**wcna1-0019**
**FREE COMMUNICATION SESSION 01**

**ROUTINE ADULT ENDOTRACHEAL TUBE SIZE SELECTION AND CUFF INFLATION TECHNIQUES: A NEED FOR NEW SAFETY STANDARDS OF CARE IN ANESTHESIA**

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1UCSF/USAR, Anesthesia, Corte Madera, USA*General anesthesia with an endotracheal tube (ETT) is performed safely countless times every day, with an estimated anesthetic complication rate of between 0.0606 to 0.0905 occurrences per 1,000 surgical discharges [1]. Post-operative sore throat (POST) and post-operative hoarseness (PH), however, remain a common complaint of intubated patients with an estimated incidence of between 14-70% [2].High endotracheal tube cuff pressure and large size ETTs have been implicated as causative factors. These two factors have also been implicated in the catastrophic and life-threatening injuries of subglottic stenosis (SGS) and recurrent laryngeal nerve damage [3,4].These two complications cause great physical, emotional, mental and financial life-long harm to patients (see patient testimonials in website LoveUrTrachea.blogspot.com). The simple methods of regulating cuff pressure with a cuff manometer and the use of smaller endotracheal tube could limit these complications and save untold suffering.

The purpose of this lecture is to deliver educational training on current research and recommendations of ETT cuff inflation and size selection and the need for new safety standards in anesthesia.These safety standards are to check cuff pressure with every intubation and to use the appropriate size ETT for the size of the patients tracheal diameter.

The lecture will begin with a self-evaluation questionnaire for each participant to exam their own practices and knowledge level of tracheal anatomy and perfusion, ETT size selection and cuff pressure in relation to evidence-based research. It will be followed by a PowerPoint presentation examining routine ETT practices and the harm that can be done by these practices as well as the current research that demonstrates the need for new safety standards of care.

The lecture will analyze the diagnosis of ‘idiopathic’ and challenge the accepted theory that SGS can only occur with prolonged intubation.The ‘hormone’ theory, that states hormones are the cause of female gender propensity to develop SGS, will be discussed as well as the factual basis from which it was developed.

Finally, in order to provide the full impact of harm done and the critical need for new safety standards in anesthesia, a patient will present her story of life with SGS, including how it is commonly misdiagnosed and the misguided treatments.

Key Words: Intubation, tracheal narrowing, knowledge

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**wcna1-0069**
**FREE COMMUNICATION SESSION 01**

**SURGICAL SAFETY CHECKLIST IMPACT ON PERI-OPERATIVE BLEEDING AND BLOOD TRANSFUSIONS**

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**Surgical Safety Checklist impact on peri-operative bleeding and blood transfusions**

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**Introduction**

One of the World Health Organization’s Surgical Safety Checklist (SSC) aims is to prevent peri-operative bleeding. We hypothesized that the SSC reduces peri-operative bleeding, subsequent blood transfusions and associated care costs.

**Methods**

A stepped wedge cluster randomized controlled trial of the SSC was carried out in two Norwegian hospitals in 2009-2010. The SSC intervention was implemented sequentially in a randomized order to five surgical clusters: orthopedic, thoracic, neuro, general and urology. In the largest hospital, we investigated a subset of outcomes (estimated peri-operative blood loss, blood transfusions, and costs) and compared control vs. SSC intervention procedures. Nurse anesthetists recorded study outcomes. Operating theatre staffs were blinded to study outcomes, post-operative and ward staffs were blinded to the intervention under study, and data assessors were blinded to patient allocation to control/intervention groups. Pearson’s exact X²-test, non-parametric t-test and logistic regression were used for statistical comparisons.

**Results**

We compared 1398 control procedures with 2304 intervention (including intention to treat) procedures and with 1743 procedures with actual SSC implementation. In control procedures the mean estimated blood loss was 278.8ml (95% Confidence Interval (CI), 248.2 to 309.4) vs. 237.7ml (95% CI, 214.9 to 260.4) in the intervention procedures, P=0.033, and vs. 236.2ml (95% CI, 235.0 to 274.9) in SSC procedures, P=0.037.

Blood transfusions (erythrocytes, plasma and thrombocytes) were used in 5.9% (218/3484) of all assessed procedures. Blood transfusions were provided in 6.8% (95/1398) of control procedures, in 5.3% (123/2304) of intervention procedures (P=0.072), and in 4.5% (78/1743) of SSC procedures (P=0.005). We adjusted for confounding variables and the odds ratio was 0.58 (95% CI, 0.40 to 0.85) when utilizing the SSC.

Mean blood transfusion costs in control procedures were 46.42 USD vs. 36.39 USD in intervention procedures (P=0.092), and 28.03 USD in SSC procedures (P=0.007).

**Discussion**

Reduction of peri-operative blood loss confirms that the SSC improves quality and safety of care in the operating theatre. These findings are further supported by recent published research (1). Reduction of blood transfusion costs associated to the SSC is a novel finding, with significant implications for the cost-effectiveness of peri-operative care.

**Conclusion**

Implementation of the WHO Surgical Safety Checklist was associated with reduced peri-operative bleeding, fewer blood transfusions, and reduced associated care costs.

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**Keywords: Anesthesia, Surgery, Cluster RCT, Implementation, Quality and Safety, Peri-operative Outcome**

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**wcna1-0075**
**FREE COMMUNICATION SESSION 01**

**QUALITY IN POSTOPERATIVE HANDOVERS: A CROSS-SECTIONAL SURVEY**

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Background: Patient handovers have been recognized as a risk for patient safety due to challenges with information transfer, teamwork and coordination. The postoperative handover represents a care transition that is especially critical to patient safety, as it is a complex process involving physical transportation of patients in a critical phase. The verbal report at handover often takes place over a patient that needs to be monitored continuously, involving practical tasks and use of medical equipment. These factors add complexity to the process and increase the risk of information omissions and errors, which potentially could lead to patient harm. Therefore safe and efficient postoperative handovers are important to ensure high quality patient care (1). This study is a comparison of how transferring and receiving nurses perceive the handover process and how they evaluate the patient being transferred. The study was carried out in a 14 bed postoperative care unit (PACU) in a Norwegian hospital.

Objectives: 1) To assess overall perceived quality of postoperative patient handovers, 2) To compare transferring and receiving nurse’s evaluations of handover quality and patient assessment, and 3) To assess which factors of handover need to be improved. Methods: Cross sectional design was chosen for the study. Nurses who had received or delivered a patient in the PACU were handed the questionnaire after handover was completed. The questionnaires were paired to the same handover without using patient identifiable information. Data about the quality of the handover situation was collected using a translated version of a handover quality-rating tool, developed by Manser and colleagues (2). The questionnaire consists of 21 statements, which the respondent chooses to agree or disagree to, on a four-point scale. The statements are related to conduct, teamwork, context and overall perceived quality of the handover. Questions addressing nurse experience, workload and evaluation of the patient were added to the questionnaire. The data has been analyzed using frequency tables and Cohen´s kappa. Results: A total of 192 questionnaires were returned from 101 handovers. The respondents were nurse anesthetists, student nurse anesthetists, intensive care nurses and nurses working in the post operative care unit. Data analysis is in progress January 2016. Preliminary results show that nurses delivering and receiving patients after surgery have different perceptions of the patient and handover process. Conclusion: Nurses delivering and receiving patients in the PACU have different perceptions of the patient and the handover process. Different roles between the two groups of nurses can be an important factor but more research is needed to assess if patient condition, nurse experience and workload affect handover quality.

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**wcna1-0034**
**FREE COMMUNICATION SESSION 02**

**STRATEGIC PLANNING WITH A PORTFOLIO – FOCUSED DEVELOPMENT OF ANESTHESIA NURSING AT THE UNIVERSITY HOSPITAL ZURICH**

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**Introduction:**The Institute of Anesthesiology at the University Hospital Zurich (USZ) was growing rapidly over the past decade based on an increase of patients in transplant surgery and highly specialized medicine. Additionally there are consistently more ASA 3-5 patients. Complexity in modern treatments with high level medicine techniques demands also an increasing effort from nurse anesthetics. To meet the current and future requirements, framework conditions and processes have to be well shaped. A portfolio, defined as a strategic paper for a systematic, focused, and continuous development. The aim was to establish a portfolio in order to promote the anesthesia care successfully in the next years.

**Methods:**In collaboration of a multidisciplinary nursing team (management, science and education) following steps were done: 1. Structured literature research in databases to discover trends in anesthesia care in German speaking and international context; 2. Collection and analysis of data to describe number of patients and their characteristics, anesthetic nurses with sociodemographic factors, working environment, workload, education level and utilization of training offers; 3. Analysis of strengths, weaknesses, opportunities and threats (SWOT); 4. Survey of anesthetic nurses to complement data from the SWOT; 5. Definition of future goals and action planning.

**Results:**Literature shows that leadership skills in management are crucial for a successful practice development. The role, tasks and responsibilities of anesthetic nurses in Switzerland differ from those in other countries. Clinical data illustrate a continuous growth of high risk and complex patients. Workforce examination shows a distinct turnover of nurses younger than 30 and a large percentage of longstanding staff. Opportunities for further education were used sparsely. Based on results from SWOT analysis and staff survey the following goals were defined: 1. Clear role definition of an anesthetic nurse and professional anesthesia care at the USZ; 2. Competence-oriented staff development and structures to promote leadership; 3. Defined standards in operation procedures; 4. Development of a quality management system in anesthesia care; 5. Agenda 2020 with topics in practice development and nursing research. Based on these goals first actions have already been initiated: 1. Constitution of modern leadership structures; 2. Establishment of function and role for a nursing expert; 3. Implementation of a credit based education program; 4. Continuous professional development concept; 5. Revision of standards in anesthesia nursing care.

**Conclusion:**Collaboration of nursing management, nursing science and nursing education led to a better mutual understanding. Positive working results were achieved quickly by an excellent teamwork in the development process, supported by motivated and enthusiastic members of the anesthesia care. With this portfolio a major step is done for the strategic planning in the Institute of Anesthesiology at the USZ. Concrete fields for practice development have been highlighted. It gives orientation to all nursing team members and will support leading persons in implementing effective actions in the future to successfully achieve goals. At the same time it helps positioning the anesthesia care at USZ for future challenges.

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**wcna1-0060**
**FREE COMMUNICATION SESSION 02**

**NURSE ANESTHESIA PRACTICE IN THE REPUBLIC OF KOREA: MEMBER SURVEY OF THE KOREAN ASSOCIATION OF NURSE ANESTHETISTS**

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Nurse Anesthesia Practice in the Republic of Korea: Member Survey of the Korean Association of Nurse Anesthetists

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INTRODUCTION: The number of university trained Certified Registered Nurse Anesthetists (CRNAs) has declined in the Republic of Korea over the past several years. To compensate for the shortfall in anesthesia providers, hospitals train registered nurses as anesthesia assistants (RNAAs). Both levels of practitioners are represented by Korean Association of Nurse Anesthetists (KANA). However, there are no uniform standards of training or established scope of practice for the RNAAs. The purpose of the project is to describe the practice of anesthesia-related nursing in South Korea. The authors describe the training and practice of CRNAs and RNAAs and also investigate the difference in work satisfaction between the groups. The hypothesis is that the level of job satisfaction will be greater for CRNAs educated at the master’s degree level.

 METHODS: A survey developed by the American Association of Nurse Anesthetists (AANA) was adapted for this study. Using online data collection, members of the Korean Association of Nurse Anesthetists responded to questions about their current practice settings. The survey was available from July through September, 2015. The survey instrument was designed to obtain anonymous sociodemographic information from members of KANA and to collect details of the professional practice of nurse anesthesia in the South Korea.

RESULTS: Two hundred and eighty-one surveys were collected and analyzed. A Kruskall-Wallis test was conducted to locate differences between the two groups. There was a statistically significant difference in work satisfaction between CRNAs and RNAAs (H (1) =22.515, p<0.01) with a mean rank of 109.07 (median = 3) for RNAAs and a mean rank of 150.38 (median = 4) for CRNAs. Chi square analysis (2x2 tables) was conducted for 10 components of nurse anesthesia practice. Of those 10 components, nine demonstrated statistically significant differences between CRNA and RNAA respondents: performance of a pre-anesthesia assessment (X2 = 7.133, p = .008), obtaining consent for anesthesia (x2 = 8.655, p = .003), collaborating with the anesthesiologist to create the anesthetic plan (x2 = 39.361, p<.001), administrating anesthetic drugs (x2 = 4.958, p=.026), airway management (x2 = 173.863, p <.001), management of emergence from anesthesia (x2 = 139.224, p <.001), post-anesthesia management of airway and pain (x2 = 9.598, p  = .002), perform regional anesthesia blocks (x2 = 15.992, p <.001), and documentation in the anesthesia record (x2 = 96.568, p <.001).

DISCUSSION AND CONCLUSION: The authors conclude there is support for greater work satisfaction related to working as a CRNA rather than an RNAA and that the increased satisfaction may be related to a more autonomous anesthesia practice experienced by the CRNA. Highly educated nurse anesthetists can provide reliable, safe, cost effective anesthesia care. The challenge is to develop standards for education and professional certification so nurse anesthetists can practice as one united profession.

KEY WORDS: Korean Association of Nurse Anesthetists, Certified Registered Nurse Anesthetists, Scope of Practice

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**wcna1-0110**
**FREE COMMUNICATION SESSION 02**

**QUALITIES OF LIFE AND STRATEGIES FOR COPING WITH STRESS IN THE WORK OF POLISH ANAESTHETICS NURSES**

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**Key words.** quality of life, stress, nurse

**Introduction.** The aim of the study was to analyse quality of life and strategies for coping with stress in the work of Polish nurses.The research question focuses on analysing an impact of sociodemographic variables on the quality of life profile and a choice of strategies for coping with stress at work, as well as finding relationships between ways of coping with stress and the level of quality of life of nurses.

**Method.** The research was carried out from June 2013 to January 2015 on randomised representative samples from 23 hospitals located in north-east Poland. The study group included 253 nurses working at the operating room and ICUs. The mean age was 42.25±8.28, and the mean working experience 15.47±1.22 years. The study used a questionnaire asking about socio-demographic data, and an abbreviated version of Mini-COPE questionnaire, in a Polish adaptation by Z. Juczyński, N. Ogińska-Bulik, which defines 14 strategies for coping with stress. Quality of life was measured with an abbreviated version of the questionnaire by the World Health Organisation (WHOQoL-Bref) in a Polish adaptation by L. Wołowicka and K. Jaracz, which allows to obtain a quality of life profile in the four domains range. The empirical material was analysed using: descriptive statistics, Spearman’s rank correlations coefficient (rS), chi-squared test (χ²), analysis of variance ANOVA (F). The level of significance was set at p<0.05.

**Results.** In the quality of life analysis, the domain defining social relationships had the highest scores (15.4±2.48). The most frequently chosen strategies for coping with stress were an active coping strategy (2.15±0.65) and planning (2.03±0.61). There is a statistically significant connection between education and the quality of life level in the psychological domain (rS=0.17; p<0.00008), which is varied by education groups (F=2.92; p<0.02), in favour of nurses with higher education II°. The strongest correlation between financial situation and quality of life was observed in the environmental domain (rS=0.43; p<0.0000001). Age was significant in connection with a choice of the seek emotional support strategy (rS=-0.13; p<0,04). People aged 30-39 indicated the need of support more often (χ²=17.39; p<0.04). Marital status determined the return to religion strategy (rS=-0.15; p<0.01). The environmental domain showed a positive connection with the seek emotional support strategy (rS=0.13; p<0.004), and negative with discharge strategy (rS=-0.15; p<0.01).

**Discussion and conclusions.** Younger nurses indicated the need of emotional support in order to skilfully deal with a critical situations resulting from the interaction with the patient.The study carried out by Humpel and Caputi shows that along with age and longer work experience, the level of emotional competence of nurses is increasing [1]. The results have both cognitive and application value in professional burnout syndrome prevention programmes and in system changes in healthcare.

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**wcna1-0010**
**FREE COMMUNICATION SESSION 03 (French Session - no translation)**

**DO INTRAVENOUS KETAMINE + LIDOCAINE ENHANCE ANALGESIA AFTER COLORECTAL SURGERY?**

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Enhanced Recovery After surgery (ERAS)

Colorectal Surgery

**INTRODUCTION**

Early rehabilitation programs for patients recovering from colorectal surgery have risen in the past last years (1). Post-surgical complications and extended hospital stays increase the costs of medical care and can dramatically reduce the potential for successful post-surgical results (2).

The anesthesia care team at Hôpital St. Joseph in Paris, has implemented some new intra-operative procedures in an effort to improve post-colorectal surgery recovery results: the intraoperative use of lidocaine and ketamine.

The purpose of our review is to examine the current evidence for enhanced recovery after surgery in intraoperative and post-operative settings of care for colorectal patients.

**METHODS**

Newspapers reports and relevant references were checked. A case-control study comparing patients who benefited of the “new procedures” from patients who were managed “traditionally” is being done.

The primary outcome was analgesia requirement. Secondary outcomes included cumulative opiate requirement, numerical pain scores, recovery indices (nausea and vomiting, length of stay, etc) and side effects (cardiac/neurological toxicity).

We carry out a retrospective chart review of patients who underwent colorectal surgery from January 2014 to January 2016 at our institution.

Inclusion criteria were patients that had benefited from an elective colorectal surgery for the first time and during the mentioned period.

**RESULTS**

57 medical records have been collected. The sample for this study is predominantly female (61%). The percentage of surgeries is: left colectomy=42%; right colectomy=32%; anterior resection of rectum=18%; abdominoperineal amputation=8%.

Patients are classified into three groups: first, intravenous infusion of ketamine and lidocaine from anesthetic induction until recovery room (RR) discharge; second, intravenous infusion ketamine and lidocaine during the intraoperative period and third, no intravenous infusion of ketamine or lidocaine.

No major complications in recovery room in any of the groups. Extubation time seems to be shorter in the third group. Pain is under control in all groups but the most painful group is the third one. The average length of stay in RR is lightly longer in first and second group (75 vs 90 minutes). Common complications in colorectal surgical service are nausea and pain. It seems that pain is more important in the third group. The length of stay is being analyzed .

**DISCUSSION**

Effects of ketamine are being discussed because of the delayed awakening for patients having received it during a long period of time. Patients’ consciousness recovery is slower and more confused than patients who have not received ketamine. Lidocaine seems to have positive repercussions in terms of pain control.

**CONCLUSION**

The use of intraoperative ketamine and lidocaine participates in early rehabilitation programs achieving good control in pain management. Nevertheless, ketamine slows extubation time down and its psychological effects for awakened patients delay the RR discharge.

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**wcna1-0061**
**FREE COMMUNICATION SESSION 03 (French Session - no translation)**

**PRACTICE GUIDELINES FOR PERIOPERATIVE MANAGEMENT IN PROCTOLOGICAL SURGERY**

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PAIN MANAGEMENT

SURGICAL PAIN

AMBULATORY SURGERY

**INTRODUCTION**

After a three year optimisation period of the management of acute pain after proctological surgery, our activity has risen 25% and new objectives are being established in terms of recovery room (RR) stay, quality of waking up after anaesthesia and discharge from hospital.

In an effort to improve the aspects of anaesthetic management in proctological surgery, the anaesthesia care team at Hôpital Saint Joseph in Paris has implemented the administration of pre-operative 1gr oral paracetamol. The aims were to reduce the administration time of other intra-operative analgesics in the first place, and secondly, to attain a faster analgesic effect.

**METHODS**

Journals, newspapers reports and relevant references were analysed. A case-control study comparing patients who benefit of pre-operative paracetamol from patients who do not is being done.

The primary outcome is analgesia requirement at 1, 2, and 3 h(1). Secondary outcomes include cumulative opiate requirement, numerical pain scores, recovery indices (nausea and vomiting, length of stay) and finally, patient’s satisfaction.

At our institution, from December 2015, we have been carrying out a prospective report of patients who undergo ambulatory proctological surgery, which will end in March 2016.

Inclusion criteria are that patients have benefited from an ambulatory surgery and are over 18 years old during the mentioned period.

**RESULTS**

Currently, no disturbing facts are being found by the ambulatory care staff in its organisational management. Patients have not complained about the pre-operative prescription described above (2).

Pre-operative paracetamol administration is satisfactory for anaesthetic team in practical and organisational terms as it allows other analgesics to be faster administrated before surgical incision, in order to attain all peak effects before anaesthesia wears off.

Pain scores are being evaluated with positive results even if they are not very different from past outcomes. 1additional g paracetamol in RR is exceptionally used.

**CONCLUSION**

Involving ambulatory care staff, anaesthetic team and RR staff in a single aim provides great satisfaction to all participants.

Administrating 3 intravenous infusions for pain management in an extremely short intraoperative period has become a challenge since first anaesthesia work in proctological surgery was done in our institution in 2013. As paracetamol is already administrated and its peak effect is reached, tramadol and/or nefopam begin their own effect on a paracetamol impregnated patient.

In contrast to what is described in the literature, oral paracetamol seems to be effective enough if taken in pre-operative time.

We think that general anaesthesia has been the most adapted protocol that the organisation in our institution allows. Next step to improve practices will be a higher use of spinal anaesthesia with the currently analgesia procedures.

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**wcna1-0078**
**FREE COMMUNICATION SESSION 03 (French Session - no translation)**

**NEUROANESTHESIA FOR NEWBORNS WITH NEURAL TUBE CLOSURE DEFECTS: EXPERIENCE IN AN OUTERMOST REGION OF THE EUROPEAN UNION**

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Introduction: Reunion Island is a French overseas department located in the Indian Ocean between Madagascar and Mauritius. The neurosurgery department at Saint Pierre University Hospital is the referral center not only for the population of Reunion Island but also for Mayotte (another overseas French department) and other countries (Madagascar, Comoros). As such, newborns with neural tube closure defects are treated by neurosurgeons in Saint Pierre although other neonatal surgeries are not routinely performed in our hospital.

Material and methods: Since 2003, in Saint Pierre, all newborns operated on for a neural tube closure defect have been reviewed with a focus on anesthesiology and the challenges of neonatal neuroanesthesia. Perioperative parameters and postoperative outcomes have been analyzed.

Discussion: Neonates with neural tube closure defects are often in need of emergency surgical treatment and may present severe comorbidities. Therefore, a rapid transfer to a neurosurgical department with an adapted technical platform is crucial. Neonatal anesthesia requires an experienced staff and the geographic, demographic and economic environment of Reunion Island’s neurosurgery department inherently raises some specific challenges. Through specific organization of the anesthesiology department these difficulties have been overcome and quality of care has been maintained.

Key words: neonatal anesthesia, neural tube closure defect, neuroanesthesia, Indian Ocean

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**wcna1-0046**
**FREE COMMUNICATION SESSION 04 (French Session - no translation)**

**THE ADDITIONAL VALUE OF NURSE ANAESTHETIST NON-TECHNICAL SKILLS ON PATIENT SAFETY**

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**Introduction:** In order to maintain a high level of safety in the ever-challenging and dynamic environment of anaesthesia, nurse anaesthetists must constantly adapt to clinical situations. To achieve this, they appear to be using skills unrelated to their technical and theoretical training in subjects such as pharmacology and physiopathology. These skills are known as non-technical skills (NTS) which fall into four distinct categories: situation awareness, task management, decision-making and team work. This study aimed to analyse whether NTS developed by the nurse anaesthetists contribute to safe practice in anaesthesia.

**Methods:** Our research project was largely inspired by the N-ANTS (Nurse Anaesthetist Non-Technical Skills) taxonomy published by Helle Lyk Jensen [1]. A qualitative study with semi-structured individual interviews was performed. The study population consisted of 12 nurse anaesthetists from various professional backgrounds who were asked to select a pertinent real life clinical experience. This allowed us to determine which of the N-ANTS categories they employed in their work, and N-ANTS subsequent impact on clinical practice and patient safety.

**Results:** Even though the N-ANTS concept was unknown to 83% of nurse anaesthetists, once elucidated, they believed in its importance. Participants most commonly employed “situation awareness” (mean 35% [31-40]), and used “decision making” (mean 17% [11-21]) the least. There was no difference between novice and experienced nurse anaesthetists, nor between genders. Participants universally valued the importance of N-ANTS in day to day clinical situations, and all believed that N-ANTS contributed to improving patient’s safety.

**Conclusion**: The use ofN-ANTS is enhanced in crises situations. In many and varied situations, N-ANTS have been shown to maintain patient safety, when combined with appropriate technical knowledge. Improved recognition of the importance of N-ANTS could further standardized practice and improve both patient safety and quality of care.

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**KEY WORDS: Nurse Anaesthetist – Non-Technical Skills – Patient Safety – N-ANTS – Adaptation**

####

**wcna1-0077**
**FREE COMMUNICATION SESSION 04 (French Session - no translation)**

**EVALUATION OF THE NURSE ANESTHESISTS TRAINING MEASURES**

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**EVALUATION OF THE NURSE ANESTHESISTS TRAINING MEASURES**

**Introduction**

The Bologna agreement (1999) places the anaesthetic nurse's training curriculum within the scope of higher education in Europe. This process is based on the structure of training programs and promoting evaluation and quality assurance. To implement these standards of quality, the teaching team of the nurse anaesthetist’s school of Paris (France) is interested in assessing the educational process. The aim is to estimate as objectively as possible the gap between what is expected and what is achieved, and contribute to the improvement of the program.

**Method**

Two questionnaires were distributed to the 83 students:

One, composed of 28 open questions and 54 closed questions, has been designed to assess the training system in clinical practice given after the second work placement. Filled in at school, it took 30 minutes to respond. 100% of the questionnaires were returned.

Another composed of 7 open questions and 59 closed questions, to evaluate the training system at school. It was diffused online at the end of the second and fourth semesters, only 64% of questionnaires were received.

**Results**

To improve this educational process and meet the targeted skills, we required the students to formalise and present their objectives at the beginning of their training and encouraged teams to build  presentation tools to make their training field attractive and traceability tools (logbook) for the monitoring of the students skills acquisition.

The formalisation of the analysis of the clinical learning situations spontaneously undertaken by 79 % of the students (the training system also allows to develop the capacities of analysing for 96.2%) enables students to develop their clinical reasoning (that the training system allows 98.1% of them to acquire), its validation by the nurses anaesthetists team thus creating a collection of representative situations.

The quality approach should incite the teams to systematize their skills appraisal (remaining informal in 25% of cases).

Tutorial classes answer for 75, 5 % of the training objectives while lectures answer for 50, 9 %. The teaching staff animate tutorial classes, their teaching role is essential in connection with the various student’s methods of learning.

To improve their working organization which remains difficult for 32,1 % the teaching staff suggests a schedule of the assessments to correspond to a work schedule. It will thus be a question, in association with the speakers, of reducing and targeting the revision program.

**Conclusion**

By this evaluation process, the teaching staff can judge the success of its training strategy and consider areas for improvement to incorporate it in a quality framework. By placing the student at the centre of the training system, the teaching staff structures the theoretical teaching around the methods of learning previously identified as self-assessment and educational monitoring, and with professionals in the field, formalises the practical training course. These actions will be deployed in the theoretical teachings at school, by information given to field professionals, by the in-service tutoring training organized at school.

**Francine OCCHIMINUTI**, nurse anaesthetist’s trainer

####

**wcna1-0091**
**FREE COMMUNICATION SESSION 04 (French Session - no translation)**

**PERPARTUM HEMORRHAGE-RELATED MORBIDITY AND MORTALITY: EPIDEMIOLOGY AND RISK FACTORS IN OBSTETRIC ICU**

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**Background**: Perpartum hemorrhage is the leading cause of morbidity and mortality worldwide. The aim of our study is to determine predictive factors of morbidity and mortality in intensive care unit patients.

**Methods:** A retrospectivedescriptive study was led over a period of 4 years (2009, December 1st to 2013, December 31st), in the obstetrical ICU, in Tunis Center of Maternity and Neonatology. We gathered 322 patients. Statistical analysis was performed using SPSS 17 software. Data was expressed as means, medians and percentages. We used Student’s and Fisher’s tests to compare qualitative and quantitative data. We computed odds ratios with their 95% confidence interval. A p value over than 0.05 was considered as statistically significant. Multivariate analysis was performed using a logistic regression to determine independent risk factors.

**Results:** The main age of our patients was32.15.4 years. The median gravity and parity was 2 for each one. The mean gestational age was 36.63.3 weeks. The majority was of ASA 1 class (81.1%), the delivery mode was caesarian section in 67%. The major bleeding cause was uterine atony (49.6%). Sulprostone was used in 74.8% cases. Seventy percent of patients underwent surgical treatment in order to stop bleeding. Emergency hysterectomy was performed in 43.2% of patients. All of our patients had blood products transfusion in emergency. Massive transfusion rate was 71.1%. The main number of transfused blood products was: 7.65.8 RBC’s; 115.8 fresh frozen plasma and 109.5 standard platelets concentrates. Clotting agents were given such fibrinogen in 61.2% of cases and recombinant activated VII factor in 13.7% of cases. The duration of mechanical ventilation was 167.731.8 hours; the duration of ICU stay was 2.62.9 days. The main observed complications were: disseminated intravascular coagulation (16.8%); pulmonary edema (14%); acute renal failure (10.2%); sepsis (8.7%); HELLP syndrome (8.1%).   Independent mortality risk factors were found such as the use of catecholamines (OR=35.2), massive transfusion (OR=168.7), pulmonary edema (OR=27), HELLP syndrome (OR=1.57) and disseminated intravascular coagulation (OR=8).

**Conclusion:** The perpartum hemorrhage-related morbidity and mortality could be prevented. A standardized and well organized management is necessary to provide efficient care to parturients. Simulation training may be useful but needs to be assessed.

Key-words: Maternal mortality, Morbidity, Perpartum hemorrhage, Intensive care, Obstetrics

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**wcna1-0006**
**FREE COMMUNICATION SESSION 05**

**COMPARISON OF RESUSCITATION PROTOCOLS USING LIPID EMULSION FOR BUPROPION OVERDOSE IN A SWINE MODEL**

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**Background:** Bupropion is a lipophilic atypical antidepressant prescribed to treat a broad range of healthcare concerns including depression, Post Traumatic Stress Disorder (PTSD), alcoholism, and tobacco addiction. As these are common in the military population, the potential for widespread misuse is a legitimate concern for healthcare providers. Toxic doses of Bupropion can cause cardiac toxicity resulting in difficult and prolonged resuscitation that is almost always fatal. Standard Advanced Cardiac Life Support (ACLS) protocols alone are not effective in resuscitating individuals presenting with Bupropion toxicity. No studies have determined the optimal combination of lipid rescue and traditional ACLS therapy for treatment of Bupropion overdose.

**Methods:** We evaluated the effectiveness of ACLS protocol with or without lipid rescue on return of spontaneous circulation (ROSC)/survival in Bupropion toxicity in a swine model.  Subjects were randomly assigned to one of eight groups as follows: CPR only (control), vasopressin only, lipid only, epinephrine only, vasopressin + lipids, vasopressin + epinephrine, epinephrine + lipids, and epinephrine + vasopressin + lipids. A dose of Bupropion sufficient to induce a nonperfusing cardiac rhythm was administered and CPR with or without treatment was initiated following two minutes of arrest.

**Results:** Our findings indicate that the odds of survival when epinephrine was administered alone or in any combination was 22x higher compared to when no epinephrine was administered (95% confidence interval). Further survival analysis suggests that time to ROSC was shortest when epinephrine was combined with lipids. We also showed that the fastest mean time to return of spontaneous circulation (ROSC) was with an epinephrine and lipid combination at seven minutes, while the second fastest mean time was the epinephrine only group at 10.33 minutes.

**Conclusion:** These data suggest that epinephrine administration is essential to survival in Bupropion toxicity. The fastest ROSC was seen with the combination of epinephrine and lipids followed by epinephrine alone.  Our data also suggest that lipid alone and lipid with vasopressin results in very low survival. There is a growing body of knowledge about the efficacy of lipid emulsion treatment in acute lipophilic drug overdose. However until now, the optimal combination of lipid with ACLS protocols for treating Bupropion-induced cardiac toxicity had not been investigated. Additional research investigating optimal drug dosing, timing, and various lipid concentrations is recommended.

####

**wcna1-0009**
**FREE COMMUNICATION SESSION 05**

**EFFECTS OF PROXIMAL AND DISTAL INTRAOSSEOUS EPINEPHRINE ADMINISTRATION ON SHORT-TERM SURVIVAL MEASURES IN A SWINE MODEL OF VENTRICULAR FIBRILLATION**

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2Geneva Foundation, Department of Clinical Investigations, San Antonio, USA***Abstract Text**

**Introduction:** It is unknown if the anatomical distance of IO epinephrine injection from the heart affects resuscitative outcome. The investigators of this study hypothesized there would be a difference in survival outcome when epinephrine was administered by proximal and distal IO routes. The purpose of this study was to explore the relationships between the anatomical distance of IO epinephrine injection and measures of short-term survival in an adult swine model of ventricular fibrillation (VF).

**Methods:** Thirty-two Yorkshire-cross swine (60 to 80 kg) were randomly assigned to four groups: humeral IO (HIO), tibial IO (TIO), IV; with defibrillation and epinephrine and IV control; with defibrillation but no epinephrine. Ventricular fibrillation was electrically induced. Swine remained in VF for 4 minutes prior to mechanical chest compressions. After 6 minutes in VF, swine were defibrillated (360 J) and epinephrine (0.01 mg/kg) administered according to group assignment. Defibrillation was repeated every 2 minutes. Epinephrine was repeated every 4 minutes. Interventions continued until return of spontaneous circulation (ROSC) or 26 post-arrest minutes elapsed. Swine achieving ROSC were observed for 30 minutes post-ROSC.

**Results:** There were no significant differences between the HIO, TIO, and IV groups relative to the occurrence of ROSC; (p > 0.05) in all cases, 30 minute post-ROSC survival; (p > 0.05) in all cases, and time to ROSC; (p = 0.43). There were significant differences between the HIO, TIO, and IV groups compared to the control group relative to the occurrence of ROSC; (p = 0.02, 0.01, 0.007) respectively, and 30 minute post-ROSC survival; (p = 0.05, 0.03, 0.007) respectively.

**Discussion and Conclusion:** The anatomical distance of IO epinephrine injection from the heart did not affect short-term measures of survival in an adult swine model of VF including the occurrence of ROSC, 30 minute post-ROSC survival, and time to ROSC. Rapidly administered epinephrine, irrespective of route of administration, increased the chance ROSC and survival to 30 minutes post-ROSC would occur in this study. The most important clinical implication of these findings is the HIO and TIO sites performed equivalent to each other when epinephrine was administered during VF with ongoing CPR. This implication implies if clinicians are emergently placing an IO device, they should select the anatomical site they are most confident using to ensure the highest possibility of successful device placement while definitive vascular access is being obtained.

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**wcna1-0020**
**FREE COMMUNICATION SESSION 05**

**CARDIOVASCULAR COLLAPSE IN ANAPHYLAXIS SUCCESSFULLY TREATED WITH VASOPRESSIN:CASE REPORT AND REVIEW OF MECHANISM**

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In this lecture I describe the case of a 52 year-old male who suffered a severe anaphylactic reaction in the operating room that was unresponsive to any vasopressors, including epinephrine but finally did respond to a single dose of vasopressin.  After an uneventful induction and intubation, the patient received antibiotics and was placed in the prone position. Once positioned, the patients blood pressure began to rapidly decline and despite escalating doses of phenylephrine, ephedrine and then epinephrine, his pressure continued to deteriorate and became unobtainable. When all other resuscitative measures failed, a singe dose of vasopressin 20 units was given intravenously; the patient had an immediate response with dramatic reversal of the cardiovascular collapse. He was then stabilized, transferred to the ICU and subsequently discharged home without neurologic sequelae.

   The signs, symptoms and pathophysiology of anaphylaxis in patients under general anesthesia will be reviewed. The unique pathways of cardiovascular collapse where vasopressin is the drug of choice will be discussed. In addition to anaphylaxis, other life-threatening hypotensive incidences in which vasopressin should be used will be presented.

Key words: Allergy, hypotension, drugs

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####

**wcna1-0008**
**FREE COMMUNICATION SESSION 06**

**CLINICAL UTILITY OF PHARMACOGENOMIC TESTING AMONG ANESTHESIA PROVIDERS: A MIXED-METHOD STUDY**

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**Keywords:**Pharmacogenomic testing, clinical utility, anesthesia, factor analysis, mixed-methods

**Introduction**: Patient pharmacogenomic testing (PGX) was developed and later a version of it approved for use internationally to improve patient outcomes in response to prescribed medications [1, 2].  PGX testing uses genetic information to predict how a patient might respond to medications.  Software is now available to interpret the testing results and support prescriptive decision-making in the clinical setting.  However, uptake of this technology is slow [3].  The study of clinical utility perceptions of pharmacogenomic testing to support clinical decision-making is not well reported.  This study aims to describe facets of the multidimensional phenomena of clinical utility as defined in the ACCE model conceptual framework proposed by the Centers for Disease Control and Prevention among anesthesia providers in the United States [4].

**Methods**: Mixed-method sequential qualitative-quantitative case study methodology design was used in this study. Framed by the ACCE Model of Clinical Utility, a purposive sample of anesthesia and pain management providers were initially interviewed using a focused interview guide [4, 5].  The interview was guided by the ACCE framework regarding provider attitudes, beliefs, and knowledge regarding PGX technology were used to query 12 anesthesia providers.  Multiple embedded case methodologies were used to analyze the results of the qualitative interviews.  Findings from the qualitative data were used to construct a qualitative survey instrument that aimed to quantify the perceptions of clinical utility.  The survey was electronically distributed to 6,000 actively practicing Certified Registered Nurse Anesthetists in the United States, 262 were returned complete.  Results of the survey were analyzed using Horn’s parallel factor analysis to explain total variance and determine the number of factors that emerged.

**Results**: Seven themes emerged from the qualitative analysis: lack of understanding about PGX testing, lack of facilities to order and interpret PGX tests, concerns related to economic costs of PGX testing, PGX testing could be advantageous to patient outcomes, providers’ concerns for the ethical and legal implications of genetic testing, concern about the complexity of the testing and interpretation, and PGX testing could help avoid complications.  Quantitative data revealed three distinct factors related to clinical utility of pharmacogenomic testing among anesthesia providers:  Benefit (48% residual), knowledge (52% residual), and concerns (51% residual).  Ninety seven percent of all factors loaded on these three factors.

**Discussion/Conclusion**: These findings indicate that anesthesia providers feel PGX testing could benefit patients and decrease complications; however, significant knowledge deficits and concerns related to complexity and ethical issues are currently prohibiting PGX testing from being used widely in anesthesia care.  Interventions aimed at increasing provider knowledge about PGX testing are necessary to move PGX testing forward in clinical anesthesia care.

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**wcna1-0035**
**FREE COMMUNICATION SESSION 06**

**POSTOPERATIVE PAIN MANAGEMENT FOR TOTAL KNEE ARTHROPLASTY IN A COMMUNITY HOSPITAL**

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POSTOPERATIVE PAIN MANAGEMENT FOR TOTAL KNE ARTHROPLASTY IN A COMMUNITY  HOSPITAL

Purpose & PICO Question:

As nurse anesthetists it is our responsibility to manage patients' pain using evidence-based practice to improve patient outcomes. Preemptive analgesia (Block) and multi-modal analgesia (Pain medication, intra-articular deposition of local anesthetic, rescue treatment).

(P) In patients receiving total knee arthroplasty

(I) with an adductor canal block and tibial block with intra-articular deposition of local anesthetic,

(C) compared to those that do not receive intra-articular local anesthetic,

(O) is there a statistically significant difference in PACU pain scores and the need for a rescue treatment?

Methodology:

A retrospective chart review was performed with participants being identified by the inclusion and exclusion criteria who underwent surgery between December 1st, 2013 and March 31st, 2014.  Three groups were identified for the study:

(1) preoperative femoral and tibial nerve blocks      (control)

(2) preoperative adductor canal and tibial nerve blocks with intraoperative intra-articular deposition of local anesthetic

(3) preoperative adductor canal and tibial nerve blocks without intra-articular deposition

Femoral block: Consisted of 20 milliliters of ropivacaine 0.5% and dexamethasone 4mg (diabetic patients received dexamethasone 2mg)

Adductor canal block: Consisted of 20 milliliters of ropivacaine 0.5% and dexamethasone 4 mg (diabetic patients received dexamethasone 2 mg)

Tibial block: Consisted of 10 milliliters of ropivacaine 0.5% and dexamethasone 2 mg (diabetic patients received dexamethasone 1 mg)

Intra-articular injection: Consisted of 49.25 mL of ropivacaine 0.25%, ketorolac 30 mg, epinephrine 0.5 mg, and clonidine 0.08 mg

The pain score was recorded between 30 and 60 minutes after arrival to the post-anesthesia care unit (PACU) using the visual analog scale (VAS) for pain, with scoring of 0-10 by the PACU nurse.

Results:

Utilizing one-way analysis of the VAS score (1-10), Group 1 had a mean of 1.67 (± 2.39), Group 2 had a mean of 5.19 (± 3.72), and Group 3 had a mean of 5.80 (± 3.75).

One-way analysis shows significant differences in VAS pain scores between groups 1 and 2 (P ≤ 0.0005), and groups 1 and 3 (P ≤ 0.001). There is no statistically significant difference in VAS pain scores between groups 2 and 3 (P ≤ 0.8407).

Nonparametric comparison of pairs using the Wilcoxon Method produced statistically significant differences in VAS scores between Groups 1 and 2 (P ≤ 0.0008), and between Groups 1 and 3 (P ≤ 0.0008).

There is no statistically significant difference  in VAS pain scores between groups 2 and 3 (P ≤ 0.695).

The success rate for Group 1 was 25/28 (89%), the success of Group 2 was 9/21 (43%), and the success rate for Group 3 was 4/15 (27%).

Discussion and Conclusions:

The results of this study do not support reports in the current literature that identifies the adductor canal and tibial nerve blocks as equal to, or better than, femoral and tibial nerve blocks for postoperative pain management.

The results indicate that femoral and tibial nerve blocks provide superior postoperative pain relief after total knee arthroplasty.

**wcna1-0054**
**FREE COMMUNICATION SESSION 06**

**MALIGNANT HYPERTHERMIA – ONCE ONLY IN YOUR ANAESTHESIA LIFETIME**

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**Introduction:**
A malignant hyperthermia (MH) is a rare but potential life threatening complication. It may occur under general anaesthesia with a probability of 1 to 5000 – 1 to 200.000. Main triggers are volatile anaesthetics and muscle relaxants. After exposition patients can develop a fulminant MH within minutes to hours. Tachycardia and hypercapnia are early but rather unspecific signs. Hypertonia, hyperkalaemia and hyperthermia up to 43 °C are typical in progress. Finally it turns into a rhabdomyolysis with a high risk for shock symptomatic. This cascade must be interrupt by early intravenous administration of dantrolene. Therefore an early diagnosis of MH is crucial but challenging for clinicians and nurses due to the unspecific beginning.

**Methods:**
Presentation of a case report

**Results:**
We took care of a 22 years old male patient with clinical suspicion for a lymphoma relapse, undergoing diagnostic laparoscopy. He never had anaesthesia before. No anaesthesia complications were known in his family history. No comorbidities existed, but a seafood allergy was known. Anaesthesia was induced as a Rapid Sequence Induction with Propofol, Fentanyl and Roccuronium. For maintenance Sevoflurane and Fentanyl were administered. Immediately after supply of Sevoflurane a therapy resistant tachycardia with 105 bpm and an acute hypercapnia with increase of CO2 from 4.3 to 6.5 Vol% occurred. First measured body temperature was 37.5 °C and increased continuously with 0.1 °C per 5 minutes Furthermore an acute hypertonia[marf1]  could be observed. After utilization of an existing MH checklist and consultation with physician team members the hypothesis of a MH was confirmed. Treatment according to MH protocol was initiated with stop of all trigger agents.  After dantrolene administration and a cold abdominal lavage CO2 and temperature decreased in normal range. To calculate the dosage of dantrolene a MH-application on smartphone was used. After a short postoperative stay in the intensive care unit the patient was transferred without any further complications.

**Discussion and Conclusion:**
MH is a life threatening event. To keep up patient’s safety, best knowledge, attention and skills of all team members in anaesthesia are essential. Simulator trainings seem to be a good opportunity to facilitate. Because of low incidence for a MH this case was presented and discussed in the Institute of Anesthesiology at the University Hospital of Zürich. As a consequence in practice the MH checklist was stored in the dantrolene box. The storage was additionally marked for better visibility. The MH-application is helpful for an exact and fast calculation of dantrolene dosage. Additionally it contains a checklist to support a fast decision making in diagnosis of MH. This tool seems to be a perfect supplement to the classic checklist.

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**wcna1-0062**
**FREE COMMUNICATION SESSION 07**

**EMERGENCY CAESAREAN EPIDEMIOLOGICAL ANALYSIS IN TUNISIA**

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1Mongi Slim Hospital La MarsaTunisia, Tunis, Tunisia*The main objective is to evaluate management, protocols and outcomes of anesthesia performed for emergency cesarean in Maternity and neonatology hospital Tunis.

**Material and method:**

A prospective observational study was performed, with patients’ agreement.

We included all patients how had been operated emergency cesarean, during a period of 08weeks (2015 marsh/April).
Exclusion criteria:  Patients who had elective caesarean section

Fifty patients were included during the study period. The age of our patients was 18 to 41 years with maximum number 30 to 40 years (62%).
23 (46%) of our patients had two pregnancies in the past; 14 (28%) parturient had only one

21 (42%) had a regional anesthesia in the past; 18 (35%) had general anesthesia
 12 (23%) give birth for the first time.

**Results**

Fetal suffering was the main indication for caesarian section (24%). Spinal anesthesia was performed in 76% cases.

Volume preloading performed with sodium chloride0.9%: 4% received 2000 ml and 80% 1500 ml.

75% of patients received Ephedrine for hypotension induced by spinal anesthesia.

Respiratory and hemodynamic incidents were associated to general anesthesia in 50% of cases with predominance of bronchospasm and arterial hypertension during laryngoscopy.

35% of Spinal anesthesia group presented nausea or vomiting

**Conclusion:**

The choice of anesthesia technique for emergency caesarian depends on the degree of emergency; spinal anesthesia is at first when time is enough to perform.

In extreme vital emergency general anesthesia is practiced.

In our study, the most important point is the absence of co –loading which is actually recommended. Key-Words: anesthesia; caesarean; emergency; technical anesthetic;

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**wcna1-0092**
**FREE COMMUNICATION SESSION 07**

**EFFECT OF MUSIC THERAPY ON ANXIETY, BLOOD PRESSURE, HEART RATE AND GLUCOSE LEVELS OF PATIENTS UNDERGOING SURGERY DURING SPINAL ANESTHESIA**

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**INTRODUCTION:** Many patient who are undergoing operation suffering from deep anxiety and stress during spinal anesthesia. This research was conducted to find the effect of preferred music listening to patient undergoing spinal anesthesia.

**PURPOSE:** This study was conducted to exam the effect of listening to preferred music on patients’ anxiety, blood pressure, heart rate, and glucose levels during spinal anesthesia.

**METHODS**: A quasi-experimental research design was used. The participants were divided into an experimental group (n=30) and a control group (n=30) undergoing lower leg operations using spinal anesthesia. The mean age was 35.1 years and the mean time of listening to the music was 71.33 minutes. The experimental group was provided with their preferred music selected by each of the participants; the control group was not provided with any music.

**RESULTS:** The state of anxiety was decreased significantly in the experimental group(F=4.14, p=.046). Anxiety (VAS) was also significantly lower in the experimental group (F=4.62, p=.036).

**DISCUSSION AND CONCLUSION**: The results of the study show that listening to preferred music

is an effective method for reducing peri-operative anxiety for patients during spinal anesthesia.

**KEY WORDS:** Spinal anesthesia, Anxiety, Music therapy

####

**wcna1-0088**
**FREE COMMUNICATION SESSION 07**

**A NURSE ANAESTHETISTS PROFESSIONAL OPPORTUNITIES IN A SMALL COUNTRY: EXPERIENCES FROM AERO MEDICAL EVACUATION IN MILITARY INTERNATIONAL OPERATIONS AND CLINICAL RESEARCH IN NORWAY**

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**A NURSE ANAESTHETISTS PROFESSIONAL OPPORTUNITIES IN A SMALL COUNTRY:** **Experiences from aero medical evacuation in military international operations (Tsunami, Afghanistan) and clinical research in Norway (effect of medical simulation training)**

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**Background:** Norway is a small country and does not have big military hospitals, like USA and Germany. Because of this they use selected civilian health professionals, who continually update their medical knowledge and certifications, in military operations. In this example, a nurse anaesthetist worked with aero medical evacuation in connection with the Tsunami 2004 and Afghanistan 2008-2012.

In Norway, nurse anaesthetists currently have more opportunities to do clinical research than before. Nurse anaesthetists working in the biggest hospital in Norway have their own department, and the management prioritizes professional development and research. Patient safety is one of the main focuses within the health service, and the effect of medical simulation training is one of the research themes (1).

**Method:** 1) Experience sharing from two missions as nurse anaesthetist in military international operations; a) Nurse anaesthetists working in connection with aero medical evacuation of patients from the Tsunami in 2004. b) Nurse anaesthetists working in helicopter in connection with aero medical evacuation of patients in Afghanistan.

2) Research project: Study 1) A survey of medical simulation training in Norway – interviews. Study 2a) An evaluation of anaesthesiologists and nurse anaesthetists satisfaction with medical simulation training – a questionnaire. Study 2b) A group interview based survey according to implementation of the new knowledge from the simulation training to the clinic. Study 3) An observational study of anaesthetic staffs’ non-technical skills in connection with anaesthetic introduction in the operating room (1, 2, 3).

**Results:** 1) The experience shows that the use of selected civilian nurse anaesthetists in military aero medical evacuation missions functions very well.

2) The research shows that the anaesthetic staff is satisfied with the simulation training. The other studies will be conducted in the near future.

**Conclusion:** Norway’s access to current medical competence for military aero medical operations need to use selected civilian medical personnel. Among other professional groups, nurse anaesthetists have been used in these missions, and the solution is satisfactory.

The anaesthetic staff is satisfied with today’s medical simulation training. Further research will be conducted according to an account of the medical simulation training among the anesthetic staff, implementation of new knowledge and observation of non-technical skills.

**Keywords:** Aero medical evacuation, nurse anaesthetist, medical simulation training

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**wcna1-0026**
**FREE COMMUNICATION SESSION 08**

**COMPETENCE ASSESSMENT METHODS AND INSTRUMENTS IN ANAESTHESIA NURSING CARE : LITERATURE REVIEW**

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**COMPETENCE ASSESSMENT METHODS AND INSTRUMENTS IN ANAESTHESIA NURSING CARE: LITERATURE REVIEW**

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Introduction: In order to fulfil the complex needs of patients undergoing surgery and anaesthesia, nurses require a well-developed knowledge and special skills in both the technical and caring dimensions of anaesthesia nursing (1). Although competence assessment in anaesthesia nursing care is demanded, it remains challengeable due to lack of rigour in the methods and instruments used for evaluation (2).

Research questions: a) to identify competence assessment methods and instruments in anaesthesia nurse care, b) to describe the reliability and validity of the instruments, and c) to discuss strengths and weaknesses of the assessment methods. This review addresses challenges of assessment methods for nurse competence and provides future suggestions to improve nurse education for anaesthesia care and nursing practice.

Method: A scoping review in a systematic manner. A search in CINAHL, MEDLINE, and ERIC was carried out to identify empirical studies (English only) from 1994 to 2015. Keywords were competence, assessment, evaluation, measurement, tool, scale, validity, reliability, nurse, anaesthesia, and nursing. A narrative synthesis approach was undertaken to analyse the data.

Results: Fifteen relevant references were included for data analysis and ten competence assessment instruments in anaesthesia nursing care were identified. The instruments used three types of data collection methods: self-assessment, observation, and written exams. The most frequently used assessment method was self-assessment. The most commonly reported validity method was content validity involving expert panels and reliability tests for internal consistency and inter-rater’s consistency. Self-assessment has criticism of uncertainty of the relationship between perceived competence by self-assessment and actual competence. Observation method in a simulated environment was considered as rather rigorous assessment when evaluating skills and behaviour toward crucial changes in patient conditions, problem solving, and communication management. However, it is not free from the issue of validity whether the measurement outcome in simulation is same as real work environment.

Conclusion: Ten assessment instruments were not appropriate for measuring competence in anaesthesia nursing care alone. Integrating more than one method may give support to overcoming some of the limitations, such as, lack of objectivity and misinterpretation of the assessment results. Since the circumstances in anaesthesia nursing are an ever-changing, anaesthesia nursing competence requires constant re-assessment from the perspective content validity, scoring methods, and reliability.

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Keywords: Competence, assessment, anaesthesia nursing, literature review

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**wcna1-0052**
**FREE COMMUNICATION SESSION 08**

**A MODEL FOR SUSTAINABLE ANESTHESIA DEVELOPMENT FACILITATED BY SHORT-TERM MEDICAL MISSIONS**

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Introduction

Essential surgery is a recognized component of universal health coverage1 and is integral to realization of right to health 2.  Despite remarkable progress toward some health goals, and vast improvements in surgical mortality in High Income Countries (HIC), conditions requiring surgical interventions carry increased morbidity and mortality in developing systems3. Short-term surgical missions can contribute to sustainable access to safe surgery when procedural outcomes include anesthesia safety upgrades that integrate local health workers.

Method and evolving results

Integrating sustainable anesthesia development requires investment beyond that of anesthesia providers.  Our model includes a team comprised of local health workers and volunteer physicians and nurses from HICs. We established a collaborative goal to assure that a culture of surgical and anesthesia safety extends beyond the short duration of the volunteer mission.  In the US, volunteer team members solicited contributions from donors for essential capital equipment. On site, recurring continuing education activities that reflect the identified needs of local anesthesia personnel are integrated into each delegation. These efforts support the work of the established anesthesia educational system. Both safety procedures and upgraded equipment have been assimilated into the district hospital anesthesia standard.

Discussion

Global health leaders recognized the capability to provide essential surgery as a fundamental health system priority with two prominent instruments in 2015.  The first volume of the third edition of Disease Control Priorities carries the title Essential Surgery3 and summarizes issues impacting the global disparity in access to safe surgery.  Subsequently, the 68th session of the World Health Assembly (WHA) unanimously accepted and promulgated an agenda item titled Strengthening Emergency and Essential Surgical Care and Anesthesia as a Component of Universal Health Coverage4 . Both international publications stress improvements in anesthesia care as a core component to providing access to essential surgery.  They identify barriers to access to safe anesthesia to include the lack of safety monitoring and the inadequate training of anesthesia providers, along with the need for sustainable health system structural organization.

In developing systems, access to surgery is often facilitated by volunteer teams during short-term delegations.  Curative surgery is a contribution to the individual patient.  However, providing resources for sustainable improvement in anesthesia safety, when the HIC team is not present, has the potential to make a more lasting contribution to access to safe surgery than any single procedure.  The commitment broadly includes maintaining the same safety standards expected in well-resourced settings, while recognizing the training and equipment limitations of local anesthesia providers. Our sustainable anesthesia improvement design consists of progressive core elements that include team building and knowledge dissemination alongside capital investment.  Specific interventions include: consistent team members returning on a regular basis, incorporating local anesthesia providers on all surgical cases performed by HIC surgeons, offering relevant continuing education for health workers, demonstrating the adoption of standard safety procedures, and organizational commitment to ear mark donor funds to upgrade anesthesia delivery and monitoring equipment.

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Keywords:  essential surgery, surgical safety checklist, anesthesia equipment, professional education, developing health system

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**wcna1-0087**
**FREE COMMUNICATION SESSION 08**

**COME ON – YOU CAN REST LATER! ERP – PATIENT CENTERED CARE THROUGHOUT THE CONTINUUM OF CARE**

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Care program for faster recovery after surgery, ERAS, FastTrack and Enhanced Recovery Program (ERP) is well established in colorectal surgery, but ERP for oesophagoectomy had not been implemented in Sweden earlier. We want to present our introduction of ERP esophagus. At Karolinska University Hospital, Huddinge, Gastro center upper abdominal surgery conducts a regional mandate for esophagus surgery. This is major surgery that involves long operations and long hospital stays, sometimes with complications and intensive care as a result. A multidisciplinary team from the Karolinska University Hospital, Huddinge with Mats Lindblad at the head went on a field trip to the Royal Surrey County Hospital in Guildford, England. The purpose of the study tour was to take part of their care with an elaborate ERAS concept for esophagus patients. Based at the Royal Surrey County Hospital concept, an Enhanced Recovery Program (ERP) was created at Karolinska University Hospital, Huddinge. The aim was to change the care to facilitate the postoperative recovery. With Enhanced Recovery Program the Royal Surrey County Hospital had shortened the lengths of stay in hospitals to 8 days and then discharge to home. As a comparison Karolinska University Hospital had about 20 days of hospital stay and then usually rehabilitation care afterwards. Inspired and motivated by the Royal Surrey County Hospital a multi-professional team prepared a care program Enhanced Recovery Program for patients undergoing esophagus surgery at Karolinska University Hospital, Huddinge. The surgical technique has evolved and today it is mostly esophagus resections with minimally invasive techniques, laparoscopy and thoracoscopi instead of the previously laparotomy and thoracotomy. The impact of the Nurse Anesthetist in charge of the patients with ERP of esophagus resections resulted in only small changes in work, but ended up with big different in patient care. The length of the Karolinska University Hospital, Huddinge is not yet down in the eight days the Royal Surrey County Hospital have but are on track. After the introduction of ERP esophagus, the proportion of respiratory complications has decreased from 31% to 16%. Anastomosis leakage is unchanged at 17%. The need for ICU care declined steadily from 34% to 10% and the number of patient days in the ICU fell from 7 to 5. The total time of hospital stay gradually dropped from 20 days in the 11. The most important changes in care were: preoperative patient information, early surgical boot, targeted fluid therapy, higher level in head position in post-operative care, early and intensive mobilization and follow-up adjustment. The work also led to improved teamwork with better working environment and increased patient involvement. The lecture will be an insight into how well the nurse anesthetist and the multi-professional team have introduced and conducting with Esophagus resection per operative today. The lecture will also describe the results until today.

####

**wcna1-0105**
**FREE COMMUNICATION SESSION 10**

**LEARNING MODULES AS PREPARATION FOR ENTRY INTO GRADUATE LEVEL STUDY IN A NURSE ANESTHESIA PROGRAM**

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**Learning Modules as Preparation for Entry into Graduate Level Study in a Nurse Anesthesia Program**

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**Introduction:** Nurse anesthesia programs are stressful, anxiety-provoking and academically challenging. Consequences of prolonged stress and high anxiety include decreased self-esteem, memory impairment, headaches, and fatigue, leading to poor clinical and academic performance [1]. The purpose of this study is to determine if learning modules administered to graduate nurse anesthesia students prior to matriculation increases readiness for the program and decreases academic anxiety. The researchers hypothesize that successful completion of pre-matriculation learning modules will increase program readiness and decrease academic anxiety.

**Methods:** The exploratory study design included educational modules, pretests, and posttests. Nineteen incoming graduate nurse anesthesia students at Wake Forest University School of Medicine, Class of 2017, participated in the study, comprising a convenience, cohort study sample. An eighteen question pretest was administered in April 2015 to establish a baseline of students’ anesthesia knowledge.  After completing the pretest, students had computer access from April 2015 - August 2015 to eleven problem-based learning modules to teach basic anesthesia concepts. Modules consisted of videos and reading materials on neuroanatomy, spinal tracts, muscle relaxants, inhaled anesthetics, anesthesia gas machine, induction sequence, emergence sequence, endocrine, one-lung ventilation, airway, and local anesthetics. Students completed a nineteen question posttest on module content during the beginning of school in August 2015.  Data collection took place in August 2015.

**Results:** Statistical data analysis is currently ongoing and expected to be completed by March 2016. However, preliminary data shows some participants reported moderate decreases in anxiety before matriculation. The researchers anticipate findings can be utilized for clinical relevance. One study revealed participating in a structured learning program prior to an acute-care clinical rotation caused a statistically significant decrease in anxiety and an increase in self-efficacy in nursing students [2].  Another study demonstrated an increase in self-efficacy among students who participated in computer-based learning [3]. Combined with those studies, this research reveals that completing learning modules increased students’ self-perceptions of readiness for matriculation. Unfortunately, the study was limited by the small convenience sample, but results can be used to inform anesthesia educators on what resources and preparation techniques work best for developing pre-matriculation modules.

**Discussion and Conclusion:** This study demonstrated that participating in learning modules prior to matriculation into a nurse anesthesia program would benefit the students by decreasing anxiety and increasing academic preparation.

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**Key words:** pre-matriculation, stress, readiness, performance, anesthesia student

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**wcna1-0108**
**FREE COMMUNICATION SESSION 10**

**THE VALUE OF CERTIFICATION FOR NURSE ANESTHETISTS**

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**Introduction**: Nurse anesthetists across the globe are subject to certification requirements which span from no certification in some countries, to required programs of very regimented and ongoing requirements in other countries. In considering the contribution of certification, a governing body concerned with nurse anesthesia practice would need to identify the benefits and disadvantages of a certification program. The implications of certification reach far beyond the most obvious concern related to practitioner competence and patient safety, and a variety of considerations would impact the feasibility of implementing a new certification program.

**Methods:** A review of literature was performed to identify the patient-care value, value to the profession, disadvantages, and barriers to implementing professional certification. Ovid was used to search scholarly databases, and a general internet search was also conducted to investigate literature from business and finance.

**Results:** Research has linked performance on knowledge examinations with quality measures. For example, a link was found between appropriate care prescription among Canadian physicians who scored higher on their initial certification examination. [1] This higher level of care persisted up to 7 years following initial certification. An ongoing certification program may also serve to maintain provider quality throughout the career. A U.S. study found that physicians who scored higher on a maintenance of certification examination were more likely to perform best practices in care for diabetes and mammography, in comparison to physicians who scored lower. [2] Certification can have financial implications, also. A law enacted in the U.S. in 1986 allowed certified nurse anesthetists to bill the government directly for anesthesia services. To bill for their services, nurse anesthetists do not need to be supervised by an anesthesiologist, but they must be certified by the national certification board. Therefore, certification adds to the value that nurse anesthetists offer to their employing hospital. Healthcare providers benefit from the values of certification, however they also desire a balance between those benefits and the personal cost, time-commitment, and practice regulation imposed by a certification program. [3]

**Discussion and Conclusion:**

A persistent challenge with linking certification to clinical performance is that it is exceedingly difficult to define healthcare quality. Evaluating whether a provider follows care standards is one potential measure, but this metric does not account for ultimate patient outcomes, nor does it indicate the provider’s skill in processing complex decision scenarios or even their ability to perform an accurate assessment and diagnosis. Therefore, it is very difficult to determine a strong, consistent link between certification and care quality. Certification does, however, create a link between continuing education and practice, and it may be the most reliable encouragement for practitioners to maintain knowledge on evolving science. Financially, certification can have important implications for practice rights and the reimbursement or pay which accompanies those services. However, the burden of a certification program must be palatable to the constituents and must match the resources available, in order to be supported by both certificants and other stake holders.This report presents advantages, disadvantages, and considerations for a country considering implementing a certification program.

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**wcna1-0112**
**FREE COMMUNICATION SESSION 10**

**INTERNATIONAL FEDERATION OF NURSE ANESTHETISTS’ ANESTHESIA PROGRAM APPROVAL PROCESS**

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The International Federation of Nurse Anesthetists (IFNA) believes that it is possible to improve anesthesia patient care through a voluntary Anesthesia Program Approval Process (APAP) for non-physician anesthesia programs. Since 2010 IFNA has awarded several grants for APAP projects which is the result of a coordinated effort by anesthesia leaders from many nations to implement a voluntary quality improvement system based on IFNA Standards of Educations for educating nurse anesthetists. These leaders firmly believe that meeting international education standards is an important way to improve anesthesia, pain management and resuscitative care to patients worldwide.

By 2015, 20 anesthesia programs from Denmark, France, Iceland, Indonesia, Philippines, Shanghai (China), Sweden, Switzerland, The Netherlands, Tunisia and the USA had successfully completed the process. Faculty from these programs, who have successfully completed APAP, show how anesthesia educators throughout the world seek to continually improve education and patient care by pledging to meet common education standards. As national governments, education ministers and heads of education institutions work to decrease shortages of healthcare workers, they would benefit from considering the value offered by quality improvement systems supported by professional organizations. When education programs are measured against standards developed by experts in a profession, policy makers can be assured that the programs have met certain standards of quality. They can also be confident that graduates of approved programs are appropriately trained healthcare workers for their citizens.

Keywords: Accreditation, Anesthesia, Approval, Education, Improvement, International, Nurse, Quality, Standards

####

**wcna1-0024**
**FREE COMMUNICATION SESSION 12**

**SAME DAY SURGERY PATIENT´S PHYSICAL SYMPTOMS TWENTY FOUR HOURS AND FOUR DAYS AFTER ANESTHESIA**

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**Aim /s.** To investigate the recovery of same day surgery patients the first four days after anaesthesia.

**Design.**  A prospective, explorative panel study design was used. Patients 18 years and older, scheduled three days in advance to have same day surgery were offered participation in the study. Exclusion criteria were staying overnight at the hospital, not being able to read and write Icelandic and that vision, hearing or psychological status compromised the patients’ ability to answer the study questionnaire.  The Quality of recovery-40 (QoR-40) was used to measure quality of recovery on days 1 and 4 after surgery. The QoR-40 is a 40-item questionnaire that measures quality of recovery after anaesthesia and surgery. It is composed of four dimensions: physical comfort (12 items), emotional state (9 items), physical independence (5 items), psychological support (7 items) and pain (7 items). Individual items are scored on a five-point Likert scale with total score ranging from 40 (poor quality of recovery) to 200 (excellent quality of recovery) (1). In addition to the QoR-40 the study questionnaire asked about tiredness, soreness and thirst at T2 and T3 and about general physical and psychological health at T1 and T3.  Data collection was before surgery (T1), the day after surgery (T2) and four days after surgery (T3).  Data collection started  November 1st 2012 and finished March 1st 2013 when 631 patients had been recruited into the study. Power analyses suggested that 405 patients were needed for the study given a power (beta) of 0.8, effect size of 0.3, alpha level at 0.05 and descriptive statistical tests.

**Results.**Participants were 564 on day one (T1) and 425 (75,4% ) on T2 and T3.  More than half were women (55, 8%), 78, 5% were married or cohabiting. About one fourth (26, 1%) of the patients had general surgery and one fifth (19,2%) had urological surgery. Significantly more patients reported their physical health as rather good or very good on T1 (74, 3%) compared to T3 (68,3%; Chi-square, p<0,001). On T2 most patients reported the following physical signs: moderate pain (43, 3%), thirst (41, 8%), tiredness (37, 8%) and hoarseness (28,1%). On T3 the symptoms were: moderate pain (32,7%), tiredness (25,6%), back pain (21,3%) and thirst (17,7%). Significantly more patients reported these symptoms on T2 compared to T3.

**Discussion.**

Results show that many patients feel physical discomfort and pain when recovering after anesthesia.  These symptoms do improve but some are still there four days after anesthesia. It is important that patients are informed about general progress of symptoms and educated on ways to deal with this. Better postoperative care of same day surgery patients is important for quality assurance.

**Keywords.** Nursing, anesthesia, postoperative recovery, QoR-40.

**wcna1-0041**
**FREE COMMUNICATION SESSION 12**

**EFFICACY OF PREWARMING WITH A SELF-HEATING BLANKET ON UNPLANNED PERIOPERATIVE HYPOTHERMIA IN PATIENTS UNDERGOING HIP OR KNEE REPLACEMENT**

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**Introduction, purpose and hypothesis**

Unplanned perioperative hypothermia (UPH) defined as a core temperature less than 36° C can have serious consequences for surgical patients. Skin surface warming (prewarming) has shown to be effective in reducing UPH (1). Prewarming with forced-air warming (FAW) can be a challenge in the clinical practice due to lack of time and equipment.

The purpose of this study was to identify the incidence of UPH and to evaluate the efficacy of a self-warming blanket on core temperature using FAW intraoperatively vs. using a self-warming blanket preoperatively and FAW intraoperatively for patients undergoing total hip or knee replacement. We hypothesized a statistically significant difference in core temperature between the two groups.

**Methods**

A total of sixty adults undergoing spinal or general anesthesia for either total knee- or hip replacement was included in this study. Initially, thirty patients (control group) were consecutively included in the study to identify the incidence of UPH. The control group received traditional care with FAW intraoperatively as the only warming strategy. Subsequently, thirty patients (prewarmed group) were consecutively included in the study to identify the incidence of UPH in patients who received a self-warming blanket preoperatively and FAW intraoperatively. Oral temperature measurements were recorded preoperatively, every 30 minutes during surgery and on admission to the post-anesthesia care unit. Data were collected from May 2012 to March 2013 at Odense University Hospital, Denmark.

**Results**

The results showed the incidence of UPH at the 30-minute and at the 60-minute interval in the prewarmed group vs. control group to be 10% vs. 34% and 13% vs. 43%, respectively. Preoperative (baseline) mean core temperature was insignificant (p>0.1). Mean core temperature in the intervention group was significantly higher (p< 0.05) in comparison with the control group throughout the perioperative period. Furthermore, mean core temperature in the prewarmed group stayed above the hypothermic threshold throughout the intraoperative period.

**Discussion**

The results of this study showed that prewarming with a self-warming blanket decreased the incidence of UPH and the result is consistent with other studies regarding efficacy of prewarming using FAW to prevent UPH (2). The initial post-induction core temperature drop was not prevented completely by prewarming. Ambient room temperature being at least 21°C and prewarming infusions should be considered as adjuncts to prewarming to prevent UPH (3).

**Conclusion**

Prewarming patients with a self -heating blanket resulted in a smaller decrease in core temperature in the perioperative period and less occurrence of UPH hypothermia compared with patients who only received FAW peroperatively. Prewarming should therefore be considered part of the clinical practice in preventing UPH in the perioperative setting.

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**Key words:** Adult, anesthesia, body temperature, warming devices, perianesthesia nursing.

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**wcna1-0063**
**FREE COMMUNICATION SESSION 12**

**POSTOPERATIVE NAUSEA AND VOMITING FOR A LAPAROSCOPIC CHOLECYSTECTOMY SURGERY H.BEN AMARA;I.HAMDOUN;A.SOUISSI ECOLE SUP DES SCIENCES ET TECHNIQUES DE LA SANTE DE TUNIS UTM**

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The main objective is to study the incidence of nausea postoperative vomiting (PONV) in Tunisian female population surgery for a laparoscopic cholecystectomy.

**Material and method:**

It is a prospective observational study, with informed consent from patients was obtained.  We included all women proposed for laparoscopic cholecystectomy in our surgery department over a period of 2 months (May and June 2011). Exclusion criteria:  Patients who received an anti emetic in the 24 hours preceding the surgery; conversion to laparotomy, male patients and postoperative mechanical ventilation.

Sixty patients were included during the study period. The average age of our patients was

46 ± 14 years with extremes ranging from 20 to 76 years. 33 (55%) of our patients were classified ASA I and 27 (45%) are classified ASA II.11 of our patients (19%) were smokers and 49 (81%) were non-smokers.14 (24%) of our patients had a history of PONV and 46 (76%) had not. Only 25% patients have received hydroxyzine before operation.None of our patients received morphine for pain relief postoperatively. For induction of anesthesia, propofol was used in 21 patients, thiopental  in 33 patients  and etomidate in 6; Succinylcholin was used in 43 patients (71%), cisatracurium for the 17remaining patients. Fentanyl was used in all patients. The average dose was 237 ± 42mcg.For maintenance of the neuromuscular block, Cisatracurium was used in all patients with a mean of 14 ± 2 mg.

Nitrous oxide: used in all patients. The mean duration of surgery (incision-closure period) was 61 ± 11 minutes.

**Results:**

48 of our patients (80%) had postoperative nausea, among them 23 (39%) experienced vomiting.  Only four patients received treatment of  PONV, (8.3%).The average EVA score during the postoperative visit was 41 ± 19, with extremes of 10-89.postoperative analgesia. The majority (58 from 60) of our patients had   a postoperative analgesic treatment.Paracetamol was administered alone in 44 patients (73%). Tramadol was administered alone in one patient. The tramadol-paracetamol was administered in 13 patients (21%).The incidence of PONV was 87% among non-smokers against 54% in smokers.                         The incidence of PONV is higher in patients with a history of PONV (92% against 78%).

The proportion of patients who experienced PONV was 85% in patients with a score of ≥2 Apfel against 54% for patients with a score of 1

**Conclusion:**

Incidence of nausea and vomiting is signified, many factors are incriminated. Professional motivated health care providers are very important for the management of PONV.

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**wcna1-0104**
**FREE COMMUNICATION SESSION 12**

**THE EXPERIENCES OF SPINAL ANESTHESIA AND PATIENT SATISFACTION**

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**The experiences of spinal anesthesia and patient satisfaction**

**Urologic surgery**

**Charles Nicolle hospital Tunisia**

**Nadia B.Khayatia Chbinou ;Hedia B.Amara Najjar ;  Samira Lemsi B.Yaghlène**

**Keywords**: information, quality; evaluation

**Introduction:**

As part of the health care quality assessment the main objective of this study is to evaluate the experience of spinal anesthesia and the satisfaction of patients operated in urologic surgery.

**Method:**

It’s a prospective transversal study.

We’ve included 100 patients who underwent Pre anesthetic consultation and surgery under spinal anesthesia during the period from 17/05/2014 to 07/07/2014.

We used a pre directed questionnaire composed of 26 closed questions.

We identified : demographic parameters, surgical history, type of intervention, the quality of the information preoperatively transmitted by the surgeon about the surgery and that  transmitted by physician anesthesiologist regarding anesthetic technique,the pain at the puncture evaluated by EVS score , pain at the surgical site, per and postoperative adverse effects of spinal anesthesia and the overall levels of satisfaction of the patients.

The data were entered into in 2007 EXCEL file and analyzed using SPSS 16 software, the selected significance level of (0.05).

**Results:**

The average age of our population is 62 years; 88 men and 12 women.

The information about spinal Anesthesia had been passed in 38 % cases during the anesthesia consultation and in the operating room just before the gesture in 85 % patients. 34 % patients had given their consent for spinal Anesthesia.

Spinal puncture was successful in the first attempt in 80 % patients, at the second attempt in 16 %and 2 % had more than 2 punctures. 2% of patients didn’t remember the number of punctures.

Pain at the time of spinal puncture was noted by 100 %patients, it was assessed as low pain in 85% of patients, moderate in 14 % and severe in 1%.

Per operative nausea and vomiting were experienced by 13 %patients. The incidence of dizziness was 14% that of purities was 13%. Postoperative pain at the spinal puncture site was felt by 60 %patients; it was assessed as low in 47 % patients, moderate in 12 %, and severe in 1 %.

The incidence of postoperative nausea and vomiting was 11%, 10 % to dizziness and headaches 15%. The time of recovery of mobility in the lower limbs after surgery was less than three hours in 90% of patients.

The patients were moderately or very satisfied by the spinal anesthesia in 84 % cases.

We found a statistically significant relationship (p <0.0000) between patient satisfaction and the desire for a possible intervention under spinal anesthesia.

**Conclusion:**

This study showed a relatively high satisfaction rate but must still be improved through improving information and better management of spinal anesthesia.

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**wcna1-0091**
**FREE COMMUNICATION SESSION 13**

**PERPARTUM HEMORRHAGE-RELATED MORBIDITY AND MORTALITY: EPIDEMIOLOGY AND RISK FACTORS IN OBSTETRIC ICU**

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**Background**: Perpartum hemorrhage is the leading cause of morbidity and mortality worldwide. The aim of our study is to determine predictive factors of morbidity and mortality in intensive care unit patients.

**Methods:** A retrospectivedescriptive study was led over a period of 4 years (2009, December 1st to 2013, December 31st), in the obstetrical ICU, in Tunis Center of Maternity and Neonatology. We gathered 322 patients. Statistical analysis was performed using SPSS 17 software. Data was expressed as means, medians and percentages. We used Student’s and Fisher’s tests to compare qualitative and quantitative data. We computed odds ratios with their 95% confidence interval. A p value over than 0.05 was considered as statistically significant. Multivariate analysis was performed using a logistic regression to determine independent risk factors.

**Results:** The main age of our patients was32.15.4 years. The median gravity and parity was 2 for each one. The mean gestational age was 36.63.3 weeks. The majority was of ASA 1 class (81.1%), the delivery mode was caesarian section in 67%. The major bleeding cause was uterine atony (49.6%). Sulprostone was used in 74.8% cases. Seventy percent of patients underwent surgical treatment in order to stop bleeding. Emergency hysterectomy was performed in 43.2% of patients. All of our patients had blood products transfusion in emergency. Massive transfusion rate was 71.1%. The main number of transfused blood products was: 7.65.8 RBC’s; 115.8 fresh frozen plasma and 109.5 standard platelets concentrates. Clotting agents were given such fibrinogen in 61.2% of cases and recombinant activated VII factor in 13.7% of cases. The duration of mechanical ventilation was 167.731.8 hours; the duration of ICU stay was 2.62.9 days. The main observed complications were: disseminated intravascular coagulation (16.8%); pulmonary edema (14%); acute renal failure (10.2%); sepsis (8.7%); HELLP syndrome (8.1%).   Independent mortality risk factors were found such as the use of catecholamines (OR=35.2), massive transfusion (OR=168.7), pulmonary edema (OR=27), HELLP syndrome (OR=1.57) and disseminated intravascular coagulation (OR=8).

**Conclusion:** The perpartum hemorrhage-related morbidity and mortality could be prevented. A standardized and well organized management is necessary to provide efficient care to parturients. Simulation training may be useful but needs to be assessed.

Key-words: Maternal mortality, Morbidity, Perpartum hemorrhage, Intensive care, Obstetrics

**References:**

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**wcna1-0028**
**FREE COMMUNICATIONS SESSION 11**

**THORACIC ULTRASOUND FOR CONFIRMATION OF CORRECT LUNG EXCLUSION BEFORE ONE LUNG VENTILATION IN THORACIC SURGERY**

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Fiber optic bronchoscopy is the standard technique to assess correct double lumen

endotracheal tubes positioning before lung exclusion for one lung ventilation. However

it requires a trained specialized anesthesiologist and is often resources consuming.

Aim of this study is to compare it with thoracic ultrasound performed by anesthetic

nurses in terms of sensibility, specificity and cost-effectiveness.

We designed a case-control, cross-over, blinded study in which, after patients

intubation, correct lung exclusion was assed both via standard bronchoscopy,

performed by a specialist anesthesiologist and thoracic ultrasound, performed by a

trained anesthetic nurse. A continuous cohort of adult patients undergoing thoracic

surgery on one lung ventilation, after intubation with a double lumen endotracheal tube,

subsequently underwent traditional fiber optic bronchoscopy followed by thoracic

ultrasound to assess correct lung exclusion.

The two techniques resulted to be equally sensitive and specific. Thoracic ultrasound

was associated to a significantly quicker execution than fiber optic bronchoscopy. Time

of execution, together with the fact that ultrasound was performed by a nurse, the costs

of materials and its sterilization, had a significant economic impact, with a net saving of

37.2±5.4 Euros per case.

Conclusion

Even though fiber optic bronchoscopy remains the gold standard in checking optimal

double lumen endotracheal tube positioning, thoracic ultrasound is a specific, sensitive

and cost-effective method to quickly obtain a functional assessment that it is working

properly, through identification of correct lung exclusion.

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**wcna1-0055**
**FREE COMMUNICATIONS SESSION 11**

**ULTRASOUND IN NURSING PRACTICE OPENING AND MAINTENANCE OF PERIPHERAL VENOUS LINES**

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Keywords: peripheral venous access, ultrasound. Before performing any anesthetic technique is necessary to open the peripheral venous access. Peripheral venous access is in the competence of nurses in anesthesia and involves puncture of the vein intravenous cannula and maintaining venous times allowing for rehydration, electrolyte, blood products and drugs recommended by the anesthesiologist.

When puncture veins nurse is assessing a vein (elasticity, fullness vein, close to the artery, close to the nerve, the size of the required cannula) orienting to puncture as successful as possible. Venous access may be difficult due to edema, and hematoma in the puncture, obesity, poor general condition of the patient or changes of anatomical structures. When peripheral intravenous route is not possible to set up with multiple puncture attempts, access to the central venous opening times which is the competence of the doctor anesthetist. The use of ultrasound in the setting up of the peripheral venous times can distinguish and visualize the structure of the puncture (veins, arteries, nerves, blood vessel lumen, the wall of blood vessels, hematoma) that can not be seen with the naked eye. Using ultrasound vein puncture is performed under the "control eye" in real time following the venous cannula throughout the puncture. The introduction of ultrasound as an aid in peripheral vein puncture we were able to open and maintain peripheral venous access in cases in which no aid testicular ultrasound was necessary to set up a central venous catheter, which increases the cost of treatment and the patient exhibits the possible complications of the proceedings (pneumothorax, arterial puncture, hematoma, infection) .

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**wcna1-0102**
**FREE COMMUNICATIONS SESSION 11**

**A RETROSPECTIVE ANALYSES : SAFETY OF SUGAMMADEX FOR THE REVERSAL OF ROCURONIUM-INDUCED NEUROMUSCULAR BLOCKADE IN PEDIATRIC PATIENTS**

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Introduction with Hypothesis

The management of pediatric patients can be challenging for anesthesiologists for many reasons, including altered pharmacokinetics and dynamics. Sugammadex is a modified-cyclodextrin which reverses the steroidal NMBAs rocuronium and vecuronium induced neuromuscular blockade (NMB) by chemical encapsulation in a dose-dependent manner (1). Clinical data have already showed the efficacy and safety of sugammadex for the reversal of moderate and deep neuromuscular blockade in adults. But there are limited articles about the safety and adverse events for  reversal of NMB with sugammadex in pediatric patients. This retrospective study was designed to assess the safety and adverse events of sugammadex for rocuronium-induced NMB reversal in pediatric patients.

Methods

After institutional ethics committee approval, datas of 112 pediatric patients American Society of Anesthesiologists (ASA) class 1–2 under age of 16 years scheduled for surgery  with general anesthesia and requiring neuromuscular blockade with tracheal intubation between January 2015 and December 2015 were retrospectively collected. Patients, who were expected to have a difficult intubation;  those with  hepatorenal, metabolic, neuromuscular diseases,  history of malignant hyperthermia, allergic to medication used during general anesthesia; or receiving medication known to interfere with NMBAs, were excluded from the study. All the patients were premedicated and after anesthesia induction , patients received rocuronium, 0.6 mg/kg, before tracheal intubation. At the end of surgery, patients received sugammadex, 2.0-4.0 mg/kg. Safety was evaluated by assessing adverse events and vital signs during and after extubation of the patients. Collected adverse events(AE) were prolonged recovery time, residuel neuromuscular blockade, nausea/vomiting, desaturation, apnea, reintubation, bronchospasm, laryngospasm, agitation, delirium and allergic reactions.

Results

Demographic data of the patients, median age 6years(min:6 months-max:16 years), median weight 22 kg(min:6 kg- max:68 kg), median operation time 45 minutes(min:15 min- max:580 min) . Vomiting, nausea and pain related to surgery were the most frequently reported AEs, and not considered to be treatment-related.  AEs considered possibly related to the sugammadex were reported in eleven patients. These consisted of agitation in one, flushing  in one, nausea/vomiting in four and bronchospasms in five children. There was no evidence of recurarization or residual curarization or other abnormalitiesin any of the patients**.**

Discussion and Conclusion

Sugammadex brings numerous advantages over the classical neostigmine. It does not have the numerous side effects of anticholinesterases and cholinergic agents, and it can reverse a NMB of any depth if established either by rocuronium or vecuronium. Our findings indicate that sugammadex 2.0 and 4.0 mg/kg can be administered safely and effectively for the reversal of rocuronium induced NMB in pediatric patients.

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**wcna1-0021**
**ORAL - POSTER PRESENTATIONS**

**APPLYING A TIME-OUT AND STANDARDIZED REPORT FORM IN ANESTHESIA HAND-OFFS**

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Introduction: At the Memphis Veterans Affairs Medical Center (VAMC), there was no established protocol for patient hand-off from anesthesia providers to the Surgical Intensive Care Unity (SICU) and Post Anesthesia Care Unit (PACU). Anesthesia and SICU staff members reported frustration regarding inconsistent and incomplete post-surgical handoffs.  Issues identified included: difficulty contacting SICU staff to give report and inconsistent availability of SICU staff upon first arrival to the SICU. The staff nurses felt rushed and received inconsistent reports. The current process resulted in unsafe hand-offs, as well as slower operating room turnovers, causing an increase in hospital costs.

Methods: A multidisciplinary committee was formed consisting of representatives from Anesthesia, PACU and SICU to discuss the problem and offer solutions. A hand-off form was created by the committee.  To increase situational awareness during transfer, anesthesia providers began to announce a “time out” before giving report. After initial compliance lagged, small tests of change were implemented to foster a culture of change and acceptance among staff.  The committee established specific roles and assignments for when a surgical patient arrived in the SICU. This was dubbed the “ABCs of safe hand-off”. A stood for Airway, meaning the anesthesia provider or respiratory therapy places the patient on the ventilator or puts on supplemental oxygen. B stood for brick, the transport module (known as the brick) and Pulmonary Artery (PA) catheter transducer are inserted into the monitor by the circulating nurse and SICU nurse respectively.

Results: The overall impact of the project has been to further promote a culture of patient safety. The key to this is establishing continuity of care as an institutional priority. To do this, the existing hand-off sheet, "Time Out” and “Cross Check” has been adapted to all hospital wide transfers. Compliance with completion of the hand-off form and “time out” has averaged 97.5% since inception of the protocol. Additionally, statistical analysis showed significant increases in the percentage of staff who felt that they were part of a team, felt the hand-offs were more efficient and effective, and felt more comfortable assuming care.

Discussions and Conclusions:

The overall Surgery to SICU transfers utilizing the Hand-Off card increased from 33% from the first month to an average of 98% after interventions. The “Time Outs” in SICU, increased from 29% from the first month and have continued to average 98.74%.  SICU staff members present at patient arrival was initially 83% and has risen to an average of 97.38% over 10 months.

Anesthesia Hand Off report for PACU patient transfers was 79% initially and increased to 98.8%.  The “Time Outs” in PACU, increased from 39% from the first month and have continued to average 98.74% over 10 months. With the guidance and expertise of the hand-off committee, PACU has begun using a hand-off sheet and “time-out” when transferring patients to the medical/surgical floors. Further areas to research include transfers from the Emergency Department as well as transfers among anesthesia providers.

 keywords: hand-offs, safety, time out

**wcna1-0072**
**ORAL - POSTER PRESENTATIONS**

**CORE TEMPERATURE-THE INTRAOPERATIVE DIFFERENCE BETWEEN ESOPHAGEAL VERSUS NASOPHARYNGEAL TEMPERATURES AND THE IMPACT OF PREWARMING, AGE AND WEIGHT; A RANDOMIZED CLINICAL TRIAL. UNPLANNED HYPOTHERMIA, ANESTHESIA**

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**Intoduction**

Despite recommendations and several clinical guidelines, prevention of unplanned perioperative hypothermia (UPH) is still missing in many anesthetized patients and the incidence of inadvertent hypothermia remains high [1]. UPH is related to the environmental temperature in the operating room but mainly to altered thermoregulation in the body due to general anesthesia and neuroaxial analgesia. Efficiency in preventing UPH depends on valid temperature measurement and effective warming routines [1].When noninvasive core temperature measurements are wanted during surgery, the esophageal and nasopharyngeal temperatures are regarded as reliable alternatives [2]. These methods enable a continuously monitored temperature measurement during surgery. The combination of pre-warming, defined as actively warming the skin before anesthesia start [2], and active intraoperative warming are effective ways to prevent UPH during surgery [3]. This study was conducted to determine the intraoperative temperatures with two different measurements techniques (esophagus versus nasopharynx). This issue was evaluated in two groups with and without prewarming (warming before anaesthesia start).

**Methods**

All patients were recruited from a waiting list for colorectal surgery. Patients included were adult and of both genders with ASA physical status 1 and 2, who were to undergo elective open colorectal surgery under general anesthesia combined with regional analgesia for an anticipated anesthesia time of at least 210 minutes. The study was designed to perform repeated core temperature measurements in two groups, A (pre- and intraoperative warmed), and B (intraoperative warmed) from probes in the esophagus, and nasopharynx. In the OR, patients were randomly assigned by a sealed envelope technique to group A (n = 26) or group B (n = 26). To minimize diurnal variation in body temperature as a confounding factor all studies started at 07.30 a.m. The temperature values were displayed continuously on the monitor screen, but recorded according to the intention of reflecting the three phases (peripheral redistribution, heat loss exceeding heat production and the plateau phase) of hypothermia.

**Results**

Mean temperatures at 210 minutes were statistically different between the groups at both sites of measurement. Esophageal temperature in group A was 36.5 ± 0.6 versus 35.8 ± 0.7 in group B (p = 0.001), and nasopharyngeal temperature was 36.7 ± 0.6 and 36.0±0.6 in group A and group B, respectively (p = 0.002). A negative correlation was found between esophageal temperature and age (r2 = -0.381, p < 0.012). Esophageal temperature was different with respect to BMI below or above 25. The temperatures were 35.81 ± 0.66 in the lower BMI group versus 36.46 ± 0.59 (p < 0.001). These results demonstrate a difference between the two measurement techniques and that pre-warming, age and BMI have an impact on measured temperatures.

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**wcna1-0016**
**ORAL - POSTER PRESENTATIONS**

**HOW TO ASSESS WHAT NURSE ANAESTHETISTS KNOW ABOUT PAIN: PSYCHOMETRIC TESTING OF THE ADAPTED GERMAN VERSION OF NURSES KNOWLEDGE AND ATTITUDES SURVEY REGARDING PAIN ANAESTHESIA**

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3University  Basel, Institute of Nursing Science, Basel, Switzerland***Abstract Text**

**Introduction:** Despite new insights into pathophysiology and modern treatment options, surgery is often accompanied by acute postoperative pain [1]. Acute pain is a relevant problem within the first 48 hours after surgery in up to 83%. These patients are at risk of developing chronic pain accompanied by psychological and physiological effects [2]. Effective postoperative pain therapy helps not only to avoid chronic pain but also prevents the development of various complications and postoperative delirium.

To provide appropriate care, nurse anaesthetists require adequate knowledge and technical expertise to respond to patient’s needs and to deal with perioperative changes as necessary. Gaps in current knowledge in the field of pain therapy can negatively impact treatment and recovery [3]. The objective of this study was a further adaptation of the existing, unpublished instrument "Nurses Knowledge and Attitudes Survey-Anaesthesia" (NKAS-A) and the psychometric testing of this tool.

**Methods:** The NKAS-A instrument was evaluated by experts in anaesthesia (n = 10). The results were recorded, and the instrument comprehensively revised and further developed by independent experts (n = 5). The instrument consists of 34 items. A review of the face validity was carried out in order to elicit the relevance of the items. Calculation of the content validity (n = 11) of the individual items (I-CVI) and of the entire instrument (S-CVI Ave) served as an assessment for the relevance of the instrument. Before testing the psychometric properties, the readability of the items (n = 3) were reviewed. Finally, the reliability according to Kuder Richardson (KR-20) and convergent validity according to Pearson were assessed in a convenience sample of nurse anaesthetists (n = 209) of five Swiss hospitals. The survey was carried out online.

**Results:** One-hundred nine nurse anaesthetists took part in the investigation, which corresponds to a return rate of 52%. The I-CVI ranged of 0.4-1.0; the S-CVI / Ave was 0.85. Pearson’s correlation was not significant (α = 0.05, two-tailed); the correlation coefficient was r = 0.017. KR 20 was 0.52 for the entire instrument (0.45 first part and 0.73 second part).

**Conclusions:** The adapted instrument meets the criteria of validity, but only partly those of reliability. It is recommended that only the second part, i.e. questions 19-34, of the instrument is to be used for assessing the knowledge of nurse anaesthetists. Before using the  instrument to assess knowledge of the nurse anaesthetists in practice, the usefulness of the items of the first part should be reconsidered, and/or the psychometric properties should be tested in a larger sample to permit a multivariate analysis. A rewording of certain items is recommended.

**Keywords:** Nurse anaesthetists, pain management, validity, reliability

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**wcna1-0083**
**ORAL -POSTER PRESENTATIONS**

**IMPLEMENTATION OF GOAL-DIRECTED TRANSFUSION STRATEGY IMPROVES THE OUTCOME OF PREGNANCIES COMPLICATED BY SEVERE POSTPARTUM HEMORRHAGE**

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**Background:**

Implementation of point-of-care testing allows for rapid adjustment of administration of blood products to achieve pre-defined goals during the management of patients with severe hemorrhage.  We evaluate the result of introduction of a goal-directed transfusion (GDT) strategy during the peripartum period.

**Methods:**

We performed a cohort study to compare outcomes among parturients with severe PPH (estimated blood loss [EBL] 1500mL or more) who were managed before and after the implementation of a GDT strategy. Clinical outcomes (including EBL, blood product replacement, hysterectomy, ICU admission, length of hospital stay) were abstracted from the medical records.
 **Results:**

86 patients met criteria for inclusion; 58 in the non-GDT group and 28 in the GDT group. Median and interquartile ranges for EBL were 3000 (2000-4000) for non-GDT versus 2000 (1600-2500) for GDT (p=0.0005).  Transfused units of PRBC were 4 (2-8) for non-GDT versus 1 (0-2) for GDT (p<0.0001).  Similar results were for fresh frozen plasma (FFP).  In non-GDT group, 44.8% of patients received platelets versus none in the GDT group (p<0.0001).  Incidence of cesarean hysterectomy was 53.5% for non-GDT versus 25% for GDT (p=0.02).  Incidence of ICU admission was 43.1% for non-GDT versus 3.6% for GDT (p=0.0001).  Median and interquartile ranges for postpartum length of hospitalization were 5 (4-6) days for non-GDT versus 4 (3-5) days for GDT (p=0.0007).
 **Conclusions:**

Implementation of a goal-directed transfusion strategy for the management of severe PPH is associated with decrease in use of blood products, reduced rate of cesarean hysterectomy, fewer ICU admissions, and shortened postpartum stay.

**wcna1-0082**
**ORAL -POSTER PRESENTATIONS**

**SLIMING THE ANESTHESIA WORKSTATION, SLIMING THE PATIENT: DOCUMENTING THE RAMBUNCTIOUS JOURNEY OF THE ANESTHESIA PROVIDER’S HANDS DURING SIMULATED, ROUTINE CARE**

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**INTRODUCTION:** This study had three objectives. Firstly, we aimed to quantify the dispersion of biological material from a simulated patient’s mouth to the anesthesia workstation throughout the induction period. Secondly, we tested the hypothesis that there would be fewer contamination sites in those who used a double-gloving technique versus those using a single-gloving technique. Lastly, we examined the effectiveness of the routine, between case anesthesia apparatus cleaning protocol used to disinfect commonly observed contamination sites.

**METHODS:** A convenience sample of 20 experienced anesthesia providers performed a simulated induction of general endotracheal anesthesia, using a set of standardized interventions. Participants were blinded to the true purpose of the study.  Group 1 (N=10) used a single-glove technique and group 2 (N=10) used a double-glove technique. DAZO®, a clear fluorescent marking gel, was used as an analog for biological material in the patient’s mouth. A standard Wood’s lamp, emitting long-wave ultraviolet light was used to fluoresce the DAZO® gel, quantifying its spread across the work area. Dispersion of the surrogate biological material from the oral cavity to other sites was considered to be due to the actions of the anesthesia provider and served as the dependent (outcome) variable. A standardized data collection tool was used to inventory areas of contamination.

**RESULTS:** Nine of the 33 discrete surfaces monitored were contaminated greater than 50% (10 or more touches) of the time inclusive of both the single and double-gloved groups. The single-glove group (group I) contaminated an average of 16.0 (SEM = 0.89) discrete sites compared to the double-glove group (group II) who contaminated an average of 7.6 (SEM = 0.85) discrete sites (t – 6.823, P = 2.2). Six of the 33 surfaces deserve special mention. The cart drawers, fresh gas flow dial, the medication vials and the ventilator controls were significantly contaminated by group I, but not contaminated by group II (P < 0.05 in all cases). The APL valve and the temperature probes were also more contaminated in group I relative to group II, but only at a marginal level of significance (P = 0.070 for both surfaces). Standardized end-of-case cleaning protocols were tested for efficacy in removing surrogate oral contaminates from the anesthesia workspace and were consistently ineffective in removing the DAZO® from the anesthesia workstation despite being easily removed with targeted cleaning after the fact.

**CONCLUSIONS:** Anesthesia providers do contaminate their workstations with the patient’s oral biologic materials. Utilizing a double-glove technique during the induction period mitigates environmental contamination but does not entirely eliminate inoculation of work surfaces. Finally, standard cleaning protocols were highly ineffective in removing the DAZO® contamination, a material that is otherwise easily removed with a simple swipe of a cleansing cloth.

Nosocomial infection, DAZO®, gloving techniques, cleaning protocols, induction, bioburden