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AND 15TH INTERNATIONAL CONGRESS OF CROATIAN NURSES SOCIETY OF ANESTHESIA, REANIMATION, INTENSIVE CARE AND TRANSFUSION
REFLECTIONS OF PAST, BUILDING THE FUTURE TOGETHER
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AMADRIA PARK ŠIBENIK

14. svjetski kongres medicinskih sestara anestezije

i

15. međunarodni kongres Hrvatskog društva medicinskih sestara anestezije, reanimacije, intenzivne skrbi i transfuzije

Zbornik sažetaka

A NEW WORLD OF LEARNING
Anesthesia and Intensive Care Medicine at the Glance

Alan Šustić, MD, PhD

University of Rijeka, Croatia

In the first part of the lecture, the author addresses the dynamic changes of the last two decades conditioned by globalization and IT revolution in the wider social context, and then the consequences of the changes in the segment of education and medicine. It also explains the differences and the consequences of moving from the so- industrial age in so- information age, or the difference between strategic thinking in relation to strategic planning. The second part of lecture author explicitly cites specific differences in the thinking and understanding of clinical medicine and education between the industrial and informatics era. Finally, the last part of the lecture highlights the need for re-thinking, redesigning and restructuring the entire education process in all segments of anesthesia and intensive care medicine and for all health profiles. Especially emphasizes the importance of changing education in order to acquire new and different student competencies such as critical evaluation, transformation and synthesis of new knowledge and general and specific communication skills.

Development of specialization programs for nurses anesthetists in Croatia

Snježana Čukljek, PhD

University of Applied Health Sciences Zagreb

In the last twenty years, various forms of formal and lifelong education in nursing have been developing in the Republic of Croatia as a result of responding to the demands of the health care system, the development of the nursing profession and the aspirations of nurses for professional development. Higher education in nursing in the Republic of Croatia is in line with the provisions of EU directives 2005/36 / EC and 2013/55 / EU, recommendations of the World Health Organization (Global Standards for Initial Education of Nurses and Midwives) and the Bologna Process and focuses on teaching based on learning outcomes. Higher education is conducted at two levels: undergraduate and graduate. Upon completion of the undergraduate study, students can continue their education at the graduate level. At the University of Applied Health Sciences, in cooperation with the Croatian Society of Anesthesia, Resuscitation, Intensive Care and Transfusion Nurses, a specialist graduate study program for nurses in the field of anesthesia and intensive care has been developed.

The anticipated learning outcomes of the study program are in line with the Official Standards for Graduate Education for Anesthesia and Intensive Care of the Croatian Society of Anesthesia, Resuscitation, Intensive Care and Transfusion Nurses (CNSARICT), and with the guidelines of the European Federation of Critical Care Nurses (EfCCNa) and the International Federation of Nurses Anesthetists (IFNA). Part of the content that students attend is common content, but most of it is specific and related to the field of anesthesia.

Learning outcomes include the development of generic skills and specific professional competences and are an upgrade of the contents of the undergraduate program and allow graduates to engage in the work in the field of anesthesiology.

Upon acceptance of the program by the Expert Council of the University of Applied Health Sciences, the program is sent to the Agency for Science and Higher Education for accreditation. The accreditation procedure includes an assessment of the content of the study program and the conditions and possibilities of quality program performance.

During the development of the program, the clinical sites, teachers and associates who will participate in the implementation of the program are planned.

Ultrasonografija

Prof.dr.sc. Alen Protić

UHC Rijeka

Ultrasonografija se kao dijagnostička ili terapeutska (interventna ultrasonografija) se rutinski koristi na Klinici za anesteziologiju i intenzivno liječenje od kraja osamdesetih godina prošlog stoljeća, a prvi rad iz područja upotrebe ultrasonografije u intenzivnoj medicine pod naslovom Sonografija u sindromu akutnog zatajivanja bubrega publiciran je još 1991. godine (Šustić A, i sur. Medicina (Rijeka)1991;27:147-151). Danas se svakodnevnom radu na Klinici za anesteziologiju i intenzivno liječenje rutinski primjenjuju svi segmenti ultrasonografije, od ultrazvučne dijagnostike pluća, abdomena i urogenitalnog sustava, preko transtorakalne i transesofagealne ehokardiografije do ultrasonografije u regionalnoj anesteziji ili najmodernijih oblika njezine primjene u periperacijskoj medicini kao i najsloženijih pocedura intrerventne ultrasonografije.

Brzi i orijentacijski pregleu gornjeg dijela dišnog puta, prsišta i abdomena u smislu FAST protokola. Ultrazvučni pregled gornjeg dišnog puta obuhvaća pregled dna usne šupljine, procjenu otežane intubacije, pregled grkljana i traheje. Focused Assessment with Sonography for Trauma (FAST) je brzi ultrazvučni pregled koji se provodi kao test probira za identifikaciju akumulirane slobodne intraperitonalne ili intraperikardijalne tekućine. Slobodna tekućina je obično posljedica krvarenja nakon traume i doprinosi procjeni cirkulatorne nestabilnosti pacijenta. Izvodi se u hitnoj službi od strane izučenih zdravstvenih djelatnika, što omogućuje pravovremenu dijagnozu potencijalno životno ugrožavajućeg krvarenja te služi utvrđivanju narednih koraka u liječenju pacijenta. Extended FAST (eFAST) omogućuje pregled prsišta bilateralnim anteriornim transtorakalnim ultrazvučnim pregledom u smislu dijagnostike pleuralnih izljeva, pneumotoraksa te procjene količine tekućine u plućnom tkivu.

Za kompetentno izvođenje perifernih nervnih blokova potrebito je primjereno specifično znanje, osobita vještina i iskustvo, te niz komunikacijskih sposobnosti samog izvođača. Ultrazvukom vođena regionalna anestezija omogućuje anesteziologu direktnu, dinamičku vizualizaciju (engl. „real time“) izvođenja blokade perifernih živaca. Naime, prilikom izvođenja tradicionalne, „slijepe“ neurostimulacijske tehnike regionalne anestezije nije u potpunosti moguće precizno paraneuralno određivanje položaja vrha igle prije primjene lokalnog anestetika. Upravo korištenje ultrazvuka u regionalnoj anesteziji omogućuje praćenje

prolaska igle kroz tkiva, precizno pozicioniranje vrha igle „pod kontrolom oka“ u blizinu ciljanog perifernog živca s ciljem potpunog obuhvaćanja živca minimalnom količinom lokalnog anestetika. Rastući je broj relevantnih i recentnih kliničkih istraživanja koja ukazuju kako primjena ultrazvuka tijekom izvođenja blokade perifernih živaca značajno povećava djelotvornost i sigurnost regionalne anestezije, a često se ističe i kraće vrijeme potrebito za izvođenja blokade, te niža cijena navedenog anesteziološkog postupka u odnosu na tradicionalnu regionalnu anesteziju. U konačnici, sumirajući dosadašnja saznanja, korištenje ultrazvuka povećava naše znanje o regionalnoj anesteziji, poboljšava razumijevanje o uspiješnosti blokova i smanjuje učestalost komplikacija. Stoga su danas mnogi anesteziolozi s bogatim iskustvom u izvođenju tradicionalne regionalne anestezije s osobitim zadovoljstvom integrirali ultrazvukom vođenu regionalnu anesteziju u svakodnevnu, rutinsku, kliničku praksu.

Anesthesia personnels' experiences on digital Anesthesia Information Management Systems

Ann-Chatrin Linqvist Leonardsen, Anne Marie Gran Bruun, Berit Taraldsen Valeberg

Østfold University College/Østfold Hospital Trust, University of Southeastern Norway, Oslo Metropolitan University

INTRODUCTION: The capture and documentation of observations and interventions in anesthesia practice has been through extensive changes through decades. The increasing volume of complex data, legislation, and quality improvement initiatives related to clinical documentation have promoted the transition to digital records from the traditional paper-based records. Anesthesia information management systems (AIMS) have been designed to pull patient information directly from the anesthesia workstation, and transmit the data directly into documentation systems and databases. Earlier research mainly focus on the practical use of AIMS rather than how this is implemented and utilized alongside clinical monitoring.

AIM: The overarching aim was to explore anesthesia personnels' experiences with digital AIMS, through different approaches.

METHODS: The results presented here are based on two studies: 1) a literature review of studies focusing on anesthesia personnels' experiences with utilising digital AIMS, and 2) a qualitative study including individual interviews with anesthesiologists and nurse anesthetists in three different hospitals. In study 1, literature searches were conducted in PubMed, CINAHL, Embase, and The Cochrane Database of Systematic Reviews. We followed the PRISMA- flow chart, and identified articles were assessed with Critical Appraisal Checklists. In study 2, we used a purposive sampling strategy, and invited three nurse anesthetists and three anesthesiologists from three different hospitals respectively to participate. Inclusion criteria were a minimum 50 per cent clinical work and having worked in the anesthesia department during the past year. Data were analysed using qualitative content analysis according to the recommendations of Graneheim and Lundman. The study was conducted in line with the ethical guidelines for research in the Declaration of Helsinki. The study was approved by the Norwegian Centre for Research Data (NSD) (project no. 599254).

RESULTS: 473 records were identified in the literature review. Seven records underwent quality appraisal, representing research from the period 1991-2018, all with a quantitative design. In total 379 anesthesia personnel were included. Results were collated into the themes «user satisfaction», «technical

aspects», «physical placement of the system», «paper based versus electronic data entry», «quality of care», and «suggestions for improvement». In the qualitative study four categories were identified: 1) Balance between clinical assessment and monitoring, 2) Vigilance in relation to the patient, 3) The nurse-physician collaboration, and 4) Software issues. Participants described that anesthesia included a continuous balance between clinical assessment and monitoring. They experienced that the AIMS had an impact on their vigilance in relation to the patient during anesthesia. The AIMS affected the nurse-physician collaboration. Moreover, participants emphasised a lack of user participation and aspects of user-friendliness regarding the AIMS.

CONCLUSION: Findings indicate both positive and negative effects of AIMS. Collaboration and acceptance of the mutual responsibility between nurse anaesthetists and anaesthesiologists for both clinical observation and AIMS administration are essential. Hence, anesthesia personnels' experiences should be included when planning, developing and implementing digital data entry systems.

Postoperative pain management in neurosurgery department: an evaluation of the patient-controlled analgesia effectiveness

Biljana Kurtović, BSN, MSN, PhD, professor Krešimir Rotim, MD, PhD

University of Applied Health Sciences, Zagreb, Croatia, University of Applied Health Sciences, Zagreb, Croatia; Neurosurgery Department, University Hospital Centre Sestre milosrdnice, Zagreb, Croatia

INTRODUCTION: Despite advances in the development of medicine, pharmacology, and technology, the incidence of postoperative pain remains high. Recent studies show that 75% of patients experience postoperative pain and that up to 30% of patients have the experience of moderate to severe postoperative pain. Therapy options for early postoperative pain may be classified according to the analgesic administration method. Data indicate that using one analgesic regime may have a different effect in comparison to another as regards patient-focused outcomes. Patient-controlled analgesia is an interactive method allowing patients to control their pain in the manner that they independently administer analgesic drug doses using a computerized pump. The pump enables continued basal flow of analgesia with smaller intravenous bolus doses, so achieving a constant concentration of the analgesic drug in plasma.

AIM: To determine the efficacy of paracetamol and tramadol analgesia via patient-controlled pump and intermittent administration using the Short-Form McGill Pain Questionnaire after L4/L5 discectomy in neurosurgical patients.

METHODS: The study lasted 14 months and has involved 200 patients from the Neurosurgery Department of the University Hospital Centre Sestre milosrdnice. The study participants were patients who underwent elective lumbar discectomy of intervertebral LIV - LV disc extrusion. Postoperative pain was assessed at equal time intervals over 48 hours. Short form of the McGill pain assessment questionnaire was used for pain assessment.

RESULTS: Perception of pain was reduced in patient-controlled analgesia pump groups after the second measurement during the first postoperative day [95% CI: −3.89, −0.76], regardless of administered analgesic (p

CONCLUSION: Analgesia administration via patient-controlled pump contributes to the alleviation of postoperative pain in neurosurgical patients regardless of administered analgesic.

Identification of Differential DNA Methylation Genes and Enrichment Pathways Associated Condition Pain Modulation in Adults with Nonspecific Chronic Low Back Pain

Edwin N. Aroke, PhD, CRNA, FAAN, Burel R. Goodin, PhD

University of Alabama at Birmingham, School of Nursing, University of Alabama at Birmingham, Department of Psychology

INTRODUCTION: Nonspecific chronic low back pain (NSCLBP) is a common musculoskeletal condition often resulting in physical inactivity, disability, and substantial cost. While the exact cause of NSCLBP remains unknown, some evidence suggests that dysfunctional processing of endogenous nociceptive input, measured as conditioned pain modulation (CPM), is associated with cLBP and may involve changes in neuronal gene expression. Also, epigenetic modifications such as DNA methylation (DNAm) have been associated with cLBP.

AIM: This study aimed to explore the relationship between CPM and DNAm changes in adults with and without NSCLBP. We also determined the functional pathways enriched by genes annotated to differentially methylated loci (DMLs) in patients with efficient versus deficient CPM.

METHODS: Following IRB approval, we recruited adults with NSCLBP (n = 48) and pain-free controls (PFC; n = 50). CPM was assessed using the sequential heterotopic noxious conditioning stimulation paradigm with algometry as the test stimulus and noxious cold water as the conditioning stimulus. DNAm was examined using reduced representation bisulfite sequencing. Gene ontology (GO) term enrichment and KEGG pathway analyses were applied to identify key pathways involved in efficient versus deficient CPM.

RESULTS: After controlling for multiple testing, we identified 759 and 304 DMLs ($q < 0.01$ and methylation difference > 10%) in adults with cLBP and PFCs, respectively. Many of the DMLs annotated to genes that enriched many GO terms of relevance to pain processing, including transcription regulation by RNA polymerase II, protein binding, nervous system

development, generation of neurons, neuron differentiation, and neurogenesis. In addition, the DMLs enriched many important pathways that have previously been associated with pain conditions and processing, including axon guidance, Rap1-MAPK signaling, Hippo signaling, and dopaminergic neurogenesis.

CONCLUSION: While the exact etiology of nonspecific cLBP is unknown, our results suggest that differential methylation of genes in crucial pathways correlates with impaired CPM and central sensitization.

INCIDENCE OF BACK PAIN IN NURSES

Marica Jerleković[1], RN, BsN, MsN

Kristian Civka[2], RN, BsN, MsN

[1]Department of Anesthesiology, Intensive Care Medicine and Pain Management, University Hospital Center Sestre milosrdnice

[2]Department of Anesthesiology, Intensive Care and Pain Therapy, University Hospital Center Zagreb

Back pain is one of the biggest health problems, and it's incidence in health professionals, especially nurses, is significantly higher than the rest of the population. Lifting heavy loads, including lifting patients, among other factors is one of the main causes of back pain. Back pain is the reason for long-term illnesses and even leaving the nursing profession, which directly calls into question the lack of staff and the employment of new ones, and adds the burden on the remaining staff. The result of a study involving nurses, bachelors of nursing, masters of nursing, all ages and different lengths of work experience, is a high percentage of back pain. Although familiar with patient reposition techniques, nurses rarely use them. The various aids used in patient care are very rarely available or does not exist. Wearing personalized shoe pads or using some form of physical therapy among nurses is very rare. Wearing adequate protective footwear is also questionable. The study was conducted electronically in two clinical hospital centers with a questionnaire designed to investigate the incidence of back pain in different hospital wards (surgical ward, intensive care units, policlinic ward, pediatric ward, internal medicine ward).

It is known that the application of ergonomic principles and the use of aids leads to safe patient handling and reduction of physical load on the musculoskeletal system of nurses. For this reason, it is necessary to standardize professional safety and health measures and implement them.

Key words: back pain, nurses, health measures

Invisible threat and Challenge - Breakage of Endotracheal Tube Inflator tube Under General Anesthesia in Prone Position : A Case Report

Yan Chunji, Kang Jiamin, Tu Shumin, Xing Xueyan, Zhou Fang

Xuzhou Medical University, Xuzhou Medical University, Xuzhou Medical University ; Beijing Tsinghua Changgung Hospital, School of Clinical Medicine, Tsinghua University, Beijing Tsinghua Changgung Hospital, School of Clinical Medicine, Tsinghua University, Xuzhou Medical University

INTRODUCTION: The 73-year-old male , with thoracic 8-11th spinal stenosis , received total laminectomy with microscopy under general anesthesia. Clinical examinations such as medical history and physical examination are performed in the anesthesia clinic before surgery. Mallampatii grade II, teeth damaged incompletely. Until the micro-surgery， 2 hours latter , the ventilator box cannot be inflated,and then mechanical ventilation circuit leakage problem occurred. The tracheal cuff is detected to collapse flattened, inflation is measured repeatedly , the cuff slowly collapses about 10 minutes, resulting in leakage of mechanical ventilation circuit.

AIM: 1. Review the function test of the endotracheal-tube before Induction

2. Review the fixation of endotracheal-tube

3. How to evaluate the teeth

4. Analyze the effect of prone position for endotracheal tube-oral bite-teeth

5. Crisis Resource Management for respiratory circuit dysfunction in restrictive surgical posture

METHODS: 1. Use tracer methodology to conduct process investigation, track the process node error events of surgical anesthesia patients from anesthesia backup, intraoperative deccumbent position change in anesthesia, tracheal catheter fixation, abnormal occurrence, emergency plan, anesthesia resuscitation treatment and other process node errors (Figure 3 ： tracer methodology for Anesthesia process);

2. Use The Donabedian structure - process - result to improve the quality;

3. Non-technical skills and ability training - perioperative crisis event handling

RESULTS: 1. Anesthesia process tracking diagram2. Obtain several important key nodes of airway management in the anesthesia process (Figure 4 ： endotracheal tube fixation)

(1) Pre-anesthesia assessment: only assess the integrity of the teeth, the state of missing teeth, and do not reach the effects of catheter fixation, post-prone airway management and other effects for preventive strategies

(2) Abnormal events in anesthesia - detection process: the importance of knowledge-belief-action for personnel

(3) Abnormal events in anesthesia - crisis resource management: training and drills for personnel to know,creed and practice

(4) Error event after anesthesia - node improvement work

CONCLUSION: Surgical position is an important part of anesthesia management involves hemodynamic management, anesthesia techniques, monitoring , etc..The change of posture is even more challenging for airway management. Different surgical positions, such as supine, prone, lateral and sitting positions, pose professional challenges for anesthesia management.

For spinal surgery, general anesthesia is used for tracheal intubation, and the prone position is often used. The main point of this position is that the chest must be placed on a soft cushion with a large opening, so that the stomach and chest can follow breathing. Put soft cushions under your knees and lift your calves slightly. The head position can be face down (ie lying prone position), using supports to make the bone structure load-bearing, and fixation to make the cervical spine in a neutral position. Another option can also be facing to the side (ie lying prone position)

Due to general anesthesia for tracheal intubation, the placement of the tracheal tube after lying on the prone position is important for airway management, effective lung ventilation, facial nerves, skin protection, and the correct position of the tracheal tube during general anesthesia. It is the focus of close monitoring. Among them, pillows with side incisions can conveniently place anesthesia tracheal tubes to maintain effective ventilation.

A UK hospital project to replace suturing securement of short term central venous catheters with Grip Lok adhesive securement device

Andrew Barton

TEHMED

Suturing short term, non-tunnelled central venous catheters (STNT-CVC) is the favoured securement technique in most UK hospitals. This practice goes hand in hand with using ultrasound to cannulate the internal jugular vein as a first choice for placement which has been recommended in the UK since 2002 when national guidelines were introduced. Since that time there has been no national review of this practice. Recent evidence has highlighted the benefits of securing vascular access devices without suturing to reduce the risk of infection and to move away from the internal jugular as the first vessel of choice for placement. A new clinical pathway for the securement of central venous catheters, both acute and long-term. Has been created with GripLok CVC as the primary fixation method used. The pathway has been trialled in an acute general hospital in the united kingdom. The trial of this fixation device has been successful, we have seen that Griplok CVC has been as successful at CVC securement as suturing with significantly fewer complications which can be associated with suturing.

Application of Humanistic Care in Anesthetic Nursing

Qian Zhang, Yanli Ma

Beijing Tsinghua Changgung Hospital，School of Clinical Medicine，Tsinghua University, Dept. of Anesthesiology, Beijing, China , Beijing Tsinghua Changgung Hospital，School of Clinical Medicine，Tsinghua University, Dept. of Anesthesiology, Beijing, China

INTRODUCTION: Anesthetic care is important part of peri-operative care. Creating a comfortable clinical environment，and providing humanistic care is necessary during present anesthetic nursing.

AIM: The aim of this study was to attempt to explore the application effect of humanistic care in anesthetic nursing.

METHODS: We recruited 100 patients that received surgery under general anesthesia in tsinghua changgung hospital，between April, 2021 and September, 2021. According to the random number table method, these patients were grouped into the control group and the observation group, with 50 cases in each group. The control group was implemented routine nursing while the observation group was implemented human caring in nursing. The self-rating depression scale (SDS) was used to assess depression and the self-rating anxiety scale (SAS) was used to measure anxiety. Patient satisfaction at 24 h post-operation were compared between the two groups.

RESULTS: The SAS and SDS scores were statistically lower in the observation group than those in the control group ($P<0.05$).

CONCLUSION: It is suggested that the application of humanistic care in anesthetic nursing significantly improves patients' satisfaction, and job satisfaction of anesthetic nurses.

Nurse Anesthetists & Subspeciality Practice: Advanced Pain Management Fellowship Programs in the USA

Jackie Rowles, DNP, MBA, MA, CRNA, ANP-BC, NSPM-C, FAANA, FAAN

The opioid crisis uncovered years of inadequate medical management of pain. This presentation reviews the history of Nurse Anesthetists' specialization of pain management practice in the USA. Highlights include challenges, implementation, and validation of Certified Registered Nurse Anesthetists movement into advanced pain management practice. Subspeciality practice is validated through the creation of accredited academic fellowships and a board certification examination in non-surgical pain management.

Improving Patient Outcomes with Doctoral Practice

Cormac T. O'Sullivan

University of IOwa

INTRODUCTION: The Practice Doctorate (DNP or DNAP) is the degree required to enter into the field of nurse anesthesia in the United States as of 2025. All educational programs are now required to award a doctor of practice degree. There have been concerns that the doctoral degree is simply a more costly degree which does not improve practice or patient outcomes. The skill set obtained during doctoral education includes topics not present in the masters education and is improving care and patient outcomes.

AIM: 1. Discuss the benefits of doctoral preparation for CRNAs

2. Review the value added to a CRNAs practice opportunities through the knowledge gained during doctoral education

3. Discuss exemplar DNP projects which improved patient outcomes and reduced costs for multiple healthcare systems

METHODS: All CRNA doctoral projects completed at a major academic health center were reviewed and categorized by topical area, level of implementation, and outcomes. Projects were reviewed by a panel of faculty members and professional practitioners. Practitioners who graduated with their doctoral degrees were contacted and interviewed about their practice since graduation.

RESULTS: 104 doctor of nursing practice (DNP) projects were completed over a 9 year period. Topical categories included direct patient care intervention, patient safety, educational, ethical, policy, legal and regulatory, and crisis simulation. Implementation levels included not, partial, full, ongoing, and completed. Outcomes ranged from achieving changes in professional board policies to reduced morbidity and mortality and cost savings.

CONCLUSION: The knowledge gained during doctoral education focuses on different areas than what is learned during a non-doctoral education. The skills learned can enhance CRNA practice, improve patient outcomes, and reduce healthcare costs. CRNAs are highly educated and skilled clinical practitioners and the addition of practice doctorate skill sets is beneficial to individual CRNAs and the healthcare system.

Rules for the Sandbox. Teaching and Practicing Cultural Humility in the Nurse Anesthesia Profession

Richard Flowers, DNP, CRNA, CHSE

Wake Forest School of Medicine, Dept. of Academic Nursing

INTRODUCTION: Cultural competence education has long been touted as a solution to health disparities in America. In recent years the idea that one can become competent in a culture other than our own has been labeled as an arrogant approach that is unachievable. A significant lack of diversity in the Nurse Anesthesia Profession in the United States exists, contributing to health disparities. Approximately 11% of the 55,000+ practicing nurse anesthetists are from under represented populations, which is far less than that of the US population (~40%). Diversity and Inclusion efforts recruitment efforts are ongoing but do not address barriers related to currently practicing providers. The practice of Cultural Humility has been suggested an alternative to cultural competence based education as a framework for change within the profession.

AIM: Cultural humility is based on the understanding that one can never be fully knowledgeable about the culture of others. This fundamental understanding affects the way we approach and interact with our patients. Instead of approaching them with the assumption that we have learned everything we need to know to care for them, we approach them with an attitude of humility regarding our complete understanding of how cultural differences may be impeding their ability to receive the care they need at that moment. Cultural humility relies upon self reflection and the recognition that cross-cultural education is an ever evolving, life-long learning process. Education efforts focused on the practice of cultural humility within the nurse anesthesia profession and educational programs could improve cross cultural care and reduce associated health disparities.

METHODS: To meet the objective of enhancing cultural education in the nurse anesthesia curriculum Wake Forest School of Medicine Nurse Anesthesia Program implemented a cultural humility thread throughout the first-year curriculum which consisted of a series of 6 "lunch and learn" events with speakers representing various under represented populations in the local community. Students completed reflective journaling exercises throughout the program. The results of this implementation have the potential to improve cross cultural care though the delivery of a unique cultural humility curriculum.

RESULTS: A review of student responses has shown a positive impact of this program in regards to the awareness of disparities related to a lack of diversity in the nurse anesthesia profession as well as the implementation of cultural humility in practice.

CONCLUSION: The practice of cultural humility is a promising tool in the reduction of health disparities related to inadequate cross cultural patient care. Implementation of cultural humility curricular programs in the nurse anesthesia educational arena and continuing education programs for practicing nurse anesthetists are suggested as tools for reducing existing disparities.

New national guidelines for nurse anesthetist education in Norway

Rita Stenseth

University hospital of Northern Norway

INTRODUCTION: In Norway, new national curriculum for the education of nurse anesthetists were legislated in October 2021. They will be applied from January 2022. Norway started educating nurse anesthetists in 1947. The education comprised, to some degree, standardized in-hospital training. In 1998 the education was implemented in the university colleges, and we got a national framework to ensure equal standards at a national level. This framework was last revised in 2005. Both the Norwegian government and the national health authorities wanted a more flexible educational framework for advanced nurse care professionals, hence a new national curriculum were warranted.

AIM:

The aim of the presentation is to give an overview of the development of nurse anesthetist education in Norway and to introduce the new curriculum. Possible implications it may have on clinical anesthesia care and the standard of practice in Norway will be discussed.

METHODS: In January 2020 a selected group of academic and clinical nurse anesthetists started on the development of the curriculum. They were appointed by the Ministry of Education and Research. The group consisted of four members from the universities, and four members from anesthesia departments representing hospitals from all health regions, including one nurse anesthetist student. The mandate was to create an educational curriculum for the future and in-line with the healthcare systems´ needs of competence and patients' need for health care services.

The group used the Norwegian standard for the safe practice of anesthesia and the international standards from the IFNA Standards of Education, Practice and Monitoring as well as inspiration. The curriculum describe the aims of the education and the learning outcomes in-line with the European Qualification Framework (EQF). The Norwegian nurse anesthetist education is now on level 7 (masters level) in the EQF. Learning outcomes are described in terms of knowledge, skills and competencies.

RESULTS: The new curriculum describes the core functions of being a nurse anesthetist very

specifically. It states that nurse anesthetists must be able to administer anesthesia to patients classified as ASA 1 and 2, and in cooperation with an anesthesiologist provide anesthesia care to patients with higher ASA score. Moreover, it classifies seven areas of competencies with related learning outcomes. The curriculum also describe how clinical studies should be managed and how universities and anesthesia departments should cooperate to help students reach their learning outcomes

(COLLATERAL) BEAUTY OF ANESTHESIOLOGY Things we take for granted - 10 reasons why I am a Nurse Anesthetist

SANDRO VIDMANIĆ, RN, BSN, MSN

UNIVERSITY HOSPITAL CENTRE RIJEKA, CLINIC FOR ANESTHESIOLOGY, INTENSIVE CARE MEDICINE AND PAIN MANAGEMENT, RIJEKA, CROATIA

INTRODUCTION: Anesthesiology, a fusion of science and art of helping others, with its beginnings, it delves deep into the history of mankind. The real story begins on October 16th, 1846. when William Thomas Green Morton (1819.-1868.) performed the first etheric anesthesia on a patient for neck tumor surgery, after which the era of modern anesthesiology began.

AIM: Speaking of anesthesiology, we enter into the world of its collateral and polymorphic beauty - the beauty that connects us, that improves the quality of life, prevents and heals. It is in everything and permeates its own scientific base making it a masterpiece.

METHODS: In modern era, where the level of information that an individual recieves on daily basis is equal to that which a person living 100 years ago would recieve in their entire life, community, society and the individual are moving unstoppably forward.

RESULTS: The speed of this movement can occasionally become fatal and cause misdirection in our purpose, goal and realizing one's own potential. Life in medicine is special in so many ways - sometimes difficult to understand and comprahand to the wider society - the dedicated combativeness and symbiosis we achieve with each individual we care about, living life within life. Ultimately - we are all artists with a rich collection of small art pieces which united together do great things and make improvements.

CONCLUSION: And that is what makes our profession thriling - life, love, knowledge, commitment, width of action, education, happiness, care, science and art.

KEYWORDS: nurse anesthetist, beauty of anesthesia

Impact of the Pandemic on Certified Registered Nurse Anesthetists (CRNAs)

Lorraine Jordan, PhD, CRNA, CAE, FAAN, Ruby Hoyem, PhD

American Association of Nurse Anesthesiology

INTRODUCTION: The COVID-19 pandemic had a profound impact on health care delivery in terms of short-term and long-term effects on the healthcare delivery system. Initially, the pandemic impacted facility capacity planning, staffing, and operations, but over the long-term states and the United States federal government contemplate permanent changes in the regulation of providers and facilities through the removal of barriers to practice.

AIM: Over the 2020-2021 period, the American Association of Nurse Anesthesiology (AANA) undertook multiple research initiatives that examined the impact of the pandemic on CRNAs. AANA studied employment shifts, practice changes, health and well-being influences, and the effects of state and federal emergency executive orders that reduced the government's regulatory burden on the CRNA scope of practice.

METHODS: These studies utilized both quantitative and qualitative methods. Three surveys of the AANA membership were conducted at various times during 2020 to assess the impact of the pandemic. Survey questions were related to their employment, health and well-being, changes in their practice regarding their expanded roles outside the OR, and the effect of removing regulatory barriers. In addition, one qualitative study was conducted involving interviews with 29 CRNAs that identified themes regarding CRNAs' experiences during the pandemic.

RESULTS: Findings indicate that CRNAs experienced severe negative impacts to their employment in the early weeks of the pandemic when facilities ceased all elective and non-urgent surgical procedures. For those CRNAs who remained employed, personal protective equipment (PPE) shortages and lack of testing created a challenging practice environment. Over time, many CRNAs were also able to apply their skills in new ways caring for COVID patients and in some locations, without supervision of physicians as previously required under state law.

CONCLUSION: Employment-related and facility planning impacts during the onset of COVID-19 were chaotic and severe. Over time CRNAs emerged as significant contributors to

patient care efforts. Collectively, the results of all studies suggest that CRNAs in the United States contributed to COVID-19 response efforts in significant and exciting new ways.

The incidence of PostOperative Sore Throat after tracheal intubation with a double-lumen endobronchial tube

Lise Hansen, Carsten Michel Pedersen

Department for Cardiothoracic Surgery, Copenhagen University Hospital , Department for Cardiothoracic Surgery, Copenhagen University Hospital

INTRODUCTION: Post-operative sore throat (POST) is a common adverse event after tracheal intubation. POST covers a wide range of symptoms and can cause delay in the postoperative rehabilitation. It seems likely that the patients' symptoms are due to damage of the mucous membranes, caused by the airway management. POST is the second most common side effect and has a reported incidence of 21% to 65%. Factors such as endotracheal tube (ETT) size, airway management and cuff pressure are among factors mentioned to have an influence on POST. Previous research show that ketamine, dexamethasone or licorice may reduce the feeling of POST. There are greater risks for women, younger age, pre-existing lung disease and prolonged duration of anesthesia. A DLT has a larger outer diameter compared to regular ETT. Difference between an ETT size 7 and a double-lumen endobronchial tube (DLT) size 35Fr is 1.2 mm. The risk of getting POST increases with a DLT (OR 2.55). At the department for Cardiothoracic Surgery, Copenhagen University Hospital, approx. 1100 patients are scheduled annually for thoracic surgery with a requirement for one-lung ventilation. We therefore decided to investigate the incidence of POST after use of DLT.

AIM: Due to limited literature regarding DLT and POST the aim of this study is to gain an understanding of POST in relation to DLT.

METHODS: A prospective quantitative study to evaluate POST in 100 sequentially selected patients scheduled for thoracic surgery with a requirement for one-lung ventilation, achieved with a VivaSight DLT size 35Fr or 37Fr. Data was recorded on two separate Case Report Forms (CRF) and anonymized for researchers using randomly assigned encodings. One filled out by the nurse anesthetist where sex, DLT size, information regarding the intubation, SARI-score, cuff pressure and medicinal treatment was registered. The second form filled out by the PACU

nurse in cooperation with the patient to register Post-operative Severity Score. Sore throat, cough, and hoarseness was registered with an NRS-score scaled from 0-3.

RESULTS: 46.6% (48/103) of the patients have an NRS-score of >1 (0-9) and experience this complication to a greater or lesser extent. The incidence of POST is therefore assessed significantly. In general, there are low NRS-scores, so even though the incidence of POST seems high, the severity of POST shows low measures. 59.6% women and 31.4% of the men had NRS-scores >1. The women had significantly higher average NRS-scores (0.95) than the men (0.40). Intubation with a DLT 35Fr and multiple attempts to intubate is related to higher NRS-score. 14 patients were intubated in the second or third attempt, and of these 50% experienced POST. Patients who were given 8 mg of dexamethasone had lower NRS-scores compared with patients who got less or no steroid.

CONCLUSION: The 46.6% of patients who experienced POST are comparable to other studies. There is no difference in POST for patients with a DLT vs. patients with an ETT.

The women had significantly higher average NRS-scores which confirms previous studies. No significant correlation between SARI and POST were found. SARI can be used to reduce multiple intubation attempts, and by that reduce the incidence of POST. Dexamethasone (8 mg) is found to reduce the incidence of POST. No significant effect of lubrication and oxynorm were found. Despite the high incidence of POST, the NRS-scores were relatively low for patients intubated with a DLT.

TRAUMATIC BRAIN INJURY AND HBOT

Mario Dugonjić, Emanuela Marcucci

Clinical Hospital Centar Rijeka, Clinic for Anesthesiology, Intensive care medicine and Pain management, Department of Underwater and Hyperbaric Medicine, Clinical Hospital Center Rijeka, Department of Underwater and Hyperbaric Medicine, Clinical Hospital Center Rijeka

INTRODUCTION: Traumatic brain injury has a tremendous negative socioeconomic impact on society. For example, there are over 4 million cases of varying severity in the United States each year, of which over 50,000 are fatal. It is estimated that more than 2% of the U.S. population lives with permanent disabilities due to traumatic brain injury, costing the national budget $75 billion.

AIM: Case Description: This paper describes the case of a 24-year-old patient who suffered a severe traumatic brain injury after colliding with a stationary object in a car. The patient was admitted to the Clinical Hospital Center Rijeka in the Intensive Care Unit on July 25, 2020. Treatment with hyperbaric oxygen started on August 4, 2020, and 22 HBOT treatments were performed, which the patient undergoes without difficulties and during which his cognitive and motor functions recovered significantly.

METHODS: Discussion: Considering the pathogenesis of traumatic brain injuries, two main causes of brain tissue injury can be distinguished: a primary mechanical cause and a secondary ischemic cause, caused by decreased cerebral blood flow and consequent tissue hypoxia. Especially within the first 24 hours after injury. Due to the marked hypoxia, brain tissue rapidly transitions from aerobic to extremely inefficient anaerobic metabolism, resulting in inadequate ATP production and apoptosis of brain cells. Hyperbaric oxygen therapy acts on the secondary neuronal damage caused by ischemia by increasing the amount of O2 inhaled (100% O2 to > 1 ATA) and the amount of O2 dissolved in plasma.

RESULTS: .

CONCLUSION: Conclusion: It is important to note that there is nothing to prevent the performance of intensive care and anesthesia in the hyperbaric system as long as all the safety aspects that the hyperbaric system entails are fulfilled. Anesthesia and intensive treatment inside the hyperbaric system are of the same quality as outside the hyperbaric system.

Greening the OR: What Can We Do to Make the Perioperative Process More Environmentally Friendly?

Rachel Smith-Steinert

University of Cincinnati

INTRODUCTION: Although nurse anesthesia has a deep history rooted in patient safety, the health of populations hasn't traditionally been a focus. A knowledge gap exists in the medical community regarding the indirect health consequences of waste and environmentally unsound practices. No guidelines or recommendations discuss the carbon footprint in the healthcare system yet healthcare is a major contributor to greenhouse emissions and solid waste. The healthcare sector accounts for 8% of the US total greenhouse gas emissions. Hospitals are the largest contributors. Operating rooms in the U.S. generate 5.9 million tons of waste, 20-30% of total hospital waste. The packaging of materials is a huge portion. The anesthesia waste stream represented 25% of total OR waste and 60% of this is recyclable. Additionally, the inhalational agents that we use are greenhouse gases which also deplete the ozone. Anesthetic gases include hydrofluorocarbons, Sevoflurane and Desflurane, and chlorofluorocarbons, Isoflurane and Nitrous oxide. 5% of the gas administered is metabolized with 95% exhaled and vented out via the scavenger. In 2014, the release of these gases stood at the equivalent of 3 million tons of CO2, with 80% related to Desflurane use. The atmospheric lifetime of Desflurane is 21.4 years vs Sevoflurane which is 1.4 years. To put this in other terms, one hour of Desflurane usage is equal to 450 miles of driving a car, with Sevoflurane at 8 miles.

AIM: The aim of this lecture is for the participant to examine their own practice and contemplate methods of making preoperative services more environmentally friendly which will improve the health of the plants and all of its inhabitants, not just the patient on the OR table.

METHODS: This lecture will focus on ways anesthesia providers can practice in a more sustainable way and will discuss actual quality improvement projects where the literature was applied. Projects which restricted Desflurane use will be discussed as well as their cost savings. TIVA and peripheral nerve blocks offer even more sustainable anesthetic options. Other "greening" practices will be discussed. Single use items (laryngoscope blades, bronchoscopes)

can be recycled. If reused, cleaning processes with glutaraldehyde are toxic. The lecture will discuss “greener” cleaning options. Some practices have begun reusing breathing circuits, with the inclusion of a hydrophobic filter for infection control. We can reuse pulse oximeters or NIBP cuffs (or recycle) and use prefilled syringes (drugs have longer expiration times, reduced waste, less drug error with mislabeling/filling). Rising environmental concentrations of Propofol in the soil and water will be discussed. Using appropriate sized ampules to avoid wastage with pharmacy splitting under a hood is recommended. Strategies to reduce energy will be explored. The impact of recycling blue plastic wrap, medical plastics, and batteries will be discussed. Unused and unneeded equipment can also be donated to countries where needed, following the WHO guidelines for responsible donating. Lastly, strategies to create a “green” committee will be discussed.

RESULTS: Anesthesia providers are in a unique position to lead change due to our interaction with numerous hospital professionals (nursing, surgery, management, environmental services, etc). Anesthesia providers can lead by improving operating room design, anesthetic choice and management, & waste disposal and diversion. Cost, safety, AND sustainability is the “triple bottom line”. Technology is evolving and so must our practice to remain sustainable and maintain overall planet health.

CONCLUSION: Through education and practice modifications, nurse anesthesia can lead the way in making preoperative services more environmentally friendly.

Student-led simulation

May-Lena Färnert

Karolinska University Hospital

INTRODUCTION: Today, there is a need to adapt specialist nursing education to today's requirements. There have recently been large groups of students, witch places new demands on both the universities and the clinical anesthesia units. Goldsmith et al believe that the development of a learning environment where the student can develop in their own pace and where it is acceptable to ask questions is very important (Goldsmith 2005). Simulation has been used in anesthesia for many years, it is described from Stanford University already in the mid 80's. Simulation then focused on critical anesthesia moments and how these should be handled (LeBlanc 2012). In order to get the most out of simulation training and improve competences, repeated training is required (Zausig 2009). The clinical environment is one of the most important parts of nursing education. There is an increasing number of students and fewer supervisors. Structured learning activities such as working with study questions and simulation are excellent as a complement to clinical care and education. It is important to practice different techniques and methods before meeting the real patient. Student-led simulation means that students actively participate in their own learning instead of passively following a supervisor. In the method room at the educational department, most of the equipment that can be found in a real operating theatre is there for the students to practice on. A real patient case is produced from the department's surgical planning system. In order for the simulation to be as credible as possible, a monitoring program is used via an app. The monitoring program can show heart rate, blood pressure, oxygen saturation and exhaled carbon dioxide. Via an extra tablet or smartphone, another student can change the parameters according to what happens in the anesthesia simulation that the other students carry out. The program is so simple that students can use it themselves. Training opportunities in sufficient quantity can be a problem on the anesthesia department. Student-led simulation means that specialist students in anesthesia practice anesthesia in simulation outside the operating room according to team-based learning. This means that all students have to be well-educated, actively participating and reflecting together. The method of reflection used in this project is Pendleton's model. To avoid incorrect behavior, students work according to a checklist manual produced by the Swedish Association for Anesthesia and Intensive Care together with the European Association for Anesthesia (SFAI

/ ESA). The project "Student-led simulation" is primarily aimed for students in Anesthesia Nursing Care but can be applied to anyone who needs to train in an operational environment.

AIM: The main purpose of the project is to raise the quality of learning and promote independence for specialist students in anesthesia at the Anesthesia department, Karolinska University Hospital, Huddinge. The aim is also to create a place for educational meetings that support specialist nurses in Anesthesia Nursing Care to become more independent, develop critical thinking, increase inter professional learning and improve collaboration. A educational meeting that is varied and challenging, were the students feel that they can, and were it feels fun and exciting and were the students get feedback and confirmation of their activities.

METHODS: Student-led simulation was introduced during the autumn 2021 during a 10 weeks internship for specialist students in Anesthesia Nursing Care at Karolinska University Hospital, Huddinge. The simulation training has been implemented locally at one hospital and has been anchored with course coordinators for the current education at Karolinska Institutet. The simulation training was scheduled during the students' internship, which meant that the students trained one afternoon a week.

The project has been evaluated with a survey by Carlsson et al. and with focus group interview.

RESULTS: Results from the questionnaire and the focus groups interviews will be presented.

The students evaluated 4 on a 1 to 4 scale that they have received both theortecial and practical knowledge from the simulation trainings.

CONCLUSION: Student-led simulation as learning has the potential to increase both technical and non-technical skills of specialist students in Anesthesia Nursing Care. As these skills increase, the student's independence also will improve.

Learning from adverse events in clinical practice. A pilot study utilizing Ecological Momentary Assessment in specialist nurse education

Marit Vassbotten Olsen, Klas Karlgren

Western Norway University of Applied Sciences, Norway, Western Norway University of Applied Sciences, Norway and Karolinska Institutet, Sweden

INTRODUCTION: Patient safety initiatives are highly prioritized in healthcare services. Still, adverse events occur, and pose challenges both to the patients, relatives, to the healthcare personnel involved as well as at an organizational level. Emergency departments (ED), operating rooms (OR) and intensive care units (ICU) are highly specialized hospital units with a high risk and incidence of adverse events. In Norway, nurses are specialized for work in EDs, ORs and ICUs through a two year masters' program. In other sectors and industries, such as the aviation and petroleum sectors and the nuclear industry adverse events are utilized in learning- and educational activities. Traditionally, adverse events have not been utilized this way in healthcare services. Ecological momentary assessment (EMA) involves repeated sampling of participants' current behaviors and experiences in real time, in their natural environments. EMA aims to minimize recall bias, maximize ecological validity, and allow study of microprocesses that influence behavior in real-world contexts. EMA techniques give possibilities to collect master students' experiences of risk or adverse events, for further use during education.

The pilot study presented here is part of a Ph.D. project aiming to explore 1) what to learn from master students' experiences with adverse events in clinical practice, 2) what to learn about adverse events and safety initiatives from experienced professionals in high risk professions, both within and outside healthcare services and 3) how simulation, using virtual reality (VR) and the "Room of Horror" model may support students in avoiding and managing adverse events

AIM: The aim of the pilot study is to explore master students' experiences with adverse events utilizing EMA integrated in a mobile application as a method of data collection.

METHOD: The EMA data will be collected through a mobile application developed by Life Data, which the participants download for registration at their own mobile cell-phones. Master students partaking the nurse anesthetist-, critical care nursing and operation theater nursing programs will be invited to participate in the pilot study (n=70). Participants will be instructed about how and when to complete their EMAs and will get reminders if necessary. The data collection will last for two weeks during the students' clinical studies. As part of the pilot study the participants will be asked to give feed-back on how they experienced using the app and reflecting about adverse events using this method. Difficulties or information missing will be noted. The data will be analyzed using Braun and Clarks' recommendations for thematic analyses.

RESULT: At time of the congress, results from the pilot study will be available. Results from the pilot study will provide essential information about how to use the app, the way to register data, collaboration with the researcher, and will give an opportunity to clarify misunderstandings and changes that are needed to be done before starting the main project. The pilot study will also create a basis for discussions regarding the number of participants and the number of experiences needed to provide sufficient data, and include issues such as saturation, data depth and other challenges regarding experience- sampling.

CONCLUSION: To our knowledge, Using EMA, and a mobile application for data collection to learn from adverse events in healthcare services is still quite unexplored. It is important to explore whether the method is functional and understandable, and how to conclude the results.

Oral premedication with Catapresan vs Midazolam on postoperative agitation in children undergoing tonsillectomy

Livoni, Maria Svane, Grøfthe, Thorbjoern. Julin, Sarah isak

Regionshospitalet Randers, Denmark

INTRODUCTION: Postoperative agitation is a wellknown phenomenon in the operation theatre and post anesthesia care setting(PACU). It is a stressfull an discomfortable condition for the child itself, parents and caretakers. Studies have shown that postoperative agitation occurs in at least 25% (10%-80%) of children undergoing surgery (4), and can be significantly reduced by intraoperative administration of clonidine. (1). Oral premedication is widely used in pediatric anesthesia to reduce preoperative anxiety and ensure compliant induction. Midazolam is currently the most commonly used premedicant, but equivalent good results have been reported with clonidine. (2).

We compared the effects of clonidine and midazolam administered orally on the preanesthetic sedation and postoperative agitation profile in pre-school children during tonsillectomy with or without adenoidectomy.

AIM: Provide better perioperative procedures for children undergoing surgery and reduce the occurrence of preoperative anxiety and posteoperative agitation.

METHODS: We performed a prospective open study, where children were assigned to receive either midazolam or clonidine. Each group received: midazolam 0.5 mg kg−1 with a maximum dose of 10 mg, or clonidine 4 μg kg−1. given orally 30 min before induction of anaesthesia.

Drug acceptance, postoperative agitation, haemodynamics, oxygenation, postoperative opoid administration and time to discharge from PACU were evaluated. Watcha score system (fig 1:) was used to compare the difference in postoperative agitation. A score was considered as significant. Sevoflurane and propofol/remifentanile (TIVA) was used for induction of anaesthesia and TIVA for maintaining. All patients received Fentanyl 1,5mikrgr/kg, ketorolac 0,5mg/kg and paracetamol 15 mg/kg perioperative.

RESULTS: We included 62 children aged 0-7 years. Watcha score was significantly lower in the clonidine group; 7.7% vs 29% at arrival PACU, 21% vs 47% in the awake state and 0% vs 12% at discharge PACU.(Table 2:)

Oral clonidine accepted by all children whereas 25% of children rejected oral midazolam(Table 1). No difference in opoid administration was observed between the two groups(Table 2). Haemodynamic values, oxygenation and time to discharge from PACU were the same.

CONCLUSION: Clonidin was more effective than midazolam in preventing postoperative agitation when given orally as premedication. The study was performed in a daily clinical setting using sevoflurane as induction and propofol/remifentanile for maintaining anaesthesia.

Reasoned oxygen therapy in the perioperative period

Sandra Garcia De Castro, Christophe Guyochet; Arnaud Le Jossec; Peggy Marchand; Elisa Grisot; Vincent Piffaut

Centre Hospitalier de Perpignan, Centre Hospitalier de Perpignan

INTRODUCTION: Since the 1960s, oxygen has been the first administrated gas in hospitals due to its easy administration and easy use until becoming a banal treatment1,2. Being afraid of hypoxia, hyperoxia effects have been totally forgotten, even if its impact is still discussed3.The current world health crisis reminds us of the importance of this treatment. Two of the services with an enormous oxygen consumption are the operating room and the PACU4. To optimize oxygen utilization, we have to make its administration as effective and efficient as possible.

AIM: To become as physiologically as possible when applying protective ventilation, our research seeks to personalize this treatment, considering also economic costs and ecological consequences that determine our practices. For the sake of streamlining the means and care personalization, with this work we wish to evaluate our practices to optimize oxygen therapy.

METHODS: A prospective research is being analyzed. Major ASA I and II patients coming for a non-thoracic surgery under general anesthesia and mechanical ventilation are included. We have recorded demographic data (sex, age, body mass index, BMI) and pulmonary and cardiac history between April and August 2021.

We resorted to a collection paper with ventilator parameters since the patient's arrival into the operating room until discharge from PACU.

153 patients included. Three different people collected data during 3 different steps. The nurse anesthetist annotated basal SpO2, kind of surgery, induction, ventilator parameters during the intervention and after extubation down. Later, the PACU nurse collected ventilator parameters at patient's arrival in PACU, monitoring and oxygen administration until the patient's discharge. Finally, the research team finalized data collection about surgery site infection until up to 3 months after the intervention.

RESULTS: One hundred and fifty-three patients included: 100 women (65.5%) with an average age of 50 years old (for men 52 years old). 70 ASA I patients (45.8%). 6 patients with cardiac history (3.9%) and 8 with pulmonary history (5.2%). 18.3% obese patients (n=28). 97.4% of patients had a basal SpO2 under ambient air ≥94% (n=150). Surgery average length was 80 minutes (9'-304'). 97.4% of inductions were made with FiO2 ≥0.8. 3.4% of patients were asleep in head up position (n=6) and 5.3% received CPAP during induction (n=8).82.3% were intubated and the rest of patients adopted LMA. Three in every 28 obese patients benefited from a head-up position and CPAP during induction (10.7%). 75% of obese patients did not benefit neither from CPAP nor head-up position during anesthetic induction.

Intraoperative maintenance was done for 72% patients with a FiO2 between 0.25 and 0.45. The rest had a higher FiO2. 44.4% of patients had benefited from lung recruitment (LR) during the intervention. 79.7% of patients didn't need any oxygen in PACU (n=122).

CONCLUSION: Applying recommendations to use protective lung ventilation involves the use of PEEP, alveolar recruitment (AR) and low FiO2 to avoid alveolar collapse5. This paper reports that patients benefited from PEEP and low FiO2 but AR was deficient.

On the other hand, management of oxygen therapy in PACU was homogenized and respected the basal patient's SpO2 as a management scale was followed.

We can confirm that oxygen masks and nasal cannulas were minimally used. Unfortunately we cannot compare the savings after the study as PACU was converted to intensive care unit (ICU) during COVID period. The same goes for oxygen consumption.

To be performed, continuous effective training and accompaniment are essential needs. Unfortunately, knowing recommendations does not systematically involve applying them. We consider proposing regular working groups all year long to deal with oxygen optimization and management in depth to become top performers for our patients. We should make the effort to apply these practices to individualize6 them if we really want to optimize oxygen treatment.

Personal experiences with COVID 19

Eva Barkestad, CCRN, BASc, MASc

I caught COVID -19 in June 2020. The only symptom I had was diarrhoeas and extreme tiredness. I never understood thsat my lungs had been infected and was progressing with inflammation and infiltrates. I didn´t even have a cough. My husband found me unconscious in our bed and when the paramedics arrived had I saturation of 54 % and a respiratory rate of 50. I was immediately transported to the ICU where they intubated me at once. They put me in an induced coma and I had invasive mechanical support for 10 days.

After I was extubated I was feeling fine and thought "I´m going to show everyone what an ICU nurse can do" how to recover from COVID-19 infection. How mobilisation and a strong will can change outcome but after a couple of days the Covid infection hit me again and I had problems breathing and my pulmonary X-ray showed that I had very little to breath with. I had to spend another 22 days with Non-Invasive support before I left the ICU.

This is my story: How I struggled with breathing, my emotions and how I tried to win the battle over COVID- 19.

Competence assessment in anaesthesia nursing care

Yunsuk Jeon, PhD

In order to provide high-quality anaesthesia nursing care, competence assessment of nurses is essential. However, in anaesthesia nursing care there has been a lack of psychometrically tested competence assessment scales. Therefore, the purpose of this study was i) to develop an Anaesthesia Nursing Competence Scale (AnestComp) and ii) to assess the anaesthesia nursing competence of nurses using the scale, with the goal of promoting anaesthesia nursing competence of nurses and providing high-quality anaesthesia care. The study was carried out in two phases: Phase I focused on describing the concept of anaesthesia nursing competence based on a literature review and experts' descriptions which then became the foundation for the AnestComp; this was followed by testing the psychometric properties of the scale. In Phase II, the anaesthesia nursing competence of anaesthesia nurses (n=222) was self-assessed by using the AnestComp. The psychometric properties of the AnestComp were tested: reliability (Cronbach's α), face validity, content validity, and construct validity. In this study, the data of nursing students (n=205) were also collected and analysed for the purpose of the construct validity testing of the AnestComp. Anaesthesia nursing competence is a multi-dimensional conception comprising of seven competence areas: (1) ethics of anaesthesia care, (2) patient risk care, (3) patient engagement with technology, (4) collaboration within anaesthesia care, (5) anaesthesia patient care with medication, (6) anaesthesia nursing intervention, and (7) knowledge of anaesthesia care. The AnestComp developed based on these competence areas consists of 39 items and uses a Visual Analogue Scale (0-100mm). The AnestComp is considered a promising scale for assessing the anaesthesia nursing competence of nurses based on the testing of psychometric properties. Nurses' self-assessed competence (VAS 88) exceeded the expected level; in this study, the expected level was set as a mean of VAS 80. Collaboration within anaesthesia care was the highest competence area, whereas patient risk care and knowledge of anaesthesia care were the lowest, and thus identified as fields requiring educational needs. Work experience and specialised anaesthesia nursing education were significant factors related to the higher anaesthesia nursing competence of nurses. The competence of nurses (particularly novices) in patient risk care and knowledge of anaesthesia

care should be ensured through regular competence assessments. More opportunity for specialised anaesthesia nursing education might be one way to improve the anaesthesia nursing competence of nurses.

KEYWORDS: competence assessment, anaesthesia nursing care, nursing education, instrument development, self-assessment, psychometric testing

Renewal of Nurse Anesthetist's Training in Vocational and Health Sciences Education in Hungary

Zoltán Balogh, PhD, RN, PT, MSc

Health vocational training is undergoing continuous development for several reasons. One is that international and domestic supply processes and procedures are changing, which require employees with new knowledge, skills, and attitudes. The division of labour of the members of the professional team, the tasks, competencies, and responsibilities of each member also change. This change requires an ever higher and more complex knowledge specialist, whose training is greatly influenced by European Union directives and national regulators. Taking all this into account, the lecture aims to present the changes that have taken place in the Hungarian vocational training and higher education system, because of which new experts in the field of anesthesiology are also appearing.

Nurse Anesthesia Governed Mastectomy ERAS Protocols Utilizing PEC1/PEC2 and Continuous Erector Spinae Plane Blocks Decrease Perioperative Opioid Requirements and Chronic Pain

Michael Burns, DNAP,CRNA, Becky Heidotten, DNAP, CRNA, Landon Smart,BS, DO, Sharniqua Holland, BSN, Karen Zang, MSN,CRNA, Emily Buckley, DNAP, CRNA

Webster University, Phelps Health , Phelps Health, Webster University, Phelps Health, Phelps Health

INTRODUCTION: Breast cancer is the most common cancer affecting women in the United States. The low mortality rate and the elevated incidence of chronic pain following mastectomy surgery reported between 20 and 50 percent proves the importance of developing strategies to optimize these patient's quality of life. It has been theorized that inadequate acute pain management is associated with a higher incidence of chronic pain and opioid requirements and could result in increased cancer metastasis and recurrence. The opioid crisis in the United States must be addressed utilizing non-opioid pain management strategies for acute and chronic pain. A knowledge gap exists on how to best control patient long term outcomes without the primary treatment being opioid analgesics especially in this patient population with high survival rates and related chronic pain requiring long term opioids. Evidence-based anesthetic and analgesic recommendations have been adapted into enhanced recovery after surgery(ERAS) protocols for patients undergoing surgery. However, mastectomy surgical patients in the United States have had a limited number of ERAS protocols utilizing regional anesthesia techniques along with multimodal non-opioid pharmacological regimens to decrease opioid requirements as well as the development of chronic pain.1&2

AIM: The purpose of this study was to evaluate the effects of an enhanced recovery after surgery protocol (ERAS) that included pectoral nerve blocks I and I along with continuous erector spinae plane blocks on postoperative outcomes. This study aimed to evaluate the acute pain management strategies on opioid requirements during the immediate postoperative period and then re-evaluate after six months the incidence of chronic pain.

METHODS: Retrospective chart review of all mastectomy surgical cases performed at a USA community hospital in rural Missouri from January 2018 to December 2020. IRB exempt approval was obtained due to no patient identifiers were collected. A total of 76 patients were included in this study. The control group included 30 patients that received ERAS anesthesia management that included utilizing esmolol, ketorolac, dexamethasone, ketamine, and ondansetron along with local infiltration by the surgeons. The experimental group received the same ERAS anesthesia management as the control, but included a preoperative placement of continuous erector spinae plane blocks at T1 or T2 with a 10 ml bolus of 0.5% ropivacaine and a postoperative infusion of 0.2% ropivacaine for three days along with single injection PEC1/PEC2 blocks utilizing 20 ml of 0.5% ropivacaine placed by the acute pain service comprising of three CRNA's. The following data was collected from the medical records: age, sex, BMI, ht., wt., surgical duration, opioids consumed during the perioperative period in IV morphine equivalents, anesthesia technique, asa classification, estrogen, progesterone, and HERS2 receptor data, admissions, PACU times, acute pain follow up data, complications, readmission, and emergency department visits.

RESULTS: The experimental group that received the ERAS protocol including regional anesthesia techniques required significantly less opioids with an average of 2.3 mg compared to the 6.8 mg of IV morphine in the control group ($p=0.002$). The incidence of chronic pain six months following surgery was four fold higher in the control group compared to the experimental group (0.016). The experimental group had lower lengths of stay with an average of 8.5 hours compared to 18.67 hours for the control group, but lacked statistical significance ($p=0.059$). Both groups had similar PACU and demographical data.

CONCLUSION: ERAS protocols including CRNA administered regional anesthetics along with adherence to intraoperative opioid avoidance techniques decrease opioid requirements during the immediate postoperative period as well as the development of chronic pain six months following mastectomy surgery. The addition of continuous erector spinae plane blocks appear to be a safe and effective continuous alternative to more invasive continuous postoperative pain control modalities such as thoracic epidural or paraverterbral blocks.

EOS: Early Optimized Safe extubation -a feasibility study

Randi Knudsen, Carsten Michel Pedersen

Department for Cardiothoracic Surgery, Copenhagen University Hospital, Department for Cardiothoracic Surgery, Copenhagen University Hospital

INTRODUCTION: Patients undergoing elective open-heart surgery often express concern about their operation. Especially the postoperative time in respirator is mentioned as stressful, both psychological (e.g., fearfulness, anxiety) and physical (e.g., pain, difficulty breathing) (1,2). Prolonged postoperative mechanical ventilation increases the risk of respiratory complications, infections and impaired cognitive function. Studies show that prolonged mechanical ventilation leads to several reintubations and long-term consequences. Early ekstubation is not associated with increased mortality or morbidity. Routines, staff's uncertainty and doubts about the benefits deters staff from early ekstubation in the OR (3,4,5,6).

At the Department of Cardiothoracic Surgery, Copenhagen University Hospital, the patients are transferred sedated and intubated, after elective open-heart surgery, to the recovery room. In average the patients are extubated within 3-4 hours postoperatively.

Based on the benefits of reduced risk of pulmonary complications, faster rehabilitation, and re-establishment of the patient autonomy, which leads to a better overall patient satisfaction (5), we decided to investigate whether selected patients can be extubated before leaving the OR.

AIM: The objective of this study was to investigate if adult patients undergoing open-heart surgery safely can be extubated within 30 min. after completion of the surgery. Furthermore, to gain knowledge about the patients experience of early ekstubation.

METHODS: Through a feasibility study with exploratory approach, data are obtained from 25 consecutively selected elective heart surgery patients who meet the inclusion criterias as, Euroscore2 ≤ 4; No need for dialysis; No difficult airway; single procedure; BMI ≤ 32 and EF ≥ 35. Patients were anesthetized based on an optimized practice and awakened in the operating room. Data are supplemented with semi-structured interviews of 7 randomly selected pre- and postoperative patients to uncover their experience.

RESULTS: 50% of patients who were scheduled for elective open-heart surgery in the period May to November 2021 met the inclusion criteria. A total of 25 patients were included. The mean age was 68 years (57-79). There were 84% men and 16% women with an average Euroscore2 of 1.41% (0.57-3.9) and average LVEF of 55% (35-60). 96% (24/25) were extubated in the OR with a median time of 8 min. (2-35 min.) from end of surgery. One patient was reintubated (4%) and another patient needed noninvasive ventilation in the PACU.

The interviews highlight that 14% of the patients to some extent; 57% to a lesser extent and 29% not at all, experience worries about being weaned from mechanical ventilation. One patient describes it as a relief not having to experience being awake during mechanical ventilation. Another patient mentions it as the most worrying part of the postoperative care.

CONCLUSION: Selected patients for elective open-heart surgery can be safely and without a large proportion of complications extubated in the operating room within 30 min. after completion of the surgery. No greater consumption of time or greater need for respiratory interventions postoperatively were found. Surprisingly we found that none of the interviewed patients mentioned being awake during mechanical ventilation as a significant concern. This is contrary to the literature and our previous experiences. Though findings from the interviews indicated some concerns from the patients.

Implementation of a safety checklist for surgical patients – a Stepped Wedge Cluster Randomized Controlled Trial

Arvid Steinar Haugen

Department of Anaesthesia and Intensive Care, Haukeland University Hospital

INTRODUCTION: Patient harm may be prevented by systematically involve patients in their own treatment process. The World Health Organization endorse uptake of patients' preferences and classify them as essential in delivering high quality healthcare. Hence, patients and healthcare workers have developed a safety checklist for surgical patients to prevent patient harm and to optimize health and safety prior to surgery.

AIM: This study aims to investigate implementation impacts of a safety checklist for surgical patients on patient outcomes, patient experiences, nutritional outcomes, implementation outcomes, health literacy and health economics.

METHODS: The study is designed as a Stepped Wedge Cluster Randomized Controlled Trial to be performed in two Norwegian hospitals. The study include patients (N = 5320) in two study arms from seven surgical specialties: ENT and maxilla-facial-; neuro-, gastro-intestinal-, breast- and endocrinology-, orthopedic-, cardio-thoracic-, and general surgery. Primary outcome includes data on morbidity and mortality. Secondary outcomes are patients' experiences on nutritional aspects, implementation, health literacy and health economics through interviews and surveys. The study collect data over 20 months, from the start of 2022.

Patients are invited to use the checklist electronically or on a paper version 4-6 weeks prior to surgery. The checklist will be collected at discharge from hospital.

RESULTS: Data collection in the work packages of the trial is ongoing. Preliminary results suggest that patients are willing to use a safety checklist and find it useful for strengthening their own safety.

CONCLUSION: Involving patients in their own safety through a safety checklist developed for patients is a novel approach to increase patient safety within surgical and anesthesia care. The trial funded by the Norwegian Research Council (ID: 320475) will provide data on

effectiveness and impact of patients use of a surgical safety checklist (ClinicalTrials.gov ID: NCT03105713).

An examination of the factors influencing job satisfaction of nurse anesthesia providers in South Korea: Frequency of practice, level of importance and difficulty of task elements

Gye Seon Jeong, Michong Rayborn

Chosun Nursing College, College of Nursing and Health Professions University of Southern Mississippi

INTRODUCTION: In the South Korea today, nurses may enter the practice of nurse anesthesia by either of 2 separate pathways. The first path is via Certified Registered Nurse Anesthetists (CRNAs) who hold certification after training. Since 2005, CRNAs are recognized as advanced practice nurses who obtained graduate degrees and have certifications in nurse anesthesia practice. The second path is via registered nurses who complete hospital-based anesthesia training programs. These programs do not confer advanced anesthesia degrees and do not require national certification. Depending on the level of training they receive and the location of their practice, these registered nurses practice under many different job titles. The authors will refer to these non-certified anesthesia providers as “registered nurse in anesthesia” (RNA), to differentiate them from CRNAs. In a previous study, the authors found several startling facts regarding anesthesia practice by nurses in South Korea. They found the number of practicing CRNAs declining in the country and only one university in the country currently offers a graduate CRNA program. Additionally, they found the contributions of both CRNAs and RNAs to anesthesia practice in Korea are remarkable. The purpose of this study was to assess the involvement of Registered Nurses including RNAs and CRNAs in anesthesia care in South Korea. To achieve this purpose, the authors sought to determine which elements of anesthesia tasks these CRNAs and RNAs are performing.

AIM: The aim of this study is to identify the influencing factors on job satisfaction by frequency of performance, importance, and level of difficulty of anesthesia task elements perform by Certified Registered Nurse Anesthetists and Registered Nurses in Korea.

METHODS: The authors used instrumentation developed by the Korean Accreditation Board of Nurses to create a survey to measure each factor. The survey questionnaires were distributed confidentially to RNAs and CRNAs in three cities in South Korea from March 1st to June 30, 2019. A total of 300 respondents returned the surveys. Of these, 6 surveys did not meet the inclusion criteria for the study and were rejected. This research design is cross-sectional and descriptive statistics were used to identify the characteristics of the participants. The collected data were analyzed to determine the percent, mean and standard deviation, t-test. Additionally, one-way ANOVA with Scheffee, Pearson's correlation coefficient and stepwise multiple regression were performed using SPSS/WIN 27.0 program.

RESULTS: Of the 294 respondents included in the study, 92.9% were female (n=273) and 7.1% (n=21) were male. The mean age was 33.0±7.87 years and working experience was 11.67±10.18 years. Certified registered nurse anesthetists made up 29.3% (n=86) and registered nurses were 49.3% (n=208). The analysis of anesthesia related tasks yielded the following: Incidence of performance assessment of pre-anesthesia 74.1% (n=218), decision of anesthesia type 36.4% (n=107), administration of anesthesia agent 93.5% (n=275), insertion of endotracheal tube and Laryngeal Mask Airways (LMA) 42.5% (n-125), management and decision of endotracheal tube remove 44.2% (n=130), post anesthesia management with pain control 76.9% (n=226), perform the regional anesthesia 31.0% (n=91) and anesthesia charting 82.0% (n=241), spinal anesthesia 24.5% (n=72), epidural anesthesia 18.4% (n=54), brachial plexus block 18.4% (n=54) independently. The scores were 2.98±0.59 of incidence, 3.57±0.54, 3.10±0.58 of the level of difficulty, 3.13±0.54 of job satisfaction related performance of anesthesia. Gender (p

CONCLUSION: Frequency of performance, importance, and the level of difficulty of anesthesia related task elements are influencing factors on job satisfaction of CRNAS and RNAs who practice nurse anesthesia in South Korea.

Palliative care- what can we learn from Germany?

Ines Štivić, Iva Šušterčić

Škola za medicinske sestre Mlinarska, Zagreb, Škola za medicinske sestre Mlinarska, Zagreb

INTRODUCTION: The goal of palliative care is to improve and/or maintain the quality of life for both patients with life-threatening illnesses and their families. This is achieved by the means of prevention and alleviation of suffering by early identification and treatment of problems in the physical, psychological, social, or spiritual dimensions. Palliative care is life-affirming and sees death as a natural process. It neither hastens nor delays death. Palliative care at the tertiary level in Croatia, Zagreb is provided at the Clinical Hospital "Sveti Duh" where they are provided 34 beds for prolonged, long-lasting, and chronic treatment and palliative care and in the Clinic for psychiatry "Vrapče" where is 15 beds for long-term treatment and palliative care.

Palliative care in Germany has experienced dynamic development during the past 50 years. Since 2007, palliative care has been established by law in Germany as an integrated part of a complex healthcare system, with approximately 5,000 beds in 235 inpatient hospices and 304 palliative wards. Outpatient palliative care comprises 300 contracts for specialized teams. Eleven thousand physicians have acquired a qualification in palliative care and 100,000 volunteers support hospice work in 1,400 outpatient hospice services. We will present examples of positive practices from Diakonissen Speyer hospices during Erasmus+ mobility as part of the I-Nurse project.

AIM: The aim of this paper is to present the pain management and referral trend from the hospice in Germany.

METHODS: We will present examples of positive practices from Diakonissen Speyer hospices during Erasmus+ mobility (Job shadowing) as part of the I-Nurse project.

RESULTS: Opioid drugs are the most effective and commonly used drugs for moderate to severe pain. A wide range of opioid drugs is available, and they can be taken in a variety of ways. Oral medicines: these can be taken in pill or liquid form and can be short-acting or long-acting (sustained-release). Adhesive patch: This can be applied to the skin to release medicine over time Opioid drug injection: This shot may be given under the skin or into a muscle. Opioid

drug IV: An opiate may be given directly into the blood through an intravenous line. Medicine pump: Opiate medicine can be given through a pump attached to an IV line -patient-controlled analgesia. Spinal injection: Opioid drug directly into the spinal cord area.

CONCLUSION: Pain relief is a very important part of improving the quality of life in terminal patients. The use of analgesic therapy should be individualized and adapted to the real need of every person.

How nurses anesthetists reacted and experienced the pandemic of Covid-19 working in the largest general hospital of Greece

Vasiliki Katsiaoni

Evaggelismos Hospital,Athens-Greece

INTRODUCTION: The pandemic of Covid-19 was an unexpected fact that afflicted the every day life of million of people the last 2 years worldwide. Until now according to WHO 469 212 705 are the confirmed cases international and the cost of lives are about 6 077 252. In Greece, from January 2020 to 25 March 2022, there have been 2.884.100 confirmed cases of COVID-19 with 27.125 deaths. More specific in Athens the Greek capital the confirmed cases aρε about 995.590 until now. As of 5 March 2022, a total of 20.181.739 vaccine doses have been administered.

AIM: The Anesthetist Nursing organization and management of the Nurse Anesthesiology Department at the Evaggelsimos Hospital on period of the pandemic in our country (February 2020- until today).

METHOD: The whole process of nursing preparation and support of anesthesiological necessities of the hospital. All actions were based both on the international literature on the treatment of health crises and on the needs and particularities of the hospital.

RESULT: The Nurse Anesthesiology Department of our hospital designed an organization chart of the department and of its anesthetists nurses in the initially unknown, new and special conditions and situations it had to face. The head nurse of the department appointed nurses in charge who were called to carry out the transmutation of the department and the nursing staff into a nursing sector of direct, comprehensive and fully adequate support for people with Covid-19 disease both in the ER and in the ICU. Alongside in the Covid nursing wards but also in the operating room, in cases that a Covid positive patient required surgery. The whole planning process was done after cooperation with all the competent scientific bodies of the hospital and were submitted in writing to the competent heads of administrative authorities.

CONCLUSION: The Nurse Anesthesiology Department of our hospital was first called to organize, train and immediately and crucially support the health crisis that our country has gone through. Update and simplify procedures within the first trimester in order to be performed more safely for all (patients and personve), immediately and with the proper use of time and medical equipment.

Differential Methylation in Inflammatory Pathways Links Condition Pain Modulation and Non-Specific Chronic Low Back Pain

Edwin N. Aroke, PhD, CRNA, FAAN, Pamela Jackson, BSN, RN, MLT(ASCP)BB, Burel R. Goodin, PhD

University of Alabama at Birmingham, School of Nursing, University of Alabama at Birmingham, School of Nursing, University of Alabama at Birmingham, Department of Psychology

INTRODUCTION: Chronic low back pain (cLBP) is one of the most significant public health problems in the western world, leading to many years lived with disability worldwide. For most individuals, the cLBP cannot be attributable to a recognizable pathoanatomic finding. Previous studies have found a negative relationship between conditioned pain modulation (CPM) and non-specific cLBP. However, the biological mechanism linking CPM and non-specific cLBP remains unknown. Differential DNA methylation (DNAm) has been associated with CPM and non-specific cLBP.

AIM: This study determined the differential DNAm associated with efficient versus deficient CPM in adults with non-specific cLBP. A secondary aim determined the functional pathways enriched by differentially methylated genes in patients with efficient versus deficient CPM.

METHODS: The sample included community-dwelling adults with non-specific cLBP (n = 49) and pain-free controls (PFC; n = 49). Participants with cLBP of known etiology, e.e.g, cancer or trauma, were excluded. Efficient versus deficient CPM was assessed using the sequential heterotopic noxious conditioning stimulation paradigm with algometry as the test stimulus and noxious cold water as the conditioning stimulus. DNAm changes were analyzed using reduced representation bisulfite sequencing and methylKit. Gene ontology (GO) term enrichment and Kyoto Encyclopedia of Genes and Genomes (KEGG) pathway analyses were applied to identify key pathways involved in efficient versus deficient CPM.

RESULTS: After controlling for multiple testing, we identified 13,201 differentially methylated CpG sites (DMCs) with q values < 0.01. Of these, 8,623 hypomethylated DMCs

and 4,578 hypermethylated DMCs were observed in individuals with efficient compared to deficient CPMs. These DMCs annotated to many genes of relevance to pain pathogenesis. The annotated differentially methylated genes were over-represented in many GO terms of relevance to pain processing, including transcription regulation by RNA polymerase II, protein binding, nervous system development, generation of neurons, neuron differentiation, and neurogenesis. Additionally, the differentially methylated genes enriched genomic pathways involved in neuroinflammation (e.g., axon guidance, Rap1-MAPK signaling, Hippo signaling) and pain perception (e.g., dopaminergic neurogenesis and cAMP signaling).

CONCLUSION: This study demonstrates a potential mechanistic role of epigenetic modifications of the link CPM and non-specific cLBP link. The results suggest that genes involved in inflammatory processes and neuronal growth, differentiation, and plasticity may play a role in cLBP via CPM.

Frequency of Tachy-Brady Events Post-Endoscopy with Propofol Anesthesia

Mercedes Weir PhD CRNA, Dillon Dzikowicz MS, RN, PCCN, Mary Carey PhD, RN, FAHA, FAAN

University of South Florida, University of Rochester, University of Rochester

INTRODUCTION: As many as 85% of surgical patients have undiagnosed obstructive sleep apnea (OSA). Propofol has revolutionized the field of endoscopy, providing rapid and profound levels of sedation for the increasing number of patients who present for life-saving screening and procedures. Still, it is known that Propofol has pro- and anti-arrhythmic properties that may increase the cardiac risk for post endoscopy patients with undiagnosed OSA. In addition, post endoscopy OSA patients may be particularly vulnerable at night when apneic periods exacerbate sympathetic activity.

AIM: Among post-endoscopic patients receiving Propofol, what is the frequency of tachy-brady events, and are there differences between those with and without obstructive sleep apnea (OSA)?

METHODS: A cardiac rhythm event recorder (BodyGuardian Heart) monitored three groups of patients for 24 hours post-procedure (OSA < 3, OSA > 3/untreated and medical diagnosis of OSA. The snoring, tiredness, observed apnea, high blood pressure (BP), body mass index (BMI), age, neck circumference, and male gender (STOP-Bang) questionnaire was used as a screening tool with a score >3 was categorized as OSA (sen=87/ spec=31). Analyses of variance (ANOVA) tests were conducted, and statistical significance was set at p

RESULTS: Among 50 outpatients, most were women (n = 35, 70%) and were 54+12 years old. The STOP-Bang score was 2.24+1.422 (0-6). There were no differences of tachy-and brady-arrhythmias across the three groups.

CONCLUSION: These results cannot be generalized to all ambulatory surgery patients. Despite the risk factors inherent in propofol administration to patients with undiagnosed and untreated OSA, the quality of clinical care by the Certified Registered Nurse Anesthetist (CRNA) team at this endoscopy center was evident in the absence of poor outcomes based on OSA.

Effectiveness of nurse-led preoperative assessment for anaesthesia: a prospective cohort study

Cecilia Diez Garcia, Ignasi Gich Saladich, Ignasi Bolibar Ribas

HOSPITAL DE LA SANTA CREU I SANT PAU, HOSPITAL DE LA SANTA CREU I SANT PAU

INTRODUCTION: Preoperative assessment of surgical patients is vital to identify patient's risk factors and provide education. In some hospitals, a nurse with anaesthesia training evaluates, under supervision, patients who are candidates for low-complexity surgery.

AIM: To evaluate, in low-complexity surgical patients, the effectiveness of preoperative assessment carried out by nurses with anaesthetic training compared to that carried out by anaesthesiologists in terms of cancellations and inadequate surgical preparation.

METHODS: Non-superiority prospective cohort study. One hundred and eighty-three patients were recruited who had undergone low-complexity surgery between May and September 2020. Sixty-nine patients were preoperatively assessed by a nurse and 114 by an anaesthesiologist. Data collection included a questionnaire to assess patient satisfaction and knowledge acquired from the preoperative assessment. Descriptive and inferential statistics were used for data analysis.

RESULTS: Incidents causing cancellation of surgery were the same in both cohorts (3.8%, 2.6%). The incidence of poor preparation attributable to the patient was also similar in both cohorts (17.0% vs 18.4%). Patients seen by nurses valued the satisfaction with the preoperative assessment more highly than patients seen by anaesthesiologists (median 91.67 vs 84.62). In terms of Knowledge obtained from the preoperative assessment, both professionals did not show statistically significant differences in knowledge levels.

CONCLUSION: Preoperative patient assessment performed by a nurse with anaesthesia training in low-complexity surgical patients can be as effective as that performed by an anaesthesiologist, without having an impact on surgical cancellations or patient preparation. On the day of surgery, patients who had been assessed by a nurse were more satisfied with their

care during the visit and acquired similar knowledge about preoperative preparation as patients assessed by anaesthesiologists. Properly trained nursing staff can perform the preoperative assessment in low-complexity surgical patients to the same standard as anaesthesiologists.

The Comparison of Virtual Reality Based Serious Gaming Versus Lecture Based Adult Basic Life Support Training Method: Randomized Trial

Tuba Usseli, Dilek Kitapcioglu, Mehmet Emin Aksoy

Vocational School of Health Services, Program of Anaesthesia Acibadem University, Istanbul-Turkey , School of Medicine, Department of Medical Education, Acibadem University Istanbul-Turkey , Center of Advanced Simulation and Education, Acibadem University, Istanbul-Turkey

INTRODUCTION: The progress in science and technology has changed our educational system. The integration of new technologies into the learning process and new educational tools like VR (Virtual Reality) based serious gaming modules are nowadays being used as an alternative to the traditional learning methods.

AIM: In this study the aim is to compare VR based serious gaming module with traditional lecture based methods.

METHODS: In this quasi-experimental study we focused on two separate teaching methods, virtual reality and traditional lecture. The effectiveness of trainings was investigated based on observational structured performance scores of 47 students of Anaesthesia Program enrolled to Acibadem University Vocational School of Health Services, 2021-Fall term. The study compared the observational structured grades of these two different groups. Two groups had been formed, and the students were randomly allocated either into a VR or traditional lecture based group. The first group was trained VR serious gaming module whereas the second group received a traditional lecture. Mann-Whitney U test was used to determine whether students' successful attempts statistically differ according to the educational methodology.

RESULTS: Based on the observational structured performance scores , the VR group performed better in adult basic life support training compared with traditional lecture group. Comparing the scores of both groups by using Mann-Whitney U test the p-value was calculated as .01428. The result was significant at $p < .05$.

CONCLUSION: This study suggests that the use of virtual reality enhances the learning process and in certain subjects yields better performance results when compared with the traditional learning method.

RESPIRATORY REHABILITATION OF CRITICALLY ILL COVID-19 PATIENTS

Martina Maričić Ljubas, Iva Marincel Antolović, mag.physioth., Mario Dugonjić, bacc.med.tech, mag.nutr.clin., Stella Gašparuš, bacc.med.tech.

CLINICAL HOSPITAL CENTER RIJEKA, CLINIC FOR ANESTHESIOLOGY, INTENSIVE MEDICINE AND PAIN MANAGEMENT, CLINICAL HOSPITAL CENTER RIJEKA, CLINIC FOR ANESTHESIOLOGY, INTENSIVE MEDICINE AND PAIN MANAGEMENT

INTRODUCTION: Patients with severe COVID-19 disease are cared for and treated in the COVID ICU. In addition to doctors and nurses, an indispensable part of the team is the physiotherapist. UHC Rijeka was the first in Croatia to include physiotherapists as the key to the rehabilitation of COVID-19 patients with the aim of early rehabilitation and prevention of respiratory complications.

AIM: The aim of this study was to present the role and interventions of physiotherapists in the ICU, to examine which respiratory support were used more often, and how many patients were treated with noninvasive mechanical ventilation and how many with invasive mechanical ventilation, on which day patients were verticalized, and with what type of respiratory support they were discharged from the ICU.

METHODS: A study was conducted on a sample of 111 patients treated in the COVID ICU from March 28, 2020 to March 28, 2021

RESULTS: The most commonly used respiratory support per admission was invasive mechanical ventilation (62%), and patients acquired conditions for extubation after 5 days on invasive mechanical ventilation on average. The most common respiratory support used after extubation is an oxygan tank mask (42%). Of the 111 patients included in this study, 30% of patients met the conditions for verticalization, and were verticalized 24 h after separation from invasive mechanical ventilation.

CONCLUSION: For patients with severe COVID-19 disease, initial assessment, individual patient approach, and teamwork are important. Respiratory rehabilitation helps to acquire the conditions to deescalate respiratory support, reduces the symptoms of COVID-19 disease and enables verticalization.

ATTITUDES OF NURSES ON THEIR ROLE IN TRANSPLANTATION TEAM

Kristina Marincel ,bacc.med.techn., Josip Brusić,mag.med.techn

Clinic for Anesthesiology, Intensive Care and Pain Management at the University Hospital Center Rijeka, Clinic for Anesthesiology, Intensive Care and Pain Management at the University Hospital Center Rijeka

INTRODUCTION: Nurses in intensive care units frequently encounter potential organ donors. Their personal attitudes and knowledge about brain death, organ donation and their role in the transplant team, directly affect the number and success of donated and transplanted organs.

AIM: The aim of this research paper is to examine the attitudes and experiences of nurses about their role in the transplant team.

METHODS: The research was conducted through an anonymous online survey among 73 nurses employed in intensive care units in Rijeka and Zagreb in the period from July to August 2021. The survey was submitted to the target group via the GoogleDocs form (electronic survey). The first part of the survey contains demographic data. The second part of the survey contains a Likert scale of agreement or disagreement with certain statements. The results of the Likert scale were examined by a series of one-way analysis of variance (ANOVA), and the variables that showed a significant difference were further examined by the Bonferroni pos-hoc test.

RESULTS: Respondents were mostly female in the age group of 41-50 years with more than 20 years of experience. The largest number of respondents is employed in the ICU of the Clinic for Anesthesiology, Intensive Care and Pain Management at the University Hospital Center Rijeka. Most of the respondents had a university bachelor's degree. Most of the respondents often or occasionally met with potential organ donors, a total of 71%. The biggest differences in attitudes were shown among the respondents depending on the frequency of encounters with a potential donor in the six claims examined by ANOVA and the Bonferroni post-hoc test. Regarding education, statistically significant differences in attitudes were observed in two statements.

CONCLUSION: Donor processes call into question the professional competence of nurses involved in the process of proving brain death, and caring for potential organ donor, and the transplantation itself. Experience working with brain-dead organ donors has an impact on nurses perceptions of their professional ability in the donation process. Training provided by more experienced colleagues and a culture that encourages discussion of aspects of the donor process can develop the professional competence of nurses and define professional practice.

Boundless learning mode for the"Post COVID-19 Epidemic" era - How to build up the Post-Graduation of Continuing Education for anesthesia nursing in China

Tu Shumin, Xing Xueyan, Kang Jiamin, Yan Chunji, Zhou Fang

Anesthesia Department, Beijing Tsinghua Changgung Hospital, School of Clinical Medicine, Tsinghua University, Anesthesia Department, Beijing Tsinghua Changgung Hospital, School of Clinical Medicine, Tsinghua University, Xuzhou Medical University, Xuzhou Medical University, Xuzhou Medical University

INTRODUCTION: Continuing education is one of the methods of lifelong education for nursing professionals. After investigation, nurses generally have different workload and life imbalance in our investigation. Due to the requirements of epidemic prevention and control for space constraints and aggregation, and the professional posts of anesthesia nursing officially set up in China in 2017 which the development of education and training, in the "post epidemic" era, makes the nurses anesthetists face more severe challenges in clinical education. In order to adapt the "post epidemic" era, we had carried out a series of training courses for continuing education of anesthetic nursing, the WeChat official account collaborated with hospitals, schools and professional media.

AIM:

1. Build a online professional platform to provide Continuing Education Columns for the national basic level training of Nurses Anesthetists, 2. Continuing education of anesthesia nursing after graduation in the standardized "post epidemic" era, 3. Green resource learning environment

METHODS: We held 38 basic courses of anesthesia nursing from September 24, 2021 to December 6, 2021 ; The main reading courses are anesthesiology, which are the teaching materials of Anesthesiology specialty in the 13th five year plan of the National Health Planning Commission (the teaching materials of national colleges and universities) - Clinical Anesthesiology and Physiology of Anesthesiology. Arrange interns and staff to reading to

Reading Club, and the Nurses Anesthetists N3-4 or Anesthesia specialist nurse will provide guidance and summary. WeChat official account is publicizing before the course. After the course, carry out the second part of offline learning after class. (1) WeChat official account provides basic anesthesia nursing learning page - providing PPT and Anesthesia specialist nurse with additional information; (2) Professional media platform playback learning. Evaluation of 2021-09-24 to 2021-12-20, the actual number of participants in the online course, the official account of WeChat public, the number of playback of the professional media platform.

RESULTS: During the evaluation period from September 24, 2021 to December 20, 2021, 60303 people participated in playback learning on the professional platform（figure 2: Basic

Basic Course of Anesthesia Nursing）:(1) WeChat official account foundation anesthesia nursing learning edition. (2) Actual number of on-site participants in online courses (3) Number of professional media platform playback learners

CONCLUSION: Anesthesia nursing is a new interdisciplinary subject combining anesthesiology and nursing. It has developed rapidly in recent years and has gradually become an indispensable part of clinical anesthesiology, in China. Since the implementation of the national policy on anesthesia nursing in 2017, anesthesia nursing education has started the development of academic education and continuing education after graduation, The safety belief of "focusing on patients in the whole period of perioperative anesthesia" and committed to the talent training goal of "improving post competence as the core" have gradually formed. We found that, in particular graduate , continuing education is due to the supervision of academic organizations, the construction of unit human resources, multiple posts of anesthesia nurses (anesthesia clinic, anesthesia monitoring, anesthesia resuscitation, acute pain, post anesthesia intensive care, anesthesia and pain ward, etc.), the lack of anesthesia nursing teachers, unclear core competence of clinical anesthesia nurses, etc, The teaching system of continuing education for anesthesia nurses after graduation is organized by the Chinese Nursing Society, provincial and municipal nursing societies and three systems of medical institutions, with PACU as the main axis. Most of the monitoring nurses during anesthesia are set up and trained according to the organizational structure of each hospital, clinical post requirements, human resources of anesthesiologists, etc. So far, no official or academic organization has proposed a standardized training program for anesthesia monitoring nurses in China. It is also because of the covid-19 epidemic situation that the operation of education and training has more restrictions on "time and space".

The survey is based on the official account platform for basic training courses in anesthesia, combined with professional media platform to promote the curriculum.During 2021-09-24 to 2021-12-20, there were 60303 playback learning platforms for professional platforms, 2535 for official account and 3694 for official account reading training courses PPT. In fact, we can find that video teaching is higher than reading in terms of usage, mainly in terms of "convenience", "freedom" and "Sui Kai Sui Guan". It is an effective basis for us to consider developing "audio books" in the future.By integrating the existing network resources, optimizing and developing the network teaching platform, we can create a "post epidemic" era of multiple choices for continuing education after graduation of anesthesia nursing in China.

REHABILITATION OF COVID-19 PATIENTS WITH SEVERE FORM OF ARDS TREATED WITH MECHANICAL VENTILATION AND EXTRACORPOREAL MEMBRANE OXYGENATION

Iva Marincel Antolović, Martina Maričić Ljubas

CLINICAL HOSPITAL CENTER RIJEKA, CLINIC FOR ANESTHESIOLOGY, INTENSIVE CARE AND PAIN MANAGEMENT, CLINICAL HOSPITAL CENTER RIJEKA, CLINIC FOR ANESTHESIOLOGY, INTENSIVE CARE AND PAIN MANAGEMENT

INTRODUCTION: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a form of coronavirus which appeared in 2019 and causes coronavirus disease (COVID-19). The most severe form of COVID-19 disease and it's complications are reasons why the patient is connected to invasive mechanical ventilation. Some patients develop an extremely severe clinical condition with acute respiratory and cardiac failure, and for this reasons are treated with extracorporeal membrane oxygenation (ECMO). ECMO is an out-of-body mechanical circulatory or respiratory support procedure that can be applied in two forms of support venous - venous (V - V ECMO) modality which provides support in case of severe respiratory failure or venous - arterial (V - A ECMO) modality which provides respiratory and cardiovascular support to the patient. Physiotherapy is an indispensable part in the treatment of patients with COVID-19 disease. Physiotherapy in ICU is based on respiratory rehabilitation.

AIM: The aim of this paper is to show physiotherapy role in early rehabilitation and prevention of respiratory complications and complications of long- term immobilization.

METHODS: Case description: In this paper, a case of a 51-year- old with severe COVID-19 disease treated, for the second time, by invasive mechanical ventilation and extracorporeal membrane oxygenation was described.

RESULTS: The patient was admitted to KBC Rijeka at the Department of Intensive Care of COVID patients on May 17, 2021, intubated and connected to invasive mechanical ventilation,

and on May 19, 2021. he was assigned a V – V ECMO. Throughout his stay, he was involved in physical therapy and rehabilitation. Patient was transferred to the Department of Physical Medicine and Rehabilitation on June 7, 2021. with the support of oxygen, bad general condition, with a more pronounced disturbance of the balance ,coordination and fine motor skills of the right hand.

CONCLUSION: On June 19, 2021, the patient was discharged from the hospital completely independent in all aspects of daily life and without oxygen support.

Challenge for Precise Nursing Care - ACE Star Knowledge transfer model in Quality Control for Anaesthesia Nursing in China

Kang Jiamin, Tu Shumin, Yan Chunji, Xing Xueyan, Zhou Fang

School of Nursing, Xuzhou Medical University, Xuzhou, China, Department of Anesthesiology , Beijing Tsinghua Changgung Hospital, School of Clinical Medicine, Tsinghua University, Beijing, China, School of Nursing, Xuzhou Medical University, Xuzhou, China, Department of Anesthesiology , Beijing Tsinghua Changgung Hospital, School of Clinical Medicine, Tsinghua University, Beijing, China, School of Nursing, Xuzhou Medical University, Xuzhou, China

INTRODUCTION: Precision nursing is to develop the new knowledge and theoretical system of nursing by integrating the four basic concepts of nursing theory - human, environment, health and nursing. We use new nursing knowledge to guide individual health behavior, establish a scientific lifestyle, and further improve the scientificity and suitability of clinical nursing decision-making through individualized nursing, so as to achieve the goal of promoting human health . At present, precision nursing is widely used in symptomatology, chronic disease management, clinical decision-making, medication management and health education. Strengthen the research work related to precision nursing, form nursing guidelines, clinical nursing paths or nursing intervention measures recognized at home and abroad, cooperate with patients' health education, and continuously improve the level of specialized nursing. Through the construction of disease or symptom prediction model, effectively evaluate the disease risk, determine the goal of nursing intervention, and accurately design the content of nursing intervention. Provide individualized nursing for patients and continuously improve the level of specialized nursing. China's state administration had issued documents on the construction of anesthesiology department , including the central government policy requirements that to be the establishment of anesthetic nursing posts for hospitals, in addition , to listed the main points of the specific work connotation for nurse anesthetists, in 2017.The aim is to provide safety, high quality and patient-centered care for perioperative patients. Since the national policy announcement began in 2017, the construction of anesthetic nursing must be based on the characteristics of professional nursing headed by "safety ", combined with the nursing quality management system, in order to improve the requirements of anesthetic nursing quality and ensure the safety of patients.In order to ensure the safety and scientific nursing of anesthesia

nursing specialty, we adopt Precise Nursing Care - ACE Star Knowledge transfer model in the quality management of anesthesia nursing.

AIM: Applying ACE star knowledge transformation model to establish the training programs of arterial catheterization for nurse anesthetists who Provided precise nursing care for liver transplant patients and reducing the incidence of complications of arterial catheterization.

METHODS: Based on ACE star knowledge transformation model: (1) Discovery: knowledge discovery, mainly the process of knowledge generation; (2) synthesis: synthesizing the results of many studies to draw meaningful scientific conclusions; (3) translation: transforming comprehensive evidence into a practical form for researchers; (4) integration: applying new knowledge to clinical practice; (5) evaluation: evaluating the process and results of evidence-based application. We set up the arterial catheterization training plan to realize the clinical fine nursing process practice. From 2019-12 to 2020-12, we investigated the incidence of arterial catheterization complications and patient satisfaction after liver transplantation. They were randomly divided into two groups: the observation group received ace star knowledge transformation training, and the control group received traditional teaching training.

RESULTS: Under the ACE star knowledge transformation training programs, the clinical practice of precision nursing significantly reduce the incidence of complications ($P < 0.05$)、improving the successful ratio of arterial catheterization, and the difference was statistically significant in observation group . In addition, after training programs, the scores of theoretical examinations and operation examination of catheters increased, and the differences were statistically significant ($P < 0.05$). Compared with control group, patient satisfaction with the process of catheterization was significantly improved , the average score before the implementation was 3.2 , and after the improvement was 4.50, the difference was statistically significant ($P < 0.05$).

CONCLUSION: The concept of precision medicine is the concept of precision Medicine released by the National Institutes of Health (NIH): emerging disease prevention and treatment methods based on understanding individual genes, environment and lifestyle. In China, the concept of precision medicine emphasizes that the basis of decision-making is based on genes, environment and lifestyle. It not only plays a role in disease prevention, diagnosis and treatment, but also plays a role in disease monitoring, prognosis and nursing . Guided by the concepts of precision medicine and precision health, Precision nursing mainly refers to that nurses carry out accurate phenotypic analysis or deep phenotypic analysis on patients, and carry

out accurate nursing practice for appropriate patients at an appropriate time, such as judging disease symptoms and their influencing factors, analyzing patients' medication compliance, disease prevention, symptom management, etc. Ace star model provides a guiding framework for promoting knowledge transformation, realizing the scientificity of nursing, applying new knowledge from research to the practice of clinical precision nursing, improving the health of patients, and improving the evidence-based practice ability of nursing staff.

Noxious stimuli and skin conductance - How does it work in an anesthesia clinical setting?

Daniel Widarsson Norbeck, Pether Jildenstål

Institute of Health and Care Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; Department of Anesthesiology, Surgery and Intensive Care, Sahlgrenska University Hospital, Gothenburg, Sweden, Institute of Health and Care Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; Department of Anesthesia and Intensive Care, Institute for Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden; Depa

INTRODUCTION: Nociception is said to be the last significant part of anesthesia that still lacks a validated objective individual clinical monitoring. There are a number of methods / techniques that measure one or more physiological changes and in different ways present this as interpretable values of nociceptive stimuli. One of these is the Nociception Level Index (NoL) from Medasense, which presents an indexed value between 0 and 100 and is based on a non-linear combination of nociception-related physiological variables (including heart rate variability, plethysmograph pulse wave amplitude and changes in skin conductance).

The relation between noxious stimuli and skin conductance has been proven to be a possible objective measurement of acute pain. A noxious stimulus activates the autonomic nervous system through nociception causing sweat to occur in the palm of the hand or sole of the foot. This increases the conductance and decreases the electrical resistance. By measuring the changes in frequency and amplitude fluctuations it’s possible to grade the level of nociception caused by noxious stimuli. And because sweat glands are controlled by muscarinic receptors the measurement is thought to be independent of haemodynamic variability and the impact of adrenergic agents. A technology from MedStorm, that measures skin conductance has been shown in studies to be a reliable way to measure nociception.

We have previously conducted a pilot study with the Medasense PMD-200 (NoL) and multiple simultanous measuring points which showed non-conclusive data. In the upcoming study we intend to add a second type of monitor (MedStorm) and additional measuring points.

AIM: The purpose of this study is to describe whether there is a variance between different measurement techniques and / or measurement points to detect adequately nociceptive stimulus in patients undergoing general anesthesia or sedation.

METHODS: We intend to study patients that undergoes abdominal and vascular interventional radiology procedures and receive routine general anesthesia or sedation. In the case of scientifically confirmed nociceptive stimuli (eg jaw lift, intubation and skin incision), measured values according to the previously described technique are noted together with other physiological parameters (heart rate, blood pressure, etc.).

RESULTS: In a pilot study with eight patients we could estimate differences in nociceptive response between left and right side of the body during surgery and general anesthesia. Now, we have an ongoing study in subject and preliminary results will be presented at the congress.

CONCLUSION: In a pilot study with eight patients undergoing surgery and general anesthesia, we could show differences in nociceptive response regarding if the response sampled from left or right side of the body.

Influence of different shift work patterns on fatigue of anesthesia nurses in China

Yanli Ma, Qian Zhang, Jing Ji， Xiaohui Guo

Beijing Tsinghua Changgung Hospital，School of Clinical Medicine，Tsinghua University, Dept. of Anesthesiology, Beijing, China , Beijing Tsinghua Changgung Hospital，School of Clinical Medicine, Tsinghua University, Dept. of Anesthesiology, Beijing, China

INTRODUCTION: Nursing human resource management directly affects nursing quality and cost. Rational application and full development of nursing resources have become the core of modern nursing management. The nature of anesthesiology determines the fast pace, high intensity, many challenges and great pressure of nursing work. The condition of emergency surgery patients in night shift is complex and changes quickly, which requires higher professional quality, psychological quality and physical quality of anesthesiology nurses. The study shows that the degree of job burnout of nursing staff in ICU, emergency and operating room is more obvious than that in general departments. Job burnout can lead to lower job satisfaction, lower work efficiency, lack of sense of accomplishment and other conditions. How to make use of the existing nursing human resources, make a systematic, scientific and reasonable schedule, so that patients get better nursing, while improving the satisfaction of anesthesiology nursing staff has become a topic of common concern of nursing managers.

AIM: To compare the relationship between different shift patterns and fatigue degree of anesthesia nursing staff, to seek a shift pattern that is conducive to promoting the physical and mental health of nurses and improving the quality of nursing work, to provide a basis for improving the shift pattern of Anesthesia nurses in China, and to provide a reference for nursing managers to better manage the human resources of anesthesia nursing.

METHODS: In China, nurses basically work for 8 hours a day, 5 days a week, and the weekly working time is calculated by hours. Anesthesiology nurses in our hospital take three shifts on weekdays, including day shift 8:00 ~ 16:00, night shift 16:00 ~ 24:00, night shift 24:00 ~ 32:00. One shift pattern is to work the night shift for six to seven days in a row, with two days off, with one shift every February. Another shift pattern is to take three consecutive night shifts to rest 1-2 days, one shift per month. Compare the feelings of nursing staff under two shift patterns. A questionnaire was distributed to 30 anesthesia nurses who had worked in our hospital for a long time in 2020-2021 by means of convenient sampling, and the survey period was 1-2 weeks.

A total of 30 questionnaires were collected. The questionnaire of this study includes the following contents: general information questionnaire, Fatigue Severity Scale (FSS) and personnel satisfaction survey.

RESULTS: Nurses in anesthesiology were more satisfied with one monthly night shift, averaging 87.27%, compared with 70.69% for the other schedule. The rate of nurses who did not feel tired was 60 percent for the monthly shift, and 10 percent for the other shift. The rate of nursing related adverse events was also lower.

The three-shift nursing schedule has the following advantages: first, it has less impact on family life and reflects highly humanized; Second, the impact on the biological clock of nursing staff is relatively small, more in line with biological work and rest rules; Third, it is convenient for nursing staff to arrange personal life time.

CONCLUSION: For all levels of nursing staff combination scheduling, can reduce the psychological pressure of young nursing staff, achieve the purpose of complementary professional level of nursing staff, improve the nursing level of the team. Scheduling optimization can fully explore human resources and reduce the physical and mental pressure of nursing staff. Emphasize play nurses' working enthusiasm, initiative and creativity, according to nursing personnel qualifications, titles such as hierarchy distribution of each nursing staff annual number of night shift, make the low qualification nurses can accomplish a certain number of night shift, according to the requirements of training high qualification nurses' shift number less, embodied humanistic care, improve nurses' job satisfaction."Fixed period" and "combination" nursing work arrangement system not only get better work efficiency, but also take care of the physical and mental health of nurses. A reasonable Shift System can not only improve the quality of life of nursing workers, its significance is to make nursing work meaningful, so as to improve work efficiency.

Residual Paralysis Matters

Richard Flowers, DNP, CRNA, CHSE

Wake Forest School of Medicine Department of Academic Nursing

INTRODUCTION: Postoperative residual neuromuscular blockade (PRNB) has been estimated to occur in up to 80% of patients receiving neuromuscular blocking agents. Residual paralysis has been implicated in a myriad of untoward postoperative respiratory complications including hypoxia, unexpected reintubation and mechanical ventilation, and pulmonary aspiration and pneumonia. Standard qualitative neuromuscular twitch (NMT) and clinical sign methods of assessing neuromuscular blockade (NMB) require human assessment of twitch quality and performance and have been shown to be unreliable in assessing the depth of NMB and limiting consequences of residual paralysis. Practicing anesthetists often underestimate the incidence of residual neuromuscular blockade at extubation and postoperatively. Practicing anesthesia providers underestimate and/or are not aware of consequences and complications related to post op residual paralysis and may not be familiar with the benefits/importance of quantitative monitoring technology. Selective binding reversal agents (sugammadex) and quantitative monitoring modalities have been show to greatly improve the incidence of residual paralysis and associated complications yet they are often not used, not available or restricted due to cost comparisons to traditional methods. However, recent evidence has shown both outcome improvements and potential overall health care expenditure reductions through the use of newer reversal agents and monitoring technology.

AIM: Participants will be aware of the limitations and lack of reliability of qualitative neuromuscular blockade monitoring and traditional anticholinergic reversal agents. They will also become familiar with the complications associated with postoperative residual neuromuscular blockade and the subsequent morbidity, mortality, and financial implications. The attendees will be aware of new commercially available quantitative monitors and champion the use of such monitors in there home facilities. The attendees will be able to choose the appropriate reversal agent based on both quantitative and qualitative data to obtain safe recommended extubation criteria in a timely fashion.

METHODS: Lecture Presentation Content:

1. Postoperative residual neuromuscular blockade a. incidence of occurrence b. associated complications 2. Limitations of Qualitative neuromuscular monitoring a. lack of interpreter reliability b. inability to assess true level of blockade c. ineffectiveness of traditional extubation criteria 3. Current recommendations for safe extubation criteria. 4. Quantitative monitoring techniques. 5. Limitations of neostigmine reversal with moderate to deep neuromuscular blockade. 6. Recommended dosing and timing of neostigmine based on depth of blockade. 7. Recommended dosing and timing of sugammadex. 8. Sugammadex vs. neostigmine in regards to postoperative complications. (PONV, PRNMB) 9. Discussion of evidence regarding outcome improvements and healthcare cost savings with implementation of pharmaceutical reversal protocols and quantitative monitoring technology. 10. Questions

RESULTS: N/A

CONCLUSION: This informative evidence based presentation focuses on the impact of postoperative residual neuromuscular blockade and the largely underappreciated limitations of traditional standard qualitative monitoring methods and anticholinergic reversal agents in recognizing and achieving recommended safe extubation criteria. The presenter will share his vast experience using both neostigmine and sugammadex in conjunction with quantitative neuromuscular blockade monitoring techniques to reduce the incidence of residual neuromuscular blockade and associated complications in his clinical practice. You will leave this session with a tool chest of evidence based recommendations for neuromuscular blockade monitoring and reversal to consistently achieve the recommended criteria for safe extubation and prevention of postoperative residual neuromuscular blockade.

The Impact of Perioperative Crisis Simulation on Improved Outcomes

Cormac T. O'Sullivan, PhD, CRNA, Heather Bair, DNP, CRNA

University of Iowa, University of Iowa

INTRODUCTION: Perioperative crisis (hemorrhage, myocardial infarction, airway difficulties) occur rarely but often result in significant morbidity and mortality when they happen. The most common events listed in closed claims studies are for airway difficulty, hemorrhage, perioperative cardiac events, and anaphylaxis/medication issues. The rarity of these events means most perioperative providers will only see them 1-2 times during their career and will be inexperienced in their treatment. The use of cognitive aids and simulation will reduce treatment errors, improve patient outcomes, and increase staff satisfaction with care provided.

AIM: 1. Discuss the benefits of cognitive aid use during perioperative crises

2. Review the benefits of simulation for perioperative crisis events

3. Discuss the development of a regular schedule of crisis simulation to improve patient outcomes.

METHODS: A program of perioperative crisis simulation was developed based on anesthesia closed claims studies. The simulation schedule was deployed at a variety of rural and urban healthcare facilities. The program is ongoing. The program has also been conducted in multiple professional conference venues throughout the United States. This facet is also ongoing.

RESULTS: All participants have rated an increase in knowledge and comfort level after participating in the crisis simulations. Anecdotally, multiple participants have contacted us since their participation detailing their increased level of care provided in a crisis event at their healthcare facility since the simulation course. Multiple participants have been able to implement some level of crisis simulation at their home facility in an ongoing basis.

CONCLUSION: Perioperative crises occur infrequently and staff present at the time of an event are usually inexperienced in treating the crisis. Simulation based education reduces poor treatment errors, improves time to delivery of critical treatments, and improves patient

outcomes in perioperative crises situations. As leaders in healthcare, CRNAs should work to implement a crisis simulation program at their facility.

Application of the three-dimensional quality evaluation mode combined with the nursing quality management group in the anesthesia nursing quality management

Xueyan Xing, Shumin Tu, Fang Zhou, Xi Tian, Zupeng Chen
Beijing Tsinghua changgung hospital, Beijing Tsinghua changgung hospital, School of Nursing Xuzhou Medical University, Beijing Tsinghua changgung hospital, Beijing Tsinghua changgung hospital

INTRODUCTION: Since 2017, the Chinese government has successively published three documents involving nurse anesthesia, clarifying the job content of nurse anesthesia. My hospital has had nurse anesthesia since 2014. The work of nurse anesthesia in my hospital covers the pre-anesthesia preparation period, the anesthesia induction period, the anesthesia maintenance period, and the anesthesia resuscitation period. The job content of nurse anesthesia includes pre-anesthesia preparations, assisting the attending anesthesiologist to perform anesthesia, monitoring and completing the peri-anesthesia nursing work.

AIM: To explore the methods suitable for anesthesia nursing quality management in China.

METHODS: The anesthesia nursing quality management team was established, and the three dimensional Donabedian quality evaluation model was used to carry out the anesthesia nursing quality management from the three dimensions of structure, process and result, combined with different quality management tools.

RESULTS: In 2020, a total of 3272 cases of painless endoscopic examination and 8138 cases of surgical anesthesia were completed by the attending anesthesiologists assisted by nurse anesthesia in my hospital, among which ≥ASA gradeIII accounted for 24.7%. No anesthesia related adverse events or nursing adverse events occurred, no complaints from patients or their families, and patient satisfaction was 100%.

CONCLUSION: The anesthesia nursing quality management team of my hospital constructed the anesthesia nursing quality management system by using the three-dimensional quality evaluation model, which consists of three dimensions and is divided into three levels, and is suitable for the current anesthesia nursing quality management in China.

Mapping nursing intervention using Therapeutic Intervention Scoring System in bloodless liver transplantations

Tímea Rengeiné Kiss Ph.D, RN, MSN, Pediatric Intensive Care Nurse

Semmelweis University, Budapest

Department of Anesthesiology and Intensive Therapy, Transplantation Intensive Care Unit

Background: The Simplified Therapeutic Intervention Scoring System adapted to liver transplantation by King's College Hospital rank 138 activities to determine the nursing workload, diagnostic, monitoring and therapeutic needs.

Objectives: To evaluate nursing activities of ''King's-TISS" score grouped in organ systems and nurse patient ratio in the perioperative 48 hours of blood product free liver transplantations (LT).

Methods: The ''King's-TISS" score's were analysed by nursing procedures and grouped, scored according to organ systems. The nursing workloads were studied during LT (T1), on arrival on the ICU (T2) and 12– 24-48 hours after LT (T3-T4-T5). Results: The total of ''King's-TISS" score points were decreased by 20% daily ($p = .001$). The mean score of 104 ± 3.5 points (CI:104–105) during LT decreased to 84.7 ± 12 points (CI:83–86) in 48 hours (T5). The ''metabolic" and ''haemostasis" points increased ($p = .01$), the ''immunology" points unchanged (T2-T5) postoperatively. A slight decrease was observed in case of ''basic nursing care", ''monitoring", ''neurologic support", ''renal support" and ''cardiovascular support" points (T2-T5, $p < .01$). The ''invasive intervention" and ''ventilatory support" points strongly decreased (T2-T5, $p < .001$). One ''King's-TISS" point was found to equal 7.4 minutes with a nurse patient ratio of 2:1 intraoperatively and 1:1 postoperatively.

Conclusion: Absence of blood product administration in LT decreases the total and organ specific workload, except the metabolic, haemostasis, immunology and basic support requirement. It was not within the scope of the King's-TISS score to analyse the application of viscoelastic haemostasis test and coagulation factor concentrate administration. We are the first to poessess a validated nursing score in the field of liver transplantation, that helps in the

individual planning of human resources and might as well be applied in other centres of Eurotransplant.

Educating for excellence: assessing student nurse anesthetists' non-technical skills in clinical practice

Fiona Flynn, Pia C. Bing-Jonsson, Ragnhild Sørum Falk, Siri Tønnesen, Berit Taraldsen Valeberg

University of South-Eastern Norway, University of South-Eastern Norway, Oslo Centre for Biostatics and Epidemiology, Oslo University Hospital , University of South-Eastern Norway, Oslo Metropolitan University, University of South-Eastern Norway

INTRODUCTION: Non-technical skills are defined as "cognitive, social and personal resource skills". Together with good theoretical knowledge and technical skills, non-technical skills such as situation awareness, decision-making, task management and teamwork are generally acknowledged as playing an integral role in providing safe and excellent anesthesia. Clinical evaluation instruments for student nurse anaesthetists assess a wide range of competencies, including technical and non-technical skills. However, there is currently little standardization, and few instruments for assessing non-technical skills appear to have been extensively tested in clinical practice. The Nurse Anaesthetists' Non-Technical Skills-Norway (NANTS-no) structured behavioural assessment instrument was psychometrically tested in a previous study and demonstrated high reliability.

AIM: The aim of this study was to explore the use of the Nurse Anaesthetists' Non-Technical Skills-Norway (NANTS-no) structured assessment instrument in developing and assessing student nurse anaesthetists' non-technical skills in clinical practice.

METHODS: This cohort study had a longitudinal design. 20 Norwegian student nurse anesthetists' non-technical skills were assessed by their mentors (N=31) and clinical supervisors (N=7) at three time-points over a 12-month period, after providing anesthesia to a patient. A 5-point rating scale was used for both the experts' assessments and students' self-assessments. Development of non-technical skills over time was estimated using linear mixed-effect models.

RESULTS: The students demonstrated a significant overall development of non-technical skills (p

CONCLUSION: The structured behavioural assessment instrument appears to be reliable for assessing student nurse anesthetists' non-technical skills in clinical practice. This study may have implications for systematic assessment of non-technical skills during nurse anaesthesia education in other countries.

Application of multimodal insulation measures to prevent perioperative hypothermia in liver transplant patients

Jing Ji, Yanli Ma

Beijing Tsinghua Changgung Hospital, School of Clinical Medicine , Tsinghua University, Beijing Tsinghua Changgung Hospital, School of Clinical Medicine , Tsinghua University

INTRODUCTION: Under normal circumstances, human heat is mainly distributed through evaporation, radiation, convection and conduction. Hyperthermia during liver transplantation (Liver transplantation) (central body temperature

AIM: Through this study, the effect of multi-mode thermal insulation measures and conventional thermal insulation measures was analyzed on the prevention of perinatal hypothermia in liver transplantation patients, so as to standardize the body temperature care measures of liver transplantation surgery, prevent the occurrence of intraoperative hypothermia in liver transplantation patients, and better promote the recovery of patients.

METHODS: The prospective study included 102 patients undergoing in situ liver transplantation at Beijing Tsinghua Changgeng Hospital from October 2020 to October 2021.All the patients signed an informed consent form, in accordance with the medical ethics regulations.Of these, 76 males and 26 female; 18 to 70, median age 44.Using computer-generated random numbers, the patients were randomly divided into multimodal body temperature intervention group (multimodal group, 51 cases) and conventional body temperature group (control group, 51 cases) according to the time of surgery.Both groups were transplanted in situ with classical nontranslocation under endotracheal intubation general anesthesia.Perioperative body temperature comparisons between the two groups were performed using an independent sample t-test.

RESULTS: In the multimodal group, no liver stage, new liver stage, and 72 h postoperative temperature were（36.5±0.6）℃、（36.6±0.6）℃、（36.5±0.6）℃、（36.5±0.5）℃，, respectively, significantly higher than the （35.8±0.5）℃、（35.5±0.4）℃、（35.3±0.4）

℃、 （35.8±0.6）℃ (t=6.60,7.24,18.68; P

CONCLUSION: Multimodal insulation measures can reduce the incidence of perioperative hypothermia in liver transplant patients.In order to further improve the application effect, the standard operation standard for temperature protection of liver transplantation can be formed to reduce the incidence of intraoperative hypothermia in patients with liver transplantation and improve patient prognosis.

Odgovornosti medicinske sestre u promjeni ograničenja posjeta u JIL-u

Irena Kovačević[1], Valentina Krikšić[2], Štefanija Ozimec Vulinec[1], Boris Ilić[1], Sanja Ledinski Fičko[1], Martina Smrekar[1], Anamarija Hošnjak[1]

[1]Zdravstveno veleučilište Zagreb. Mlinarska c. 38. 10 000 Zagreb

[2]Ustanova za zdravstvenu njegu „Domnius“. Jaruščica 9E. 10 000 Zagreb

Potreba za promjenom ograničenja posjeta bolesnicima koji se nalaze u JIL-u i sličnim odjelima postala je problem koji zahtjeva rješavanje. Umjesto dosadašnje tradicije, medicinske sestre imaju priliku pomoći bolesnicima i humanizirati skrb donošenjem odluka koje se temelje na znanju koje ima uporište na rezultatima istraživanjima. Zdravstveni djelatnici ponekad zaborave da je pravo na liječenje privilegija koju daju bolesnik i obitelj. Odrasle osobe koje su hospitalizirane u JIL-u u većini slučajeva uživaju malo prava u pogledu posjeta obitelji. Bolesniku se govori da su ograničenja posjeta bitna za proces oporavka. Član obitelji koji mirno sjedi uz krevet i razgovara s bolesnikom i dodiruje ga samo kada je budan pruža sigurnost koja je neophodna da bi bolesnik zatvorio oči i odmorio se. Medicinske sestre u JIL-u imaju moć promijeniti obrazac izolacije bolesnika od njihove obitelji. Dolazak u JIL predstavlja potpuni gubitak neovisnosti odraslih i izaziva strah sličan onom koji doživljava dijete. Osim boli povezane s organskim problemom, okolišni uvjeti kao što je visoka razina buke, stalna aktivnost, nedostatak poznatih lica, višestruki invazivni postupci i višestruki priključci na tijelo pogoršavaju strah i smanjuju sposobnost suočavanja. Ovom bolesniku potrebna je velika emocionalna podrška, a jedini koji će uspjeti približiti se bar malo je supružnik ili druga, bolesniku značajna osoba. Neki autori tvrde da je obitelj bolesnika u početnom razdoblju hospitalizacije ključna za preživljavanje. Bolesnici bez obiteljske podrške u JIL-u osjećaju se napušteni od obitelji i nemoćni, dok su se članovi obitelji koji su čekali u čekaonici osjećali izostavljeno i nemoćno pomoći svojoj voljenoj osobi. Bolesnici i obitelj instinktivno znaju da imaju pravo biti zajedno, ali bolnička pravila ih sprečavaju da ostvare svoja prava. To uzrokuje poremećaj u obiteljskoj zajednici, a članovi obitelji kasnije izražavaju krivnju što su dopustili da ih pravila ometaju u pružanju utjehe i podrške njihovoj kritično bolesnoj voljenoj osobi. S druge strane, obitelji su pokazale sposobnost nositi se s kritično bolesnim članom obitelji, dajući mu snagu koja je neophodna za prevladavanje bioloških kriza.

Ključne riječi: JIL, posjete, ograničenja, medicinska sestra

Kolonizacija usne šupljine multi rezistentnim gram-negativnim bakterijama nakon preoperativne profilaktičke primjene antibiotika kao faktor rizika za upalu pluća povezanu s mehaničkom ventilacijom

Bratić Vesna

Klinika za anesteziologiju, reanimatologiju, intenzivnu medicinu i terapiju boli

KBC Zagreb

Iako je već dokazano da su produljena profilaktička primjena antibiotika i višestruka neadekvatna antibiotska terapija neovisni čimbenici rizika za pneumoniju povezanu s mehaničkom ventilacijom, nije bilo studija koje bi ispitivale mijenja li prijeoperacijska profilaktička primjena antibiotika oralni mikrobiom i povećava rizik od upale pluća povezane s mehaničkom ventilacijom.

Cilj istraživanja je bio utvrditi utječe li prijeoperativna profilaktička primjena antibiotika na oralni mikrobiom, povećava li kolonizaciju gram-negativnim bakterijama i posljedični rizik od upale pluća povezane s mehaničkom ventilacijom.

Metode istraživanja: U istraživanje su uključeni odrasli pacijenti na mehaničkoj ventilaciji koji su primali kiruršku antibiotsku profilaksu. Analizirana je prisutnost gram-negativnih bakterija u preprofilaktičkim i postprofilaktičkim oralnim brisevima i trahealnim aspiratima, kao i pojava upale pluća povezane s mehaničkom ventilacijom.

Rezultati: Broj pacijenata koloniziranih gram-negativnim bakterijama u postprofilaktičkom oralnom brisu bio je značajno veći u odnosu na oralni bris uzet prije profilaktičkog antibiotika. S druge strane, broj bolesnika s gram-negativnim bakterijama u trahealnim aspiratima ostao je sličan kao i u postprofilaktičkim oralnim brisevima. Štoviše, otkrili smo da je prisutnost gram-negativnih bakterija u pre- i post-profilaktičkim oralnim brisevima bila u pozitivnoj korelaciji s prisutnošću gram-negativnih bakterija u trahealnim aspiratima.

Zaključak: Ova studija je pokazala povećanu kolonizaciju usne šupljine gram-negativnim bakterijama nakon prijeoperativne profilaktičke primjene antibiotika. Nadalje, primanje dva profilaktička antibiotika s WHO Watch liste povećalo je učestalost gram-negativnih bakterija u oralnim brisevima i trahealnim aspiratima, te rizik od razvoja upale pluća povezane s mehaničkom ventilacijom.

Ključne riječi: usna šupljina, multi rezistenztne gram-negativne bakterije, upala pluća povezana s mehaničkom ventilacijom.

Primjena hiperbarične oksigenoterapije u hitnim stanjima i jedinicama intenzivnog liječenja

doc.dr.sc.Mirna Žulec, mag.med.techn.

Poliklinika Marija, Ulica grada Vukovara 284, Zagreb

Hrvastko katalički sveučilište, Odjel sestrinstva, Ilica 242, Zagreb

Hiperbarična oksigenoterapija (HBOT) je intervencija u kojoj osoba udiše 100% kisik dok je unutar hiperbarične komore koja je pod tlakom većim od tlaka razine mora (1 atmosfera apsolutna, ili ATA). U kliničke svrhe, tlak mora biti jednak ili veći od 1,4 ATA dok diše skoro 100% kisik.

Za neke indikacije hiperbarična oksigenoterapija predstavlja primarni modalitet liječenja, dok je u drugima dodatak kirurškim ili farmakološkim intervencijama.

Indikacije za liječenje definiraju društva za hiperbaričnu medicinu (europska ili međunarodna), kao i pravila zdravstvenog osiguranja koja su specifična za različite zemlje.

Općenito, akutne indikacije uključuju dekompresijsku bolest, trovanje ugljičnim monoksidom, zračnu ili plinsku emboliju, akutni nekrotizirajući fascitis, crush i compartment sindromi i druge akutne traumatske ishemije, akutnu toplinsku ozljedu opeklina i idiopatski iznenadni gubitak sluha te okluziju centralne retinalne arterije.

Kad je riječ o bolesnicima u jedinici intenzivnog liječenja, HBOT bi trebao biti uključen u cjelokupnu skrb o bolesnicima na intenzivnoj njezi tek nakon procjene rizika/koristi povezane sa specifičnostima hiperbaričnog centra i kliničkog stanja pacijenta. U većini slučajeva je moguće nastaviti intenzivno liječenje tijekom HBOT.

Trovanje ugljičnim monoksidom i iatrogena plinska embolija dvije su glavne bolesti bolesnika kojima je najčešće potrebna mehanička ventilacija tijekom HBOT.

Nažalost, zbog niza birokratskih problema HBOT u Hrvatskoj i dalje nije uključena u komplementarno liječenje kako kod hitnih, tako i kod bolesnika u jedinici intenzivnog liječenja.

Ključne riječi: hiperbarična oksigenoterapija, indikacije, jedinica intenzivnog liječenja

FAMILY CENTERED CARE

dr. sc. Karolina Kramarić, mag. med. techn.

AIM: Aim of this paper is to provide a short review of the basic principles and importance of Family Centered Care (FCC) in health care.

METHODS: A comprehensive PubMed and Medline database search was performed. Articles from the nursing, medical, psychology and sociology literature published between 2014 to 2020 were reviewed. We also reviewed articles obtained through related references. Several sets of terms were used in the search process: Family Centered Care, pediatrics, ICU, patient care, health care needs. We limited the search to studies investigating how FCC was being formed, benefits of Family Centered approach and how the concept and definitions of FCC are applied in practice.

RESULTS: Of all included research papers, 30 met our criteria and were included. FCC as a model is the most available for paediatric patients. Majority of studies were performed in the United States or in Europe. We found a positive association of FCC with improvements of patient's health status, service satisfaction, communication between patient, family and staff and family functioning.

Key components to facilitate FCC include collaboration between patient's family and care providers, Furthermore, care providers should be considering the family context. Also, family and health care providers education is very important.

CONCLUSION: This paper identified care aspects of the FCC model. The available evidence suggests that FCC is associated with improved health outcomes of patients. FCC is considered the gold standard of care in pediatrics. Since FCC is designed as a partnership in health care decision-making between the family and health care providers, we recommended the use of this approach by individuals and organization. It includes general principles such as partnership, collaboration, information sharing, negotiation, respecting differences and care in the context of family and community. Family centered care is a proposed way of supporting patient and their family involvement in patient`s care and decreasing distress associated with patient`s critical illness by improving communication, helping manage stress and coping.

Promocija udžbenika Intenzivna zdravstvena njega

Ana Mutić, Ivana Horvat

Škola za medicinske sestre Vinogradska

Nije jednostavno napisati školski udžbenik u jeku globalne krize uzrokovane širenjem pandemije COVIDOM -19. Činilo se gotovo nestvarno da u vremenu pandemije mislimo o bilo čemu drugom osim o bolesti koja je zahvatila cijeli svijet, ali s druge strane svesti svoje misli samo na pandemiju koja će kad-tad proći i zaboravljati na životne probleme koji će se u jednom trenutku vratiti u prvi plan potrebno je usredotočiti se na svakodnevni život i postavljene ciljeve ostvariti. Tako je skupina autorica odlučila se usredotočiti na ispunjavanje svojih ciljeva te usmjeriti pozornost na stvaranje novih djela, nove literature koja će kako učenicima, tako i nastavnicima/profesorima, ali i medicinskim sestrama/tehničarima omogućiti nova saznanja i vještine. Zbog sve prisutnih informacija koje su u današnje vrijeme dostupne iz raznih izvora, nametnule su se potrebe za stvaranjem/ pisanjem novih udžbenika te u godini pandemije i potresa nastao je udžbenik Intenzivna zdravstvena njega u suradnji s kolegicama I kolegama koji su neosporivo i srdačno sudjelovali u stvaranju teksta za udžbenik uz suradnju Medicinske naknade. Veliko hvala svim suradnicima na potpori i stvaranju ovog udžbenika. Intenzivna zdravstvena njega novi je udžbenik za istoimeni izborni nastavni predmet napravljen u skladu s novim strukovnim kurikulumom za obrazovanje kojim se stječe zvanje medicinske sestre općeg smjera/ medicinski tehničar općeg smjera. Udžbenik je prvenstveno namijenjen učenicima pete godine učenja srednje medicinske škole, ali svakako se može preporučiti kao vrlo korisna literatura za svaku medicinsku sestru/medicinskog tehničara koji započinje sa radom u jedinici intenzivne skrbi. Pedocentristička edukativna paradigma na kojoj se temelje sva poglavlja ovog udžbenika omogućuje čitatelju usvajanje sadržaja na zanimljiv i inovativan način.

Ključne riječi: intenzivna zdravstvena njega, medicinska sestra/tehničar, udžbenik.

Suvremeni sestrinski pristup i primjena hiperbarične oksigenoterapije u liječenju kronične rane

Mirela Marjanac

Zavod za fizikalnu medicinu i rehabilitaciju „Dr Miroslav Zotović“

UVOD: Pod kroničnom ranom smatra se rana koja ne zarasta uz standardne postupke liječenja u razdoblju od 6 do 8 sedmica. Kronične rane su jedan od jedan od većih problema s kojima se medicinska sestra susreće u svakodnevnom radu. Navedene rane predstavljaju veliki novčani teret za zdravstvo, bolnički sistem i organizaciju rada te se teži tome da se ti troškovi svedu na minimum.

Kvalitetno i stručno provođenje zdravstvene njege uz dobro edukovan tim medicinskih sestara i tehničara uveliko doprinosi bržem zarastanju rana i sprječavanju komplikacija iste.

Zavod za fizikalnu medicinu i rehabilitaciju „Dr Miroslav Zotović“ ima mogućnost tretiranja kroničnih rana hiperbaričnom oksigenoterapijom, primjenom modernih načina debridmana (ultrazvučno potpomognuti debridman), terapijom topikalnim negativnim pritiskom (NPWT) te primjenom savremenih pokrivača za vlažno zarastanje rana.

CILJ: Cilj ovog rada je prikazati suvremeni pristup u zbrinjavanju kroničnih rana te prikazati smjernice u prevenciji i liječenju kroničnih rana (prikaz slučaja).

METODE: Tretman kronične rane hiperbaričnom oksigencijom pri ambijentalnom pritisku 2.0 ATA, trajanje seanse 60 mnuta. Lokalni tretman rane upotrebom suvremenih obloga za vlažno zarastanje rana.

REZULTATI: U radu je prikazan suvremeni pristup, primjena hiperbarične oksigencije i primjena obloga za vlažno zarastanje rana u tretmanu kronične rane. Pomenutim tretmanima postiže se maksimalan efekat u liječenju i zarastanje rana.

ZAKLJUČAK: Svaka rana koja ima potencijal zarastanja, ako je adekvatno tretirana i ako su postupci u toku liječenja primjenjivani po svim pravilima dobre kliničke prakse, uz ciljano liječenje osnovne bolesti koja je uzrok nastanka kronične rane, mora u konačnom ishodu dovesti do zarastanja rane.

Samo intenzivna briga medicinskog osoblja daje pozitivne rezultate i omogućuje bolji kvalitet života bolesnika.

Battlefield akupunktura i blokada bedrenog živca za liječenje postoperativne boli nakon ugradnje revizijske endoproteze kuka

Ivana Blažeković, Matija Bagarić, Ivana Sučić, Josipa Dovranić

KBC Zagreb, KBC Zagreb

UVOD: Oporavak nakon ugradnje revizijske endoproteze kuka karakteriziran je jakom boli, stoga je važno obratiti posebnu pažnju na učinkovitu analgeziju kako bi postigli adekvatnu rehabilitaciju te smanjili troškove liječenja. Najčešće se koriste opioidni analgetici u kombinaciji sa paracetamolom, metamizolom i ketoprofenom te u novije vrijeme, akupunkturom.

CILJ: Pacijent je primljen na revizijsku operaciju nakon ugradnje totalne endoproteze kuka te je po završetku zahvata zaprimljen u JIL na postoperativnu skrb. Pacijent je alergičan na većinu analgetskih lijekova uključujući fentanil, alfentanil, madol, buprenorfin, paracetamol, piroksikam, propifenazol, kodein, kofein, diklofenak, ibuprofen. Pri liječenju su jedino bili dopušteni Ketoprofen te Oxycodonum.

METODE: Pacijentu je od strane liječnika aplicirana blokada bedrenog živca u kombinaciji 10 ml 2% Lidocaina i 10 ml 0.5% Levobupivacaina pod kontrolom ultrazvuka. Uz standardne medicinske postupke primijenjena je i akupunktura uha Battlefield za koju su korištene jednokratne sterilne akupunkturne iglice koje su aplicirane na period od 30 minuta. Tijekom 24-satnog postoperativnog perioda, primijenjen je Ketoprofen 2 x 100mg intravenski te Oxycodonum 20mg intravenski.

REZULTATI: Procjena boli je aktivno praćena VAS skalom koja se prije aplikacije bloka i akupunkture kretala između 8 i 9, nakon čega je pala između 5 i 4 te tijekom noći na 3 i 2.

ZAKLJUČAK: Pacijent je zadovoljan postignutim stupnjem analgezije

TERAPIJA VISOKIM PROTOKOM KISIKA PUTEM NOSNE KANILE (HFNC) U COVID-19 JEDINICI INTENZIVNOG LIJEČENJA

Izabela Tot, Blaženka Lovrek

Opća bolnica "dr. Tomislav Bardek" Koprivnica Odjel za anesteziologiju, reanimatologiju i intenzivnu medicinu – Jedinica intenzivnog liječenja, Opća bolnica "dr. Tomislav Bardek" Koprivnica Odjel za anesteziologiju, reanimatologiju i intenzivnu medicinu – Jedinica intenzivnog liječenja

UVOD: Pandemija nove bolesti koronavirusa (COVID-19) uzrokovana teškim akutnim respiratornim sindromom i dalje je veliki globalni izazov. Prilikom zbrinjavanja bolesnika u jedinicu intenzivnog liječenja cilj je očuvanje respiratorne mehanike uz minimalne respiratorne komplikacije. Posljednjih godina, nosna kanila visokog protoka (NFNC) terapija je izbora u liječenju respiratornog zatajenja. Nosna kanila visokog protoka omogućava veću koncentraciju i protok kisika. Također, može smanjiti potrebu za endotrahealnom intubacijom kod pacijenata s COVID-19 infekcijom te može smanjiti duljinu boravka u jedinici intenzivnog liječenja, kao i komplikacije povezane s mehaničkom ventilacijom.

U radu je prikazan primjer liječenja bolesnika oboljelog od COVID-19 infekcije. Bolesnik je klinički imao evidentirano akutno pogoršanje COVID-19 pneumonije uz morbidni adipozitet i pridružene kronične bolesti. Zbog očuvane respiratorne mehanike odabrana je terapija visokog protoka kisika putem nosne kanile.

Ključne riječi: nosna kanila visokog protoka, COVID-19

Postoperativne aritmije kod djece sa prirođenim srčanim greškama

Mato Mijakić, Jan Uroić, Margita Poturić, Adriano Friganović, Vesna Bratić

Klinika za anesteziologiju, reanimatologiju i intenzivnu medicinu i terapiju boli
Zavod za anesteziologiju, poslijeoperacijsko zbrinjavanje i intenzivnu medicinu u ginekologiji i porodništvu te uroloških, kardiokirurških vaskularnih i torakalnih bolesnika
Odjel za anesteziologiju, poslijeoperacijsko zbrinjavanje i intenzivnu medicinu kardiokirurških i vaskularnih bolesnika

SAŽETAK

Postoperativne aritmije kod djece sa prirođenim srčanim greškama česte su postoperativne komplikacije, te su uzrok povećanog morbiditeta i mortaliteta. One se javljaju u ranom postoperativnom periodu što uzrokuje poremećaje hemodinamike i mogu dovesti do sindroma niskog minutnog volumena srca te kardijalnog aresta ako nisu na vrijeme prepoznate i liječene.

Aritmije koje se javljaju nakon kardiokiruških zahvata kod djece uključuju supraventrikularne tahikardije, JET (junctional ectopical arrhythmia), ventrikularne ekstrasisole, te hemodinamski nestabilne ventrikulske tahikardije i ventrikulse fibrilacije. Cilj rada je prikazati uloge medicinske sestre i tehničara u prepoznavanju i liječenju aritmija. Sestrinska skrb o djeci sa kiruškim zahvatom na otvorenom srcu predstavlja izazov u sestrinskoj praksi zbog kompleksnosti liječenja ovakve djece.

Metode liječenja kongenitalnih srčanih gešaka ograničene su na kiruške metode jer bez njih djeca brzo ulaze u stanja opasna po život. Zdravstvena njega nakon kardiokiruškog postupka usmjerena je na sprečavanje i prepoznavanje ranih poslijeoperacijskih komplikacija, održavanje parametara hemodinamike i respiracije, primjenu propisane terapije te zadovoljavanje nutritivnog statusa djeteta. Hemodinamski parametri koji se redovito monitoriraju su puls, centralni venski tlak, tlak u lijevom atriju te diureza. Srčana akcija jedan je od važnijih parametara jer nam daje podatke o svim ostalim organskim sustavima te je stoga važno pravovremeno prepoznavanje poremećaja srčanog ritma.

KLJUČNE RIJEČI: postoperativna skrb, aritmije, hemodinamika

Metode dezinfekcije u jedinici intenzivnog liječenja

Vignjević Lucia, bacc. med. techn., Javorski Melita bacc. med. techn.

OB Karlovac

Dezinfekcija je postupak kojim se, između ostalog, pomoću dezinfekcijskih sredstava uništavaju patogeni organizmi do granice koja nije štetna za zdravlje. Dezinfekcija se provodi još od daleke povijesti, pranje i čiščenje su svrstani pod najstarije metode dezinfekcije. Mikrobna rezistencija i COVID 19 pandemija predstavlja dodatne izazove naročito u jedinicama intenzivne medicine Najveću ulogu u dezinfekciji ima medicinsko osoblje, spoznaje o dezinfekciji i dezinficijensima neprestano se mijenjaju stoga je važno da se zdravstveni radnici kontinuirano informiraju i usavršavaju i u ovom segmentu rada. Cilj rada jest prikazati postojeće metode i postupke te njihov ispravni odabir ovisno o mjestu primjene, sredstvima na kojima se primjenjuju naročito uzimajući u obzir da se između ostalog radi i o osjetljivoj elektroničkoj opremi (monitori, respiratori i drugo) a time i olakša izrada i provođenje učinkovitog plana dezinfekcije.

KLJUČNE RIJEČI: dezinfekcija, mikrobna rezistencija, COVID19, plan dezinfekcije

SMJERNICE MEDICINSKIM SESTRAMA I TEHNIČARIMA ZA SIGURNU PRIMJENU KRVNIH PRIPRAVAKA

Silvija Piškorjanac, Dalibor Ratić, Marina Samardžija

Sveučilište J.J. Strossmayera Osijek; Fakultet za dentalnu medicinu i zdravstvo, Klinički bolnički centar Osijek; Klinički zavod za transfuzijsku medicinu, Klinički bolnički centar Osijek; Klinički zavod za transfuzijsku medicinu

UVOD: Transfuzija krvi smatra se jednostavnim postupkom zbog jednostavnosti primjene iako je u biološkom smislu to jedan od najsloženijih medicinskih postupaka. S obzirom na funkciju i sastav krvi, transfuziju krvi ili krvnih pripravaka treba shvatiti kao jednu vrstu transplantacije tkiva, a ne samo kao nadomjesnu terapiju. Zbog naravi lijekova, proizvedenih od ljudske krvi jasno je da sigurnost transfuzijskog liječenja nije samo logičan zahtjev struke, već je i moralni i etički imperativ. Regulatorne agencije i zakonodavna tijela u svijetu posebnu pozornost poklanjaju unaprjeđenju kvalitete i sigurnosti transfuzijskoga liječenja. Primjena krvnih pripravaka u kliničkoj praksi podrazumijeva „ transfuziju prave krvne komponente, pravom bolesniku, u pravo vrijeme, u pravim uvjetima i u skladu s propisanim smjernicama“. To je lanac međusobno povezanih odluka i postupaka, koji započinje ispravnom procjenom o potrebi bolesnika za transfuzijom jedne ili više komponenti, a završava kliničkom procjenom učinka transfuzijskog liječenja.

CILJ: Znanje osoblja temeljni je element sigurnoga sustava rada. Da bi postigli maksimalni učinak, trebaju postojati mehanizmi za praćenje njihova znanja i ključnih procesa, uz trajnu povratnu informaciju i popravljanje propusta gdje je to uočeno. Da bi radili na siguran način, profesionalci ovise o svom, ali i o znanju i vještinama drugih sudionika u procesu, te o sveukupnoj učinkovitosti sustava rada. Medicinske sestre i tehničari, te djelatnost koju obavljaju temeljne su poveznice u tom procesu. Učinkovitost medicinskih sestara i tehničara ovisi o radnom okolišu koji prepoznaje važnost smanjenja broja pogrješaka i povećanja sigurnosti rada.

METODE: Temeljem provedenih, kao i dostupnih istraživanja o znanju medicinskih sestara i tehničara o sigurnoj primjeni krvnih pripravaka uočena je potreba za publiciranjem edukativnog

materijala za medicinske sestre i tehničare iz područja transfuzijske medicine, a koji ćemo predstaviti na kongresu. Edukativni materijal se nadovezuje i predstavlja nadogradnju već ranije objavljenog Mementa o terapiji krvnim pripravcima za medicinske sestre i tehničare kao primjer potrebe cjeloživotnog učenja u našoj profesiji.

REZULTATI: Dokument koji planiramo predstaviti na kongresu uključuje nekoliko ključnih postupaka: odluka o primjeni transfuzije, popunjavanje obrasca za zahtjev izdavanja krvnog pripravka, ispravna identifikacija bolesnika i uzimanje prijetransfuzijskog uzorka, prijetransfuzijsko testiranje u laboratoriju, odabir i primjena adekvatnih krvnih pripravaka te primjena krvnih pripravaka uz adekvatan monitoring bolesnika. Neizostavni dio dokumenta čini sažetak sestrinskih intervencija temeljenih na dokazima, kao i stručna mišljenja koja usmjeravaju medicinske sestre i tehničare u interpretiranje europskih normi, reference i izvore materijala.

Smjernice se mogu prilagoditi našim potrebama, odnosno, radnim uvjetima, a dodatnu sigurnost predstavlja činjenica da bi dokument kao takav bio iznimno strogo provjeren od strane vodećih stručnjaka u području transfuzijske medicine.

ZAKLJUČAK: Publicirane smjernice bile bi dostupne u elektroničkom formatu na web stranici stručnog društva, kao i u tiskanom formatu u zdravstvenim ustanovama u kojima se primjenjuju krvni pripravci. Na taj način, gore navedeni materijali su lako dostupni svim medicinskim sestrama i tehničarima u Republici Hrvatskoj

STRES U JEDINICI INTENZIVNOG LIJEČENJA ZA VRIJEME COVID PANDEMIJE

Ksenija Begović, Tajana Bračko Hadžija

Opća bolnica "dr. Tomislav Bardek" Koprivnica Odjel za anesteziologiju, reanimatologiju i intenzivnu medicinu – Jedinica intenzivnog liječenja, Opća bolnica "dr. Tomislav Bardek" Koprivnica Odjel za anesteziologiju, reanimatologiju i intenzivnu medicinu – Jedinica intenzivnog liječenja

UVOD: Pojam stresa prvi je tridesetih godina 20.stoljeća uveo kanadski liječnik Hans Selye koji je stres definirao kao „sumu ukupnog trošenja organizma tijekom životnog vijeka". Jedna od današnjih definicija stresa doktorice Dubravke Miljković napominje da je stres nespecifični odgovor organizma na zahtjeve, odnosno zalogaj što ga ne možemo progutati jer nam se čini većim od raspoloživih „gutačkih" kapaciteta. Stres je prisutan u Jedinici intenzivnog liječenja jer je posao vrlo kompleksan, složen i odgovoran, a pojavom virusa Covid-19 taj stres je postao još veći i učestaliji među zdravstvenim djelatnicima. Medicinske sestre i liječnici koji rade u Jil-u imaju veći rizik od zaraze virusom zbog svog radnog okruženja i rada s teže oboljelim pacijentima koji su priključeni na mehaničku ventilaciju i zahtijevaju provođenje opasnih i invazivnih postupaka. Obzirom na povećani obim posla, povećani stres, složenost posla, učestalo susretanje s povećanom smrtnošću pacijenata,

strah od zaraze virusom, iscrpljenost, umor, razdražljivost i „pucanje po šavovima", sve su to uzroci stresa kod zdravstvenih djelatnika. Bitno je da se prepoznaju znakovi stresa, da se pronađu načini kako se nositi sa nastalim problemima, a vrlo bitna u svemu tome je osobnost svakog pojedinca i načini kako se suočavati sa stresom. Svatko treba pronaći svoj „ispušni ventil" i raditi na smanjenju stresa.

Ključne riječi: Stres , Jedinica intenzivnog liječenja ,medicinska sestra i Covid-19

PREOPERATIVE AND POSTOPERATIVE CARE OF CHILDREN IN THE RECOVERY ROOM

DAVORKA ĆELIĆ, ANITA ŠTOKIĆ, PETRA ŠABAN

KBC RIJEKA , KBC RIJEKA, KBC RIJEKA

INTRODUCTION: Pediatric anesthesia includes anesthetic procedures in patients who are in the process of rapid development and growth. Children differ from adults in anatomy and physiology, which determines anesthetic techniques and care. Dosage of drugs is determined by age and body weight. Medical care and all other medical procedures related to the child are special processes which involve social and psychological aspects of health care.

AIM: The purpose of the paper is to present not only the nurse's work and role in preoperative preparations and postoperative surveillance of children, but also the parents' as equally important members of the medical team in the healthcare process.

METHODS: The data analysed in this paper is from the Clinical Hospital Center Rijeka, Clinic for Anesthesiology and Intensive Care, Department of Pediatric Anesthesia at Kantrida Children's Hospital and refer to the number of elective and emergency anesthetics for each month during 2019, as well as data on the types and duration of anesthesia. Data also includes experiences of nurses within the anesthesia team.

RESULTS: The number presented is the number of anesthesias performed from January 1 to December 31, 2019 at the Clinical Hospital Center Rijeka, the children's department of anesthesia Kantrida, Clinic for Anesthesiology and Intensive care. The number of elective anesthesias was 1529 and the number of emergency ones was 424, out of which there were more emergency ones in the summer months because of the tourist season.

CONCLUSION: Current formal education of nurses and anesthesiology team is not enough for such a specific work environment and conditions. Therefore, it is necessary to continuously educate personnel and create written protocols that take into account the needs of children involved in the anesthesia care, parents, anesthetic nurses and the entire healthcare team that participates in the process of treating the child.

Komparativna prednost prijema u sobu za buđenje u odnosu na druge oblike poslijeoperacijske skrbi

Marijana Čičak, Sanja Benko, Mirjana Meštrović, Adriano Friganović, Vesna Bratić

KBC Zagreb, Klinika za anesteziologiju, reanimatologiju, intenzivno liječenje i terapiju boli

Sažetak

U sobi za buđenje provodi se cjelovita, specifična i individualno prilagođena zdravstvena njega, odnosno neposredna poslijeoperacijska skrb za bolesnika. Kvaliteta i sigurnost temeljni su ciljevi neposredne poslijeoperacijske skrbi u hemodinamski nestabilnih i životno ugroženih bolesnika. Holistički pristup bolesniku neizostavan je dio skrbi, a medicinska sestra je aktivan i ravnopravan član multidisciplinarnoga tima.

U ovom radu dotaknuta je širina sestrinskog pristupa, kako u prepoznavanju tako i u rješavanju problema iz područja procesa sestrinske skrbi u sobi za buđenje te prikazana važnost uloge medicinske sestre u svim segmentima zbrinjavanja, praćenja i liječenja bolesnika, od trenutka zaprimanja u sobu za buđenje te do njegova premještanja na odjel ili u jedinicu intenzivnog liječenja.

Cilj ovoga rada je prikazati osobitosti i prednosti zbrinjavanja bolesnika u sobi za buđenje u odnosu na premještanje bolesnika iz operacijske sale na odjel.

KLJUČNE RIJEČI: soba za buđenje, poslijeoperacijska skrb, medicinska sestra

Percepcija kvalitete radnog života medicinskih sestara/tehničara

Katarina Tokić, Slađana Režić

KBC Sestre milosrdnice, KBC Zagreb

INTRODUCTION: Kao najbrojnija skupina zaposlenih u zdravstvu, medicinske sestre/tehničari predstavljaju jednu od najvažnijih karika za pravilno fukncioniranje bolničke ustanove, a njihovo zadovoljstvo poslom je imperativ kako bi bile u mogućnosti pružiti kvalitetnu njegu pacijentima o kojima skrbe. Zadovoljstvo poslom je nezahvalan konstrukt za mjerenje, s obzirom da većina upitnika sadrži tvrdnje koje su vezane uz osobne stavove ispitanika na koje poslodavac ne može utjecati. Stoga je 1930.-ih osmišljen novi konstrukt, kvaliteta radnog života medicinskih sestara/tehničara, koja se fokusira na identificiranje mogućnosti za poboljšanje rada i radnog okruženja medicinskih sestara/tehničara, a istovremeno i na postizanje ciljeva ustanove u kojoj rade. Evaluacija kvalitete radnog života nam je potrebna kako bi mogli razumjeti one aspekte rada koje medicinske sestre ili poslodavac mogu modificirati i tako poboljšati kvalitetu istog.

AIM: Ispitati i utvrditi stupanj kvalitete radnog života medicinskih sestara/tehničara zaposlenih u Jedinicama intenzivnog liječenja i na Odjelu za anesteziju.

METHOD: Istraživanje je provedeno pomoću Brooks-ovog upitnika za kvalitetu radnog života medicinskih sestara/tehničara. Upitnik se sastoji od 2 dijela. Prvi dio se sastoji od 42 tvrdnje koje se ocjenjuju pomoću Likertove skale gdje 1 predstavlja U potpunosti se ne slažem, a 6 U potpunosti se slažem. Tvrdnje se dijele u 4 podskupine, a one su: Poslovni život-privatni život (utjecaj između poslovnog i privatnog života), Poslovni zadaci (radni zadaci koje provode medicinske sestre), Poslovna okolina (radno okruženje i kako ono djeluje na odnos između medicinskih sestara i pacijenata) i Poslovni svijet (utjecaj društva na sestrinstvo). Drugi dio upitnika se odnosti na demografske podatke. Statističkim metodama utvrditi će se povezanost demografskih podataka s utvrđenim stupnjem kvalitete radnog života.

RESULT: Rezultati će naknadno biti statistički obrađeni.

CONCLUSION: Kvaliteta radnog života ne utječe samo na zadovoljstvo poslom, nego i na druge aspekte života kao što su obiteljski i drugi društveni odnosi. Zbog navedenog, kvaliteta je važan aspekt poslovnog života medicinskih sestara jer izravno utječe na preuranjeno

umirovljenje, promjenu radnog mjesta i posvećenost poslodavcu, a navedeni faktori imaju utjecaja na kvalitetu pružene zdravstvene skrbi. Bitno je naglasiti da uspješnost zdravstvenih organizacija u postizanju vlastitih ciljeva leži u njenim ljudskim resursima, stoga bi pažnja trebala biti uvelike usmjerena na potrebe medicinskih sestara/tehničara.

Stanje svijesti pacijenata u Respiracijskom centru - praćenje uz pomoć bispektralnog indeksa

Martina Ivanišić, Magdalena Andričević

KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje, KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje

INTRODUCTION: S medicinskog gledišta, svijest je definirana kao spoznaja o samom sebi i svome okruženju; stanje u kojem osoba reagira na podražaje iz okoline i aktivno djeluje. Iako je svijest nematerijalna razina, sklop tijela i uma, medicina pokušava utvrditi anatomsko-fiziološku osnovu kako bi lakše razumjela mehanizme poremećaja. Primarna tegoba uočena kod bolesnika oboljelih od Covid-29 je nedostatak zraka i insuficijentno disanje, a minimalna potreba mozga za kisikom kako bi svijest bila očuvana iznosi 3.0-3.5ml/100g tkiva7min, dok u zdrave osobe perfuzija mozga iznosi 50-60ml/100g tkiva/min s čime se osiguravaju sve energetske potrebe.

Bispektralni indeks (BIS) metoda je kojom je omogućeno točno i kontinuirano mjerenje moždanog statusa, primarno tijekom primjene anestetika i sedacije.

AIM: Cilj rada je procjena stanja svijesti pacijenata u Respiracijskom centru primjenom BIS-a.

METHODS: Presječna studija provedena je u Respiracijskom centru KBC-a Osijek, a obuhvaćala je sve hospitalizirane pacijente u periodu provođenja studije. Podatci dobiveni praćenjem obrađeni su deskriptivnom metodom.

RESULTS: Primjenom BIS-a mjerila se dubina svijesti kod pacijenata hospitaliziranih u Respiracijskom centru koja se razlikovala ovisno o općem stanju bolesnika, načinu ventilacije te ovisno o vrsti analgezije i sedacije primijenjene kod pacijenta u danom trenutku.

CONCLUSION: Upotrebom BIS monitoringa dostupne su informacije koje mogu olakšati odluku o primjeni lijekova, ali i uvid u opće stanje pacijenta što pak osim što poboljšava sigurnost pacijenta, smanjuje i potrošnju lijekova

Pneumonija u jedinici intenzivnog liječenja

Maja Grahek, Valentina Vinkler, Ivana Pastuović

KBC "Sestre Milosrdnice", KBC "Sestre Milosrdnice"

INTRODUCTION: Pneumonija je akutna infekcija plućnog parenhima koja se manifestira s jednim ili više sistemskih znakova akutne upale, promjenama na rentgenogramu pluća te pojavom auskultatornih fenomena.

Uzrokovana je brojnim i različitim mikroorganizmima, a pojavljuje se u svim dobnim skupinama i u osoba s različitim kroničnim bolestima i oštećenjima imunosustava. Pneumonija je mnogo češća i teža, nerijetko i smrtonosna bolest u starijih ljudi. Od pneumonije umire više ljudi nego od bilo koje druge infektivne bolesti. Više od 90% svih smrti od pneumonije pripada populaciji starijih ljudi

Može biti izvanbolnička i bolnička pneumonija. Izvanbolnička pneumonija je svaka upala pluća koja se javlja u pacijenta koji nije bio hospitaliziran unatrag najmanje 14 dana od pojave prvih simptoma, a bolnička pneumonija je svaka upala pluća nastala u 48 ili više sati od hospitalizacije pacijenta. Raščlamba na ove dvije kategorije od velikog je značaja jer nam govori mnogo o etiologiji pneumonije; mogući uzročnik nas navodi na optimalnu antibiotsku terapiju koju je važno uvesti čim je to moguće.

Najčešći uzročnici izvanbolničkih pneumonija: Streptococcus pneumoniae, Legionella, RSV, Staphilococcus) , a bolničkih: Klebsiella, Pseudomonas, MRSA.

U JIL-u se susrećemo s više oblika bolničke pneumonije: aspiracijska pneumonija, pneumonija u imunokompromitiranih, pneumonija u intubiranih i strojno ventiliranih pacijenata, bolnička pneumonija koja je nastupila na odjelu prije dolaska pacijenta u JIL.

S obzirom da se nalazimo u pandemiji uzrokovanoj SARS-CoV-2 virusom spomenule bismo i Covid pneumoniju. Upala pluća uzrokovana uzročnikom SARS-CoV-2 u početku slijedi tipičan obrazac virusne upale pluća, ali kasnije se može javiti kao posljedica imunosno posredovanog odgovora. Radi se o značajnoj kliničkoj manifestaciji koja zahtjeva koordiniran pristup u odabiru terapije, a nerijetko i intenzivnu liječničku skrb.

AIM: Opisati pneumoniju i njezine vrste, opisati ulogu medicinske sestre/tehničara u jedinici intenzivnog liječenja u prevenciji pneumonije i postupanju s pacijentom oboljelim od pneumonije

METHODS: Za potrebe izrade rada korištena je stručna literatura, arhivske slike te osobna iskustva djelatnika Središnje jedinice intenzivnog liječenja KBC „Sestre milosrdnice“.

RESULTS: .

CONCLUSION: Pneumonija je najteža akutna bolest dišnog sustava koju mogu uzrokovati različiti mikroorganizmi: bakterije, virusi, gljivice, paraziti. Od pneumonije mogu oboljeti svi, međutim pod najvećim rizikom su osobe s kroničnim bolestima, mala djeca i starija populacija. Dužnosti medicinske sestre jesu da educira pacijenta o pravilnom disanju i postavljanje pacijenta u pravilan položaj. Od velike je važnosti prevencija, kasnije liječenje i rehabilitacija pacijenta oboljelog od pneumonije. Uloga medicinske sestre u liječenju oboljelih odnosi se na smanjivanje i ublažavanje simptoma i znakova bolesti. U tu svrhu medicinska sestra provodi postupke usmjerene smanjivanju tjelesne temperature, postavljanje pacijenta u pravilan položaj, ublažavanje boli, ublažavanju kašlja i iskašljaja, praćenju unosa i iznosa tekućine i ostali intervencije usmjerene podizanju kvalitete pacijentovog stanja.

Utjecaj globalne pandemije koronavirusom na transplantaciju srca

Gloria Bešker, Gloria Antolković, Margita Poturić, Adriano Friganović, Vesna Bratić

Klinika za anesteziologiju, reanimatologiju i intenzivnu medicinu i terapiju boli Zavod za anesteziologiju, poslijeoperacijsko zbrinjavanje i intenzivnu medicinu u ginekologiji i porodništvu te uroloških, kardiokirurških vaskularnih i torakalnih bolesnika, Klinika za anesteziologiju, reanimatologiju i intenzivnu medicinu i terapiju boli Zavod za anesteziologiju, poslijeoperacijsko zbrinjavanje i intenzivnu medicinu u ginekologiji i porodništvu te uroloških, kardiokirurških vaskularnih i torakalnih bolesnika

INTRODUCTION: Globalna pandemija koronavirusa (COVID-19) utjecala je na transplantaciju srca, uključujući i pacijente na listi čekanja i same primatelje transplantacije. Većina transplantacijskih programa je obustavljena, strah od mogućih posljedica infekcije utjecao je na privremeni prekid u transplantacijskim aktivnostima. Dolazi do povećanog rizika za dobivanje infekcije COVID-19 i napredovanje u tešku bolest s obzirom na višestruke kontakte sa zdravstvenim sustavom, s obzirom na opće zdravstveno stanje i imunosupresivnu terapiju. Prethodna iskustva s epidemijama koronavirusa kao što su teški akutni respiratorni sindrom (SARS) i bliskoistočni respiratorni sindrom utjecali su na transplantirane pacijente i imali su slične prezentacije kao opća populacija. Kako se pandemija razvijala tako se i smanjivao volumen transplantacije, dolazilo je do smanjenja broja kreveta, osoblja i medicinske opreme u jedinici intenzivne njege i potrebe za skrbi osoba bez transplantacije.

Prema preporukama Nacionalnog povjerenstva za transplantaciju potrebno je za vrijeme održati donorski i transplantacijski program aktivnim kako bi se smanjila smrtnost u ovoj populaciji bolesnika. Osim toga, kako se COVID-19 širio javljao se problem neidentificiranih darivatelja koji mogu biti asimptomatski nositelji virusa. U procesu evaluacije darivatelja pažnja se obraćala na to je li osoba bila u kontaktu s osobom zaraženom COVID-19 u posljednjih 14 dana, tada se isključuje kao potencijalan darivatelj. Ako je darivatelj pozitivan, njegovi organi se ne smiju koristiti za transplantaciju.

Medicinska sestra koja skrbi o primatelju srca ne bi smjela raditi ili biti u kontaktu s osobama koji su oboljeli od COVID-19. Potrebno je smanjiti mogućnost zaraze primatelja.

KLJUČNE RIJEČI: transplantacija srca, COVID-19, medicinska sestra

VAŽNOST NUTRITIVNE TERAPIJE U JIL-u

Mara Martić, bacc. med. techn., Leon Vranić, Žana Dorotić

UHC Sestre milosrdnice Zagreb, UHC Sestre milosrdnice Zagreb, UHC Sestre milosrdnice Zagreb

INTRODUCTION: Hrana je svaka tvar ili proizvod prerađen, djelomično prerađen ili neprerađen, a namijenjena je konzumaciji ili se može opravdano očekivati da će ju ljudi konzumirati. Zdravstveni djelatnici, uz medikamentozno liječenje i zdravstvenu njegu, zaokupljeni su primjenom osobne zaštitne opreme (PPE - personal protecting equipment), načinom njene primjene, rada po radnim uputama, upoznavanjem i rukovanjem sa sve većim brojem medicinskih uređaja (monitora, respiratora, volumetrijskih pumpi, fiberbronhoskopa, ...) uz istovremeno poznavanje prehrane pacijenta. Uspješnu nutritivnu terapiju pacijenta u jedinici intenzivnog liječenja (JIL) treba temeljiti kako na nutricionističkom znanju poštujući nove spoznaje i znanstvena istraživanja, tako i na multidisciplinarnom pristupu profesionalaca (ms/th, liječnik, klinički dijetetičar, ...). Nutritivnom terapijom u prevenciji i liječenju postižemo poboljšanje staničnog metabolizma, poboljšanje funkcije organa, smanjenje katabolizma, prevenciju gubitka mišićne i tjelesne mase, sinteze bjelančevina, poboljšanje i održavanje funkcije gastrointestinalne barijere, porastom mehanizma obrane protiv infekcije i postizanje bržeg cijeljenja rane. Konačni odabir vrste nutritivne terapije je individualan i uglavnom ovisi o pacijentovom stanju, o njegovoj bolesti i prehrambenoj potrebi. Na primjer, kirurški pacijent u JIL-u ima drugačije prehrambene potrebe u odnosu na pacijenta u drugim uvjetima liječenja.

U odluci o početku primjene enteralne terapije kod pacijenta, pomažu nam skorovi za procjenu nutritivnog statusa, najčešće NRS 2020 (Nutritional Risk Screening - NRS 2020).

Zaključak: Samo sveobuhvatan multidisciplinaran i individualan pristup u liječenju pacijenta u JIL-u koji neće izostaviti enteralnu terapiju iz mjera za održavanje života ima mogućnost spriječiti nastanak bolesnog stanja i poboljšati ishod bolesti, posebice u fazi oporavka.

KLJUČNE RIJEČI: hrana, nutritivni pripravci, način primjene, nutritivna terapija

EPIDUROLYSIS - RACZ CATHETER PROCEDURE, CASE REPORT

Barbara Juretić Vrankić, Silvana Grubišić, Josip Brusić

KBC Rijeka, KBC Rijeka, KBC Rijeka

INTRODUCTION: Epidurolysis is a procedure used in patients with sciatica pain or with pain in the area of spinal nerve distribution. It is a minimally invasive procedure performed with a Racz catheter that inserts certain drugs into the epidural space. The procedure is indicated in various disease states such as degenerative arthritis, spinal stenosis and after unsatisfactory spine surgery.

AIM: In this paper, we will present a case of a patient who had back pain after surgery - L4 / L5 interlaminectomy, after which the pain reappeared with the same intensity as before the operation. Pain occurs when standing and sitting and the treatment of pain by epidurolysis is indicated. Prior to the procedure, the patient was on drug therapy and acupuncture, which partially helped. During the epidurolysis procedure, the patient was monitored and mildly analgesic.

METHODS: The procedure is performed under X-ray control where the caudal approach locates the epidural space. The position is confirmed by contrast and the coater is introduced at the L4 / L5 level. Epidurolysis was performed with a local anesthetic (ropivacaine 3 ml 0.5%) and a corticosteroid (dexamethasone 8 mg).

RESULTS: After the procedure, the patient was without neurological outbursts, with active motility of the lower extremities and without loss of sensibility. It was recommended to continue with the exercises, physical therapy, and pharmacotherapy in a dose according to the intensity of pain. It was was recommended to do a check-up after 10 days and then again after 6 weeks with an assessment of the intensity of pain.

CONCLUSION: Patient had the pain reduced to VAS < 2 ten days after epidurolysis and no longer used analgesics. At the control examination one month after epidurolysis, she still has no tingling in legs, but pain is present when sitting or standing (VAS = 3) and is taking medication as needed. In conclusion, it is important to say that epidurolysis is most effective in patients who feel pain if it is done soon after surgery.

SVOJSTVA I PRIMJENA SUPKUTANOG KATETERA KOD PALIJATIVNOG BOLESNIKA

Zoran Sabljić

KBC "Sestre Milosrdnice" Zagreb

INTRODUCTION: Zbrinjavanje palijativnog bolesnika kao specifične kategorije zahtijeva korištenje sredstava i pomagala koja su primjenjiva kako u bolničkim, tako i u kućnim uvjetima. Uzimajući u obzir bolesnikove potrebe, ali i poštujući zakonske okvire o liječenju u kućnim uvjetima, supkutani kateter se pokazao kao prvi izbor za aplikaciju terapije karcinomske boli i nadoknadu tekućine.

AIM: Educirati zdravstvene profesionalce s mogućnostima, prednostima i načinu postavljanja supkutanog katetera

METHODS: Radionica

RESULTS: Radionica

CONCLUSION: Skrb o palijativnom bolesniku podrazumijeva zbrinjavanje simptoma, a bol, kaheksija i dehidracija su najčešći i najočitiji. U određenoj fazi bolesti, bolesnici prestaju biti u mogućnosti peroralno unositi lijekove, te dovoljnu količinu hrane i tekućine, pa supkutana aplikacija postaje metodom izbora.

Supkutani kateter je osmišljen da bi supkutanu aplikaciju olakšao, učinio sigurnijom i manje stresnom za bolesnika („one-poke“). Aseptičnim postupkom insercije smanjuje se mogućnost inficiranja ubodnog mjesta, a materijal od kojega je sačinjen omogućuje bolju prilagodbu anatomskim strukturama čime smanjuje nelagodu bolesnika i ograničenost kretnji. U tijeku 24h moguća je administracija do 1500 ml tekućine po jednom sc kateteru, a moguća je insercija više od jednog sc katetera po pacijentu, ovisno o fizičkom stanju bolesnika

GRIP – LOK FIKSATOR

Nikolina Kraljić, bacc. med. techn., Kristian Civka, mag. med. techn., dr. sc. Adriano Friganović, dipl. med. techn.

Klinika za anesteziologiju, reanimatologiju i intenzivnu medicinu i terapiju boli
KBC Zagreb

INTRODUCTION: Njega u jedinicama intezivnog liječenja (JIL) zahtjeva nadzor, praćenje i monitoring vitalnih funkcija kroz 24 sata. Svaki bolesnički krevet u JIL-u opremljen je respiratorom, monitorom na kojem se prate vitalni parametri (elektrokardiogram, zasićenost kisika u krvi, neinvazivno i invazivno mjerenje arterijskog tlaka, mjerenje središnjeg venskog, plućnog arterijskog i intrakranijalnog tlaka), infuzomatom, perfuzorom, aspiratorom, stalkom za infuzije i ormarićem te njega u JIL-u zahtjeva da medicinske sestre/tehničari uz znanje adekvatno koriste opremu te da se služe proizvodima koji ima olakšavaju svakodnevni rad. Veliku ulogu imaju fiksatori koji služe za fiksiranje katetera koji su od vitalne važnosti u nadzoru pacijenta. Za fiksaciju i stabilizaciju urinarnog katetera te arterijskih linija koriste se Grip - Lok fiksatori koji su napravljeni od mekanog i prozračnog materijala koji je siguran za fiksaciju te je prilagodljiv svakoj vrsti zaštite. Hook-and-loop dizajn omogućuje ponovno pozicioniranje i pristup kateteru nakon učvršćivanja. Dizajnirani su da poboljšaju sigurnost i udobnost pacijenata tijekom liječenja te omogućuju jednostavnu primjenu i olakšavaju rad i skrb u jedinicama intezivnog liječenja. Istraživanja pokazuju da upotreba Grip – Lok fiksatora smanjuje broj komplikacija u odnosu na uobičajene mjere sigurnosti.

Znanje medicinskih sestara Klinike za pedijatriju KBC-a Zagreb o pruzanju palijativne skrbi na neonatologiji i pedijatriji

Tanja Maričić, Neda Pintaric

KBC Zagreb

INTRODUCTION: Pedijatrijska palijativna skrb posebna je grana palijativne medicine, nastala iz pedijatrije, a označava brigu za teško bolesnu djecu od rođenja do 19. godine. U Hrvatskoj još uvijek ne postoji dječji hospicij u kojemu bi dijete i roditelji imali stalni nadzor i podršku već se organizacija palijativne skrbi odvija u bolnici ili kod kuće.

AIM: Cilj ovog istraživanja je ispitati stavove i znanje medicinskih sestara o palijativnoj skrbi u Klinici za pedijatriju KBC-a Zagreb.

METHODS: U istraživanju je sudjelovalo 96 medicinskih sestara koji su zaposleni u KBC-u Zagreb. Istraživanje je provedeno u obliku ankete koja se sastojala od nekoliko sociodemografskih pitanja i PCQN upitnika. Za potrebu istraživanja traženo je odobrenje etičkog povjerenstva KBC-a Zagreb i od svakog sudionika zatražen je informirani pristanak.

RESULTS: Rezultati su prikazani Hi kvadrat testom, sa Fisherovom korelacijom za male uzorke. 99% ispitanika je ženskog spola, a najviše ispitanih (41,7%) ima od 0-5 godina radnog staža. 39,6% ispitanih imalo je od 2-7 točnih odgovora, a 60,4% od 8-11. Nije uočena statistički značajna razlika u znanju s obzirom na spol, radni staž, profesionalni status i odjel na kojem rade.

CONCLUSION: U istraživanju je prikazano objektivno znanje o palijativnoj skrbi u KBC-u Zagreb putem validiranog upitnika. Prema dobivenim rezultatima potrebno je uvesti kvalitetnije edukacije o palijativnoj medicini i više se bazirati na sveukupnu edukaciju kako bi se povećala kvaliteta medicinske skrbi djece.

Analgesia and anesthesia in SARS-CoV-2 positive pregnant women

Biserka Mirt, Renata Tabako

Klinika za anesteziologiju, intenzivnu medicinu i liječenje boli, Klinički bolnički centar Rijeka, Krešimirova 42, 51 000 Rijeka, Hrvatska, Klinika za anesteziologiju, intenzivnu medicinu i liječenje boli, Klinički bolnički centar Rijeka, Krešimirova 42, 51 000 Rijeka, Hrvatska

INTRODUCTION: Krajem 2019. godine došlo je pandemije SARS-CoV-2 virusom koji zahvaća sve dobne skupine pa tako i trudnice. Broj radova koji opisuje dovršenje poroda u trudnica pozitivnih na SARS-CoV-2 virus je ograničen. COVID-19 infekcija dovela je do promjena u protokolima za izvođenje određenih zahvata, došlo je do prilagođavanja na novonastale uvjete u svrhu zaštite zdravlja rodilja, novorođenčadi, ali i medicinskog osoblja.

AIM: Cilj ovoga rada je analizirati iskustva Klinike za anesteziologiju, intenzivnu medicinu i liječenje boli, Kliničkog bolničkog centara Rijeka u izboru analgezije i anestezije za dovršenje poroda u SARS-CoV-2 pozitivnih rodilja. Istraživački rad će opisati i usporediti zastupljenost primjene analgezije i anestezije prilikom dovršenja poroda kod SARS-CoV-2 pozitivnih rodilje te kod rodilja prije pandemije COVID-19.

METHODS: Ovom retrospektivnom studijom analizirani su podatci SARS-CoV-2 pozitivnih rodilja iz informatičkog bolničkog sustava, Analizirali su se sljedeći podatci: dob rodilje, tjedan trudnoće, trajanje infekcije, ishod trudnoće (vaginalni porod, carski rez), izbor analgezije pri porodu, izbor anestezije pri carskom rezu (opća anestezija, regionalna anestezija), komplikacije poroda.

RESULTS: Samo istraživanje ukazalo je na promjene u zastupljenosti primjene analgezije i anestezije prilikom dovršenja poroda kod SARS-CoV-2 pozitivnih rodilja. Komplikacije koje su se pojavile nisu vezane uz anesteziološke tehnike već uz samu infekciju SARS-CoV-2 virusom. Kako bi se trudnoća SARS-CoV-2 pozitivnih rodilja uspješno dovršila potreban ja multidisciplinarni pristup, a izbor analgezije i anestezije kada je potrebna ovisi o stanju rodilje, hitnosti izvođenja zahvata te iskustvu anesteziološkoga tima u novonastalim uvjetima.

CONCLUSION: Kako bi se trudnoća SARS-CoV-2 pozitivnih rodilja uspješno dovršila potreban ja multidisciplinarni pristup, a izbor analgezije i anestezije kada je potrebna ovisi o

stanju rodilje, hitnosti izvođenja zahvata te iskustvu anesteziološkoga tima u novonastalim uvjetima.

Standardi u sestrinskoj njezi

Fahrudin Melić

JU Bolnica Travnik

Standard je profesionalno dogovoren nivo pružanja njege, primjeren populaciji na koju se odnosi, može se posmatrati, mjeriti, ostvariti I vrijedi ga imati. Florens Najtingel je još sredinom 19.vijeka postavila brojne principe u vezi sa njegom bolesnika I načinom života I rada medicinskih sestara, koji se mogu smatrati prvim standardima profesionalne sestrinske prakse. Ona je 1858.godine sačinila prvi kodeks profesionalne etike. U njemu su sačinjene visoke etičke norme. To pokazuje da je ona imala jasno izgrađen stav o značaju etičkih aspekta ličnosti osobe koja želi da se bavi njegom bolesnika (poštenje, čast, humanist).Ova načela su I u savremenom sestrinstvu najvažnija karakteristika ličnosti jedne medicinske sestre – tehničara za obezbjeđivanje kvaliteta zdravstvene njege. 1973.godine ANA (American Nurses Association) objavljuje standard medicinske prakse, koji predstavljaju opšti model I osnovu za izradu standard prilagođenih različitim nivoima njege, specifičnim oblastima sestrinske prakse I pojedinim zdravstvenim institucijama.

Specifičnost zbrinjavanja dišnog puta kod opeklinskog bolesnika (Prikaz slučaja)

Nikolina Humeljak, bacc. med. techn.

KBC Sestre milosrdnice

Opeklina se smatra jednom od najčešćih traumatskih ozljeda, nastala djelovanjem patogenih količina ne samo topline, već i zračenja, elektriciteta ili kemikalija. Opeklina je jedan od velikih javno-zdravstvenih problema, koji je često udružen sa sistemskim upalnim odgovorima koji mogu biti opasni po život. Osim ozljeda kože, opeklinom stradavaju i potkožna tkiva, sluznice ali i organi, čitavi organski sustavi i duboke strukture tijela. Ovisno o dubini zahvaćenog tkiva odnosno stupnju opekline, simptomi i znakovi postaju sve teži za bolesnika i za kasniju rehabilitaciju.

Dišni putevi također mogu biti zahvaćeni opeklinom. Kada se govori o opeklinama dišnih puteva, najčešće se uzrok pronalazi u visokim toplinskim djelovanjima i kemijskim isparavanjima. Opeklinama dišnog sustava, ubrzo nastaju upalni procesi, oštećenja krvnih žila i edemi kao lokalna reakcija organizma nakon ulaska vrućeg zraka, otrovnog plina ili plamena. Navedene stavke vrše dodatne komplikacije u funkciji disanja. Upravo zbog toga, bolesnici se pri hitnom prijemu ili hospitalizaciji intubiraju kako bi se moguće komplikacije svele na minimum. Pouzdani znaci nastali patogenim kemijskim isparavanjem kod dišnih putova jesu kratkoća daha, promuklost i zviždanje. Pouzdani znak da je došlo do opekotine dišnog sustava jesu jezik i ždrijelo crne boje. Specifičnosti zbrinjavanja opeklinskog bolesnika ogledaju se u postupcima koji su usmjereni ka uspostavi dišnog sustava i funkcije disanja, uklanjanju edema, sprječavanju i liječenju šoka i boli, upale pluća i plućnog kolapsa.

Liječenje opeklinom zahvaćenih dijelova dišnog sustava pokušava se ponovo uspostaviti njegova temeljna funkcija, odnosno uspostava disanja. Liječenje opeklinskog bolesnika zna biti zahtjevno i dugotrajno. Zbog često velike otvorene površine rane, komplikacije poput bakterijskih infekcija ili septičke komplikacije nisu rijetkost.

Ključne riječi ; opeklina, intubacija, infekcija, prikaz slučaja

ZDRAVSTVENA NJEGA BOLESNIKA NA NEINVAZIVNOJ MEHANIČKOJ VENTILACIJI- ODRŽAVANJE HIGIJENE USNE ŠUPLJINE

Ružica Žilić, Kristina Bulić, Emica Jurić Popović, Mirjana Meštrović, Adriano Friganović, Vesna Bratić

Klinika za anesteziologiju, reanimatologiju i intenzivnu medicinu i terapiju boli
KBC Zagreb

INTRODUCTION: Higijena usne šupljine standardni je postupak koji se izvodi u zdravstvenoj njezi, kako bi se sluznica održala čistom i vlažnom te time spriječio nastanak naslaga i razvoj infekcije.

AIM: Sprječavanje infekcije i održavanje oralnog zdravlja.

METHODS: Zdravstvena njega usne šupljine provodi se svaka 4 sata, ponekad i češće ukoliko postoje znakovi infekcije ili naslage. Važno je obratiti pozornost na dovoljnu hidraciju usne šupljine kako bi se spriječilo nastajanje naslaga. Njega usne šupljine provodi se jednokratnim četkicama sa gotovim pripravkom ili korištenjem antiseptičkih sredstava namijenjenih za usnu šupljinu.

RESULTS: Pravilna higijena usne šupljine uvelike može pridonijeti smanjenju nastanka infekcije.

CONCLUSION: Postupcima medicinske sestre i adekvatnom higijenom usne šupljine mogu smanjiti komplikacije liječenju jedinici intenzivne medicine te skratiti boravak bolesnika u bolnici.

Uloge magistre sestrinstva na odjelu neonatologije

Maja Vrabec, mag. med. techn., Bojan Horvat, bacc. med. techn.

KBC Osijek

INTRODUCTION: Magistre sestrinstva relativno su novi kadar zdravstvenih radnika te njihovo mjesto u sustavu zdravstva još nije u potpunosti definirano. Fakultetska izobrazba na diplomskom studiju, pruža magistrima sestrinstva dublje razumijevanje sestrinske discipline kako bi se mogli uključiti u praksu na višoj razini u različitim okruženjima. Magisterij iz neonatologije je subspecijalnost koja se bavi zdravljem novorođenčadi koja se ubrzo nakon rođenja susreću s brojnim uobičajenim i ne tako uobičajenim problemima.

AIM: Ispitati mišljenje prvostupnica i magistri sestrinstva o njihovoj ulozi na odjelu neonatologije, te razlike u percepcije uloge prvostupnice/ magistre na neonatologiji prema dobi, spolu, stručnoj spremi i mjestu zaposlenja ispitanika. Ispitati povezanost percepcije uloge prvostupnice/ magistre na neonatologiji prema dobi, spolu, stručnoj spremi i mjestu zaposlenja ispitanika. Ispitati razlike u percepcije uloge prvostupnice/ magistre na neonatologiji prema varijablama koje se odnose na kompetencije.

METHODS: Anketni upitnik proveden online. Ispitanici su bili zdravstveni djelatnici na Odjelu neonatologije KBC-a Osijek, Zagreb, Rijeka i Split koji imaju završen preddiplomski ili diplomski studij sestrinstva.

RESULTS: Mišljenje prvostupnica i magistri sestrinstva o njihovoj ulozi na odjelu neonatologije je pozitivno, percepcija uloge prvostupnice/magistre na neonatologiji nisko pozitivno povezana sa razinom obrazovanja, dobom ispitanika, pozitivnija percepcija uloge prvostupnice/magistre na neonatologiji povezana sa visokom stručnom spremom i zaposlenjem u KBC Split.

CONCLUSION: Percepcija uloge magistara sestrinstva ne samo na neonatologiji i dalje je nejasna svim zaposlenicima u zdravstvenom sustavu. Logičan slijed je edukacija i mogućnost specijalizacije što pokazuju i rezultati istraživanja, pri čemu oni koji imaju visoku razinu obrazovanja imaju jasniju sliku o ulogama magistara na odjelu neonatologije.

Ključne riječi: magisterij; motivacija; neonatologija; sestrinstvo; uloga.

Izvori stresa kod medicinskih sestara i tehničara u Respiracijskom centru Kliničkog bolničkog centra Osijek

Ivan Perković, Boris Horvat

KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje, KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje

INTRODUCTION: U suvremenom svijetu podložnom promjenama svakodnevna je pojava stresa. Stres je postao tema brojnih istraživanja na području medicine, psihologije i neuroznanosti. Riječ je o čimbeniku koji je vezan uz psihička i somatska oboljenja te postoje brojne teorije stresa i strategije suočavanja. Dok je stres unutarnje stanje ili doživljaj koji nastaje kao reakcija organizma na stresor, stresor je vanjski događaj, izvor stresa. Stres na radu, specifična je vrsta stresa čiji je izvor u radnom okruženju. Teorije profesionalnog stresa naglašavaju važnost osobne percepcije na određenu situaciju, tako objektivno ista situacija na poslu neće svima biti izvor stresa. Mentalno zdravlje, definirano je kao stanje dobrobiti u kojem pojedinac ostvaruje svoje potencijale, može se nositi s normalnim životnim stresom, može raditi produktivno te je sposoban pridonositi zajednici. Iz ove definicije jasno je vidljivo koliko dobro mentalno zdravlje utječe na posao, no ne smijemo zaboraviti kako posao često utječe na mentalno zdravlje. Stres i narušeno mentalno zdravlje, podloga su za većinu dana bolovanja među medicinskim sestrama i tehničarima i tako predstavljaju ogroman problem za zdravstveni sustav.

AIM: Cilj ovog istraživanja je utvrditi koji su izvori stresa u Respiracijskom centru KBC-a Osijek i u kojoj su mjeri stresni za medicinske sestre i tehničare.

METHODS: Kao metoda istraživanja za ovaj rad, korišten je anonimni anketni upitnik o izvorima stresa u poslu medicinske sestre sa pitanjima zatvorenog tipa.Ispitanici su medicinske sestre i tehničari u Respiracijskom centru KBC-a Osijek.

RESULTS: Obradom podataka dobivenih anketiranjem medicinskih sestara uočava se kako je najveći izvor stresa raspored rada, suočavanje s naglom smrti kod pacijenata te sama prisutnost pandemije.

CONCLUSION: Stresori uzrokuju visok stupanj nezadovoljstva medicinskih sestara i tehničara što dovodi do nemogućnosti osiguranja kvalitetne zdravstvene njege, te povećanja razine profesionalnoga stresa u poslu.

Zdravstvena pismenost pacijenata

Martina Ivanišić, Katarina Čamagajevac

KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje, KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje

INTRODUCTION: Zdravstvena pismenost određene populacije od iznimne je važnosti za zdravstvenu komunikaciju, jer se pismenost pokazuje kao najjači prediktor zdravstvenog stanja pojedinca. Istraživanja u svijetu pokazuju da je stupanj zdravstvene pismenosti direktno povezan s uspješnošću komunikacije, što nadalje utječe na suradljivost pacijenata, ishod liječenja, učestalost korištenja zdravstvene zaštite, troškove i ukupnu kvalitetu zdravstvene zaštite. Za testiranje zdravstvene pismenosti postoje različiti instrumenti, većinom primjenjivi za govornike engleskog jezika. Na hrvatskom jeziku izrađen je 2014. godine validiran test Zdravstvene pismenosti NSV-HR.

AIM: Cilj ovog rada pregled je dostupne literature te usporedba rezultata objavljenih od trenutka izrade hrvatskog validiranog testa zdravstvene pismenosti.

METHODS: Za svrhu pisanja rada prikupljeni su podatci pomoću deskriptivne metode rada relevantnih baza podataka dostupnih putem interneta. Pretraga je izvršena korištenjem ključnih riječi: pismenost, zdravstvena pismenost te komunikacija u zdravstvu u online bazama podataka.

RESULTS: Pregledom dostupne literature o provedenim istraživanjima primjenom testa NSV-HR uočava se značajna razlika među rezultatima ovisno o ispitanoj populaciji. Istraživanje provedeno 2018. godine u odnosu na istraživanje iz 2014. godine ukazuje na smanjenje razine zdravstvene pismenosti sa starenjem, ali je u oba istraživanja uočena pozitivna povezanost zdravstvene pismenosti sa stupnjem obrazovanja.

CONCLUSION: Testiranje zdravstvene pismenosti pacijenata pri provođenju sestrinske skrbi u sklopu sestrinske dokumentacije ili u sklopu medicinske dokumentacije, olakšalo bi komunikaciju s pacijentima te time omogućilo svakom pacijentu ravnopravno sudjelovanje u vlastitom liječenju i brizi za svoje zdravlje.

Uloga medicinske sestre u postoperativnoj skrbi bolesnika u jedinici intenzivnog liječenja nakon rekonstrukcije mjehura po Hautmannu

Marina Lozina, Antonija Rorić

KBC Zagreb

INTRODUCTION: Karcinom mokraćnog mjehura jedan je od deset najčešćih karcinoma u svijetu. Nažalost, često se otkrije tek u poodmaklom stadiju. U takvim slučajevima pristupa se kirurškom liječenju - radikalnom cistekomijom nakon koje se može postaviti trajna urostoma ili neobladder. Neoblader/novi mjehur složen je proces stvaranja rezervorara koji imitira mjehur od dijela tankog crijeva.

AIM: Ovim radom definira se i opisuje operacija rekonstrukcije mjehura po Hautmannu, uloga medicinske sestre u postoperativnoj skrbi za bolesnika u jedinici intenzivnog liječenja te uloga medicinske sestre pri sprječavanju mogućih postoperativnih komplikacija.

Rizici u radu medicinske sestre

Anto Mandić, Brigita Bagara

KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje, KBC Osijek, Klinika za anesteziologiju, reanimatologiju i intenzivno liječenje

INTRODUCTION: Medicinske sestre su kroz svoj rad svakodnevno izložene rizicima i njihovim posljedicama. Procjena opasnosti mjera je prevencije kojom se nastoji spriječiti neželjene posljedice.

AIM: Cilj ovog rada je pregled literature i približavanje pojmova rizika, te uočavanje utjecaja određenih rizika i njihovih posljedica.

METHODS: Deskriptivnom metodom prikupljena je literatura pomoću ključnih riječi: rizik, rizici u zdravstvu, medicinska sestra te sigurnost na radu.

RESULTS: Prema istraživanjima definirane su najčešće vrste rizika: psihosocijalni, ergonomski, biološki, kemijski te rizik od izloženosti zračenju. Rezultati su podijeljeni u dvije skupine: zaštita zdravlja i sigurnosti u radu medicinskih sestara te prijedlozi mjera i intervencija prema najučestalijim rizicima u radu.

CONCLUSION: Sigurnost i radna sposobnost medicinskih sestara čine ključni dio u kvalitetnom pružanju zdravstvene njege.

Zadovoljstvo roditelja organizacijom rada ORL jednodnevne dječje kirurgije Dječje bolnice Srebrnjak

Marija Kljaić

Dječja bolnica Srebrnjak

INTRODUCTION: Jednodnevna kirurgija podrazumijeva izvođenje terapijskog postupka i odlazak kući u istom danu. Takav način liječenja je idealan za djecu i roditelje, jer je stres i strah od boravka u bolnici sveden na minimum. Pružanje zdravstvene skrbi preko jednodnevne dječje kirurgije (JDDK) može uvelike povećati zadovoljstvo roditelja i percepciju kvalitete pruženih zdravstvenih usluga.

AIM: Cilj istraživanja je ispitati zadovoljstvo roditelja organizacijom rada na Odjelu ORL JDDK te detektirati potencijalna područja za poboljšanje.

METHODS: Istraživanje je presječna prospektivna studija koja je provedena u DB Srebrnjak na Odjelu ORL JDDK u razdoblju od 01. siječnja 2021. do 01. lipnja 2021. godine. Ispitao se uzorak od 100 ispitanika. Ispitanici su bili roditelji, skrbnici ili pratnja djece koja su dolazila na operaciju u DB Srebrnjak. Pristupalo im se na Odjelu ORL JDDK prije otpusta kući sa zamolbom da ispune upitnik uz osiguranje dobrovoljnosti i anonimnosti. Za potrebe istraživanja koristio se validirani upitnik o zadovoljstvu pacijenata pruženom skrbi u dnevnoj bolnici pod nazivom „Core questionnaire for the assessment of Patient Satisfaction – Day care“ (COPS-D). Upitnik je preveden na hrvatski jezik i modificiran za potrebe istraživanja.

RESULTS: U istraživanju je sudjelovalo 89 ispitanika ženskog spola i 11 ispitanika muškog spola. Najveći broj ispitanika je u dobnoj skupini od 31-40 godina, njih 60. Uzimajući u obzir stručnu spremu ispitanika, prevladavaju ispitanici sa srednjom stručnom spremom, njih 45. Rezultati su pokazali visoku razinu zadovoljstva na svim ispitanim područjima. Ispitanici su najmanju razinu zadovoljstva iskazali na području privatnosti, tijekom posjete i pregleda, te je to područje za poboljšanje rada Odjela ORL JDDK.

CONCLUSION: Temeljem dobivenih rezultata utvrđeno je da su skoro svi ispitanici zadovoljni organizacijom rada Odjela ORL JDDK te su detektirana područja na kojima su moguća dodatna poboljšanja.

Ključne riječi: jednodnevna dječja kirurgija, zadovoljstvo roditelja, organizacija rada

Važnost pružanja prve pomoći i rane defibrilacije životno ugroženoj osobi u izvanbolničkom okruženju

Katarina Atlagić, Emili Kvas, Lucija Tuweg Pejak

Klinički bolnički centar Sestre Milosrdnice

INTRODUCTION:

Iznenadni srčani zastoj jedan je od vodećih uzroka smrti u svijetu. Kada se dogodi u izvanbolničkom okruženju potrebno je što prije započeti provoditi osnovne mjere održavanja života uz kardiopulmonalnu reanimaciji s primjenom automatskog vanjskog defibrilatora. Brza i učinkovita intervencija od strane laika, ključna je za sam ishod izvanbolničkog srčanog zastoja. Vrijeme je jedna od glavnih komponenti koja utječe na ishod srčanog zastoja. Stopa preživljenja se smanjuje za 10% svakom minutom ukoliko se ugroženoj osobi ne pruži potrebna pomoć. Iz tog razloga brza intervencija ključna je za uspješan ishod iznenadnog srčanog zastoja i povratka cirkulacije, a temelji se na kardiopulmonalnoj reanimaciji, defibrilaciji i uklanjanju primarnog uzroka.

AIM: Cilj rada je pridonijeti podizanju svijesti o važnosti rane reanimacije i defibrilacije u slučajevima iznenadnog srčanog zastoja, primjeni i lociranju automatskog vanjskog defibrilatora. Ohrabriti i osvijestiti laike o njihovoj važnoj ulozi u pravovremenom reagiranju i pružanju prve pomoći ugroženoj osobi.

METHODS: Provedeno je kvalitativno istraživanje na temelju podataka prikazanih u dosadašnjim istraživanjima.

RESULTS: Izvanbolnički srčani zastoj vodeći je uzrok smrti u razvijenim industrijskim zemljama. Prema podatcima Svjetske zdravstvene organizacije od posljedica kardiovaskularnih bolesti godišnje umire 17,9 milijuna osoba. Iznenadni srčani zastoj može se dogoditi bilo kome, sportašima, mladim i zdravim osobama, osobama starije životne dobi. Rano prepoznavanje životno ugrožene osobe i učinkovit postupak pružanja prve pomoći, u izvanbolničkom okruženju može značajno doprinijeti ishodu preživljavanja u slučaju brze intervencije. Prvu pomoć može pružiti svaka osoba, bez obzira na dob, spol, razinu i vrstu obrazovanja. Osnovne mjere održavanja života čine masaža na sredinu prsnog koša ugrožene osobe, umjetno disanje

te na posljetku primjena automatskog vanjskog defibrilatora. Rana reanimacija i defibrilacija ključne su za uspjeh ishoda iznenadnog srčanog zastoja.

CONCLUSION: Kada se srčani zastoj dogodi u izvanbolničkom okruženju, u velikom broju slučajeva ugroženoj osobi prvu pomoć pruža laik, odnosno očevidac nesretnog događaja. Najčešće je to osoba koja nema medicinsku razinu obrazovanja, a o brzini i točnosti intervencija koje će laik provesti ovisi sam ishod događaja. Prvu pomoć može pružiti svaka osoba, bez obzira na dob, spol, razinu i vrstu obrazovanja. Osnovne postupke oživljavanja čine masaža na sredinu prsnog koša ugrožene osobe, umjetno disanje te na posljetku primjena automatskog vanjskog defibrilatora. Iz tog razloga osnovne mjere održavanja života bi trebale biti temeljne vještine koje bi svaka osoba neovisno o zanimanju i profesiji trebala posjedovati. Bez valjane edukacije i prisutnosti svijesti, niti jedan građanin neće osjećati dovoljnu razinu sigurnosti i samopouzdanja za pružanje potrebne pomoći ugroženoj osobi.

Regionalna anestezija u porodništvu

Branimira Troha, Vedrana Pavoševič

KBC Osijek

INTRODUCTION: Regionalna anestezija u porodništvu

Regionalna anestezija obuhvaća niz anesteziooloških postupka kojima se postiže privremeni gubitak osjeta određenog dijela tijela.

AIM: Cilj rada je približavanje pojma regionalne anestezije u porodništvu i njena svakodnevna primjena.

METHODS: Podatci za rad prikupljeni su deskriptivnom metodom rada relevantnih baza podataka dostupnih putem interneta. Korištenjem Ključnih riječi spinalna anestezija, epiduralna anestezija, porodništvo

RESULTS: Pregled literature omogućio je uvid u suvremeni pristup primjene regionalne anestezije u području porodništva. Vrste anestezije su epiduralna i spinalna anestezija.Anesteziju izvodi anesteziološki tim.Prednosti regionalne anestezije su smanjenje porođajnih bolova, eliminacija rizika opće anestezije, izvrsna analgezija za vrijeme i poslije poroda, nema štetnih utjecaja na dijete, kontakt majke i djeteta mogući je odmah poslije poroda.Anestezija se izvodi u dogovoru s rodiljom na temelju njenog zdravstvenog stanja, hitnosti te procijeni anesteziologa koja bi vrsta najbolje odgovarala.Epiduralna anestezija izvodi se u svrhu obezboljenja donjeg dijela tijela bez gubitka osjeta i primjenjuje se najčešće kod bezbolnog poroda iako se može primijeniti kod dovršetka poroda putem carskog reza.Spinalna anestezija se izvidi isključivo kod carskog reza i kod ove vrste anestezije dolazi do gubitka osjeta donjeg dijela tijela.

CONCLUSION: Regionalna anestezija je najmodernija tehnologija i kvaliteta usluge koja daje sigurnost i najbolje uvjete poroda.

Ključne riječi: spinalna anestezija, epiduralna anestezija, porodništvo

ERAS protokol u kolorektalnoj hirurgiji

Katarina Krstić, Svetlana Fejdi

Institut za onkologiju Vojvodine, Sremska Kamenica, Institut za onkologiju Vojvodine, Sremska Kamenica

INTRODUCTION: Kolorektalni karcinom se nalazi na trećem mestu po učestalosti svih karcinoma. Prema podacima SZO, u 2020. godini od kolorektalnog karcinoma je obolelo 1 093 000 ljudi, a preminulo 935 000. ERAS protokol (ERAS = Enhanced Recovery After Surgery) predstavlja multimodali pristup perioperativnom lečenju

AIM: Komponente protokola imaju za cilj poboljšanje kvaliteta lečenja, smanjenje perioperativnog stresa, održavanje fizioloških funkcija, ponovno uspostavljanje homeostaze kako bi se unapredio i ubrzao oporavak nakon operacije.

METHODS: Osnovni principi ERAS protokola mogu se podeliti u 3 faze, preoperativnu, intraoperativnu i postoperativnu. U preoperativnoj fazi od izuzetnog značaja je informisanje pacijenta i njegove porodice o programu lečenja i njihovom aktivnom učešću, izostavljanje preoperativnog gladovanja, prevencija tromboembolije. Tokom intraoperativne faze neophodna je optimizacija anestezije, koja uključuje izostavljanje premedikacije, antibiotsku profilaksu prema protokolu, kratkodelujuće opioide, optimizaciju perioperativne terapije tečnostima, izbegavanje hipervolemije, zagrevanje pacijenta, na kraju operacije odstraniti nazogastričnu sondu, prevencija postoperativne mučnine i povraćanja, manji broj drenova.U postoperativnom periodu optimalnu analgeziju moguće je postići multimodalnim pristupom. Multimodalna analgezija podrazumeva primenu više vrsta analgetika i različite tehnike analgezije. U osnovi multimodalne analgezije je redukcija upotrebe opioidnih analgetika, kako bi se izbegla dozno – zavisna neželjena dejstva. Optimizacija perioperativne terapije tečnostima, izbegavanje hipervolemije, prevencija postoperativne mučnine i povraćanja, trombembolijska profilaksa prema protokolu, započinjanje sa per os unosom tečnosti 6h nakon operacije, a prvog postoperativnog dana započeti unos kašaste hrane i uspostaviti aktivnu mobilizaciju pacijenata.

RESULTS: Primena odgovarajućih preoperativnih procedura, precizne i jasne informacije omogućavaju pacijentu da aktivno participira u svom lečenju i pospešuju postoperativni oporavak. Budući da je kolorektalna hirurgija povezana sa dužinom boravka u bolnici, visokom

cenom lečenja i stopom infekcije hiruškog mesta, ERAS protokol smanjuje mogućnost nastanka komplikacija.

Važno je naglasiti, da samo dobro informisan i adekvatno pripremljen pacijent za predstojeću hirušku intervenciju, može biti siguran i zadovoljan pruženom uslugom.

CONCLUSION: ERAS protokol predstavlja značajan pomak u perioperativnom lečenju. Implementacija protokola vodi ka značajnom unapređenju postoperativnog oporavka, redukciji komplikacija, trajanja hospitalizacije i troškova lečenja. Pristup perioperativnom lečenju mora biti multimodalan i multidisciplinaran. ERAS protokol je doneo i novu kulturu nege. Neophodna je kontinuirana edukacija i obuka medicinskih sestara, zasnovana na naučnim dokazima, kako bi se obezbedio kvalitet i sigurnost u nezi.

KVALITETA ŽIVOTA DUGOLEŽEĆEG BOLESNIKA U JEDINICI INTENZIVNOG LIJEČENJA – PRIKAZ SLUČAJA

Daulat Hotić, ms, Mateo Jagodin, bacc. med. techn., Emica Jurić Popović, bacc. med. techn., Mirjana Meštrović, mag. med. techn., dr. sc. Adriano Friganović, dipl. med. techn., dr. sc. Vesna Bratić, mag med. techn.

KBC Zagreb

INTRODUCTION: Bolesnik u dobi od 68 godina zaprimljen je u Jedinicu intenzivnog liječenja kao politrauma nakon pada sa visine od 3m. Dolazi sa kontuzijom glave i pluća, pneumomedijastinumom desno, frakturom C5-C7, serijskom frakturom III.-VI. rebra desno, te VI. rebra lijevo. Po dolasku reanimiran uz brzu uspostavu spontane cirkulacije. Intubiran, mehanički ventiliran, analgosediran. 3. dan boravka bolesnik dolazi svijesti, budan je, u neverbalnom kontaktu, tetraplegičan. 7. dan boravka bolesnik teškog općeg stanja, hemodinamski nestabilan, ponovno reanimiran. Postreanimacijski na visokim dozama vazoaktivne potpore, mehanički ventiliran sofisticiranim modalitetima.

AIM: Glavni cilj u skrbi za dugoležećeg bolesnika je postići i zadržati najbolju moguću kvalitetu života.

METHODS: Kvaliteta života je sveukupno blagostanje na koje utječu objektivni pokazatelji, veliki udio ima subjektivna percepcija, vrednovanje tjelesnog, emiocionalnog, socijalnog i materijalnog blagostanja, te osobnog razvoja i svrhovite aktivnosti.

RESULTS: Radi očekivane potrebe za dugoročnom mehaničkom ventilacijom, bolesnik se 24. dan boravka privremeno traheotomira. Traheotomija često dovodi do značajnih emocionalnih i mentalnih poteškoća što utječe na smanjenu brigu o sebi odnosno lošiju kvalitetu života.

CONCLUSION: Stručnim unapređenjem, profesionalnošću, znanjem i iskustvom značajno utječemo na kvalitetu života te zadovoljstvo bolesnika i zaposlenika.

THROMBOEMBOLIC INCIDENTS IN SARS-COV-2 INFECTIONS

TANJA MATKOVIĆ, VESNA ČAČIĆ

Clinical Hospital Center Rijeka, Medical Secondary School in Rijeka and Faculty of Health Studies in Rijeka

INTRODUCTION: To show the overall incidence of thromboembolic incidents in patients treated in the Intensive Care Unit for COVID patients. Further studies are needed to investigate the individualized risk of thromboembolism in patients with COVID-19 disease and optimal preventive anticoagulant therapy.

AIM: We wanted to show sex and age groups of these patients, most common comorbidities, and complications. We investigated what is the most common thromboembolic incident in patients treated for COVID-19 disease. Furthermore, we wanted to show potential relationship between inotropic support and invasive monitoring with the incidence of thromboembolic incidents.

METHODS: The research was conducted at the Intensive Care Unit for COVID patients, Clinic for Anesthesiology, Intensive Care and Pain Management at the Clinical Hospital Center Rijeka in the period from March 28, 2020, to June 30, 2021. Research methods were review of literature, data collection and statistical analysis of collected data.

RESULTS: 32 patients who developed some form of thromboembolism as a complication of SARS-COV-2 infection were included in research. During the research period, 544 patients were treated, 6% of whom developed thromboembolism as a complication. Mortality was 44% of which 5% related to patients with some form of thromboembolism. 75% of patients treated for thromboembolism were male while 25% were female. By age groups, most patients were in the 70-79 years age group (41%). 73% of the total number of patients included in the study developed pulmonary embolism (PE) as a complication. Most often comorbidities were vascular diseases (34%) while the most common complications were respiratory disease (53%) The most common respiratory support upon admission of patient was invasive mechanical ventilation (28%) and hight flow nasal cannula (28%). Due to hemodynamic instability, 55% of patients received some form of inotropic support. The most common daily doses of Enoxaparin were 2x80mg (44%). All patients had some form of invasive monitoring of vital functions, 63% had central venous catheter. 37% of patients with thromboembolic incident

developed during treatment of SARS-COV-2 infection died in the Intensive Care Unit for COVID patients.

CONCLUSION: Several mechanisms are thought to contribute to increased risk of thromboembolism in COVID-19 disease. The leading risk factors for the development of thromboembolism in patients with COVID-19 disease are age, sex, and comorbidities, especially those associated with cardiovascular diseases. Platelet activation, patient immobilization, mechanical ventilation, and use of invasive monitoring are other factors that contribute to thromboembolism in COVID-19 disease. Asymptomatic individuals with COVID-19 disease and those with mild symptoms have a very low risk of thrombotic complications. However, thrombosis rates are significantly increased in hospitalized patients and are extremely high in patients who are in critical condition and require intensive care treatment. Further studies are needed to investigate the individualized risk of thromboembolism in patients with COVID-19 disease and optimal preventive anticoagulant therapy.

Primjena TCD-a u neurološkom JIL-u

Donald Peran

KBC Zagreb, klinika za Neurologiju

ŠTO JE TRANSKRANIJSKI DOPPLER?

Neinvazivna ultrazvučna metoda kojom kroz prirodne “prozore” na lubanji utvrđujemo hemodinamiku intrakranijskih arterija (Willisov krug). Rutinska je pretraga kod indiciranih bolesti i ima veliku ulogu u dijagnostici i terapiji akutnog ishemičkog inzulta. Sastavni je dio bolničke opreme u JIL-u te također ima dijagnostičku i terapijsku ulogu

INTRAKRANIJSKE ARTERIJE

Willisov krug i vertebro- bazilarni arterijski sistem, veličine 3cm u promjeru uz anatomske varijacije. Samo 20% “standardne” su strukture. Nastaje iz ICA i VA.

NAJČEŠĆE INDIKACIJE

CVI (moždani udar), Monitoring kod trombolitičke terapije - Tromboliza, Monitoring vazospazma (nakon SAH-a), Analiza kolateralnih intrakranijskih puteva, Detekcija AVM-a (okluzije i stenoze), Detekcija cerebralnog embolusa, Analiza vazomotoričke rezerve, Monitoring funkcionalne rezerve, Monitoriranje i evaluacija cerebrovaskularnog cirkulatornog aresta. (Utvrđivanje moždane smrti)

PRIPREMA PACIJENTA

U ležećem položaju na leđima uz pristup gotovo svim lokacijama istovremeno. Potpuno mirovanje glave i tijela prilikom izvođenja pretrage uz maksimalno uklanjanje vanjskih izvora buke. Ukloniti eventualne leće (transorbitalno)

POZICIONIRANJE OPERATERA

Sjedeći ili stojeći položaj iznad glave pacijenta. Ruka sa sondom naslonjena laktom na krevet zbog stabilizacije (gubitak signala). Optimalan pristup na obje strane glave uz orjentaciono anatomski lakše izvođenje zahvata. Sprječavanje artefakata je nužno.

IZVOĐENJE PRETRAGE

Specijalist Neurolog, educirana medicinska sestra – tehničar. Točna identifikacija intrakranijskih arterija uz prethodni uvid u karotidne i vertebralne arterije. Spektar dobivenih krivulja ovisi o hemodinamici i mjeri se protok krvi kroz odabranu krvnu žilu. Nalaz očitava specijalist Neurolog

IZVOĐENJE PRETRAGE TRANSTEMPORALNIM PRISTUPOM

Izdašna količina akustičnog gela postavlja se uz pozicioniranje sonde iznad zigomatičnog luka i ispred uha. “Prozor” varira u lokaciji i veličini a kod 30% populacije se ne nalazi. Teže se nalazi kod starije populacije zbog smanjenog protoka, te prolaz kroz temporalnu kost kod žena.