Simulation Education in Neuraxial Anesthesia Resource-Constrained Settings

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Introduction
• Neuraxial anesthesia is a critical skill to learn and perform in modern anesthesia practice
• In sub-Saharan Africa, anesthesia providers consist of few anesthesiologists and mostly non-physician clinical officers whose training can be variable
• Hands-on teaching opportunities in clinical setting are at times limited due to limited workforce (i.e. teaching faculty) in low resource settings
• There have been anecdotal reports of high complication rates of neuraxial (PDPH especially)
• Complications of neuraxial can be preventable if there is focused teaching on patient selection and medication effects

Aims
• Create a neuraxial curriculum including sim scenarios and partial task training, tailored to local context that could improve fund of knowledge and affect clinical practice for providers in low resource settings

Lecture
Standardized lecture incorporating core objectives for performing neuraxial anesthesia, including indications/contraindications, physiology, technique, and complications

Low Fidelity Neuraxial Models
We constructed low fidelity neuraxial models based on a model developed by Dr. Merlin Larson for teaching anesthesia residents at UCSF. Cost was about $20 per model and items locally sourced, including native fruits.

Simulation
• At Makerere University, we have previously established low-cost simulation center
• At Busitema University in Mbage, we recently developed a new low-cost simulation center
• For both centers, vitals are displayed using SimMon software that was developed and provided by Niels Castle
• We developed simulation scenarios to teach neuraxial anesthesia and manage high spinals that will be taught to anesthesia officers
• Simulation scenarios involve the scenario with guides for performance rating, debriefing, and educational materials.

Challenges
• Simulation is not a part of the formal curriculum at Makerere University, so scheduling sessions was challenging
• Unpredictable factors such as strikes and hospital closures made course administration challenging during the study period
• Materials were sourced locally though finding ideal materials was somewhat challenging and required modifications
• Cost effective audio/video setups for recording were challenging given loud environment and power reliability

Future Directions
• Pilot study to be conducted and course will be refined
• After course refinement, larger implementation with Anesthetic Officers (non physicians) to assess impact on fund of knowledge and practice patterns
• Support secured from WFSA to scale this pilot and evaluate impact on AO practice in Uganda

Acknowledgements
• Department of Anaesthesia at Makerere University
• Department of Anaesthesia at Busitema University
• Niels Castle – SimMon Software
• WFSA for allowing us to use educational materials and providing funding

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