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Patient Safety Abstracts

Contents

Lost in translation: a scoping review of language barriers in Canada's multicultural health care climate and anesthesia care

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25

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INTRODUCTION

Language barriers between patients and the anesthesia team can impact communication and the ability to deliver safe, compassionate, and high-quality care. The anesthesia team's role is especially challenging, as they often have limited time to establish rapport, gather critical information, and communicate a plan to patients, with language discordance contributing to miscommunications and compromised patient safety outcomes. Despite increasing linguistic diversity in Canada, the effects of language barriers remain under-represented in the literature. This scoping review explores language barriers in anesthesia care and identifies strategies to improve equity and communication in Canada's multicultural health care system. It aims to identify the communication challenges that anesthetic teams face; examine effects on patient outcomes such as pain management, satisfaction, and hospital stay; and review novel strategies to mitigate these barriers. The review also highlights gaps in the literature to guide future research and promote equity in anesthesia care.

METHODS

An OVID search strategy was developed to explore the current landscape and identify key terms and relevant studies. The final search strategy included "anesthesia" and all its derivates, as well as "language barrier/English-limited" or "translator/interpreter." Electronic databases, including Medline, Embase, and all Evidence-Based Medicine (EBM) reviews, were systematically searched from inception to October 2024. Two reviewers performed independent screening through Covidence, resolving discrepancies through discussion or consultation with a third reviewer. Studies were included if they focused on the impact of language discordance, were conducted in English-speaking centers, and were published in English for logistical reasons. International mission trips and studies undertaken in multilingual nations were also included to provide insight into extreme language barriers with limited resources or to reflect the multilingual climate of Canada, respectively. Studies were excluded if interactions with the anesthesia team were not noted to keep the anesthetic lens of the project. There was a mix of randomized control trials, retrospective reviews, qualitative analyses, and case reports. The data extraction was duplicated with a standardized template, and all results were compiled. The

reference lists of relevant articles were reviewed for additional studies to ensure thorough exploration.

RESULTS

Twenty-one studies were included, most of which were qualitative and conducted in the USA. Only 1 Canadian study addressed language barriers in anesthesia care and did not focus on French or Indigenous populations.[1] Common challenges included higher rates of miscommunication, delays in care, and alterations in anesthesia plans, such as lower use of epidural anesthesia among non-English-speaking patients.[2] Interventions like translators and educational tools (e.g., videos, pamphlets) improved communication but faced accessibility and availability challenges.[3] Emerging technologies, such as smartphone apps and artificial intelligence (AI)-based tools, showed potential but lacked research in larger populations.[4] Communication barriers trended toward worse patient outcomes, highlighting significant concerns for patient safety; however, the absence of quantitative data linking language barriers to specific outcomes, such as pain management, satisfaction, or length of stay, made it difficult to draw definitive conclusions on the effectiveness of interventions.

DISCUSSION

There is a significant gap in the literature on anesthetic care for patients with limited English proficiency. Language barriers have a negative impact on patient safety outcomes and reduce provider efficiency. Future research should assess the effectiveness of traditional interpreter services and compare them with novel translation technologies using quantitative measures. Translation services may be more accurate for Western languages, raising concerns about inter-language variability. This is especially important in Canada, a bilingual and multicultural country, where one in four residents is an immigrant.[5] Additionally, the needs of Canada's Indigenous populations remain understudied, which can lead to further health disparities.

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Monitoring endotracheal tube cuff pressure under general anesthesia: a quality improvement project

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INTRODUCTION

Modern endotracheal tubes (ETTs) use a high-volume, low-pressure design, allowing the cuff to conform to the trachea, securing it against aspiration and facilitating mechanical ventilation.[1] The optimal cuff pressure is 20 to 30 cm H_2O to minimize tracheal mucosal injury while ensuring effective sealing to decrease aspiration risk and ventilator-associated pneumonia.[2] Several factors have been shown to affect cuff pressure, including ETT characteristics, patient positioning, and surgical techniques.[4] Several measurement techniques exist, including manual palpation of the pilot balloon, the minimal leak technique, and the fixed volume technique.[5] Although simple and cost-effective, these methods lack the accuracy of a manometer and do not support repeated measurements to be obtained. In response to the 2023 Canadian Anesthesiologists' Society (CAS) guidelines recommending ETT cuff pressure monitoring with manometers, this project utilized the Plan-Do-Study-Act (PDSA) cycle shown in the Figure to improve cuff pressure management at a tertiary care centre.

METHODS

Study investigators measured ETT cuff pressures on 50 patients under general anesthesia. Anesthesia providers were not aware of when the pressures were to be measured. The manometer was attached to the pilot balloon of the ETT during end-expiration. After measurement, the pressure was corrected to the optimal range if necessary. The reading was recorded along with patient demographic data.

After initial measurements of ETT cuff pressures, manometers were supplied to each operating room to ensure accessibility. Educational sessions with operating room (OR) personnel, including anesthesia providers and perioperative nurses, emphasized the importance of accurate cuff pressure management, proper measurement techniques, and adherence to recent guidelines. The sessions included hands-on training with manometers to enhance practical application. Endotracheal tubes cuff pressures were reassessed three months postintervention using the same protocol as the baseline measurement. Patient demographics and relevant clinical variables were collected during this reassessment to facilitate a comparative analysis with baseline data. Pre- and postintervention measurements were

analyzed and compared using descriptive statistics in SPSS, with statistical significance defined as $P < 0.05$.

RESULTS

This study evaluated the impact of educational sessions and manometer availability on ETT cuff pressure management. Baseline and follow-up sampling included 50 patients in each group. No readings were excluded from the analysis. Initially, the mean ETT cuff pressure was 56.5 cm H_2O (SD, 33.1), with only 18% of pressures within the optimal range (20–30 cm H_2O). Following the intervention, the mean pressure decreased to 37.8 cm H_2O (SD, 25.9), with 44% of pressures within the optimal range. These changes were statistically significant ($P < 0.05$).

Height and ETT size showed significant associations with cuff pressure, with taller patients and larger ETT sizes associated with lower pressures. Female sex was correlated with higher cuff pressures ($P < 0.05$), while age and weight had no significant impact. The intervention improved adherence to optimal cuff pressure ranges, highlighting its effectiveness in enhancing patient safety.

DISCUSSION

In response to the 2023 CAS guidelines, this project utilized the PDSA cycle to improve ETT cuff pressure management. Targeted educational sessions and accessible manometers decreased mean cuff pressure by 33% and increased pressures in the optimal range (18% to 44%). Demographic factors, including ETT size, sex, and height, influenced cuff pressure, emphasizing individualized management. Limitations include the single-center design, small sample size, and lack of randomization. Future steps include addressing barriers, integrating reminders, and assessing complications like post-operative sore throat, ventilator-associated pneumonia, and aspiration.

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Figure


Plan
• Assess the baseline prevalence of cuff pressures outside of the recommended range.
• Identify contributing factors to improper management
Do
• Supply manometers for each operating room to facilitate access.
• Develop educational initiatives for healthcare professionals, emphasizing the importance of accurate measurement techniques and the significance of optimal cuff pressure.
Study
• Evaluate the impact of our interventions on cuff pressure management post-implementation.
Act
• Identify any remaining barriers to cuff pressure management and implement additional interventions as needed.
• Continuously monitor and review cuff pressure management practices to sustain improvements over time.

OR-ientation: changing onboarding strategies to improve trainee knowledge of the location of emergency drugs and equipment in the operating room

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INTRODUCTION

As a quaternary pediatric referral centre, our institution educates a large volume of anesthesia residents each academic year, from PGY 2–4, as well as several off service and off-site learners. This results in frequent changeovers of learners. Even established clinical staff can be unfamiliar with individual operating room (OR) layout and the location of emergency equipment. In an emergency, cognitive overload may result in a struggle to identify equipment or medication in a timely manner.[1] Through the introduction of the OR-ientation package, we sought to improve orientation to equipment necessary to provide safe patient care.

METHODS

The authors obtained approval from the local Quality Improvement Committee. We adopted the model for improvement (PDSA) methodology. Using the Association of Anaesthetists' equipment safety guideline[2] and local aide memoires for anesthetic emergencies, we identified key equipment that would be required in a pediatric anesthesia emergency.

An online “Knowlege test” 9-item questionnaire was administered to trainees 3 weeks post traditional onboarding to establish baseline knowledge of the location of these items. Following this, a root cause analysis (RCA) was performed to identify gaps in the onboarding that contributed to knowledge gaps.[3]

Cycle 1: A digital questionnaire was administered administered to trainees at the end of their first day of onboarding, requiring them to perform a “scavenger hunt,” uploading photographs of emergency equipment and medications in the department prior to commencing their clinical duties. Knowledge was tested at 3 weeks using original questionnaire.
Cycle 2: Virtual scavenger hunt with e-mail reminders.
Cycle 3: In-person escape room-style activity during protected simulation time. New learners were charged with managing a virtual complex case, to unlock each piece of clinical information, they were required to seek-and-find emergency equipment and medications.

Microsoft forms was used for all digital questionnaires. Data were analysed using SPSS.

RESULTS

Baseline questionnaire and RCA: 15/18 responded to initial questionnaire. Sixty percent were familiar with the location of the code blue carts. Forty-six point six percent knew how to override the Omnicell in the event of an emergency and how to activate the emergency bell in the OR. Fifty-three percent were aware of the location of dantrolene and intralipid. Mean score 5/9.

Root cause analysis identified contributing factors including cognitive overload of new learners and the emergency equipment orientation performed on a tour of the department, before learners were familiar with the layout.

Cycle 1: 60% of new learners completed the scavenger hunt. Mean score on the quiz was 6/9. Barrier to completion: forgetting.
Cycle 2: E-mail reminders sent twice during week 1. 60% of new learners completed the scavenger hunt. Mean score on the quiz was 6/9. Barrier to completion: lack of protected time.
Cycle 3: 90% learners completed (1 missed due to illness). Mean score on quiz 8/9.

DISCUSSION

In our institution, we identified frequent turnover as a potential patient safety threat due to repeated loss of institutional knowledge regarding the location of emergency equipment and medications. Through multiple PDSA cycles, we have improved knowledge in new hires. Safety II thinking identifies the importance of well-trained individuals in mitigating potential harm before it reaches patients.[4] By making the orientation interactive, we allow learners to physically and mentally rehearse retrieving equipment, prior to their involvement in a crisis.[5]

We will continue to develop this program to meet the needs of future learners and our patients.

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