

HISTORY AND EDUCATION

Paper No: 35.00

A bioethical glance to the practice of the professional anesthesiologist

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Values and principles are essential to all human life is especially important in the healthcare environment. The health care should be conducted by professionals with comprehensive training, including the human aspects. However, only the current education into account. Without doubt, this is one of the major unfinished business of our health system now spreads much discouragement in a negligible percentage of health professionals.

To this end, medicine requires professionals conducting a series of reflections Ethics Seal, compared to the situations faced daily, so as not to violate moral rules, ethical and legal. However, our values education is almost nil. In the case of physicians, including anesthesiologists, are usually trained in the proper handling of the so-called "Clinical Facts", but are not trained in conflict resolution between values. This is due to the widespread belief that they can play no role in the Hospital. However, it is an issue that has a significant influence on the quality of healthcare.

In the health field often conflicting values of life with health and other economic, religious, cultural, and so on. Many doctors do not know how to manage such conflicts, resulting in a higher prevalence of stress. This is where comes in. Bioethics, which provides guidance for such situations.

For Bioethics considers the set of rules governing human activities related to the biological world, with living things and their components, from the molecule and cell to the people and the general ecological system. Why is it important Bioethics? As science became inseparable in the field of health discussions for the advancement of anesthesiology and research skills necessary to make that area of specialty practice.

There are several philosophical movements in the fundamentals underpinning bioethics, however, the analysis model commonly used is the "principal" of Beauchamp and Childress described in 1979 and is based on four principles: Charity, Non-maleficence or safety, Justice and Empowerment.

Good training in bioethics will avoid potentially difficult situations the anesthesiologist in clinical practice. Undoubtedly the best way to raise their level of satisfaction and, consequently, improve the quality of care. Therefore, it is now

essential to take into account the values to make good decisions.

Understandably, more and more anesthesiologists recognize ethical dilemmas in their practice: situations that warrant transfusion in Jehovah's Witnesses, in patients with complicated pregnancies Jehovah's Witnesses, Do Not Resuscitate Orders, Vital Wills, etc. In this bibliographic report we review and define bioethical concepts in which the anesthesiologist is involved. Particularly, it is suggested an encouragement in the participation of the anesthesiologist in the casuistry for the evaluation of the cases and ethical-medical dilemmas

Keywords: Bioethics; Bioethical Principles; Doctor-Patient Relationship; Anesthesiology

Paper No: 60.00

A comparison of knowledge retention between online and in-class problem-based learning

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Introduction: Through student empowerment, problem-based learning (PBL) has a strong reputation for enhancing student motivation towards learning tasks and providing an unconstrained environment. The method promotes the learner's role as the decision-maker and planner. The researchers play the role of a 'good friend', facilitating learning and stimulating referral to databases, while fostering a context conducive to learning. In addition, the online learning method is increasing in popularity.

Objective: To compare knowledge retention of the two learning methods: online (OPBL) and in-class problem-based learning (IPBL).

Methods: A pre and post-test study design of the three-week research project was performed in volunteered students from two-academic year. After completing the pretest, the IPBL group performed an activity test. Then the instructor held an open discussion for further explanation and clarification.

Afterwards, students performed a diagnostic test to earn their achievement score. The 3-hour activities in each learning specification part took place exactly a week apart. The contrary, the OPBL group performed all tests by log on to the website. The online program not only established their weaknesses and urged them to explore for core knowledge, but also recorded students' profiles. After three weeks, the post-test was arranged for both groups. Four weeks later, the final test was managed without prior notice. The pretest, post-test and final test forms were parallel under the same table of specifications.

Results: The pretest, post-test and final test score of the IPBL group and the OPBL group were 4. 57 2. 92, 23.74 7.58, and 12. 70 5. 19; 4. 94 6.31, 31.67 7.07, and 25. 77 5. 9 respectively. The growth of knowledge after the post-test and after the final test as well as the retention of knowledge of the IPBL group and the OPBL group were 54. 32%, 22. 64%, and 68.32%; 76.01%, 59.63%, and 83.64% respectively.

Conclusion: The OPBL yielded the better of knowledge retention. The key success factors might depend on students' achievement motive and a sense of self-actualization.

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Paper No: 216.00

Tracheal intubation of rabbits (*Oryctolagus cuniculus*): comparison with and without laryngoscope

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Introduction: Rabbits (*Oryctolagus cuniculus*), mainly from New Zealand, many currently used for experimental research and demonstration procedures. However, maintenance of the airway is a major problem for the anesthesia of the animals.

Objectives: This study aims to compare the intubation using the laryngoscope and blindly in rabbits submitted to laparotomy demonstration.

Methods: After approval by the ethics committee of animal research institution rabbits were divided into two groups. Group L consisted of forty-three rabbits were intubated with the use of laryngoscope blade straight number one and group C consisting of forty rabbits intubated blindly

and supine. After weighing the animal, it was identified with a bandage on the front foot with your number and corresponding weight. As a pre-anesthetic was used acepromazine 1 mg/kg combined with dexamethasone 0,2 mg/kg ketamine and 15 mg/kg subcutaneously fifteen minutes before the shaving. The monitoring was using esophageal stethoscope and clinical parameters. After venous catheterization in the marginal ear vein, 24 G catheter was administered sodium chloride 0.9% 10 ml/kg. Ketamine for anesthesia was used from 50 to 10 mg/kg intravenously. Cannula number 2 without balloon was used for the intubation. If there was difficulty in intubation option would be for maintenance of anesthesia under mask. Anesthesia consisted of inhaled 1% isoflurane and oxygen three liters per minute in face mask system (Mapleson D). The variables evaluated were: number of attempts, number of failures and number of intraoperative deaths.

Results: A total of 83 rabbits, 43 in group C and 40 in group L. Regarding the number of attempts we got a mode, an average of 4,22 with a standard deviation of 4,11 in group C, and mode 2, an average of 4,41 with a standard deviation of 3,51 in the group L. Regarding the number of failures obtained in tracheal intubation in group C 6,9% and 7,5% in group L. With the number of intraoperative deaths obtained 4,6% in group C and 5% in L.

Conclusions: This study demonstrated that the use of the laryngoscope does not improve the efficiency of tracheal intubation compared with intubation blindly in New Zealand rabbits used for demonstrative surgeries.

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Paper No: 335.00

Intraoperative Acceleromyography Monitoring Reduces Symptoms of Muscle Weakness and Improves Quality of Recovery in the Early Postoperative Period

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Introduction: Awake volunteer studies have demonstrated that small degrees of residual blockade are associated with a number of unpleasant symptoms of muscle weakness.¹ The subjective experience of residual paresis after emergence from anesthesia has not been examined systematically during postanesthesia care unit (PACU) admission.

Objectives: We hypothesized that acceleromyography monitoring, by reducing the percentage of patients with train-of-four (TOF) ratios <0.9 in the PACU, would also diminish unpleasant symptoms of residual paresis during recovery from anaesthesia.

Methods: 155 patients were randomized to receive intraoperative acceleromyography monitoring (acceleromyography group) or conventional qualitative TOF monitoring (control group). Neuromuscular management was standardized and extubation was performed when defined criteria were achieved. Immediately upon arrival to the PACU, TOF ratios were measured using acceleromyography and a standardized examination was used to assess 16 symptoms and 11 signs of residual paresis. This examination was repeated 20, 40, and 60 minutes after PACU admission. Generalized weakness was quantified on a 0-10 scale at these times. Quality of recovery was assessed using a 100 mm visual analogue scale (VAS) at PACU discharge.

Results: The incidence of residual blockade (TOF ratios <0.9) was reduced in the acceleromyography group (14.5% vs. 50.0% control group, $P<0.0001$). Generalized linear models revealed the acceleromyography group had less overall weakness (graded on a 0-10 scale) and fewer symptoms of muscle weakness across all time points ($P<0.0001$). Median overall weakness (0 to 10 scale) in the acceleromyography group on PACU admission was 4 and decreased to 2 in one hour while in the control group it was 6 on PACU admission and decreased to 4 in one hour. The median number of symptoms of muscle weakness in the acceleromyography group on PACU admission was 2 and decreased to 0 in one hour while in the control group it was 5 on PACU admission and decreased to 1 in one hour. The median number of signs of muscle weakness was 0 in both groups at all times assessed. Global quality of recovery measured on a 0 to 100 VAS was improved in the acceleromyography group (85 (50 to 100) vs. 70 (0 to 100) control group, $P<0.0001$).

Conclusions: Acceleromyography monitoring reduces the incidence of residual blockade and associated unpleasant symptoms of muscle weakness in the PACU, and improves overall quality of recovery.

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Paper No: 352.00

Historical review of anaesthesia & intensive care in Trinidad & Tobago

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Introduction: The evolution of Anaesthesia & Intensive Care Services is unique to every country and region. Although the first surgery in Trinidad & Tobago dates back to 1871, there

have been anecdotal reports prior to this. Like many other countries, anaesthesia services in these islands commenced with surgeons self-administering local anaesthesia, later seeking the assistance of junior officers to administer ether/chloroform without appropriate patient monitoring. This study determines the historical development of such services in Trinidad & Tobago.

Objectives: To study the developments of Anaesthesia & Intensive Care Services in Trinidad & Tobago and examine the influence of the University of the West Indies

Methods: Local, regional and international literature including scientific publications and newspaper archives were searched. Information was also derived from personal interviews with surviving colleagues in Surgery and Anaesthesia. Additional information was obtained from the "History Section" of various Continuous Medical Education seminars.

Results: Anaesthesia in Trinidad & Tobago dates back to an eye operation performed in 1871. The first operating list under ether or chloroform was done in 1878 in Elliot Hospital, now the Port-of-Spain General Hospital. Tobago, the sister island, had the first anaesthesia in 1887. The San Fernando General Hospital was established in 1860 and where the first anaesthetic machine from the United Kingdom was used. Before 1950, there were no qualified anaesthetists. The establishment of the University of the West Indies and the development of the postgraduate specialty programmes changed the scenario. Teaching anaesthesia to undergraduates started in 1975, the first ICU was established in 1976. The postgraduate training programme was commenced in 1984. Currently there are over 40 qualified anaesthetists, 52% being locally trained. Presently, state-of-the-art technical equipment, drugs and qualified human resources are available to ensure a smooth and safe delivery of perioperative and intensive care. Establishing our local Association in 1985 with affiliation to the World Federation of Societies of Anaesthesiologists (1988) provided further potential opportunities for growth.

Conclusion: The specialty of Anaesthesia & Intensive Care has evolved exponentially within half a century in Trinidad & Tobago.

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Paper No: 432.00**Impact of transesophageal echocardiography simulation-based training on learning basic cardiac structures recognition and navigation between the twenty standar views**

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Introduction: Perioperative use of transesophageal echocardiography (TEE) has evolved as an indispensable tool for anesthesiologists in cardiac surgery and recently also in high risk non-cardiac surgeries. TEE training is challenging for anaesthesiologists and the availability of fellowships or elective rotations in some countries is limited. Moreover, until TEE simulator was not made commercially available for TEE training, there was no formal hands on training technique for TEE. The aim of our study is to determine the impact of the use of the TEE simulator in the learning curve of intracardiac structures identification and navigation between the 20 standard diagnostic views.

Methodology: 14 cardiac and non cardiac anaesthesiologists were recruited to assess the educational benefit of TEE Heart work® simulator. A 20 multiple choice test was completed by the participants before and after 1 hour simulation-based teaching session in a controlled environment. The test was written and validated by four experienced anaesthesiologists. It was divided in two parts, ten questions to assess the structures identification knowledge and ten questions focused on how to get the standard views. Values are expressed as mean and standard deviation. The Mann-Whitney U test and T student test were used for comparisons.

Results: There was a statistically significant improvement between the scores of pre and post simulation session test: Averaged presimulator score was 40%+/-22 and postsimulator was 77%+/-13 ($p < 0,05$). There were not statistically significant differences between the improvement of the scores of structure identification part (pretest: 50%+/-20 and post-test 80+/-12) and navigation in the standard views part (pretest 39%+/-21 and post-test 75%+/- 18).

Conclusion: The use of the simulation-based training during 1 hour significantly and equally improves the knowledge of intracardiac structures identification as well as navigation between the 20 standard TEE views. Simulation-based training, although an expensive tool may significantly decrease the amount of time needed to practice on real patients when learning basic TEE. Simulation-based learning could be very useful in countries where fellowship programs are not easily available, and widespread and cardiac and non cardiac anaesthesiologists or intensivists have limited opportunities to learn.

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Paper No: 440.00**Feedback on clinical and educational performance needed by US academic anesthesiologists for practice-based improvement and promotion**

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Introduction: Formative feedback and reflective practice are vital for the academic anesthesiologist. American Board of Anesthesiology Maintenance of Certification (MOCA) process includes a practice improvement project involving collection of practice data, comparison against benchmarks, implementation of an improvement plan and reevaluation of outcomes. 1 Limited performance feedback may help to explain why clinician-educators are promoted at a lower rate than researchers. 2

Objectives: Aims were to clarify the self-perceived ability of anesthesiologists to comply with MOCA requirements, and to identify the challenges educators experience in documenting their educational activities for promotion.

Methods: IRB-approved survey was distributed in paper format to 2010 Society for Education in Anesthesia (SEA) national meeting attendees, and in electronic format to SEA members who did not attend (overall response rate 31%). Categorical variables were compared using Pearson chi-square tests. Open-ended questions were analyzed for content and systematically coded and categorized. Themes were identified. Respondents were compared on gender, rank, age and regional location to US academic anesthesiologists, using AAMC data 3.

Results: With 75% of SEA respondents participating in the MOCA process, only 48% had ready access to their practice outcome data, less than 35% routinely received evaluation of clinical performance, and only a third felt their present feedback system was adequate to complete the practice improvement project. Evaluations by chairs, students, and residents were the main sources of feedback on clinical practice (65%, 25% and 48%) and teaching (56%, 60% and 91%). Peer feedback was available to only 22% for clinical practice and 8% for teaching, while multisource feedback was available 17% and 6%, respectively. Top concerns about completing MOCA related to collecting, evaluating, and presenting individual practice data. Although about half of respondents reported faculty development programs, 25% of junior

faculty and nearly 20% of clinical faculty did not feel they had an adequate understanding of the promotions process. Maintenance of an academic portfolio was highly correlated to availability of institutional tools for this purpose ($r=0.55$, $p<0.001$). Fewer than 12% received feedback from mentors. Top concerns about promotion included uncertainty about effective presentation of clinical and educational performance data, and lack of time for research.

Conclusions: Our survey results suggest that adequate feedback is not occurring in academic anesthesia departments and that better guidance in the promotions process is needed. A majority of respondents desired a better organizational structure for presenting their achievements in educational and clinical arenas to promotions committees.

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Paper No: 473.00

History of trauma anesthesia and resuscitation

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Introduction: History of trauma anesthesia and resuscitation includes management of airway, pain, shock, triage, transport, anesthesia and surgery.

Discussion: Greek and Roman Eras: Hippocrates described trauma and types of head injuries. Pain relief with opium, hemlock, and mandrake. Asclepiades 1st described tracheostomy; Celsus, treated abdominal trauma, head injuries, fractures; Galen had methods to close wounds and treat bleeding. Middle Ages: pain control via “drugged” wine and “soporific” plants. Wounded were treated in monasteries. Renaissance: Wounds were cauterized with boiling oil. Analgesia was opium and direct nerve compression. 17th Century: Serverino used snow and ice for analgesia. Harvey described circulation of blood. Major 1st used IV fluid therapy; Monel tourniquets to control bleeding. 18th Century: Hale was 1st to measure blood pressure. Pugh used air pipes for newborn resuscitation. Hunter, air bellows with valves. Nairn 1st used electricity for cardiac defibrillation. 19th Century: Larrey was 1st modern military surgeon to use horse drawn “flying ambulances” for

wounded rescue at start of battle and introduced triage and “First Aid.” Forence Nightengale improved sanitation of hospitals. Lister introduced germ therapy. Cocaine used for local and regional anesthesia. Ether introduced by Long and Morton, N2O by Wells. Esmarch introduced his chloroform mask; first aid and rubber bandages to exsanguinate limbs. Bier described IV regional block. 20th Century, WWI: Crile developed anoci-association theory with N2O balanced anesthesia in WW1. Lansteiner classified blood into 4 groups; Robertson and Cannon developed the 1st blood bank. Guedel described stages of anesthesia. Need for specially trained anesthesia providers recognized. Uncuffed endotracheal tubes were developed by Magill and Rowbotham followed by Guedel and Waters who added cuffs. WWII: At Pearl Harbor, pentothal effects in hypovolemic patients was recognized. Henry Beecher researched shock and resuscitation. Post WWII: New anesthetics were curare, succinylcholine, lidocaine, halothane, ketamine and opioids. Miller and McIntosh laryngoscope blades introduced. Anesthesia develops into specialty with formal training, certification and organization. Korean War: Helicopter evacuation and Mobile Army Surgical Hospital (MASH) units decreased mortality. Viet Nam War: Triage and resuscitation started in field with helicopter evacuation to MASH units. “Da Nang Lung” and ARDS recognized. Persian Gulf, Iraq and Afghanistan to present: Anesthesia was TIVA, propofol, inhalation draw-over vaporizers, regional, and ketamine used alone. Care of wounded brought to front line with Mobile Forward Surgical Teams (MFST).

Conclusion: War involves trauma and over the ages has contributed to and been the benefit of advancements in anesthesia, critical care and resuscitation.

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Paper No: 474.00

Comparison of American anesthesia gas machines used at the start of the 20th century

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Research Problem: What were similarities and differences common among anesthesia gas machines at the start of the 20th Century and how did they impact anesthesia care?

Sources: National WW 1 Museum, Kansas City, MO; Wood Library and Museum, Park Ridge, IL; Google internet search.

Methods: Approach: archival, library, museum and internet web research.

Results: In the 1860s, problems of nitrous oxide (N₂O) and oxygen (O₂) storage and delivery were solved by use of high-pressure metal tanks. In the early 1900s, the invention of pressure reducing valves decreased tank pressures delivered to the patient. Newer gas machines were developed that allowed addition of chloroform or ether to mixtures of N₂O and O₂ and provided a continuous, steady flow of gas at uniform pressure. The technique of N₂O/O₂ anesthesia was popularized by the Anoci-Association theory of Dr George Crile during World War One to decrease morbidity and mortality associated with using chloroform or ether during surgical shock. Crile's N₂O/O₂ balanced regional anesthesia technique decreased mortality as a lighter depth of anesthesia was needed for surgery compared to using chloroform or ether. N₂O/O₂ was used more consistently in place of chloroform. Newly developed gas machines included the Gwathmey, Connell, Heidbrink, Teter and Ohio Monovalve. Factors common to these early machines were electric warmers, vaporizers, rebreathing bags, and pressure reducing and control valves, allowing the simultaneous or single administration of N₂O or O₂. The Heidbrink (1911) and Teter (1912) incorporated reducing valves and rebreathing bags which provided a definite flow and mixture of N₂O and O₂ for continuous breathing. The Ohio Monovalve (1912) passed gas through regulators and automatic valves to reduce gas pressure. The Gwathmey (1912) was simple to use and eliminated need for diaphragm valves. A visible sight feed allowed for economy of gas consumption and eliminated irregularity of gas flow, leakage and freezing of valves. The Connell (1913) had flow meters which allowed accurate gas delivery with quantitative dosing of N₂O and O₂.

Conclusions: New N₂O/O₂ gas machines were developed at the start of the 20th century. These machines had: (1) N₂O/O₂; (2) reducing and control valves; (3) rebreathing bags; (4) electric source to warm gases; (5) vaporizers for ether and chloroform. Advantages were even, continuous gas flow with no valve freezing, allowing the use of a minimum quantity of gas given alone or in combination. Choice of machine appeared to depend on individual preference.

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Paper No: 475.00

Comparison of united states (US) versus German anesthesia during world war one

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Research Problem: What were influences, similarities and differences between US and German anesthesia methods used during WW I?

Methods: Archival, library, museum, internet web research. Anesthesia techniques used by US vs German armies were compared in areas of: (1) surgeons and anesthetists; (2) drop mask methods; (3) apparatus; (4) gas agents and machines; (5) premedication; (6) regional anesthesia and local anesthetics.

Results: Surgeons (US=Crile, Cushing, Mayo. German= von Esmarch, Schimmelbusch, Bier, Braun, Kuhn) and anesthetists (US=Guedel, Gwathmey, Hodgins. German=Kapeller, Dumont, Braun, W. B. Mueller (textbooks)) in each country influenced the type of anesthesia. Drop mask methods were used at front line casualty stations, field, evacuation and base hospitals for both countries. Yaunker and Gwathmey masks were used by US. While Schimmelbusch mask was used by both countries, Germany also used Julliard, von Esmarch, and Sudeck masks. While the Shipway anesthesia apparatus was used by US, Germany used the Ombrédanne and H. Braun. Gas machines were used at evacuation and base hospitals. The Roth-Draeger and Georg Haertel gas machines with compressed O₂ were used by Germany. N₂O was not used by Germany during WWI. Whereas in 1910 the first N₂O–O₂ machine (Rota-M. Neu) and then in 1926 the Draeger-Model A came on the market in Germany, they were not used for military purposes. Ohio Monovalve, Heidbrink, Connell, Gwathmey, and Teter machines were used by the US. As N₂O was a key component of Crile's Anoci-Association balanced anesthesia technique, Crile supported using the Ohio Monovalve machine. Intramuscular morphine and scopolamine or atropine were used as premedication by both US and Germany. Oral Veronal, Luminal and Pantopon were used by Germany. Regional anesthesia was used by both countries, with Novocain the most popular local anesthetic. Stovain (from France) was used by the US. Germany used Tropacocain. Germany added Suprarenin (adrenalin) to Novocain.

Conclusions: At front line casualty stations, field, evacuation and base hospitals, the drop mask methods used by both armies were similar. A major difference of anesthesia administration was type of gas apparatus and machine. There was an increased emphasis on N₂O as well as variety of different gas machines used by the US. Regional anesthesia/local anesthetics were used by both countries, with the exception that Stovain (from France) was used for spinal anesthesia by the US. In Germany, regional techniques were highly accepted and used in up to 60% of all anesthetics.

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Paper No: 526.00

A Summary of Novel Simulation and Educational Tools for Anesthesiology Residents and Medical Students

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Introduction: In the past, anesthesiologists have had a significant impact on creating new ideas in medical simulation and education. Recently, anesthesiologists' use of simulation in anesthesia education has become evermore popular and globally prevalent. We describe several new learning tools that are currently used in our teaching institution to enhance the simulation experience. Furthermore, we show the diverse range of simulation techniques and share some scenarios that have been developed to specifically address some of our problems in anesthesia education. Additionally, we show how our anesthesia simulation curriculum is integrated into a Web 2. 0 internet application. Finally, we show anesthesia related learning tools available at free or little cost.

Objectives: 1) Show unique anesthesia learning tools that were developed and/or utilized at our anesthesia training program. 2) Show how a anesthesia simulation program is integrated into our academic institution's anesthesia residency program and how it helps to meet the ACGME requirements. 3) Illustrate how our anesthesia simulation curriculum is integrated into a Web 2. 0 internet application. 4) Summarize anesthesia related learning tools available at little or no cost.

Methods: n/a

Results: The integration of a simulation program into the larger anesthesia training program curriculum cannot be overstated. Tools used to enhance the simulation experience have been developed by our institution. These include state of the art checklists, digital worksheets, DVDs and integration of our simulation program into a Web 2. 0 application. While relatively new, we believe that our utilization of technology helps to enrich our simulation program to aide the learners' experiences to create a higher impact learning experience. In addition, we list a thorough list of freely available or low cost educational material that will enhance the anesthesia student's education.

Conclusion: The use of technology in medical education is continually expanding. It is imperative for physician educators to be aware of the different types of technology and how they can enhance the education of anesthesia residents or students. This abstract focuses on innovative approaches in anesthesia education and simulation.

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Paper No: 560.00

Introducing clinical governance to a tertiary trauma hospital – experience from Saigon, Vietnam

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Introduction: As a volunteer for the charity HVO (health volunteer organisation), I visited Ho Chi Minh Trauma Centre (HCMTC) during my out of program year. Under the supervision of the head of anaesthesia, I carried out the department's first survey of current practice in regional anaesthesia and introduced the concept of clinical governance into the residents' everyday anaesthetic practice.

Objectives: To create a system where clinicians feel accountable for continuously improving the quality of their services and safeguarding high standards of care. To demonstrate how a departmental survey helps to identify areas for improvement and generate discussions to resolve issues surrounding equipment, patient consent, uniformity in clinical practice & training needs.

Methods: Prospective survey questionnaire sent out to members of the anaesthetic department (nurses & doctors), covering a range of topics: types of block performed; block technique & assessment; rescue techniques & drug preferences.

0.25% w/ C	0.5% w/C
p value	
ISB (250)	18.6
SD 4.4 (488)	20.2
SD 5.0	<0.05
AX (72)	17.5
SD 4.2 (654)	19.1
SD 5.3	<0.05

Results:

Upper Limb: Interscalene(30.6);Supraclavicular(10.5);Axillary(48.4);Radial(3.2);Ulnar(3.2);Median(3.2);Flexor tendon (0.8)
-Lower limb: Femoral(37.2);Tibial(11.6);Popliteal(4.7);Ankle(4.7);Other(41.9) ? Consent: 100% of practitioners consent their patients ? Discussions in consent(%):Numbness(75);Tingling(35);Pain(50);Nerve Damage-reversible(15); irreversible(0);Urinary retention(5);Stuffy nose(5);Difficulty speech / swallow(5);Not stated(5) ? Use of nerve stimulator(%):Always(0);Sometimes(80);Rarely(10);Never(10) ? Why not stimulator(%):Training(10);Confidence(20);Time(60);Access(40);Others(15) ? Use of ultrasound(%):Always(0);Sometimes(10);Rarely(25);Never(65) ? Why not ultrasound(%):Training(45);Confidence(20);Time(30);Access(55);Others(15) ? Success indicator(%):Numbness/parasthesia(85);Tingling(25);Pain(5);Pain on injection(10);Aspiration of blood(10);Other(15) ? Reasons for general anaesthesia (GA) conversion(%):Patient complaint(70);HR/RR(45);Prevents surgery(70);Surgeon complaint(40);Others(10) ? % GA conversion last week(%):0(40);1-5(20);6-10(10);11-20(25);21-30(10);>30(0) ? If RA fail, what strategies?(%):GA(80);Add opioids(30);Add Benzodiazepine(BDZ)(10);Add BDZ+Opioids(5);Rescue block(20) ? Rescue drug preference(%):Propofol(60);Ketamine(5);Propofol & ketamine(20);BDZ(30);Fentanyl(10)

Conclusions: This survey has highlighted the importance of a formalised log: currently, there are no theatre logs or formal documentation of the workload at the HCMTC and consequently, funding & procurement of new equipment can be difficult to justify. A wide variety of regional anaesthetic practices exist within the department. The standardisation of clinical care would benefit the patient, in particular, patient consent and the timing and type of rescue technique when stand-alone regional anaesthesia fails. Further discussion is required to formalise strategies and consensus including identifying training needs. A re-audit by another volunteer from HVO or a member of staff from the department is expected.

Paper No: 563.00

Combined use of sugammadex and neostigmine reverses rocuronium-induced profound neuromuscular blockade faster than that of sugammadex alone

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Introduction: Sugammadex is a new reversal agent for profound neuromuscular blockade. However, it is more than thirty times as expensive as the traditional reversal agent, neostigmine (sugammadex 200mg costs 9477 yen, and neostigmine 2.0mg costs 267 yen in Japan) (1). Sugammadex

and neostigmine have different mechanisms of action and their pharmacological interaction has not been studied yet.

Objectives: We hypothesized that we could reverse rocuronium-induced profound neuromuscular blockade by partially substituting sugammadex with neostigmine.

Methods: After institutional ethics committee's approval and written informed consent, twenty-six healthy adult surgical patients were randomly allocated to Group S (n=13) or Group SN (n=13). Anesthesia was induced with propofol and was maintained with continuous infusion of propofol and remifentanyl. The patients were intubated without neuromuscular blocking agents and mechanically ventilated during the study. Neuromuscular blockade monitoring was performed using TOF Watch SX® acceleromyography. After control stabilization, rocuronium (0.6mg/kg) was administered to patients in both groups. The patients in Group S received sugammadex 1.0mg/kg five minutes after rocuronium administration. Those in Group SN received sugammadex 0.5mg/kg and neostigmine 0.04mg/kg five minutes after rocuronium administration. The recovery time was started at the administration of reversal agents. The degree of recovery was evaluated by T1/control and TOF ratios. They were measured and recorded every thirty seconds for forty minutes after the administration of reversal agents. The results are expressed as mean ± SD. Statistical analysis was done using analysis of variance (ANOVA) and the unpaired t-test with Bonferroni's adjustment. A p-value less than 0.05 was considered to be statistically significant.

Results: The T1/control ratios were significantly higher in Group SN at 5, 10, 15 and 20 minutes after administration of reversal agents (Group NS vs. N; 0.23 ± 0.26 vs. 0.06 ± 0.12 , 0.53 ± 0.34 vs. 0.21 ± 0.19 , 0.69 ± 0.28 vs. 0.43 ± 0.25 , 0.80 ± 0.20 vs. 0.63 ± 0.19 , respectively. $p < 0.05$). The TOF ratios were significantly higher in Group SN at 10, 15, and 20 minutes after administration of reversal agents (Group NS vs. N; 0.42 ± 0.35 vs. 0.17 ± 0.29 , 0.63 ± 0.36 vs. 0.35 ± 0.26 , 0.77 ± 0.31 vs. 0.57 ± 0.27 , respectively. $p < 0.05$).

Discussion: These results demonstrate that combined use of sugammadex and neostigmine can reverse rocuronium-induced profound neuromuscular blockade faster than that of sugammadex alone.

Conclusions: We can partially substitute sugammadex with neostigmine for the reversal of profound neuromuscular blockade.

Reference

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Paper No: 649.00

Rapid sequence induction/intubation and nasogastric tubes: historical perspective, current concepts, and proposal of an algorithm

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Introduction: Rapid sequence induction and intubation (RSII) is a commonly chosen anesthetic technique for patients at risk of aspiration of gastric contents. Because of their clinical condition, some patients may have a nasogastric tube (NGT) placed preoperatively. There are no accepted guidelines regarding which patients should have a NGT preoperatively. Furthermore, there is no agreement whether to keep the NGT in place, or to withdraw the NGT partially or completely before anesthetic induction.

Objective: This study was designed to examine the history of the use of NGT's during RSII. An algorithm governing this use of NGT's when RSII is contemplated is proposed.

Methods: Manuscripts addressing RSII and NGT's since 1951 were reviewed.

Results: RSII (with a 40° head-up tilt) was described by Snow and Nunn in 1959.¹ The lack of complications with this technique was attributed to the use of NGTs. Cricoid pressure (CP), introduced by Sellick in 1961,² seemed to have overcome the disadvantages of the head-up tilt. Sellick hypothesized that NGTs can increase the risk of regurgitation by "tripping the upper and lower esophageal sphincters" and by interfering with the effectiveness of CP. In a second publication,³ he modified his views regarding the withdrawal of NGTs before anesthetic induction. Studies in cadavers in the 1970's and 1980's demonstrated the effectiveness of CP in obliterating the esophagus around the NGT.⁴ In 1993, Vanner & Pryle⁵ provided additional evidence regarding the efficacy of CP in the presence of a NGT. In the 1990s, some clinicians recommended complete or partial withdrawal of a NGT to the mid-esophagus before anesthetic induction.⁶

Discussion: An algorithm is proposed regarding the use of NGTs when RSII is contemplated. It is based on historical and clinical evidence, as well as, additional factors: the type and severity of the esophageal, gastric or intestinal pathology; age; predictability of difficult intubation or mask ventilation; whether or not a NGT is in place; associated medical conditions; and the presence of possible contraindications to the use of RSII or CP.

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Paper No: 702.00

The influence of anaesthetic factors on the well-being of the fetus during birth: preliminary study

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Background and goal of the study: The acid base state of the fetus is an important component in establishment of a connection between the labor events and the neonatal conditions and development, and therefore, it's the marker of fetal well-being. We are searching a multivariant model of the pH of a newborn according in patients who have been subjected to obstetric analgesia for labor.

Material and methods: After the ethical committee approval, we carried out a randomised clinical double blind trial on consecutive women. They were on spontaneous labour, ASA I-II, 18-36 years, first, second or third pregnancy, 3-5 cms dilation. The method of randomisation was closed. Three hydration groups were established with Ringer lactate : Group I 500 ml, Group II 700 ml and Group III 1.200 ml . Patient laying on his left side . Weiss puncture 18G, L3-L4, Test dose: Lidocaine 1,5%+epinephrine 1:200.000 3 ml. Continuous epidural infusion at 10 ml/h with bupivacaine 0.0625%+Fentanyl 2 µg/ml+epinephrine 1:200000. Monitoring: electrocardiogram, pulse oximetry and non invasive blood pressure (NIBP) . The following variables were observed: age, corporal mass index, dilation, number of previous pregnancies, lenght of labor, blood pressure, oxytocin units, instrumentation, total volume infused and umbilical arterial samples for pH determination . The analysis was carried out with the intention of treatment . The calculation software used was SPSS 18.0.

Results: A total of 56 patients were included in the study: 17, 23 and 16 in group I, II and III respectively. There were no differences of age, mass corporal index or number of pregnancy, instrumentation, cervical dilation and parity between the groups. The mean of newborn pH was 7,247 (Group I), 7,233 (Group II) and 7,281 (Group III) without statistical significance difference (ANOVA p=0,559) We've made a predictive model of newborn pH with the studied variables using a lineal regression model: Newborn pH= 7,239- (0,002 x age)+ (0,032 x cervical dilation) - (0,105 x parity) - (0,189 x instrumentation)+ (0,0001 x total volume) - (0,056 x oxytocin units) - (0,097 x hypotension) We've not found statistical significance in any of this variables.

Conclusions: Although we've not found likely an appropriate predicting model based on small current sample size, it can be said that the influence of the fluid therapy in the improvement of the newborn is low, because of the low intensity of

the lineal regression model coefficient that we appreciate when compare this with others variables like instrumentation and number of previous pregnancies.

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Paper No: 724.00

Impact of 15 years of Benin-Belgium cooperation on anesthesiologists' demography in West Africa

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Introduction: According to the WFSA Sub-Saharan Africa was in 1992 the only region in the world where the number of anesthesiologists was decreasing instead of rising. In many countries our specialty was extinct or nearly so, impeding teaching for anesthesia nurses or technicians (1,2). In 1994 Belgian universities decided to support the University of Abomey-Calavi (Benin) to start an anesthesiology 'CES' (Certificat d'Etudes Supérieures) program to teach and train future specialists from all French-speaking African countries, following CAMES specifications.

Materials and Methods: Belgian Cooperation grants (CGRI, CIUF-CUD, CTB, WBI) supported the project for a total 2106 €, representing the largest part of the CES budget. 10 Belgian Hospitals and 3 Universities (UCL, ULB, ULg) also provided 21 scholarships. Individuals sponsors and industry participated occasionally. Future professors got scholarships.

Results: The program enrolled 96 candidates from 14 countries and delivered 50 diplomas to candidates from 11 countries (Benin, Congo-Brazza, Burkina-Faso, Central-Africa, Chad, Djibouti, Gabon, Guinea-Konakry, Mali, Niger, Togo, [Morocco]); 8 left Africa, 1 is ill and 1 died; 84% of living graduates work in Africa, increasing the total of specialists practicing in the sub-region from 44 in 1999 (date of first diplomas) to 84 (+91%); 68% assume teaching duties. The average duration of training has been 5.3 years; 33 candidates did rotations in Belgium; 46 are still in training, + those enrolled in 2011. This should provide a regional workforce of 99 anesthesiologists by 2015 taking into account observed rates for brain-drain, drop-outs, mortality. A 2½ year course for nurse anesthetists started in Cotonou in 2002 and

already graduated >150, multiplying the impact of the program. Alumni worked in Darfour, Haiti and Porga crises. Two professors got CAMES certified; another one is preparing his doctorate.

Discussion: With limited financial means and deliberately avoiding any direct humanitarian action this project succeeded in reversing the negative demographic trend of our specialty in French-speaking West Africa and restored adequate conditions for knowledge transmission to the next generation of specialists. However, the future still depends on a dangerously small number of individuals; brain drain remains a threat. Efforts are made to respect the 4 year-training schedule. African Governments' policies vary toward graduates, some countries providing better reinsertion conditions. The next priority is to open more CES programs in the region and more schools for nurse anesthetists, which implies training former and future graduates in teaching and management skills.

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Paper No: 766.00

E-learning prior to undergraduate simulation and crisis management-development of an online educational tool

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The face of Undergraduate medical student education is constantly changing. Currently the challenge is to meet the needs of our Generation Y or Millennial students. Characterized as having low attention spans, their learning styles are visual and kinaesthetic with a preference for multi-media technology.

At the University of Toronto, we have developed an online e-learning module as part of the Blended learning approach. Blended learning combines e-modules with face-to-face teaching.(1,2) The e-module is standardized in content and delivery allowing for flexible, repetitive viewing. E-learning has been shown to improve satisfaction among students through being interactive and engaging(3,4) likely translating into improved performance.(5) Students complete the e-module prior to hands on Simulation as part of the core curriculum, facilitating student focused-learning and optimizing face-to-face instruction time with Faculty.

The web based e-module is accessible to computers and hand held devices via a learning management system compatible with various internet browsers. Learning objectives are i) Airway in Crisis, ii) Formalization of the CanMEDS

roles(6) exemplified by team training and iii) Introduction to ACLS guidelines as a roadmap to resuscitation. Content is fully narrated for the multi-tasking Millennial learner and is delivered using specialized features including i) animated annotations that highlight learning objectives, ii) still images and high resolution video, iii) multi-level navigation and branching, iv) embedded live web pages and v) interactive “clickable” slides to facilitate active learning. Prior to each video, objectives are posed with questions following to allow self assessment. There is an embedded end of module quiz with instant feedback.

Senior medical students and 1st year Anesthesia residents have praised the content and multimedia delivery of this module as being easily accessible and instructional prior to their hands on Simulation training. Specific comments included the video breakdown of necessary components for a successful team after viewing 2 scenarios and interactive slides with labelled equipment and patient's vital signs.

In conclusion, the authors believe that the e-module is an important educational tool directed at the student to focus learning prior to hands-on Simulation. Our goal is to extend accessibility of this tool to include other interprofessional teams.

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Paper No: 803.00

A pilot project of anesthesia education by video-conferencing between Uganda and the United States

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Introduction: Annually many anesthesiologists from high resource countries volunteer to teach and provide anesthesia

care in low resource areas. With recent wide accessibility of improved global communication networks, this education effort could be supplemented by video-conferencing by satellite, IP, ISDN, or 3G mobile phone communication.

Objectives: To evaluate the ability to use free Skype video-conferencing to provide anesthesia education between an American metropolitan tertiary referral hospital and a Ugandan rural secondary referral hospital.

Methods: We used Skype to video-conference between Massachusetts General Hospital (MGH), Boston, USA and Mbarara Regional Referral Hospital (MBRR), Mbarara, Uganda, on eight days. We used three lectures formats: 1. small group discussion 2. department case presentation conferences 3. department Grand Rounds. Department presentation streaming was encrypted. One to two lectures were broadcast during two hour sessions. Lecture materials were emailed in advance. We selected topics based on request from Uganda and the pre-existing lecture program at the MGH. We requested feedback from lectures and students about the convenience of time slots, quality of the internet connection, audibility of the presentations, format of lectures, clinical relevance of the topic presentations and future possibilities of the project.

Results: The 7 a.m. start of protected academic time at MGH coincided with the 2 p.m. slowing of clinical load at MBRR. Internet connection was achieved on six of eight days, lack of a modem in Uganda being the issue on two days. Bilateral sound transmission was excellent. Video transmission was good and could be improved by greater lighting in Uganda. Small group discussions were felt by students to be most useful as they involved interaction with lecturers and sharing of experiences. Topics felt by students to be of most relevance were those requested by students, although MGH department presentations were also of interest and educational benefit. Lecturers enjoyed interacting with international students, as well as having their lectures streamed internationally. A formal lecture syllabus and time slot schedule would be useful. The lecturers and students felt the program should be continued and expanded.

Conclusions: Scheduled video-conferencing is an effective, inexpensive way to provide long-distance anesthesia education. It can supplement local academic programs, enhance international anesthesia outreach programs, and build relationships between academic centers in different parts of the world.

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Paper No: 813.00

Does residual neuromuscular blockade affect postoperative pulmonary functions?

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Residual neuromuscular blockade (RNMB) is a common problem in the postoperative period following muscle relaxant based general anaesthesia despite the use of reversal agents.¹ The respiratory muscle weakness due to RNMB can result in restrictive breathing and reductions in peak expiratory flow (PEF), forced vital capacity (FVC) and forced expiratory volume (FEV1).² Few studies are available, hence we studied the incidence of RNMB produced by different muscle relaxants, as assessed by TOF and post-operative pulmonary respiratory functions.

Methods: After obtaining Ethical clearance from our Institutional Review board, 150 patients of ASA grade 1 & 2, undergoing various surgical procedures of 2–4 hours duration, were randomly allocated into three groups receiving Vecuronium (Group V), Atracurium (Group A) or Rocuronium (Group R) as muscle relaxants. No attempt was made to standardize anaesthetic technique, which was left to the choice of Anaesthesiologists concerned. At the end of surgery, neuromuscular blockade was reversed with Neostigmine and Glycopyrrolate. TOF and pulmonary function test (PFT) were measured preoperatively and on arrival at PACU by TOF watch (Organon Ltd) and Spirometry (Micro plus). RNMB was defined as TOF < 0.9. Age, Sex, Height, Weight and BMI were noted. Parameters recorded were Duration of Surgery, Duration of last dose to reversal, time to achieve from reversal, to extubation, TOF > 0.7 and TOF > 0.9 were recorded. PEF, FEV1, FVC, FEV1/FVC ratio, were recorded post operatively, every 5 min. The best of three readings was considered for the analysis. Data was analyzed by using ANOVA, Student's t-test, Kruskal Wallis test and Chi-square test or Fischer's exact test.

Results: Average duration of first PFT measurements was 16.7 ± 13.8 min and 9.5 ± 12.4 min after reversal and first TOF measurement respectively. RNMB (TOF < 0.9) was present in 86 patients and absent in 64 patients, significantly more in females (64%, $P=0.001$). Incidence of RNMB (TOF < 0.9) was significantly lower in Rocuronium group (44%) as compared to Vecuronium group (68%) and

Atracurium group (60%) ($P=0.047$). The postoperative PFT for groups with 'RNMB-absent' and 'RNMB-present' were; PEF 49% and 41% ($P=0.007$), FEV1 58% and 53.5% ($P=0.060$) and FVC 61% and 55% ($P=0.033$) of the preoperative values respectively indicating restrictive pulmonary function. The postoperative PEF, FEV1 and FVC values in 'RNMB-Present' patients were 84%, 92% and 90% respectively as compared to fully recovered (RNMB absent) patients.

Conclusion: We conclude that in clinical practice, the incidence of RNMB was significantly lower with Rocuronium and higher in females. Patients with RNMB had significantly low PFT values and may be more prone to critical respiratory events in PACU.

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Paper No: 914.00

A pilot project for training operative department practitioners to improve team performance with a two stage process of screen based simulation followed by simulation on airway training head

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Introduction: In the United Kingdom, Operating Department Practitioner (ODP) provides dedicated and skilled assistance to an anesthesiologist within the operating theatre. It is important for an ODP to provide skilled assistance for a successful outcome if a critical incident occurs. Maintaining and securing airway is fundamental to anaesthetic practice. Failed intubation and ventilation, which although not very common, is a potentially life threatening situation if immediate steps are not taken. Newly qualified ODPs may not have enough experience to help anesthesiologists in managing this situation effectively to avoid a fatal outcome.

Objectives: We describe a pilot project of training newly qualified ODPs with an aim to improve team performance during failed intubation /ventilation scenario, using a two stage process to enhance cognitive retention and performance.

Methods: We used screen based simulation (SBS) for "can't intubate, can't ventilate" scenario for a group of seven newly qualified ODPs. The focus was on developing situational awareness, learn management protocol, increase the knowledge base and emphasize concept of team working in a crisis situation. This was followed by repeating the scenario with an airway training head in the operating theatre. We observed their knowledge and skills in handling the situation, and non-technical skills such as anticipation, planning and preparation, communication, use of available resources,

calling for help early and appropriately, setting priorities and avoiding fixation errors. This was followed by feedback and debriefing.

Results: ODPs demonstrated their knowledge about steps to be taken in the above situation with good knowledge retention from the previous screen based simulation and had a systemic approach to anticipate and use the management protocol. Several shortcomings were also highlighted e.g. lack of knowledge and experience in handling specialist airway equipment, difficult airway trolley and availability of specific drugs in theatre. Structured debriefing increased their knowledge and confidence.

Discussion: The two stage process of teaching a “can’t intubate, can’t ventilate” scenario is useful in bringing together the skills of being a team player with good communication skills, being prepared to work under pressure and learn to be meticulous in preparation and checking of equipment and drugs. Repeating the simulated scenario in a theatre environment after screen based simulation helps in building their knowledge, understanding and skills thereby promoting and helping in their spiral learning.

Conclusions: Screen based simulation followed by airway simulation in theatre environment is effective experiential learning tool for difficult intubation scenario for newly qualified OPDs.

Paper No: 920.00

Flat screen cardiovascular physiology instruction: is one large group session just as effective as multiple small group sessions?

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Introduction: Since 1995, second year medical students have learned the theory of pulmonary artery catheterization (PAC, “Swan-Ganz”) and the interpretation of hemodynamic data during problem based learning (PBL) sessions during the cardiology block[1]. In parallel, to make the “theory come alive,” we have provided hands-on simulation experiences[2]. The students, in small groups (6-8 per group) interactively experience the hemodynamic data generated in real time by a physiologically based full human simulator[3]. Students highly value these sessions, and are requesting more simulation sessions. However, due to the high time requirement (20 hours of faculty/instructor time), we are not able to expand the number of small group simulation experiences.

Objectives: Our objectives included exploring differences in learning and perceptions after two methods of simulation instruction: control (small groups: mannequin based

simulation), experimental (one large group=half the class, using a lecture with screen-based simulation.)

Methods: Following ethical approval, volunteering second year medical students were assigned to either control group (one-hour small group simulation sessions) using a physiologically based mannequin (METI HPS, Medical Educational Technologies, Inc., Sarasota, FL) or experimental group (one-hour large group session, using a PowerPoint lecture based on the current small group session, with concurrent screen-based simulation.) A second presenter projected a computer based (“flat screen”) simulation (Hemodynamics Simulator, Version 1.0, Anesoft Corporation, Issaquah, WA). Interactive questions were integrated into the lecture using an audience response system. Both groups completed a 5 point knowledge questionnaire (pre- and post session), a subjective questionnaire exploring their perceptions (0=bad, 10=good) after the sessions, as well as a questionnaire based on acquisition of Bloom’s levels of knowledge. Free text comments (large group versus no simulation) were also elicited. Two sample t-tests were used to compare the groups. A p value of 0.05 was considered significant.

Results: 52 students participated in small group sessions and 52 in the large group session. Pre- to post differences in knowledge scores (large group- 1.06 ± 1.19 , small groups- 1.25 ± 1.28) were not significantly different ($p=0.4$). 71% (large group) and 86% (small groups) indicated an increased understanding ($p<0.01$). On all Bloom’s domains[4] (Gain new facts, Understand issues, Apply knowledge, Analyze monitors’ data, Use to diagnose and plan therapy, Evaluate/compare therapies), the small group participants’ ratings were higher than the large group ($p<0.04$).

Discussion: Small group simulation sessions are preferred by the students. However, given the choice of large group simulation[5,6] versus no simulation, they indicated a preference the large group simulation.

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Paper No: 949.00**The trainee and trainer perspective of postgraduate medical education and training in the United Kingdom (UK)**

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Introduction: In recent years postgraduate medical training in the UK has undergone a significant overhaul. The Postgraduate Medical Education and Training Board (PMETB) merged with the General Medical Council (GMC) on the 1st April 2010 (1).

PMETB was a non-government organisation responsible for postgraduate medical training and education in the UK. It was an independent body, but was accountable to Parliament. Today the GMC sets the standards and outcomes for postgraduate medical training and education in the UK (2).

Objectives: We were keen to find what trainees/trainers thought of current postgraduate medical education and training programmes in the UK and whether opinions correlated or differed. We also wanted to know whether there were any identifiable factors within the hospital that had a significant impact upon the delivery of good postgraduate medical training.

Methods: Multiple choice questionnaires were sent out to trainers/trainees in the UK. Questionnaires collected demographic data and trainer/trainee's views and experiences of current postgraduate medical education and training in the UK.

Results: Responses were received from a good spread of medical specialties. Participants were asked what criteria they considered made (a) a good doctor and (b) a good postgraduate training programme. Over 70% stated that patient safety was important as a doctor, but not essential within a good training programme (10%). Support and supervision scored highly in both categories. Competency at procedures and good theoretical/practical knowledge were deemed to be extremely important qualities as a clinician (over 80%) and competent trainers, organised teaching and the ability to attend these teaching sessions was considered necessary within a good training programme.

Constantly changing supervisors and time pressures, particularly emphasised by trainers, had the biggest impact on inability to complete work based assessments (WBAs). Fifty-five percent of trainees were able to attend 50-80% of their scheduled teaching and attendance was generally prevented by either roster or service commitments.

Discussion: The majority of trainees feel that the training they received last year was average to excellent. However, it is clear that despite the GMC's efforts to ensure a national standard for postgraduate medical training, both trainees and in particular trainers rate service provision, rosters and time pressures were considered the most significant obstacle in providing good postgraduate training.

Conclusion: There needs to be a greater understanding from the GMC and NHS that extra resources and time are required to ensure that 'Tomorrow's Doctors' are trained to a safe and competent standard.

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- 2 Tomorrow's Doctors 2009, Trainee Doctors 2010 (GMC)

Paper No: 980.00**2011 Prevalence Of Burnout In Residents Of The Course Of Studies Specialist Physician In Anaesthesiology Of The AAARBA [Reanimation, Analgesia and Anesthesia Association of Buenos Aires City]**

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Introduction: The Burnout is a syndrome of chronic distress of those service professions distinguished by an intense and continued attention to people that are in a situation of need or dependency. Nowadays, it is one of the main reasons that cause inability to work or absenteeism. The syndrome shows three main aspects: emotional exhaustion, depersonalization and lack of personal accomplishment.

Objetives: Calculate the prevalence of the Burnout syndrome in residents of the course of studies specialist physician in anesthesiology of Buenos Aires city. Secondary goals: Describe the distribution of the Burnout syndrome in the different subgroups (year of residency, sex, age, previous residencies, capital-province) and calculate the different subscales of the syndrome.

Methods and Materials: Multicentric, observational descriptive cross-sectional study, applying the Maslach Questionnaire to the target population under intentional consecutive sampling. The Chi-square test is applied for proportions comparison, considering significant a $p < 0.05$ and Pearson parametric correlation to relate age and prevalence of Burnout ($r > 0.6$).

Results: 191 residents are surveyed over a total of 281, obtaining that 6.3% of them experience the Burnout Syndrome. The three subscales are qualified that give the following proportions: 45% show emotional exhaustion, 38.2% depersonalization and 12% does not reach personal accomplishment. There are no significant differences according to sex ($p = 0.32$) or between capital and province ($p = 0.85$). Burnout prevalence between physicians that went through prior residencies (18.8%) is significantly higher than the ones who did not (4.2%) ($p = 0.036$). The distribution of the syndrome according to ages shows a direct positive correlation for Pearson coefficient ($r = 0.72$).

Discussion: The comparison of our results with those of other countries shows that anesthesiology residents of the AAARBA present a high rate of emotional exhaustion (45%) similar to the one of our colleagues in Belgica (40.4%) and clearly superior to the one detected in Mexico's hospitals (17%), Australia (20%), North America (22, 2%) and Spain (19, 5 %). However, the coexistence of the three subscales of the Burnout Syndrome in the residents of the AAARBA (6.3%) have considerably lower values in comparison to the ones of Australia (20%) and Spain (12,1%), approaching these last international prevalence values to the ones of second year residents of the AAARBA (14%).

Conclusion: Although a small proportion present the syndrome; we consider it is a cause of concern that by analyzing separately the different spheres that compose it, there are high rates of emotional exhaustion or depersonalization.

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Paper No: 989.00

The use of a computerized haptic simulation model to track angles of epidural needle insertion by anesthesiology residents

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Introduction: Presently, while lacking suitable simulation models for training, residents essentially learn epidural

needle placement skills on patients. We evaluated haptic (force feedback) devices to teach skills of small angle changes of epidural needles.

Objectives. The objective was to test the value of haptic devices which simulated advancement of an epidural needle. Specifically, we wished to train the residents to make smaller angle adjustments of the epidural needle after encountering (“hitting”) bony obstructions.

Methods: Following ethical approval, we developed a Virtual Reality epidural simulator based on a haptic device (Phantom Omni, Sensable Technologies, Woburn, MA, USA). A 22 mm diameter round object (coin) was programmed at a depth of 40 mm.

Part A (baseline measurements): Anesthesia residents advanced the simulated epidural needle straight ahead (horizontal) to encounter the object. They were then requested to repeatedly retract and advance while changing the angle with the aim of finding (“walking off”) the edge of the object. They were asked to establish, from the angle of insertion, the size of the object. During this phase, the screen of the computer was turned away.

Part B: (practicing): While viewing the computer screen, residents practiced advancing the needle while making only necessary (small) angle changes to find the edge of the object.

Part C: (testing): With the screen turned away, residents attempted finding the edge of the object as before. Comments were elicited from residents as to the value of the training and suggested changes. The computer program measured the angle of each insertion attempt and calculated distances from the center of the object. We calculated the variation (standard deviation) of each resident's attempts. We calculated the average of the group's variations for Part A and Part C. We used Fisher's Exact Probability Test to compare Part A and B. P-values of <0.05 were considered significant.

Results: For Part A, the 16 volunteers had an average variation of 11.4 mm (minimum 5, maximum 17.) For Part C the average variation was 13.3 mm (minimum 4, maximum 21.) Differences were not significantly different. The residents indicated that this was a useful device to use for training. However, the simulated needle had to be placed in the “home” position prior to each insertion, and the residents had difficulty in remembering the prior angle of insertion.

Conclusion: Based on our results, we believe this is a valuable training device for residents, and further development would be deemed worthwhile.

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Paper No: 1077.0

Workplace-based assessment tools in Canada: a comprehensive, cross-sectional survey of anaesthesiology resident coordinators

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Introduction: Medical education has undergone a paradigm shift from time and process based to competency based and has changed the way we assess learning progress (1,2). Workplace-based assessment (WBA) is defined as the evaluation of demonstrated professional practice in a real work setting by an assessor. WBA includes various tools: portfolios, case-based discussions, the mini-clinical evaluation exercise (mini-CEX) and the direct observation of procedural skills (DOPS) (3). As such, WBA is considered a cornerstone of the theory of competency-based education because it can assess knowledge, skills and attitude at once in an authentic context. It is not currently known how widely WBA tools have been adopted in Canadian anaesthesiology programs. Faculty development is key to the successful use of WBA tools and there is no published literature on whether Canadian anaesthesiology faculty are routinely trained in the use of assessments. This study aimed to evaluate the use of WBA tools in Canadian anaesthesiology resident programs and to identify the current state of faculty development with respect to these tools.

Methods: After Research Ethics Board approval, anaesthesia Residency Program Coordinators of all 17 University Departments of Anaesthesia in Canada were included for an

online nationwide survey investigated the implementation of WBA in postgraduate anaesthesia programs.

Results: Response rate was high with 68% (44 of 64 Resident Program Coordinators) representing 88% of the University Departments of Anaesthesia (15 of 17). The most widely used tools were locally designed assessment tools (25/64), DOPS (direct observation of procedural skills, 28/64), multi-source feedback (20/64) and case-based discussions 24/64). Both oral and written feedback is indicated in 88.6% of responses. When given, feedback happens immediately after the assessment in 61.8%. In most cases (65.5%), the Resident Coordinator gives delayed feedback (mid-rotation or end-rotation) and 31.8% feedback is given directly by the daily supervisor. The large majority of assessors (88.7%) did not receive training before the use of WBA tools. **Conclusion:** WBA tools are widely implemented in all Canadian postgraduate Anaesthesia Programs. However, WBA tools used vary among teaching hospitals. Locally designed WBA tools are predominantly used raising the question of whether validity has been established. Feedback practice is not commonly performed according to educational principals as feedback is delayed in a third of all cases. Faculty development appears to be underdeveloped and improvement may increase the educational benefit of WBA.

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Paper No: 1083.0

George Leininger, M.D.: The World's First "Professor of Anaesthesia" to Dedicate Undivided Academic Attention to "Professing Anaesthesia"

George Bause

Introduction: For the last decade, historians have believed that the world's two earliest anesthesia professors were H.I. Dorr, a multidisciplinary "Professor of the Practice of Dentistry, Anaesthetics and Anaesthesia" at a dental school, and T.D. Buchanan, a multidisciplinary "Professor of Anaesthesia" at a medical school.(1,2) Could another "Professor of Anaesthesia" have been overlooked?

Objective: To uncover the earliest unidisciplinary “Professor of Anaesthesia”.

Methods: This study collected two major types of data. First, over the last 6 years, the author conducted a systematic survey for names of early anesthesia professors in medical or dental literature (books, periodicals, ephemera, etc.) published in the English language. Then, in September of 2011, the author requested names of early anesthesia professors from the staffs of the world’s largest dental and anesthesia libraries, the American Dental Association Library and the American Society of Anesthesiologists’ Wood Library-Museum of Anesthesiology.

Results: Interviews of 5 library staff at the 2 institutional libraries underscored staff awareness of the landmark professorships of Drs. Dorr and Buchanan. Internet search engines and systematic on-site literature surveys uncovered no unidisciplinary “Professor of Anaesthesia” prior to a George Leininger, M.D., who taught from 1892–98(3,4).

Discussion: Henry Isaiah Dorr, M.D., D.D.S. was a dentist-physician with a dental school professorship by 1889 that was titled “Professor of Practice of Dentistry, Anaesthetics and Anaesthesia” at the Philadelphia College of Dentistry. In contrast, in 1904 Thomas Drysdale Buchanan, M.D. was a physician with a medical school professorship as the unidisciplinary “Professor of Anaesthesia” at the New York Homeopathic Medical College. This study searched for the earliest professorship appointed timewise between these two—an earlier unidisciplinary “Professor of Anaesthesia.” The earliest found, George Leininger (1856–1935) was born and publicly schooled in Archbold, Ohio. He received his M.D. in 1881 from the College of Wooster, Ohio. By 1886 he had moved to Chicago to practice medicine. There Leininger would serve as a “Professor of Anaesthesia” for a total of 6 years at: 1) the American College of Dental Surgery (1892–96) and then 2) the Northwestern University Dental School (1896–98). Unlike dentist-physician Dorr who taught practical dentistry part-time, physician Leininger gave his undivided academic attention to “professing” anesthesia at each of his successive dental schools.(4) Leininger finally forsook teaching to pursue opportunities in industry, public service, and the private practice of medicine.

Conclusion: This study uncovered no earlier unidisciplinary “Professor of Anaesthesia” than George Leininger, M.D.

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Paper No: 1168.0

Continuous updating in anesthesia and related sciences: an internet free project

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Anestesiología y Medicina del Dolor

Introduction: The cost and logarithmic growth of medical information are obstacles to stay updated. The Internet facilitates the acquisition of information, but takes time and computer skills to achieve an efficient search. In January 2010 Anestesiología y Medicina del Dolor embark on the Alpha Project sending daily emails characterized by full articles in PDF/HTML, and made free access educational changes in our website www.anestesia-dolor.org. Objectives. To facilitate and promote Internet update in anesthesia.

Material and methods: We created an email list and use an online email marketing service to submit daily emails. This list grew by email invitation and continuous addition by the authors. The articles were selected from Internet free access sources, dividing the subjects into 17 areas of interest in anesthesia and related sciences. The original website was modified allowing for consulting and educational sections. We monitored intermittently the outcome of the project.

Results: From January 1, 2010 to August 15, 2011 the Alpha Project has sent 2,696,362 emails containing 1 to 6 full articles in PDF/HTML in each email. The 29.10% (740,490) were opened, 19% (140,603) clicked on them, 5. 5% (149,588) of the sent mails bounced for diverse reasons, and 0.1% (417) was forwarded to non subscribed physicians. The website had 33,844 visits made by 21,703 people from 102 countries/territories on five continents. The most frequent countries that generated the website visits were: Mexico (19,387) Peru (2930), Spain (1686), Venezuela (1456), Argentina (1376), Colombia (1362), Ecuador (1136), United States (738), Chile (492) and Bolivia (352). The website sections with the largest number of visits were: events (5478), continuing education (4181), journals (3165), books (3064) and informatic repository (2006).

Conclusions: The Alpha Project was satisfactory in both parts; mailings full articles in PDF/HTML, as well as the website visitors. The total number of sent emails was prominent due to the fast growing of the mailing list. This continued growth was the most important reason for an increased percentage of opening emails. The highest percentage of visitors to the website comes from Latin America countries, but visitors from non-Spanish speaking geographical areas have increased. Most visits were in the educational sections, but it was a high consultation of the academic events listed. We conclude that the free Internet education with daily shipments of full articles and the availability of a related website is a valuable form of continuous updating in anesthesia and related specialties.

Paper No: 1241.0**Teaching communication skills and professionalism to anesthesia trainees: the program to enhance relational and communication skills**

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Importance of physician-patient communication in improving patient safety, outcomes and satisfaction is well-established, but only recently has the importance of teaching communication and relational skills been recognized. The ACGME designated "Interpersonal & Communication Skills" and "Professionalism" core competencies, yet few evidence-based methods exist to teach these. We describe the development, implementation and preliminary evaluation of an evidence-based, simulation-enhanced program for anesthesiology trainees dedicated to cultivating these skills.

Anesthesiologists have an extraordinarily brief period of time in which to both evaluate and gain the confidence of patients, so communicative skill is essential. Much of the discussion during these brief patient interactions involves not only establishing trust and explaining the anesthetic, but also obtaining informed consent. With no legal standard for what information must be disclosed, studies have reported a full spectrum of patient preferences for information and decision-making. Therefore, our Program to Enhance Relational and Communication Skills (PERCS-Anesthesia) focused on the informed consent discussion in the context of patient-centered communication.

PERCS-Anesthesia was designed based on the perspectives and self-identified educational needs of trainees through rigorous qualitative analysis of narratives obtained during early development of the program. Trainees identified ethical, practical and relational challenges associated with informed consent; each of these challenges was then addressed in the final simulated case scenarios. Ethical challenges included circumstances such as patient's wishes not being honored and conflicts between patient's wishes and those of his family or the judgment of his providers. Practical challenges represented the trainee's uncertainty about how much information to provide, communication barriers, and time limitations. Relational challenges included issues of mistrust and previous negative experiences.

The workshops incorporate didactic presentations, simulated informed consent discussions with professional actors, feedback, and discussion. The program combines experienced anesthesia and psychology faculty to model and to teach communication and relational skills in realistic case scenarios. To date, twenty CA-1 trainees have been enrolled and 19/20 (95%) have completed pre-post evaluation questionnaires.

The clinical realism and usefulness of the case scenarios was highly rated as 4.7 and 4.5, respectively, on five-point Likert scales; additionally, 100% of residents would recommend the program to other trainees. The final version of this abstract will include increased sample size and qualitative analysis of the communication and relational skills that trainees intend to incorporate into their clinical practice.

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Paper No: 1292.0**Digitizing Our Past: The Wood Library-Museum of Anesthesiology and The Ether Controversy Experience**

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Introduction: The Wood Library-Museum (WLM) of Anesthesiology Rare Book Collection is housed in the K. Garth Huston, Sr. Rare Book Room at the American Society of Anesthesiologists headquarters in Park Ridge, Illinois. This comprehensive collection includes 2,242 rare literatures describing the discovery of anesthesia and its introduction to surgery-the largest collection of anesthesia rare books in the world.

Objectives: The WLM Trustees and staff have long recognized the importance of preserving our Rare Books and sharing them with out colleagues and scholars.

Methods: We had dialogues with other major libraries and made site visits to the National Library of Medicine (NLM) and the Countway Library at Harvard Medical School In April 2007, I visited the NLM in Bethesda, Maryland and met three key professionals who directed the “Turning the Pages” project or “TTP. This is an electronic format created by the British Library that which allows visitors to touch and turn the |ppages of virtual books on the screen. In July 2008, we sent six pamphlets from “Ether Controversy” collection for a “trial digitization” to Northern Micrographics in La-Crosse, Wisconsin. Their digitization process uses multiple scanners and book cradles to allow scanning without unbinding the book. The digitized product is a searchable portable document (PDF) and a digital versatile disc (DVD).

Results: We catalogued and digitized subsets of rare books in a systematic fashion. The Ether Controversy was the first collection completed and contains books and pamphlets that are unique or have special significance. There are now 48 titles in this digital folder and a few representative items are listed here: Morton’s Letheon, WTG Morton, 1847. Some account of the Letheon: or, who is the discoverer? Edward Warren, 1847 Protest of Dr. Charles T. Jackson, the bill providing for the recompense of the discoverer of practical

anaesthesia. Charles T. Jackson, 1854 These rare books can be viewed electronically via the following URL: <http://woodli-brarymuseum.org/library/rarebooks>

Discussion: The WLM’s philosophy and approach towards its digitization effort has evolved over the past three years. Initially we focused on unique books that might be overlooked by larger electronic databases.

Conclusion: The Ether Controversy Collection digitization project caused us to reflect upon the future of medical libraries and the role of the WLM. As of August 2011 there are 225 books and pamphlets are preserved electronically. Anyone can access these collections: ASA members, scholars, students and the general public. Digitization has allowed us to preserve and share our anesthesia heritage.

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