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(Abstracts)

Contents

"The Airwayve Podcast": A Novel Anesthesia Educational Tool for Medical Students

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Introduction/Background: Medical students remain underexposed to anesthesiology before clerkship.(1) Few accessible introductory-level materials in anesthesia exist, and the COVID-19 pandemic has compounded this issue by restricting clinical access to the specialty.(2) We developed "The Airwayve Podcast" to provide fundamental teaching in anesthesia using succinct, student-generated episodes reviewed by senior students, residents and faculty. Episodes explore core topics in anesthesia, tips for learners and feature guest speakers to facilitate career exploration. For episodes and summaries, visit www.airwayvepodcast.com.

Methods: Ethics approval was not applicable because the study did not involve human or animal research. Six medical students, three residents and one faculty anesthesiologist have collaborated on the podcast. Each episode undergoes a three-step editorial process prior to recording and distribution via podcast apps. We administered a survey to capture students' perspectives regarding: preferences for the podcast as a learning and career exploration tool, podcast content, barriers to listening and preferences for future directions. Data were gathered via Likert-based assessments and multiple-choice options, which were represented as means and percentages.

Results: Thirteen episodes published across two series ("Introduction to Anesthesia" and "General Anesthesia") have received over 1100 downloads worldwide since September 2020. Data from the podcast hosting software indicates that 73% of listeners access episodes from mobile devices and listeners most commonly access episodes via the free online player on the podcast website (20%) and Spotify (19%). The Airwayve Podcast has been faculty-endorsed and shared nationally across medical schools. Survey data from 21 participants indicate that the podcast has helped students explore anesthesiology as a career path (mean 4.5/5), exposed students to anesthesia for the first time (mean 4.1/5), was perceived as effective in teaching fundamental anesthesia concepts (mean 4.4/5), was perceived as an accessible learning tool (mean 4.7/5), and helped students understand the skills and content to be successful in anesthesia (mean 4.2/5). Clerks (self-identified; n=11) indicated that the podcast was useful for clinical anesthesia rotations (mean 4.2/5). The top three requested topics for future episodes were: episodes about general anesthesia (76.2%), episodes about career advice (71.4%), and episodes featuring guest speakers (66.7%). Nine participants (42.9%) indicated that a lack of time to listen to episodes was a barrier to using the podcast as a learning tool; however, the majority of respondents (n=11; 52.4%) did not identify any barriers to listening to the podcast.

Discussion: The Airwayve Podcast is the first faculty-endorsed anesthesia podcast geared towards medical students. Preliminary results suggest strong approval of the podcast as a learning and career exploration tool. Listeners' feedback may be leveraged to optimize the content of this educational tool to ultimately support medical students' learning in the current distance-learning environment posed by the COVID-19 pandemic.

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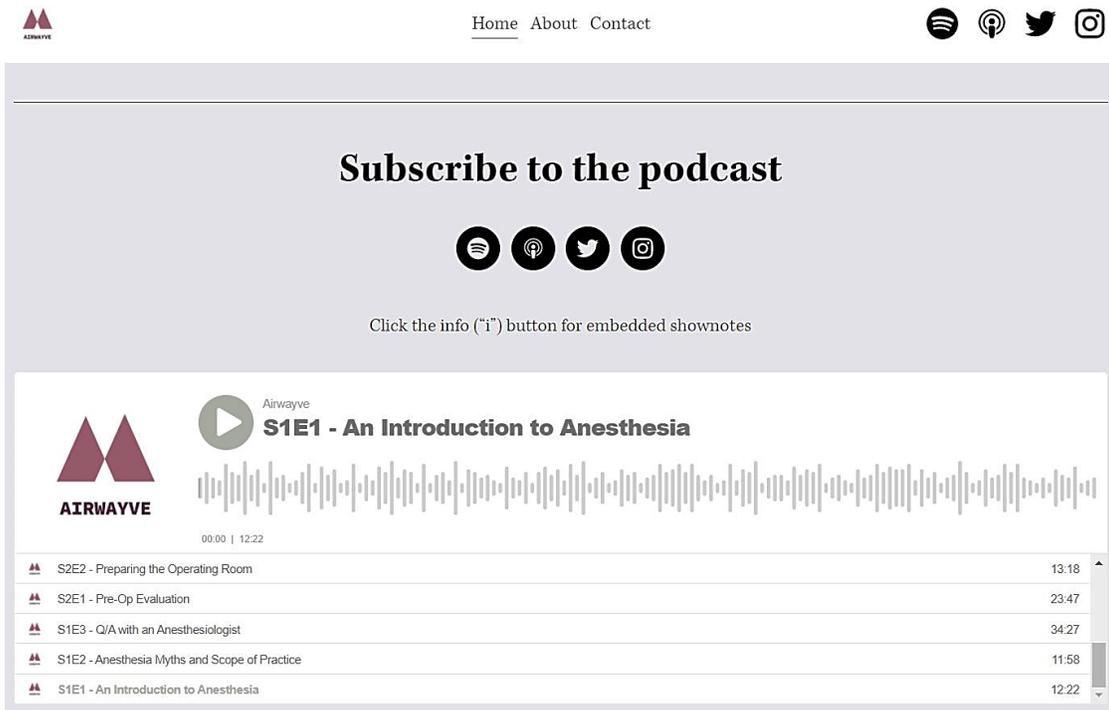
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Airwayve
S1E1 - An Introduction to Anesthesia

00:00 | 12:22

S2E2 - Preparing the Operating Room	13:18
S2E1 - Pre-Op Evaluation	23:47
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S1E1 - An Introduction to Anesthesia	12:22

Development and Implementation of a Resident Assessment Dashboard for Competency-Based Medical Education in Anesthesiology: A Mixed Methods Study

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Introduction: Competency-based medical education (CBME) demands frequent assessment of resident performance.[1,2] Challenges in accessing the high volume of assessments in CBME may impede resident use of self-regulated learning (SRL) skills,[3,4] including self-assessment and goal setting. We describe the use of an iterative design-based framework to create a resident assessment dashboard (RAD) whereby residents access results of multiple assessments on a consolidated platform. We incorporated faculty and resident stakeholder perspectives into the development of the RAD. Our aims were to enhance resident access to assessment data, and understand the potential utility of a RAD in the context of SRL theory.

Methods: Ethics approval was obtained from the local REB. We employed a mixed-methods approach to gain an in-depth understanding of resident and educator perspectives on the elements of the dashboard that facilitate the use of assessment information for performance improvement, and the anticipated uses of the RAD in the context of SRL theory. We first used an anonymous survey to investigate elements faculty and residents felt were important for a RAD. We then performed resident and faculty focus groups to deepen survey findings, and probe stakeholder perspectives on the utility of an RAD in SRL. Thematic analysis using a grounded theory approach was used to analyse focus group transcripts.

Results: The RAD design proceeded iteratively, incorporating the results of each analysis into subsequent versions. Quantitative survey analysis revealed that 92% (24/26) of residents and 92% (17/19) of faculty felt that timely access to assessment results was important, and 77% (20/26) of residents felt that comparing their performance to anonymized peer assessment data was an important RAD feature. Thematic analysis of focus groups revealed that residents and faculty viewed the RAD as a tool to help residents accurately assess their performance, target their learning efforts, plan their learning strategy, and monitor for progress. Faculty and resident perspectives diverged on issues relating to confidentiality. Where residents were concerned that use of the RAD could threaten assessor anonymity resulting in reduced faculty engagement with assessment, faculty expressed concern that it could compromise peer assessment information privacy for trainees. Access to anonymized peer assessment data for comparison was viewed as important by a subset of residents to help them accurately self-assess. Although the RAD displayed a mix of summative and formative assessment data, in line with SRL theory, residents viewed the RAD primarily as a formative assessment tool.

Discussion: In our study, resident and faculty stakeholder co-development of a RAD permitted the inclusion of varied viewpoints in the iterative design and development of a tool to improve resident engagement with assessment. The anticipated uses of the RAD overlapped with processes inherent to SRL. Use of a RAD may enhance resident engagement with learning and assessment.

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Does Leniency Bias Persist in Workplace-Based Assessments that Use Entrustment-Supervision Scales?

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Introduction/Background: Workplace-based assessments (WBA) play a crucial role in the assessment system of competency-based medical education programs. Entrustment-supervision scales frame assessors' decisions around the degree of supervision a trainee requires for safe patient care, reflecting the trainee's progression toward independent practice.[1] Basing WBAs on entrustment-supervision scales may encourage assessors to use the entire scale and to overcome the central tendency and leniency biases associated with proficiency scales.[2] We aimed to examine whether entrustment-supervision scales resolved leniency bias in a WBA used for postgraduate anesthesiology training.

Methods: Ethics approval was obtained from our local REB.
One of our program's WBAs for perioperative care, the Anesthesia Clinical Encounter Assessment (ACEA), includes a global rating scale (GRS) assessing 8 clinical competencies and overall independence. Supervisors rate residents on a 5-point entrustment-supervision scale, with descriptive anchors for each point (i.e., from '*Intervention*': required frequent direction or significant involvement from staff for this case; to '*Consultancy level*': could teach or supervise others for this case). We extracted ACEA data for anesthesia residents from July 2017 to January 2020. We analyzed data from assessors who completed at least ten assessments, for the frequency of low scores (i.e., '*Intervention*' or '*Direction*') and high scores (i.e., '*Autonomous*' or '*Consultancy level*') on the GRS items and the overall independence rating.

Results: We analyzed 7871 assessments for 137 residents, completed by 214 assessors. Across all residents, 10.75% (23/214) of assessors never assigned low scores for any GRS items and 27.10% (58/214) for the overall independence rating. In their first year of training, residents received a mean of 38.86 (±13.85) assessments. On at least one ACEA, 94.64% (53/57) of first year residents were rated as '*Autonomous*' or '*Consultancy level*' for overall independence, and 24.79% (±15.35) of overall independence ratings for PGY1s were assigned as '*Autonomous*' or '*Consultancy level*.' Additionally, 2.63% (2/76) assessors never assigned low scores to PGY1s for any GRS items and 11.84% (9/76) for the overall independence rating.

Discussion: As entrustment-supervision scales reference the level of supervision required for safe and high-quality care, it would be expected that a first-year resident's readiness to be trusted with clinical responsibility would start off requiring '*Intervention*' (i.e., frequent direction and/or staff involvement). Nevertheless, assessors rated junior residents in our anesthesiology program as ready for independent practice nearly 25% of the time, which suggests that leniency bias in resident assessment persists even with entrustment-supervision scales. Leniency bias can impede tracking of a resident's progress, preclude identification of learners in difficulty, and restrict the coaching and corrective feedback that trainees receive.[3] These findings highlight the need for further research to determine the promoters of leniency bias with entrustment-supervision scales and approaches to mitigate its consequences in a competency-based assessment system.

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GRANT ACKNOWLEDGEMENTS:

First-Pass Success Rate of Endotracheal Intubation in Anesthetized Adults Comparing Video Laryngoscopy Using a Standard Blade to Direct Laryngoscopy - A Multicentre, Randomized Controlled Clinical Trial

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Introduction/Background: First-pass intubation success has long been an important goal, with multiple attempts at laryngoscopy associated with airway trauma and potential morbidity[1]. The COVID-19 pandemic has reinforced the importance of first-pass success (FPS) to increase patient and healthcare worker safety[2]. Video laryngoscopy (VL) has been reported to reduce the incidence of failed intubations. However, the impact of VL on FPS remains unclear[3]. We hypothesized that using the McGrath MAC VL (McG; Medtronic®, Dublin, Ireland) for routine intubation in the operating room would result in a higher FPS compared to conventional direct laryngoscopy (DL).

Methods[4]: Ethics committees of participating centres approved this international multicentre randomized controlled trial prior to patient recruitment. Adults for elective surgery under general anesthesia requiring endotracheal intubation, without predictors of difficulty, were consented and randomized to either DL or McG. The primary outcome was FPS; secondary endpoints were the influence of the provider experience, time to ventilation, and adverse events (e.g., hypoxia or soft tissue injury). Multiple logistic regression analysis of subgroup factors allowed assessing factors affecting successful first-time intubation comparing McG to DL. A chi-squared test was used to compare FPS between the two groups. Data are expressed as median (interquartile range [IQR]). $p < 0.05$ was considered to be statistically significant.

Results: A total of 3323 patients were assessed for eligibility. 2047 consented and were enrolled in the trial (McG n=1021; DL n=1026). FPS was higher with the McG (955/1021, 93.5%), compared with DL (839/1026, 82%; p<0.0001). Overall, 1011/1021 (99%) of the McG and 983/1026 (96%) of DL attempts were successful after two attempts. Years of anesthesia experience had a positive effect on the probability of FPS (p<0.001). Lack of experience had a stronger effect on failure when using DL (OR = 0.889, 95% CI = [0.859; 0.940]), compared to McG (OR=0.992, 95%CI=[0.951;1.034]). Time to ventilation was shorter with DL (34 s, IQR [26-45]), compared to McG (36 s, [26-48]; p<0.01). Overall, no differences in intubation-associated adverse events between groups were observed (p=0.19). However, soft tissue lesions were more frequent with DL (25/1026, 2%) than McG (12/1021, 1%; p=0.03).

Discussion: In this large randomized multicenter trial, using a video laryngoscope with a Macintosh blade improved the intubation first-pass success rate in adults under routine general anesthesia. Less experienced anesthesiologists were more likely to be successful with the McG, compared to DL. Intubation time was slightly shorter using DL, but this was not clinically relevant. Based on these results, video laryngoscopy using a Macintosh-shaped blade can be recommended as a first-choice instrument to improve FPS in patients without predictors for difficult airway management. These findings are highly relevant during the ongoing COVID-19 pandemic.

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Intrathecal Morphine Does Not Increase Pour in Joint Arthroplasty Surgeries. A Double Blind RCT

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Introduction: The changing health economy has driven the need for greater patient throughput, rapid turnover, and shorter hospital stays whilst retaining high quality medical care. Use of intrathecal opioids has become a widely accepted technique for providing effective postoperative pain relief in joint arthroplasty surgeries[1]. However, intrathecal morphine (ITM) has its own adverse effects including urinary retention, and delayed respiratory depression[2]. Post-operative urinary retention (POUR) is one of the main reasons for the delayed discharge following hip and knee arthroplasties. Early removal is important, as a risk of UTI is reported to rise 5% for each day a urinary catheter remains in situ[3]. Avoiding intrathecal morphine would benefit patients by decreasing complications associated with prolonged catheterization such as urinary tract infection and improve cost effectiveness through early discharge of patients[4]. Our aim was to evaluate, whether removing the ITM would facilitate early removal of urinary catheter and earlier discharge from hospital.

Methods: Ethics approval was obtained from the local REB. A prospective, double-blind, RCT of 134 patients who are 18 to 85 years old, with BMI 18 to 40 and undergoing elective primary as well as revision knee and hip arthroplasty under regional anesthesia was conducted. Patients were excluded if they had language barrier, prior history of urinary retention or BPH. Intra-operatively, patients received ITM 100 mcg (group A) or saline (group B) in addition to the standard dose of bupivacaine and 15 mcg of fentanyl. None of these patients were catheterized. If they were unable to urinate, an in and out was performed according to preset ultrasound bladder residual volumes. Post-operatively, data collection includes the time of in and out catheterization, Post-op pain, opioids side effects and hospital length of stay.

Results: 112 out of 134 patients were recruited, with 99 completing the study, which 66 underwent knee surgery and 33 underwent hip surgery. Both groups; A (ITM) and B (Non-ITM) were similar at baseline. The use of ITM was found to significantly reduce the length of hospital stay at 48 hours post-operatively (with the Difference (95%CI) in the median of -15.3 (-29.9, -0.71) and p-value of 0.04). There was no significant difference in the incidence of opioid side effects, duration of bladder catheterization and requirement for In & Out catheterizations, pain score and patient satisfaction between the two groups.

Discussion: The results of our study show that traditional use of ITM in joint arthroplasties significantly reduces hospital length of stay. It does not increase the incidence of opioid side effects, duration of bladder catheterization and requirement for In & Out, patient satisfaction and pain score at rest and movement. The use of ITM in the context of Fast Track Knee and Hip Arthroplasty is still a useful modality.

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