were revised and circulated for round 3.

Conclusion: This study identified competencies for diagnostic POCUS suitable for the assessment of resident training in perioperative anesthesiology through expert consensus at a national level. After completion of round 3, we will focus upon designing and piloting assessment tools for these nationally defined competencies.
State of Affairs for Advocacy Education in Pediatric Inpatient Settings

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Introduction: Advocacy is recognized as a professional responsibility for physicians across the world. Advocacy training in residency currently focuses on community practice, but the inpatient setting offers a unique opportunity for advocacy. We aimed to assess the landscape for advocacy training within pediatric hospital medicine (PHM) fellowships by assessing educational offerings, perceived needs, and barriers.

Methods: We conducted a cross-sectional survey of PHM program directors (PDs) and fellows in the summer of 2022. Surveys were developed using content experts and literature review and underwent piloting and validation with PHM educational leaders and fellows from other subspecialities. We performed summary statistics on quantitative data and used a content analysis approach to identify themes from free text responses.

Results: Response rate was 37 of 65 (56.9%) PDs and 60 of 101 (59.4%) fellows. Over half (59%) of PDs reported their programs offered advocacy education with the majority of those (77%) being optional. While only 40% of fellows reported having an advocacy elective available, 70% reported if offered they would participate. The top barriers to advocacy education identified by PDs and fellows respectively were lack of faculty expertise (67%, 37%), time in curriculum (58%, 38%), and lack of faculty mentorship (42%, 37%). Overall, 59% of PDs and 75% of fellows believed advocacy education was very or extremely important for pediatric hospitalists ($P=.10$). Qualitative data revealed themes related to viewing advocacy as central to pediatric hospitalists’ roles and support for inclusion of advocacy training in PHM fellowships.

Conclusion: Based on our national survey results, advocacy education in the pediatric inpatient setting is desired and important to trainees but offerings are limited. Continued insight from stakeholders in the inpatient setting is imperative to address barriers. The creation of an inpatient advocacy curriculum could complement advocacy education in the outpatient setting to better meet the needs of residents and PHM fellows.
Entrustability of Acute Care Procedures in Pediatrics Residency Training

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Introduction: Pediatric residents are expected to be competent in certain acute care procedural skills by the end of their training as specified by the Royal College of Physicians and Surgeons of Canada (RCPSC). However, the extent to which residents are competent is not fully assessed or understood. To address this, the pediatrics program at McMaster University conducted a longitudinal cross-sectional study examining the competency of their trainees in acute care procedures. The purpose of this study was to present a cross-sectional observation of the entrustability of pediatric residents in 6 procedural skills.

Methods: The RCPSC specified procedures were bag-valve mask (BVM) ventilation, intubation, intraosseous (IO) line insertion, chest tube insertion, and cardiopulmonary resuscitation (CPR) and defibrillation. Residents received a learning session on the procedures and the relevant procedural milestones followed by an “Acute Care Procedure Day” where procedures were performed with direct observation and entrustability scores based on the O-SCORE (1-5) were assigned. Demographics, self-perceived comfort, and entrustability data were collected. Descriptive statistics and Pearson correlation for postgraduate year (PGY) level versus entrustable professional activity (EPA) scores were performed.

Results: Thirty-six residents participated: 24 (67%) were in PGY-1–2, and 12 (33%) in PGY-3–4. Reported levels of prior experience were lowest for chest tube (8.3%) and IO placement (52.8%). The highest levels of initial entrustment (EPA 4-5) were observed with IO placement (28 of 33), BVM skills (27 of 33), and CPR (16 of 25), while the lowest were seen with chest tube placement (0 of 35), defibrillation (5 of 31) and intubation (17 of 31). There was a strong correlation between PGY level and entrustability score for intubation (0.77), and no correlation for the other procedures.

Conclusion: Our findings show that entrustability of certain acute care skills is not being obtained and that large variations in entrustability and perceived comfort exist. Further research is needed to characterize the learning curves for these skills and their relative importance in pediatrics training.
Needs Assessment for the Development of Training Curricula for Internal Medicine Residents

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Introduction: Patient-centered outcomes can be achieved when common core and specialist competencies are achieved in a balanced way. To improve the internal medicine (IM) training education curriculum for promoting patient-centered outcomes, this study was conducted to assess needs to fill the gap between the defined competencies and learners’ achievement.

Methods: A cross-sectional online survey was conducted. The participants were 202 IM specialists who obtained board certification in 2020-2021. We developed a questionnaire to investigate the self-evaluation of common core competencies and achievement level of IM essential competencies. For analysis, frequency tests, paired t-test, Borich priority formula, and $\chi^2$ were performed.

Results: IM specialists recognized that their achievement level was low compared to their importance for all common core competencies ($P<.001$). Among the common competencies, self-management-related competencies were most linked to educational priorities. They recognized achievement levels as novice or advanced beginner in 5 essential procedures. Regarding the assessment method for essential procedures, “non-assessment” showed a distribution of approximately 24% to 44%. Among the essential competencies, the overall average of the achievement level for symptoms and signs was $3.55\pm0.96$, which was the predominant competent level (3 points). As for the assessment cycle for essential symptoms and signs, regular assessments were 40.1%, and irregular assessment was 30.2%. Of the participants, 29.7% answered that they had no assessment opportunity.

Conclusion: We identified the priorities of core competencies, the level of achievement in essential procedures and in patient care with essential symptoms and signs for IM training, and the related educational methods and assessment status. This study is expected to be used as basic data for developing and revising IM training educational curriculum.
Examining Resident Experiences of Vulnerability in Postgraduate Medical Education

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Introduction: Learning and growth in residency education often require vulnerability, defined as openness to uncertainty, risk, and emotional exposure. However, expressing vulnerability can threaten a resident’s credibility and professional identity. Despite this important tension, studies examining vulnerability in residency education are limited. As such, this study aims to understand residents’ experiences of vulnerability and identify the factors that influence vulnerability in residency education.

Methods: Using a constructivist grounded theory approach, individual semi-structured interviews were conducted with 15 residents from 10 different specialties. Themes were identified and their relationships were examined using constant comparative analysis.

Results: Three themes represented participants’ experiences of vulnerability in residency: (1) Courage in the face of uncertainty, (2) Worth the risk?, and (3) A double-edged sword. Vulnerability was described as a relational process shaped by personal, social, and contextual influences. Residents viewed vulnerability as a valuable yet challenging experience. Given the risks and uncertainties involved, residents engaged in reflective processes before expressing vulnerability. The sociocultural context of residency represented a key modifier for engaging in vulnerability. For instance, tensions existed between expressing vulnerability to foster learning and demonstrating competence to achieve entrustment. Social agents, such as clinical teachers and peers, shaped both the experience of, and outcomes derived from, vulnerability. The influence of vulnerability on professional and personal outcomes was thus contingent on the nature of the task, and the social and environmental contexts in which it was experienced.

Conclusion: Our theory represents residents as active agents in their learning who reflect on the potential benefits and risks of vulnerability. The results can inform how experiences of vulnerability can be understood and studied in residency education. These findings capture the nuance and complexity of vulnerability in residency and the need to create supportive learning environments that leverage the value of vulnerability while acknowledging its risks.
An Evaluation of Transition to Foundations Curriculum for First-Year Pediatric Residents

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Introduction: Foundations of Discipline is the second stage of competency-based medical education for pediatric residency programs in Canada. A full-day Transition to Foundations curriculum was developed using Kern’s 6-step guide. This curriculum included didactic and simulation components, to prepare residents for increased roles and responsibilities, particularly during pediatric night float. The purpose of this study is to evaluate which components of the curriculum were useful for residents.

Methods: The curriculum was piloted to 11 first-year pediatric residents at McMaster University in September 2021 prior to Foundations of Discipline and night float rotations. Descriptive statistics of data from pre- and post-curriculum surveys were used to evaluate resident perception of the curriculum.

Results: Resident response rate was 11 of 11 for pre- and 8 of 11 for post-curriculum surveys. Resident comfort with answering pages (80% pre, 100% post) and initial assessment of patients (72.7% pre, 100% post) improved. Comfort with acute patient presentations improved after virtual simulations, including seizure management (50% pre, 100% post), respiratory distress (60% pre, 87.5% post), sepsis (20% pre, 75% post), shock (30% pre, 50% post), assessing “watchers” on the ward (36.4% pre, 75% post), and consulting pediatric critical care (18.2% pre, 100% post). All respondents found the curriculum and its simulations to be helpful.

Conclusion: The Transition to Foundations curriculum is helpful for first-year pediatric residents to prepare for increased roles and responsibilities in Foundations of Discipline, including night float rotations. Simulations of acute presentations improve resident knowledge and comfort prior to overnight on-call experiences.
Developing a Rheumatology Ultrasound Curriculum: Exploring How Expert Educators Prioritize Competencies for Novice Learners

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Introduction: When novel clinical skills are introduced into the practice of medicine, educators are tasked with developing new curricula to teach these skills. In deciding what skills to include, educators must balance many factors. How educators determine which competencies are included in the curriculum is not well understood. We seek to explore how expert rheumatologists prioritize competencies when developing a musculoskeletal ultrasound (MSUS) curriculum for novice learners.

Methods: Fourteen rheumatology MSUS experts from Canada and the United States were invited using nonprobability sampling and snowball technique to participate in a 3-hour online meeting. Experts were asked to independently identify a prioritized list of MSUS competencies for rheumatology residents. A summarized list of competencies was reported back to experts during 3 round-robin discussions to elicit the reasons why each expert felt the competencies they selected should be prioritized. One study member transcribed notes and performed thematic analysis using an open coding strategy. Data were triangulated throughout the 3 round-robin discussions and reported back to experts for member checking. The meeting was recorded, transcribed, and independently reviewed by 2 additional study members to validate the themes.

Results: Ten MSUS experts participated in the online meeting. We identified 7 themes, grouped into 2 key areas: clinical utility and learnability. For clinical utility, experts felt competencies that enhance clinical assessment, are frequently performed in clinical practice, and are relevant to the scope of practice should be prioritized in the curriculum. For learnability, experts emphasized factors such as ease of learning, availability of resources, learner characteristics, and opportunities for practice throughout training.

Conclusion: This study explored how expert educators prioritize competencies when developing educational curricula for novice learners. Future work can confirm the importance of these factors in other areas and continue to explore how experts balance competing demands during the curriculum development process.
Grappling With the Future of the Internal Medicine Teaching Team: A Multicenter Qualitative Study

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Introduction: Internal Medicine Teaching Teams (IMTTs) are the backbone of IM training and are under threat—striving to balance education and care quality—in an increasingly stressed health care system. To date, the tensions between these have been underexplored. Moreover, more information is needed about strategies that can be used to optimize the achievement of both.

Methods: Constructivist grounded theory guided data collection and analysis. Data were transcripts from semi-structured interviews with physicians holding clinical and educational leadership roles on IMTTs in the United States and Canada. Rigor and trustworthiness were enhanced through iterative collection and analysis, constant comparison, memoing, and purposive sampling.

Results: Participants acknowledged tensions among health care system demands, direct patient care, education, and clinician wellness. Key identified challenges included: the imbalance between demand and resources; changing patient population and an emerging question—“who are our patients, and what is our job?”; getting work done vs doing it well (e.g., patient communication, interprofessional collaboration, trainee assessment, teaching seminars); work-life balance (both trainees and faculty); and education’s inherent inefficiencies in health care systems that prioritize efficiency and productivity. While participants described numerous strategies to mitigate these tensions, many had unintended consequences. For example, to address the increasing intensity of work, many centers created non-teach teams and decreased attending rotation duration, with unintended consequences of escalating discontinuity of patient care and teacher-learner relationships.

Conclusion: Across the United States and Canada, the traditional IMTT is under threat, with quality of care and trainee education suffering. While education and clinical leaders are attempting solutions, many appear to be focused on workload and “getting the work done” rather than enhancing the quality of either. Strategic thinking about the resourcing and structuring of the IMTT is required to meet the needs of society by ensuring high-quality medical education and patient care.
The Ideology of Medicine and Professional Identity Struggle in Residency Training: A Qualitative Study

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Introduction: To enter a profession is to take on a new identity. Professional identity formation is difficult, with medical learners struggling to adopt professional norms. One way to understand inherent tensions within socialization is to consider the role of ideology in medical education. In this study, we use the concept of ideology to explore residents’ experiences with identity struggle during residency.

Methods: We conducted a qualitative exploration of residents in 3 different specialties at 3 academic institutions in the United States. Participants engaged in a 1.5-hour session consisting of rich picture drawing and a one-on-one interview. Interview transcripts were coded and analyzed iteratively, with developing themes compared to new data as it was collected. We met regularly to develop a theoretical framework to explain the findings.

Results: We identified 3 ways in which ideology contributed to residents’ identity struggle. First was the intensity of the work of being a resident and becoming a physician. All participants discussed the compelling forces of residency work requirements, future practice expectations, underlying perfectionism, and human limitations. Second were messages regarding the subjugation of personal identities to the all-encompassing goal of developing a professional identity. Multiple participants expressed a desire to be more than just physicians but reported the feeling that more wasn’t possible. Third were instances where the imagined professional identity clashed with the reality of medical practice. Many residents described how their ideals misaligned with the ideals of the profession, or how the system constrained the alignment of practice with ideals.

Conclusion: This study uncovers a deeper ideology that creates struggle as it often calls residents in impossible, competing, or even contradictory ways. As we uncover the hidden ideology of medicine, learners, educators, and institutions can play a meaningful role in supporting identity formation in medical learners through dismantling and rebuilding its destructive elements.
Hidden Curriculum of Bias Across Medical Disciplines: Validation Results From a Newly Developed Survey

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Introduction: The phenomenon of the hidden curriculum (HC) appears to be a common feature of medical institutions, yet very few studies have empirically and comprehensively measured its scope and impact. A hidden curriculum has the potential to reinforce or undermine the values of an institution. We assessed the validity of a newly developed HC survey and make recommendations for future use and improvement.

Methods: In a random survey of medical students, residents, and faculty (n=470) conducted at Queen’s University, we measured their experiences of the HC at the personal level, their perceptions of respect and disrespect for different disciplines, the settings in which the HC was experienced, the impact of the HC, their own actions, the efficacy of interventions, and the HC at the organizational level. We examined the factor structure, reliability, and validity of the HC constructs using exploratory factor analysis, Cronbach’s alpha, regression analysis, and Pearson’s correlations.

Results: Expert judges confirmed the content validity of the items used and the analysis revealed new HC constructs reflecting negative expressions, positive impacts and expressions, negative impacts, personal actions, and positive institutional perceptions of the HC. Evidence for criterion validity was found for the negative impacts and the personal actions constructs and were significantly associated with the stage of respondents’ career and gender. Support for convergent validity was obtained for HC constructs that were significantly correlated with certain contexts within which the HC occurs.

Conclusion: More unique dimensions and contexts of the HC exist than have been previously documented. The findings demonstrate that specific clinical contexts can be targeted to improve negative expressions and impacts of the HC.
Distinguishing Between Supportive and Collaborative Interdependence to Better Understand and Assess Individuals’ Contributions to the Collaborative Health Care Team

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Introduction: Individual assessments disregard the team. Team assessments disregard the individual. Interdependence—defined as the ways in which individuals enable or constrain one another’s performance in collaborative work—has been put forth as a conceptual bridge between our tradition of assessing individual performance and our imminent challenge of assessing team-based performance. The purpose of this study was to develop a more robust, refined conceptualization of interdependence to inform the assessment of trainees’ developing competence within health care teams.

Methods: This study took place in Canada and the United States. Following a constructivist grounded theory approach, we conducted 49 semi-structured interviews with various members of health care teams (eg, physicians, nurses, pharmacists, social workers, patients/parents) within 2 clinical specialties: emergency medicine and pediatrics. Data collection and analysis occurred iteratively. Constant comparative inductive analysis was used, and coding involved initial, focused, and theoretical stages.

Results: Although participants acknowledged interdependence, they did not view it as part of a linear spectrum where interdependence becomes independence. Our analysis refined the conceptualization of interdependence to include 2 types: supportive and collaborative. Supportive interdependence occurs within health care teams when one member demonstrates insufficient expertise to perform within their scope of practice. Collaborative interdependence, on the other hand, was not triggered by lack of experience or expertise within an individual’s scope of practice, but rather recognition that patient care requires contributions from outside a single individual’s or specialty’s scope.

Conclusion: To assess a team’s collective performance without losing sight of the individual, we need to move away from a linear trajectory of competence where independence is seen as the end goal. Recognizing that trainees (and others) cycle in and out of 2 kinds of interdependence, depending on the needs of the situation, can help support efforts to assess an individual’s competence as an interdependent collaborator within a health care team.
Sanctions for Professionalism Breaches: Are Learners and Leaders on the Same Page?

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Introduction: Professionalism is a growing area of study in graduate medical education; perceptions between residents and program leaders regarding appropriate consequences for professionalism lapses has not been well studied. We sought to compare the perspectives of trainees and program leaders surrounding professionalism lapses and appropriate sanctions to identify potential areas to target for education.

Methods: A 25-item survey describing professionalism scenarios was created and grouped based on elements described in professionalism milestone categories (professional behavior, well-being, ethical principles, and accountability). The survey was sent to Baylor College of Medicine residents and program leaders. Respondents were asked to select what they felt was an appropriate sanction for each scenario, ranging from no action to expulsion. Each sanction was assigned a numeric score. Median differences between residents and leadership responses in each scenario were analyzed using Wilcoxon rank sum test. Median differences in opinions by specialty were analyzed using Kruskal-Wallis test. Internal consistency of the domains was measured by Cronbach’s alpha.

Results: There were 178 respondents, 82% (n=146) residents and 18% (n=32) leadership. Response rate was 13.8% for residents and 36.8% for leadership. There was a significant difference in resident vs leadership opinions in 6 of 25 questions. There were statistically significant differences in opinions concerning appropriate sanctions between residents and program leaders for lapses in the domains of well-being (recognizing importance of maintaining personal and professional well-being) and accountability (completion of responsibilities). The Cronbach’s alpha for all domains is above 0.7, indicating high internal consistency.

Conclusion: Program leaders differ from residents in their opinions on how professionalism lapses should be handled, most notably in the domains of well-being and accountability. Based on this, future work should target development of educational and professional instruction to better align expectations among residents and program leadership in these important domains.
Humility in Medicine: An Integrative Review

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Introduction: The modern-day medical education professionalism movement depends on virtues to undergo and sustain it. Competency-based curricula require that trainees exhibit qualities such as integrity, compassion, and humility in behavioral terms. Humility may be the most challenging virtue to understand and practice. This may be due to contrasting conceptualizations of humility and its role in medicine. This study aims to develop a cohesive conceptualization of physician humility in medical practice and define its functions and implications within the field.

Methods: This integrative review followed Whittemore and Knafl methodology. The authors searched PubMed, Ovid MEDLINE, Web of Science, EMBASE, ERIC, and PsycINFO from database inception through July 7, 2022. English-language empirical studies, perspectives, and editorials pertaining to the conceptual aim of this investigation were included. An applied thematic analysis was conducted. Articles were uploaded to Quirkos, a computer software program to support qualitative data analysis, and analyzed using open and axial coding. Authors organized themes, identified relationships among themes, and refined them through group discussion.

Results: Of 958 potential articles, 49 met the inclusion criteria. The authors identified themes within the categories of the definition of humility, functions of humility, implications of humility, and fostering of humility within the medical practice. Within the theme of the definition of humility, the authors identified what humility is (eg, honest self-disclosure, unpretentious openness, low self-focus) and what humility is not (eg, low self-esteem, self-deprecation, meekness) to provide a nuanced conceptualization. Humility is seen as integral for clinical practice, learning and curiosity, and interpersonal competence, and it may be cultivated by exposure to positive role models.

Conclusion: Humility in medicine is a rich, multidimensional construct with numerous positive implications within medical practice. These findings contribute to discourse in medical education and professional development on humility in clinical practice.
Development and Implementation of Spasticity Focused Neuromuscular Ultrasound Curriculum

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Introduction: The use of ultrasound has also been found to enhance understanding of anatomical structures and their localization and may improve accuracy and effectiveness of injection-based treatment for spasticity. Despite this, formal neuromuscular ultrasound teaching in the residency context is limited. This project aimed to design and implement a neuromuscular curriculum for physical medicine and rehabilitation (PM&R) residents.

Methods: The curriculum was developed by 2 senior residents and 3 expert staff clinicians in PM&R. As it was developed following the COVID-19 pandemic, delivery was to be in-person, virtual, or hybrid. A needs assessment survey was completed by 10 residents to further inform content and delivery methods. The developed curriculum emphasized the role of near-peer teaching and multimodal teaching methods. Additionally, an accompanying reference manual and infographics were developed by the senior residents involved. Six key ultrasound probe positions in the upper extremity and 8 in the lower were identified and described for anatomical localization of common neuromuscular structures. A post-curriculum survey was developed to assess satisfaction and to inform future directions.

Results: The curriculum consisted of a 2-hour didactic PowerPoint lecture of foundational principles (virtual), 2-hour clinician-led demonstration of key probe positions, and 6-hour near peer-led and case-based practice. The reference manual and infographics were used as references during the course. The curriculum was successfully delivered September 24, 2022, to 8 PM&R residents and 2 fellows with all residents reporting being “very satisfied” on the post-curriculum survey.

Conclusion: This curriculum serves at the first neuromuscular ultrasound curriculum developed and delivered within Canada. The curriculum developed by residents and clinicians employed multimodal teaching strategies and use of near peers as educators. In future, this curriculum may serve as a foundation for other residency programs seeking to implement further ultrasound education using in-person or virtual platforms.
Climate Action Now: An Evaluation of Planetary Health Metrics to Drive Educational Change at the University of Ottawa Faculty of Medicine

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Introduction: Faculty leadership and longitudinal integration of planetary health education in medical schools are essential for preparing physicians to succeed in a climate-disrupted world. Yet in a 2019 survey, only 15% of medical students reported planetary health in their curriculum. The Planetary Health Report Card (PHRC) is a trainee-led initiative, evaluating medical schools on metrics of curriculum, research, community outreach/advocacy, support for student-led initiatives, and campus sustainability. We explore the utility of the PHRC in identifying priority areas for planetary health and how a similar approach can be applied to resident education.

Methods: Using the PHRC, we evaluated the University of Ottawa Faculty of Medicine (uOFoM) in 2021-2022. For each metric, scores were provided alongside evidence and improvement recommendations.

Results: The uOFoM scored an overall C grading. The planetary health curriculum lacked breadth and longitudinal integration, consisting mostly of a 1-hour lecture in the second year. The uOFoM did not organize community-oriented planetary health initiatives. However, medical learners could pursue planetary health initiatives through programs with non-specific focuses. Most campus sustainability initiatives occurred offsite from the medical campus, and were open to, but not promoted to, medical learners. Some faculty projects were dedicated to Planetary Health Education research but lacked central coordination. Notably, the uOFoM appointed a Director of Planetary Health—the first such position in Canada—thereby facilitating student-faculty collaboration in addressing PHRC-identified shortcomings. These initiatives include student-faculty groups to design a longitudinal medical school planetary health curriculum, and introduction of planetary health-focused conferences, webinars, newsletters, and research projects with resident involvement.

Conclusion: The PHRC identified short and long-term goals for the University of Ottawa and facilitated constructive dialogue between medical students, residents, and the uOFoM to organize educational initiatives. Similarly, the PHRC can be adapted to evaluate residency programs and inform a foundational planetary health residency curriculum to increase planetary health competence among residents.
“Your Comment Is Not as Helpful as it Could Be…Do You Still Want to Submit?” Using Natural Language Processing to Identify the Quality of Supervisor Narrative Comments in Competency-Based Medical Education

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Introduction: Trainee development relies on supervisor narrative comments, yet these comments are not routinely measured for quality. The Quality of Assessment for Learning (QuAL) score has validity evidence for measuring quality in this context, but it is time intensive to score the large volume of these comments generated in medical education assessment programs. Natural language processing (NLP) models have the ability to rapidly analyze and categorize human text. We set out to develop an NLP model for applying the QuAL score to narrative supervisor comments.

Methods: 1250 EPA assessments were randomly extracted and de-identified from both McMaster’s and Saskatchewan’s emergency medicine (EM) residency training programs. These comments were put into 25 unique 100 comment surveys for rating. Twenty-five EM faculty members and 25 EM residents each filled out a survey rating comments with the QuAL score. Discrepant QuAL scores were resolved by 2 of the study authors. Eighty percent of the data was used as the training data set and 20% for the validation set. A transformer model technique was used to determine overall QuAL score as well as QuAL score sub-components.

Results: All 50 raters completed the rating exercise; imperfect agreement on QuAL score were resolved by 2 study authors. The 3 QuAL score sub-components had a balanced accuracy of 0.615, 0.85, and 0.902. For the overall QuAL score, the NLP model had a balanced accuracy and top 2 accuracy of 0.52 and 0.83, respectively. The NLP model can be viewed at www.commentquality.ca.

Conclusion: We have developed an NLP model for rating the quality of narrative supervisor comments in competency-based medical education (CBME) using the QuAL score. This can serve as a tool for nudging in real time, audit and feedback in faculty development initiatives, and an outcome measure for overall program evaluation in CBME.
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