HEPMP Ljubljana

March 12-16, 2018

Lecture Book
& Meeting Report

Editors: Blaž M. Geršak, Maja Šoštarič

Co-funded by the
Erasmus+ Programme
of the European Union

HEPMP
Higher Education Pain Medicine Project

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Lecture series 3 - Office of Outpatient Pain Management

Lecture series 4 - Obstetric Analgesia

Lecture series 5 - Acute Pain Management

Lecture series 7 - Research and Publication on Pain Medicine**,**
containing lectures 7.1 Organizing research on pain medicine **and** 7.2 Publications on pain medicine in Slovenia**,**
is not included in this Lecture Book due to its hypothetical nature.

Lecture series 1

Welcome Address

▶ joined lectures

Lectures 1.1 and 1.2

Introduction to the University of Ljubljana

Introduction to Faculty of Medicine Ljubljana

prof. Igor Švab, MD, PhD

Dean, Faculty of Medicine Ljubljana

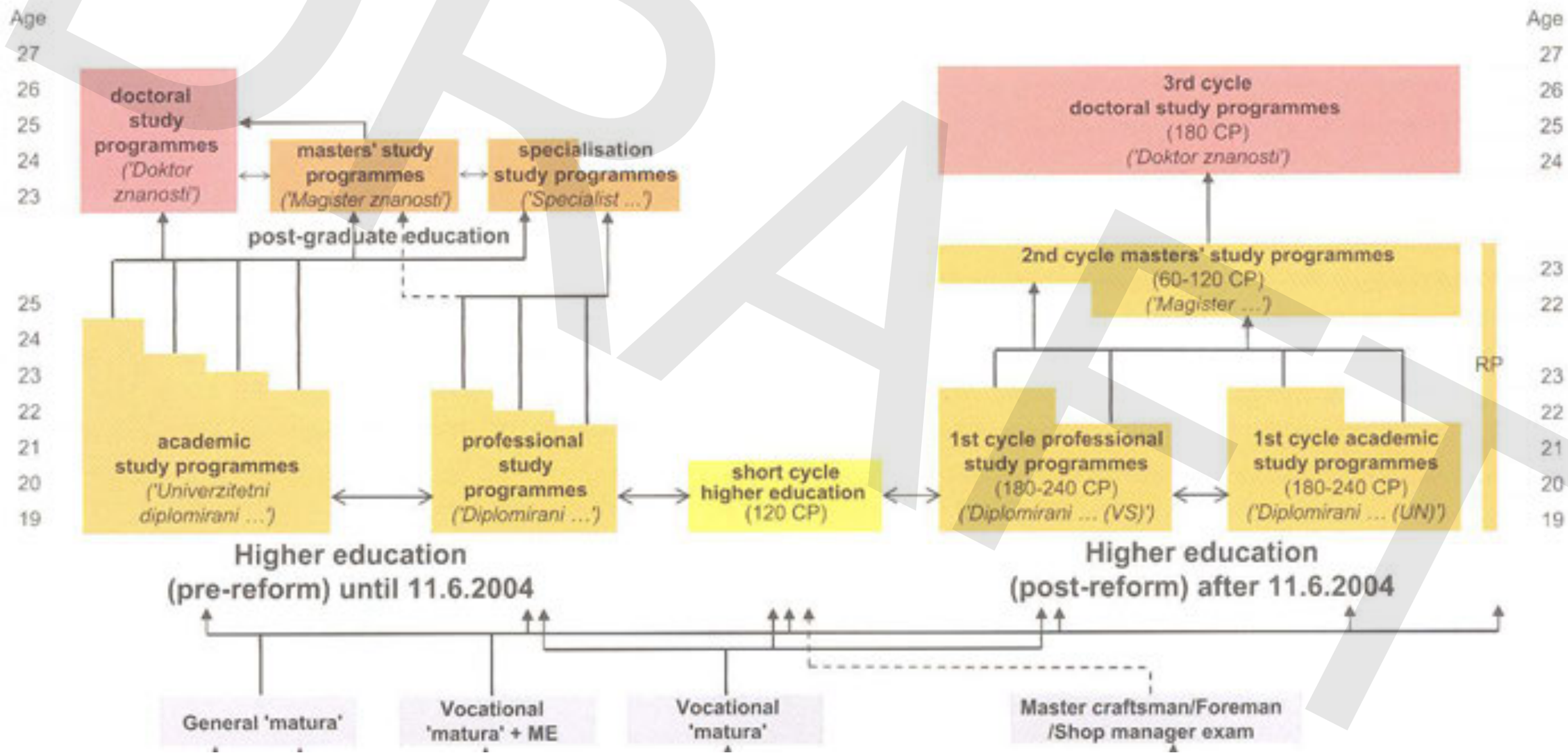
Univerza *v Ljubljani*

University *of Ljubljana*

Connecting to prosper

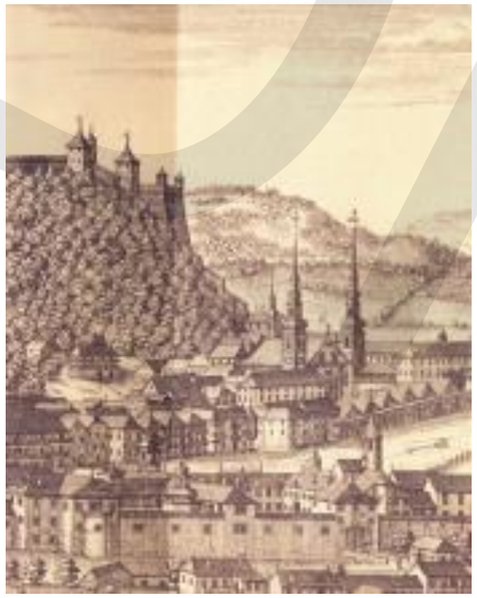
Univerza v Ljubljani

The Structure of Higher Education in Slovenia



Univerza v Ljubljani

UNIVERSITY OF LJUBLJANA



Established in 1919

- **23 faculties**
- **3 academies**
- **A traditional, comprehensive and research oriented university**
- **App. 41 000 students**

Univerza v Ljubljani

- Comprehensive, research oriented university

- 40.109 students
- 5.730 employees
- an annual budget of 304,7 mio €
- Ranked among top 3% of world universities

Univerza v Ljubljani

- Established in 1919 with 5 member faculties (including Medicine)
- At present the University of Ljubljana consists of:
  - 23 faculties and
  - 3 arts academies

STUDY FIELDS: Natural Science, Technology and Engineering, Social Sciences, Humanities, Medicine, Art

University *of Ljubljana*

Univerza v Ljubljani

- Research
- Education
- Knowledge transfer

- Quality
- Internationalisation

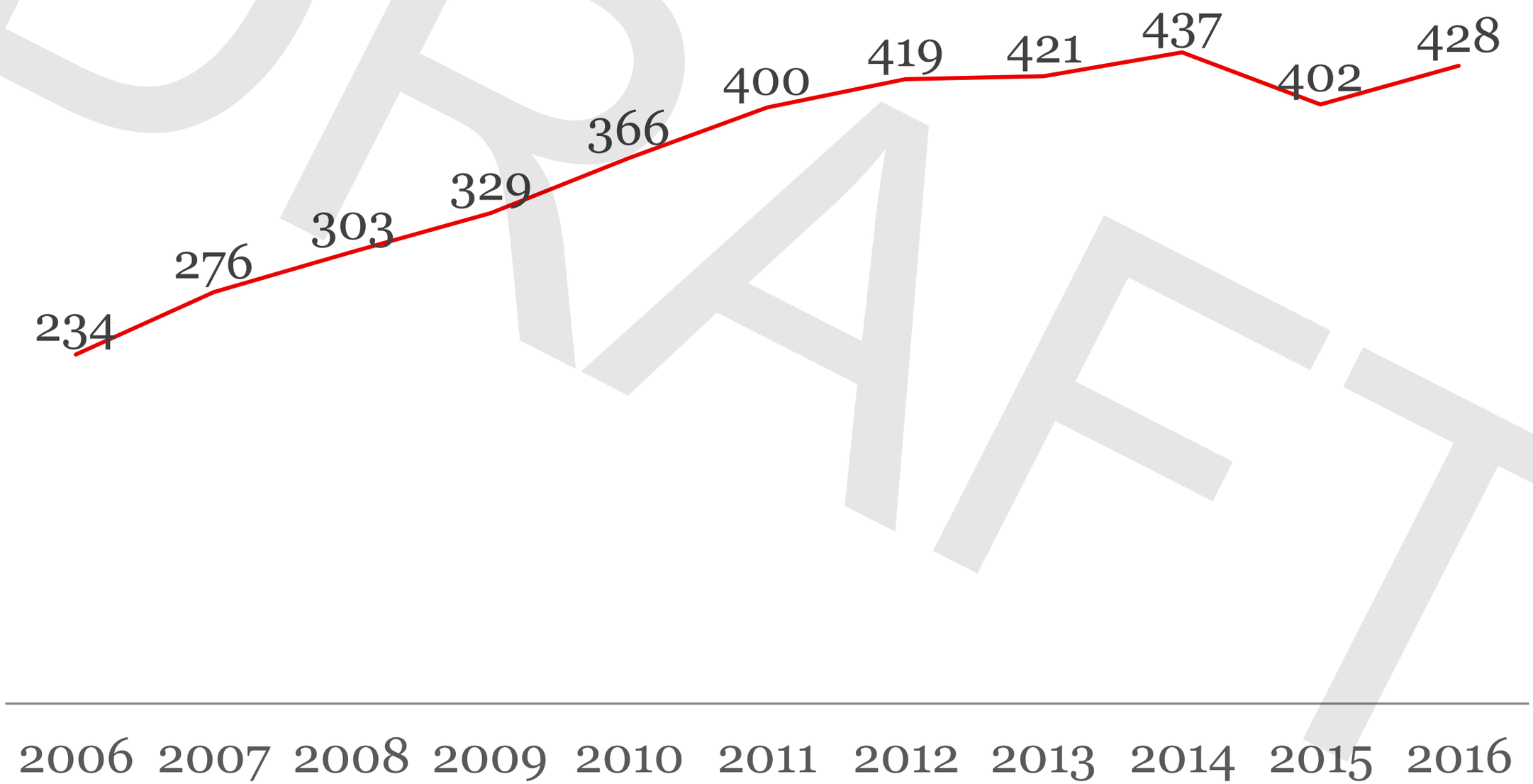
Three pillars of core business & two strategic orientations

Univerza v Ljubljani

- 4027 registered researchers
- 412 young researchers + 7 post-docs
- 174 long-term research programmes
- 480 research projects
- Every teacher is expected to be involved in research

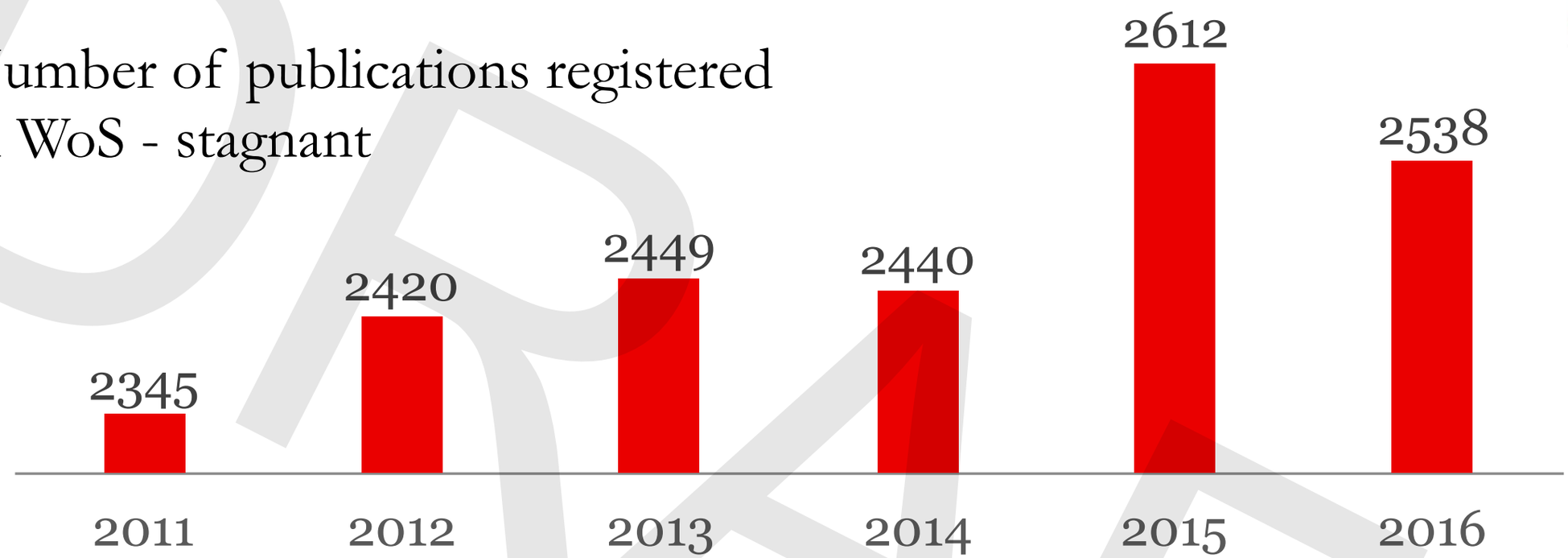
Research focus

EU Projects 2006-2016

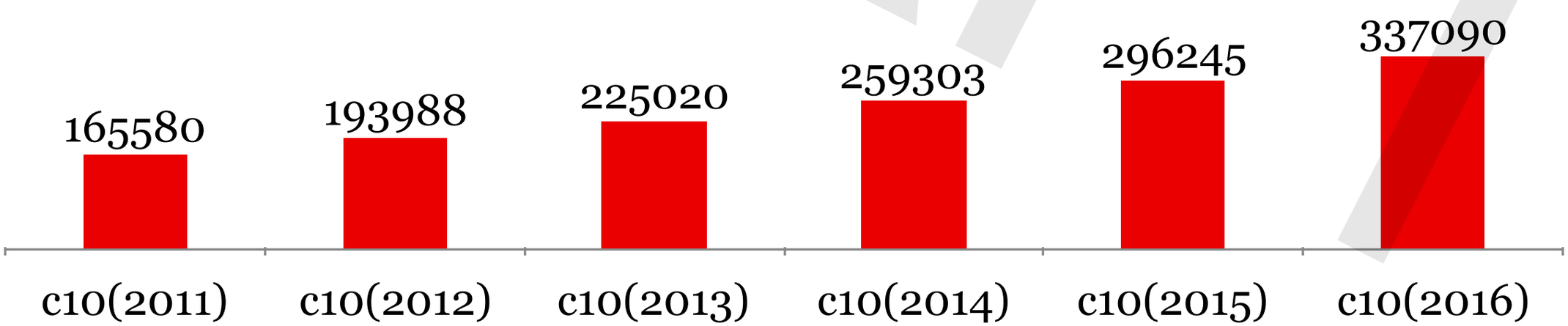


Publications

- Number of publications registered in WoS - stagnant



- Citations of publications doubled in 5 years



UNIVERSITY OF LJUBLJANA
FACULTY OF MEDICINE

Univerza *v Ljubljani*
Medicinska fakulteta
1919
2019




- 26 departments
- 13 institutes
- 3 health services institutes
- 3 centers

UNIVERSITY OF LJUBLJANA FACULTY OF MEDICINE In Numbers

Univerza v Ljubljani
Medicinska fakulteta
1919 2019

EMPLOYEES IN TOTAL: 872

- administrative and technical staff: 389 (46,50%)
- teaching staff: 347 (38,30%)
- full/part time researcher: 107
- young researchers/investigators: 35

Research programmes and projects:

national: 61 EU + other international: 30

Javna agencija
za raziskovalno dejavnost
Republike Slovenije

UNIVERSITY OF LJUBLJANA
FACULTY OF MEDICINE

Univerza v Ljubljani
Medicinska fakulteta

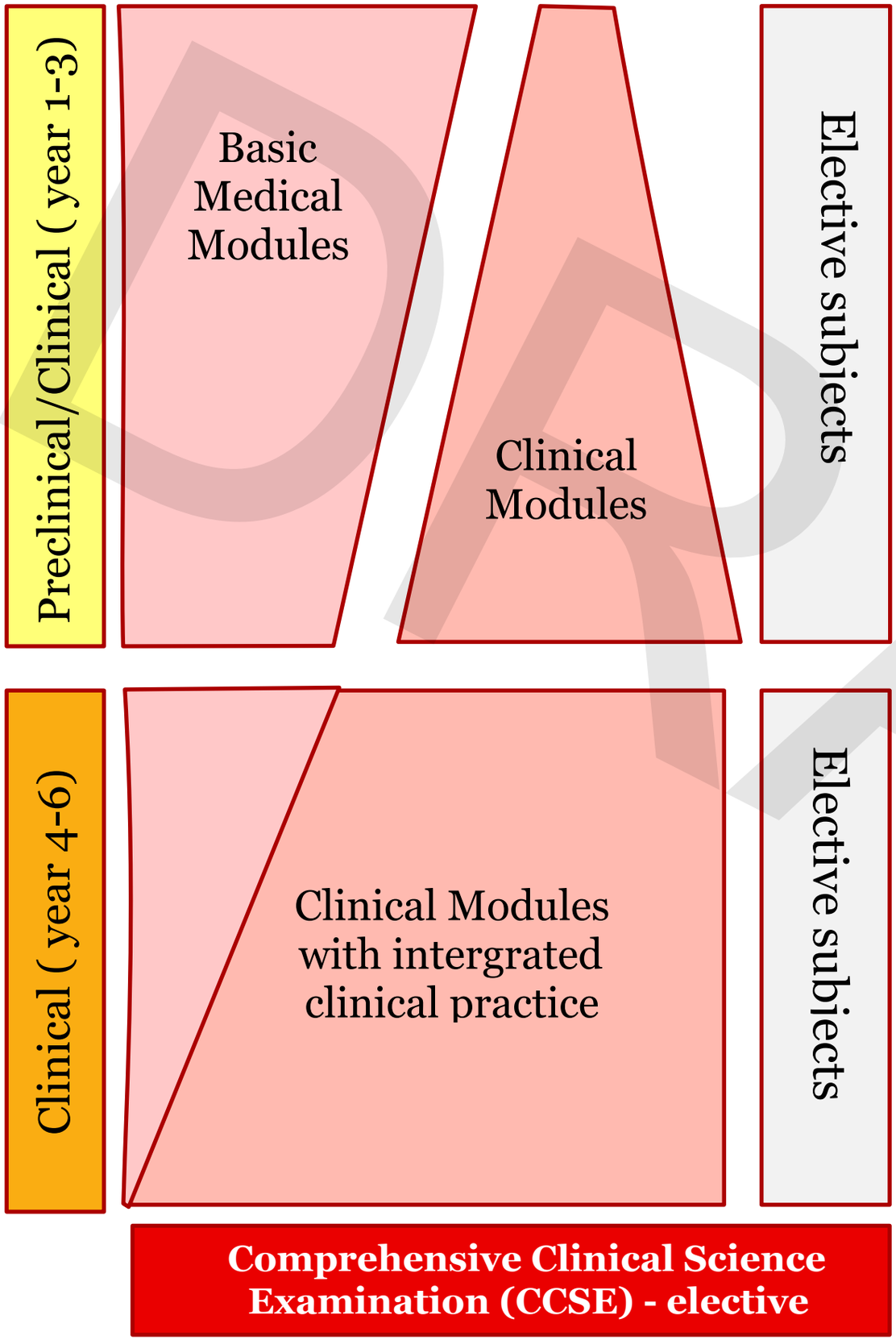
STUDY PROGRAMMES

Uniform second-level master‘s programmes

- Medicine (MD) 6 years / 12 semesters, 150 students
- Dental medicine (DMD), 6 years / 12 semesters, 50 students

Doctoral study programme

- BIOMEDICINE (PhD) 4 years, 100 students



Univerza v Ljubljani

Basic structure of study programme Medicine & Dental Medicine

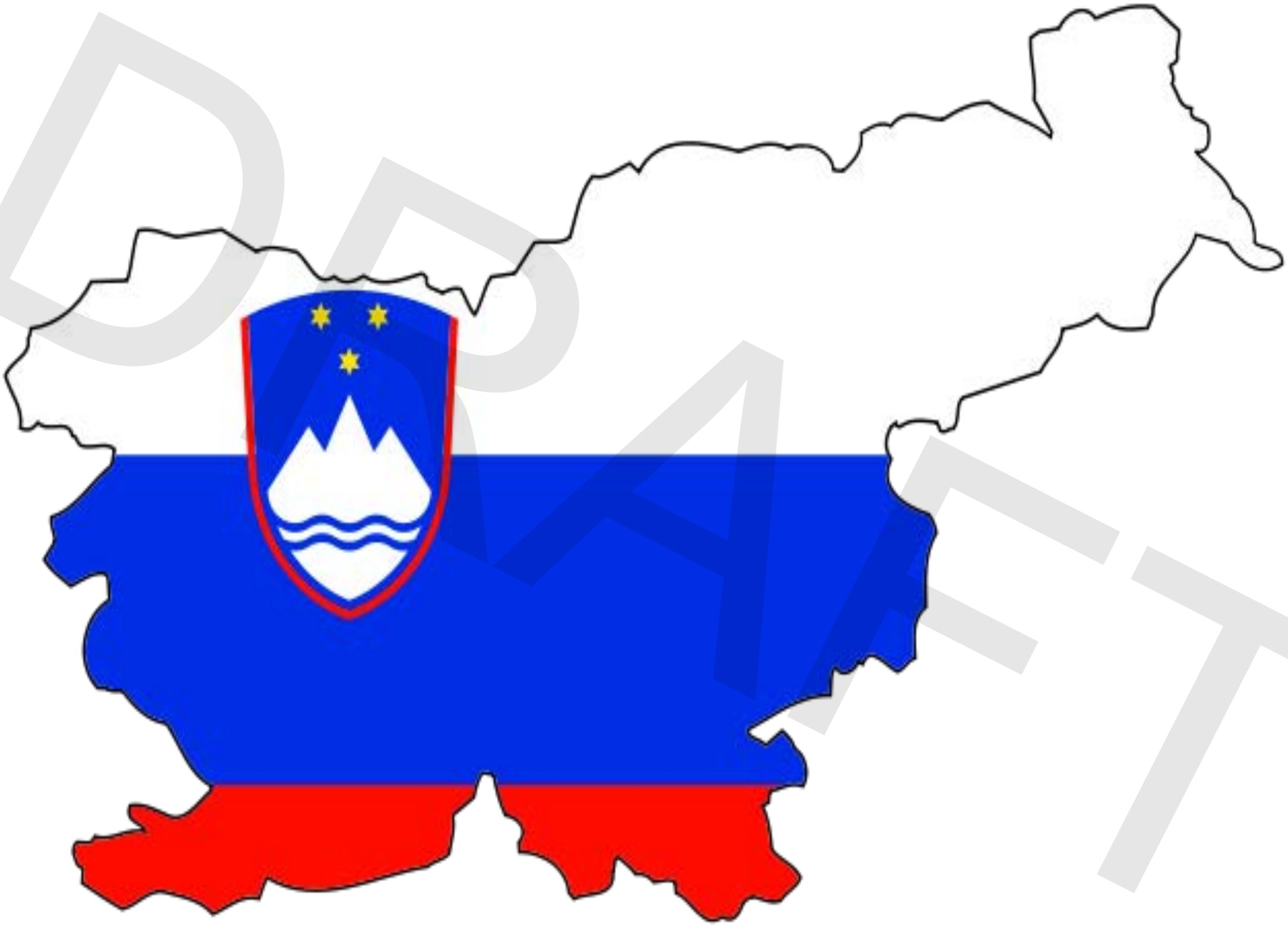
Lecture 1.3

Introduction to the Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

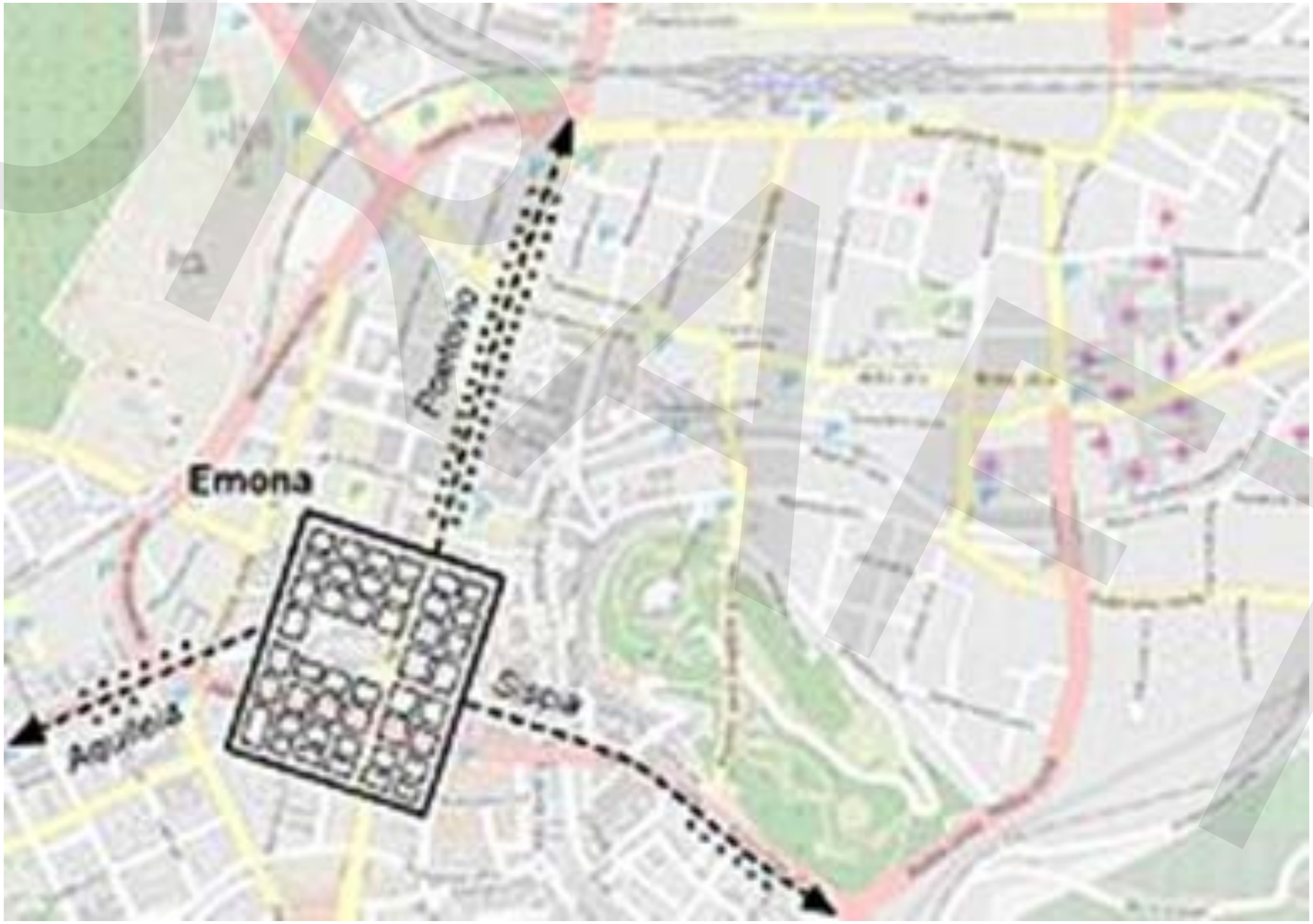
prof. Vesna Novak Jankovič, MD, PhD

Head, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana


EUROPE
ICELAND
NORWAY
SWEDEN
FINLAND
RUSSIA
North Atlantic Ocean
UNITED KINGDOM
IRELAND
DENMARK
POLAND
GERMANY
UKRAINE
FRANCE
ROMANIA
ITALY
SPAIN
PORTUGAL
TURKEY
GREECE
ALGERIA
MOROCCO
TUNISIA



Ljubljana
EMONA - Roman castrum



1974

William Morton 1846 - the first use of ether as an anaesthetic

Slovenia

- 4 months later
- Dr. Leopold Nathan

Illyrisches Blatt.

ZEITSCHRIFT

für

Vaterland, Kunst, Wissenschaft und geselliges Leben.

Nr. 17. Samstag den 27. Februar. 1847.

Chirurgische Operationen unter Anwendung des Schwefeläthers.

Am 24. Februar wurde im hiesigen allgemeinen Krankenhause, in Gegenwart des Herrn Landes-Protomedicus, Gubernialrathes Dr. Sporer, dann mehrerer Herren Professoren und anderer Kunstgenossen, zum ersten Male der Schwefel-Aether als Mittel zur Beseitigung des Schmerzes, welcher chirurgische Technicismen begleitet, angewandt. Es handelte sich um die Abtragung einer krebshaft entarteten Drüse, in der Größe einer geballten Mannsfaust, bei einem Manne von 40 Jahren, schwächlichen Körperbaues und cachectischen Aussehens. Der Kranke machte aus dem, von Wattmann modificirten Apparate erst 14 Athemzüge, und nach Verlauf von einer und einer halben Minute noch weitere sechs. Die Operation, von Professor Dr. Nathan meisterlich vollführt, dauerte zwei und eine halbe Minute, der Zustand der Athemzehrung für den Schmerz drei Minuten. Der Puls, welcher vor dem operativen Acte 76 Schläge in der Minute (vielleicht in Folge moralischen Einflusses) machte, hob sich erst auf 80, um in der dritten Minute auf 68 zu sinken. Die Augen, welche, so wie das Gesicht, etwas geröthet waren, bewegten sich langsam mit einem fixen Blick und erweiterter Pupille, die Lieder nicht geschlossen. Die niedergedrückte Unterlippe blieb hängen.

Beim Hautschnitte, geführt in einer Länge von nahe an 6 Zoll, bei der Trennung der Geschwulst — keine Empfindung; bei der Unterbindung der Schlagader und des diese begleitenden Nervens eine Verziehung des Mundes

heit brachte; ein Beweis, daß Wissenschaft und Philanthropie nicht bloß schön zu träumen, sondern auch Großes zu leisten vermögen.

In einem Falle, wo Behufs der Ausziehung eines Stockzahnes 10 Athemzüge mit Aether gemacht wurden, erfolgte eine, durch eine und eine halbe Minute anhaltende Narcose, bei geschlossenen Augen, blassem Gesichte, langsamem Pulse, Kälte der Hände, ohne Träume; jedoch stellte sich beim Eintritte in die frische Luft, drei Viertel Stunden nach der Extraction, welche durchaus schmerzlos vorübergieng, ein leichter, bald vorübergehender Taumel ein. Der Athem roch noch am folgenden Morgen nach Aether.

Laibach, am 25. Februar 1847.

Dr. Rainerus Sporer,
d. z. Director des allg. Krankenhauses.

Das zweite Gesicht.

Novelle.

(Fortsetzung.)

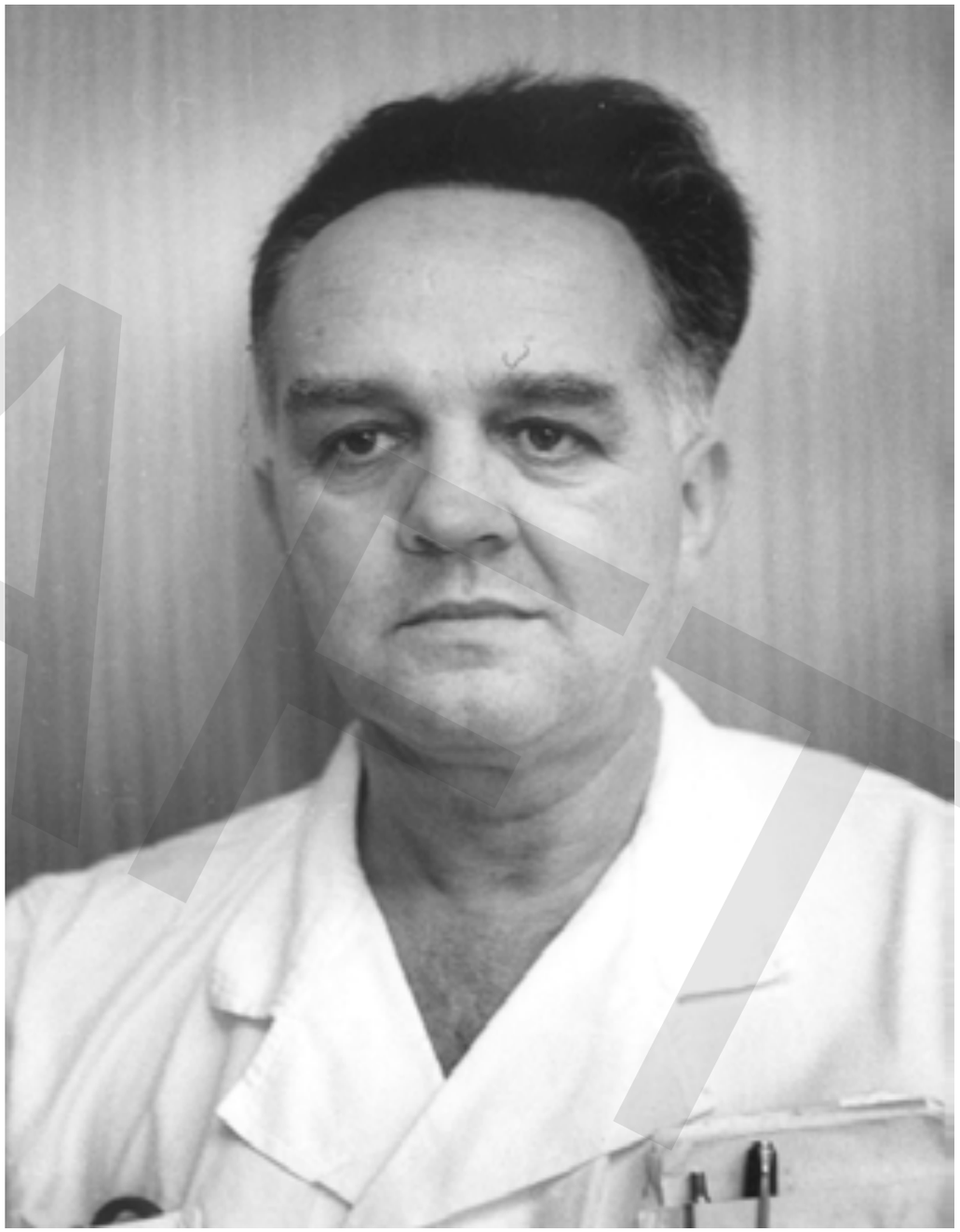
„Ich dankte ihr vielmal für ihre Gefälligkeit und ging über die Straße nach dem angedeuteten Hause, indem ich nach den Karniesen und anderen an der Façade angebrachten Zierathen emper schaute. Sie waren ohne Zweifel sehr schmutzig. Ein Paar steinerne Damen, mit Körben in den Händen, die wahrscheinlich einst so weiß gewesen waren, wie Schnee, hatten jetzt eine Menge langer, schwarzer Streifen auf ihren Gewändern, die Nasen waren verschwunden, aber die Augäpfel waren ganz dunkelbraun, erhoben über der Mitte sich ein weißer Fleck zeigte, der das Vorhanden-

Prof.EDO ŠLAJMER MD PhD
31. October 1901 first spinal anaesthesia

First endotracheal intubation

UNRRA-
first endotracheal tubes

Prof. Miro Košak 1947

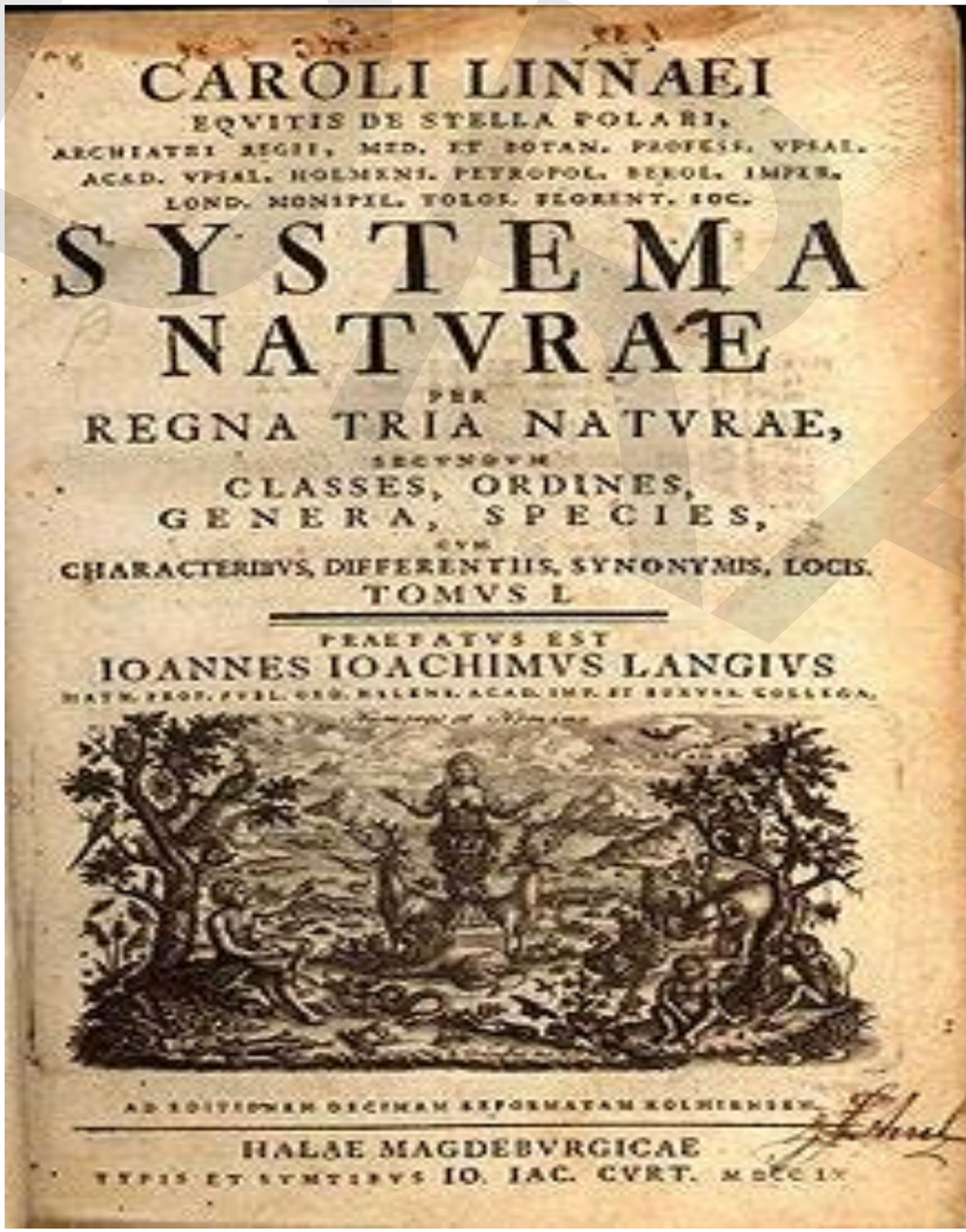


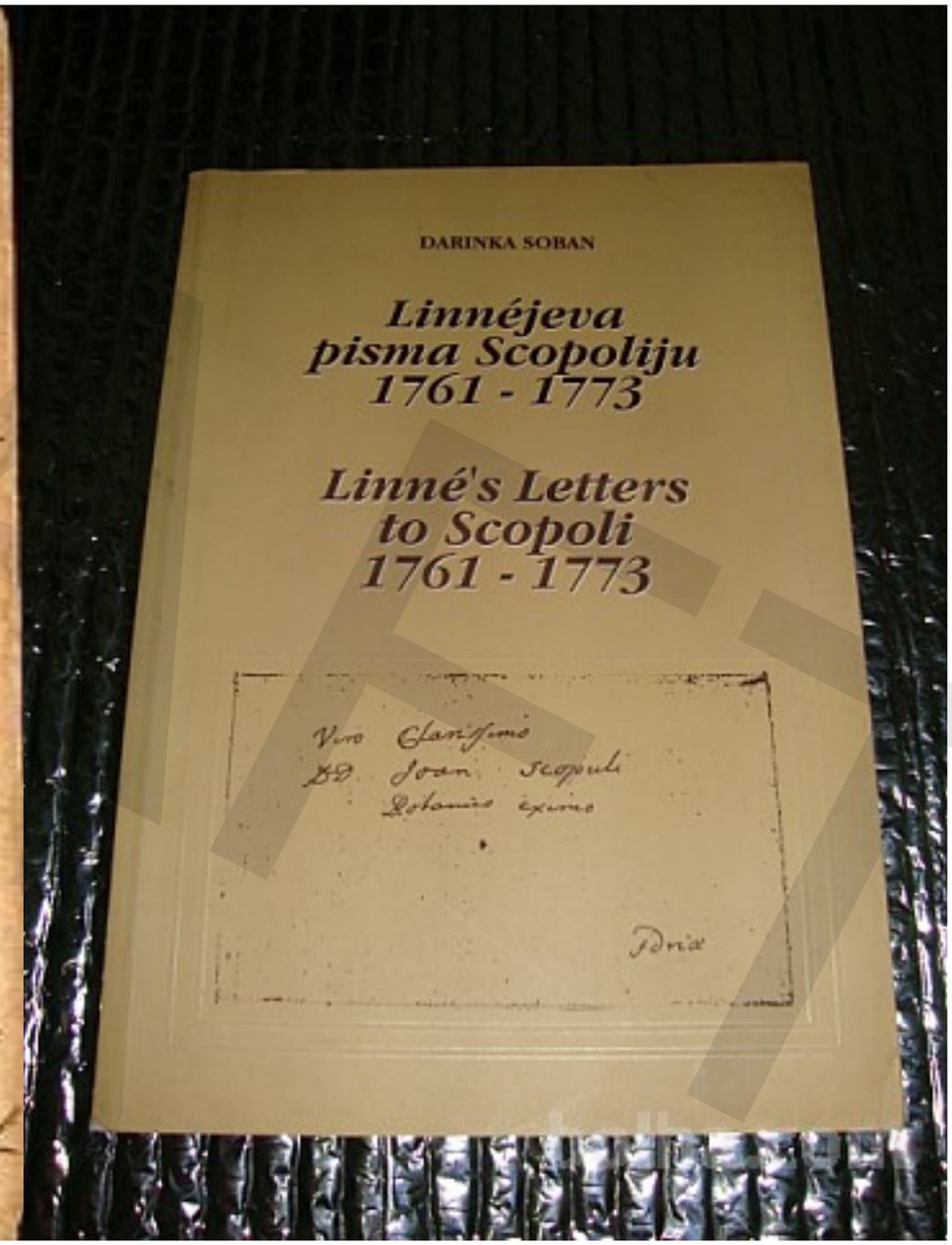
Prim.Drago Hočevar MD

- 1949 Clinical department of anaesthesiology and intensive therapy
- Copenhagen - school of anaesthesiology

Prof. Darinka Soban MD PhD
EPIDURAL ANAESTHESIA 1960´s

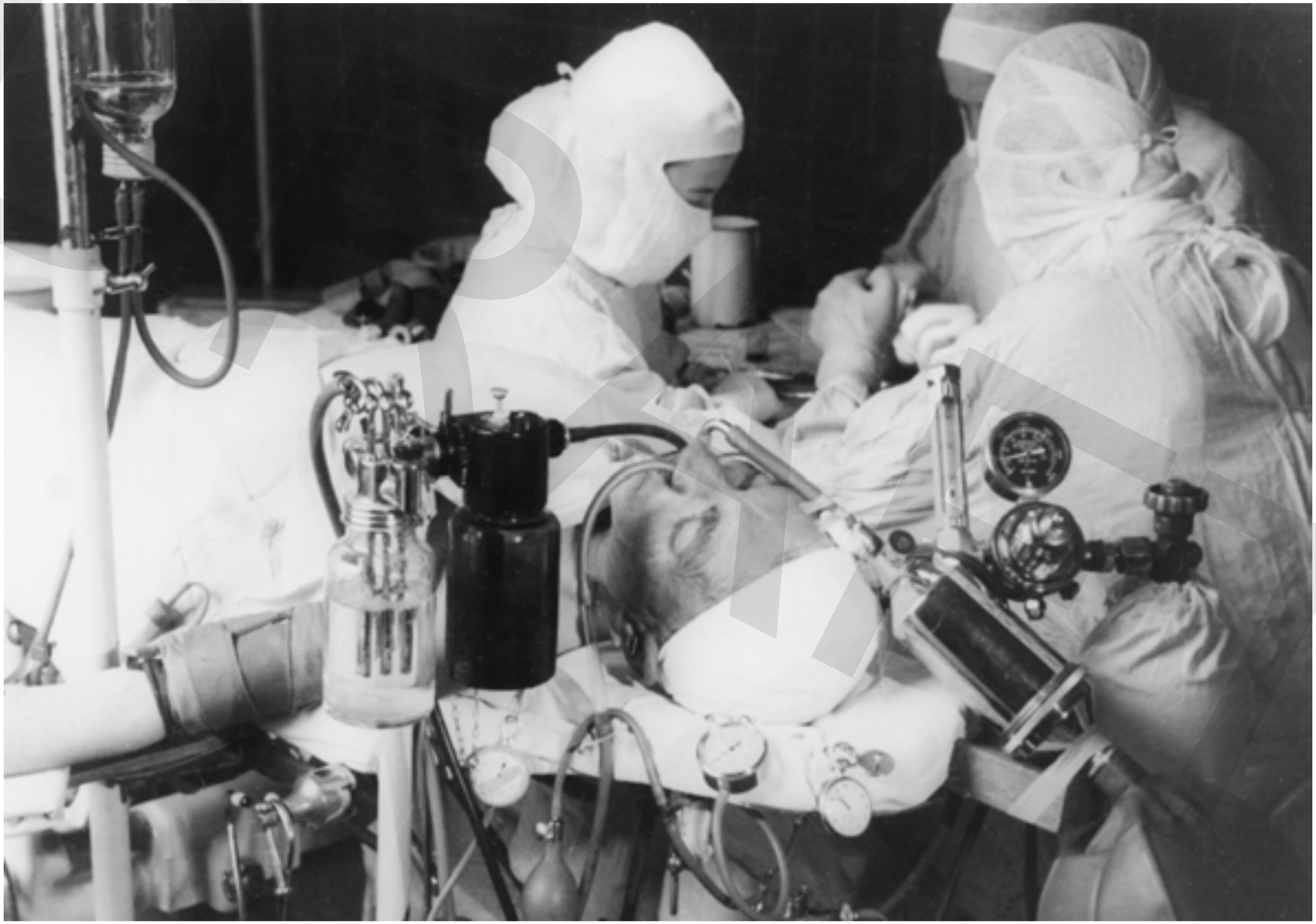
Correspondence
K.Linnaeus-J.A.Scopoli


CAROLI LINNAEI
EQVITIS DE STELLA POLARI,
ARCHIATRI REGII, MED. ET BOTAN. PROFESS. VPSAL.
ACAD. VPSAL. HOLMENS. PETROPOL. BEROL. IMPER.
LOND. MONSPEL. TOLOS. FLORENT. SOC.
SYSTEMA
NATVRAE
PER
REGNA TRIA NATVRAE,
SECVNDVM
CLASSES, ORDINES,
GENERA, SPECIES,
CVM
CHARACTERIBVS, DIFFERENTIIS, SYNONYMIS, LOCIS.
TOMVS I.
PRAEFATVS EST
IOANNES IOACHIMVS LANGIVS
MATH. PROF. PVBL. ORD. HALENS. ACAD. IMP. ET BORVSS. COLLEGA.
AD EDITIONEM DECIMAM REFORMATAM HOLMIENSEM.
HALAE MAGDEBVRGICAE
TYPIS ET SVMTIBVS IO. IAC. CVRT. MDCCLX

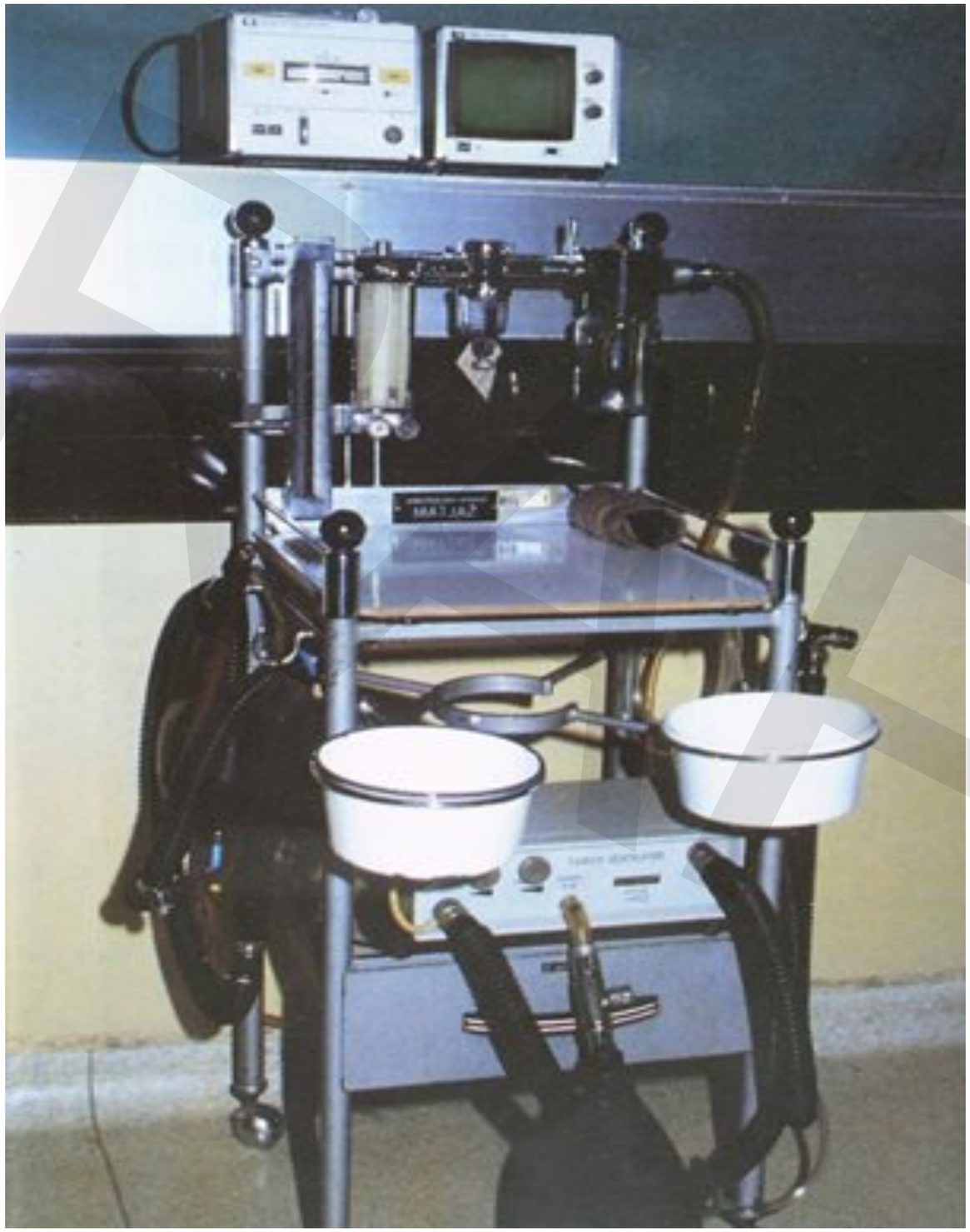



MACRODEX
MACRODEX

1960



Matjaž - 1st slovenian anaesthesia machine



Prof. Stojan Jeretin MD,PhD

CARS - central anaesthetic reanimation service

Prof. Lučka Toš Md PhD

Prof. Vesna Paver Eržen MD PhD

CEEA courses
Medical simulation centre


CEEA

Committee for European Education in Anaesthesiology

within

ESA

20. TEČAJ CEEA

Kontinuirano podiplomsko izobraževanje iz anesteziologije (CME)

Ljubljana, 13. do 15. april 2012

SLOVENSKO ZDRAVNIŠKO DRUŠTVO

MEDICINSKA FAKULTETA UNIVERZE V LJUBLJANI

UNIVERZITETNI KLINIČNI CENTER V LJUBLJANI

PREDSTAVITEV KOAIT

Department of anaesthesiology

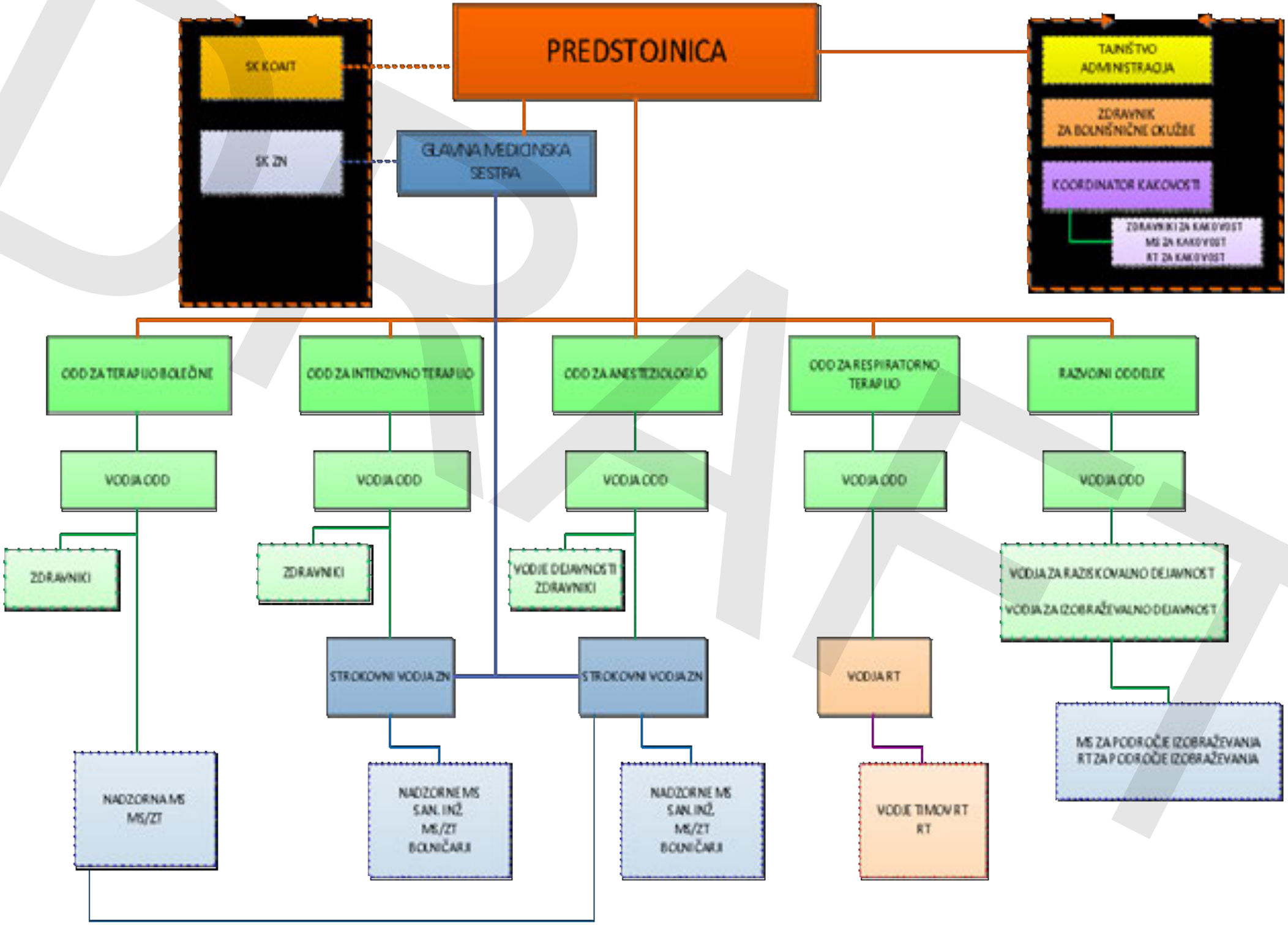
ICU

Pain clinic

Respiratory therapy

Development and research

ORGANIZACIJSKA SHEMA KOAIT



1. ODDELEK ZA ANESTEZIOLOGIJO

1. Anesteziologija: **34.023** obravnav
   - splošna anestezija: 31.004
   - regionalna anest: 4.267
   - sedacije: 895
   - nadzori: 437
   - vstavljanje OVK: 109
2. Pooperativni nadzori: 23.425 pacientov
3. Služba za lajšanje akutne pooperativne bolečine: 14.851 obravnav
4. Predoperativne anesteziološke ambulante: 8.921 pacientov
5. Oživljanje: UKB 358 pacientov, UKCL 195 pacientov
6. Medbolnišnični helikopterski transporti: 80 pacientov

2. ODDELEK ZA INTENZIVNO TERAPIJO

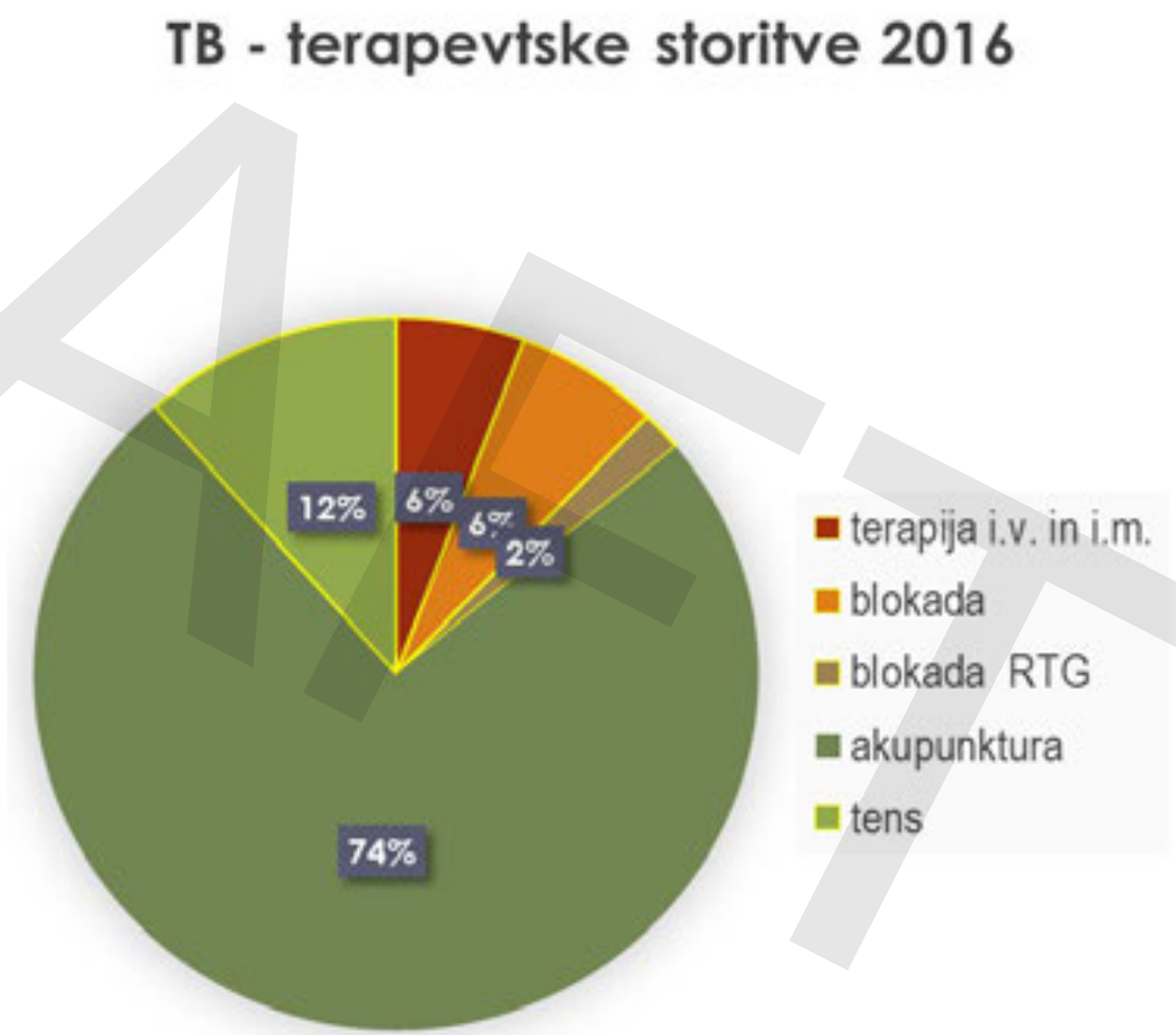
Enote intenzivne terapije:

- CIT: 20 postelj 567 pacientov
- KVIT: 12 postelj 1.020 pacientov
- Opekline: 4 postelje 10 pacientov

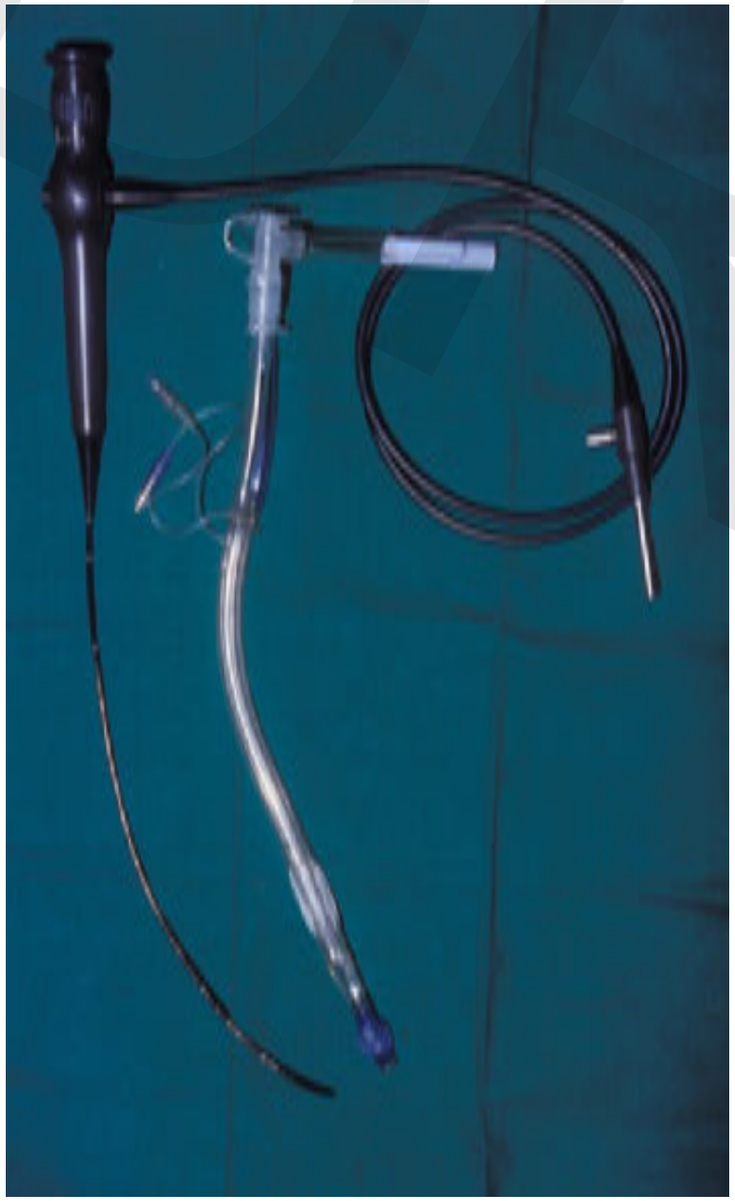
- Enote intenzivne nege na Ginekološki kliniki:
  - KO za ginekologijo 16 postelj – 1.304 pacientov
  - KO za reprodukcijo 9 postelj – 729 pacientov
  - KO za perinatologijo 8 postelj

3. ODDELEK ZA TERAPIJO BOLEČINE

- prvi pregled 1.836
- ponovni pregled 846
- terapevtski posegi: 10.174
- SKUPAJ: 12.856 obravnav



Pain service 1998
prim. Marija Godec, prof. Rawal



4. Department for respiratory therapy

- Preoperative evaluation
- No pts – 10.135
- No procedures – 162.264
- NIV – 10.237 ur
- IPV – 5.052 ur

5. Department for development and research

- Research:
  - research projects (ARRS 1x, European projects – 2x, other 9x)
  - UMC LJ projects(21)
- Education:
  - European centre for training of anaesthesiologists
  - students of MF UL and Faculty of health science UL (1015 students MF, 218 študentov FHS)
  - residents of anaesthesiology(136)
  - other residents (6)
  - specialistic exams (8)
  - Education of nurses, technicians

436 employees

- Anaesthesiologists 100
- Residents 52
- CRNA 243

Academic titles (20%)

- **2 prof** *(Vesna Novak-Jankovič, Tatjana Stopar-Pintarič),*
- **4 assoc prof** *(Maja Šoštarič, Neli Vintar, Tomislav Mirkovič, Primož Gradišek),*
- **9 PhD** *(Alenka Spindler Vesel, Minca Voje, Janez Benedik, Katja Režonja, Darja Šervicl Kuchler, Iztok Potočnik, Marija Damjanovska, Marko Žličar),*
- **2 MSc** *(Rade Stanič, Nina Kosmač),*
- **4 primariji** *(Snežana Žarkovič, Tatjana Babnik, Gorazd Požlep, Rade Stanič).*

2016

- 100 000 procedures
- 30 000 general anaesthesias
- 4500 regional anaesthesias
- Surgical ICU 600 pts
- CV ICU 1000 pts

UMC Ljubljana

- Premature babies, newborns
- Congenital heart diseases
- Congenital diseases,
- Major neurosurgical, thoracic, abdominal surgery
- Transplantations (heart, liver, kidney)
- TAVI
- CAS, coiling

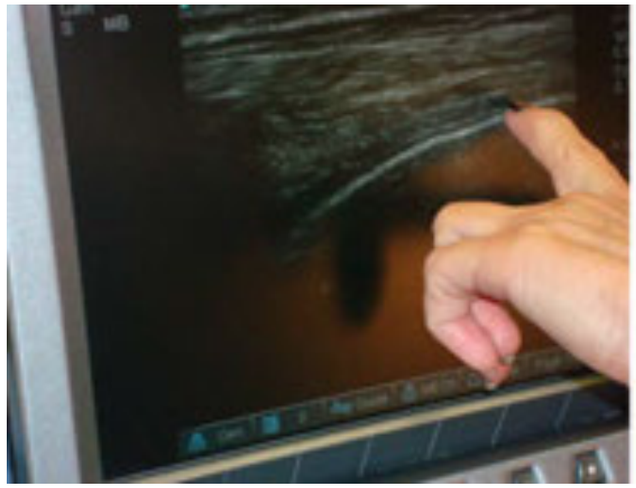
Working places	Mon	Tue	Wen	Thu	Fri
Surgical division	29	32	30	31	28
Gynecological and obstetric division	8	8	8	8	8
Ortopedic clinic	4	4	4	4	4
ORL	3	3	2	3	2
Internal division		2	1	1	1
Paediatric clinic	2	2	1	1	2
Clinic for ophtalmology	2	1	2	1	2
Clinic for stomatology		1	1	1	
Department for radiology	2	2	2	3	1
Preoperative evaluation	3	5	5	5	3
Others	11	12	10	10	11
CIT	9	9	9	9	9
After shifts	11	11	11	11	11
	82	92	86	88	82

Duties

- Helicopter transportations interhospital (70-80)
- CPR, polytraumas (450)
- Intrahospital CPR (350)

New methods

- **Radiofrequency rhizotomy** 2010 chronic back pain
- **US** central and peripheral nerve blocks
- **ECMO** (Extra Corporeal Membrane Oxygenation)
- **HEARTMATE** LVD
- **BIS** operating theatre ICU
- **NIRS** cerebral oximetry



New methods

- Prevention (**VAP** – ventilatory associated pneumonia) endotracheal tube with subglottic aspiration,
- **HFV** – high frequency ventilation (ARDS, ALI-acute lung injury),
- **HFJV-**high frequency jet ventilation for laryngeal surgery
- **CritiCool** cooling system for head injury
- Early goal directed therapy **LIDCO Rapid** , **VIGILEO, VIGILANCE**
- **Awake neurosurgery**
- **Awake VATS**
- **TAP blokov** (transversus abdominis plane blocks),
- **Microdialysis** head injury

New methods

- **PROSAFE international data base ICU patients**
- **Point of Care** (POC) (**ROTEM, MULTIPLATE**) for the control of haemostasis
- **Dexmedetomidine** perioperative use,
- **NIV** of surgical pts

Improvements

- Optimisation of organisation
- Schedule pro Bokosoft – electronic programme for the schedule of our doctors and nurses
- Electronic anaesthetic template
- Electronic administration (HIPOKRAT, BIRPIS data base)

Guidelines and recommendations

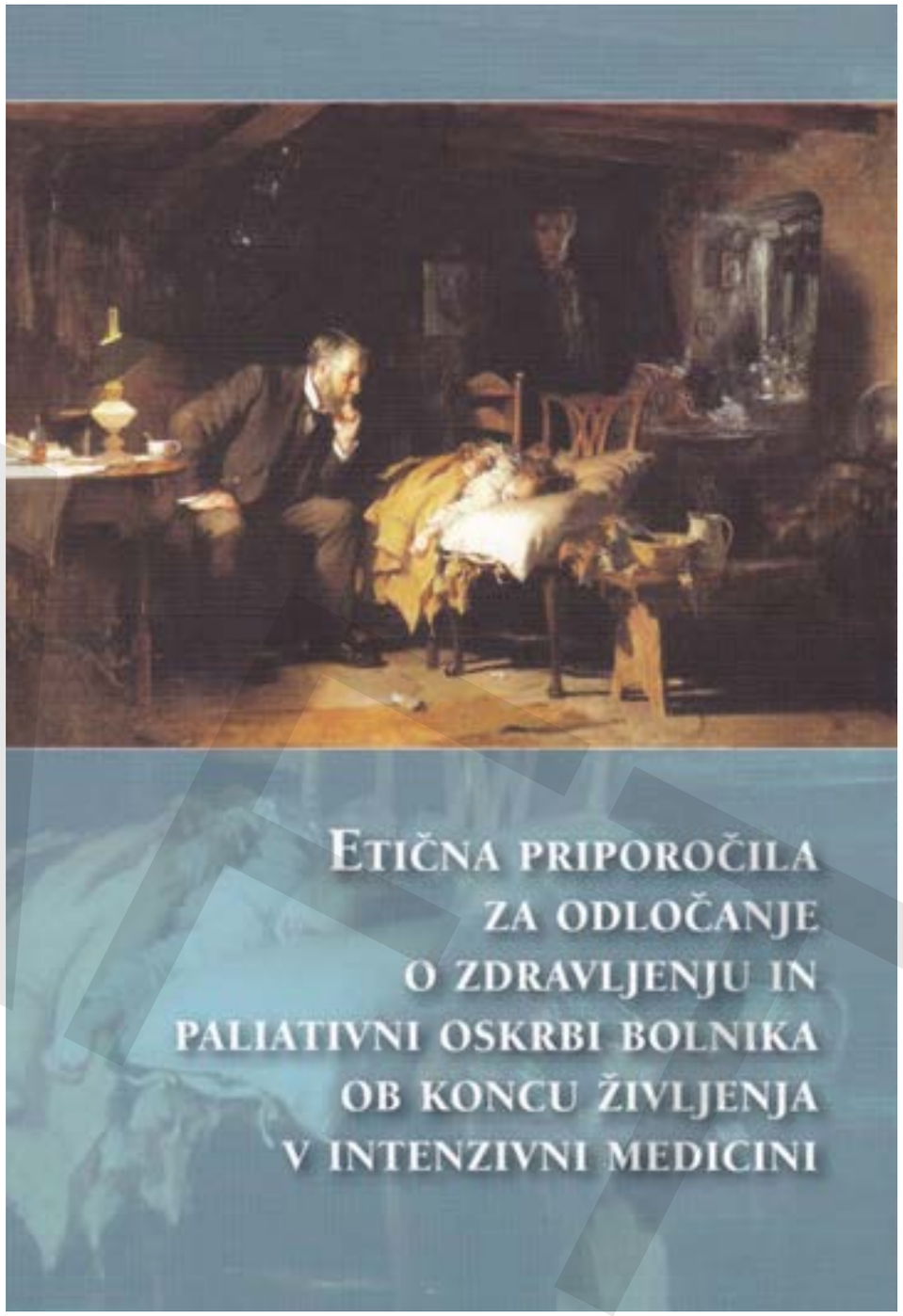
- v letu 2010 smo v klinično prakso uvedli nove **slovenske smernice za antikoagulantno in antitrombotično zdravljenje** ob področni anesteziji. *Dosegljive so tudi na spletni strani www.szaim.org (objava v Zdrav Vestn 2009;78:619-25);*
- v letu 2014 smo uvedli evropske **smernice za perioperativno nadomeščanje tekočin pri otrocih**; na našo pobudo je Lekarna UKCL začela izdelovati glukozo 1 % z elektroliti; po našem priporočilu je navedeno smernico v svojo prakso uvedel tudi KO za otroško kirurgijo in intenzivno terapijo;
- z Alergološko in imunološko sekcijo, Sekcijo za pediatrično pulmologijo, alergologijo in klinično imunologijo, Združenjem zdravnikov družinske medicine in Slovenskim združenjem za urgentno medicino smo sodelovali pri izdelavi smernic za obravnavo bolnika z alergično reakcijo **"Dogovor o obravnavi anafilaksije"**.
- izdelali smo **"Priporočila za nadomeščanje tekočin pri odraslih"** *(objava v Zdravniškem vestniku 2015)*
- izdelali smo **"Priporočila za težko intubacijo"** *(objava v Zdravniškem vestniku 2014)*
- izdelali smo **smernice za predoperativno teščost odraslega bolnika in otroka**

Booklets

1. Etična priporočila za odločanje o zdravljenju in paliativni oskrbi bolnika ob koncu življenja v intenzivni medicini

2. Dogovor o obravnavi anafilaksije

3. Priporočene smernice za obravnavo poškodovancev z blago in zmerno poškodbo glave



Standard certificate

- DNV accreditation
  -> international standard
- Certifikati
  ISO 9001:2008
  &
  EN 15224: 2012

BUREAU VERITAS
Certification

Certifikat

prejme

UNIVERZITETNI KLINIČNI CENTER LJUBLJANA
KLINIČNI ODDELEK ZA ANESTEZIOLOGIJO IN INTENZIVNO TERAPIJO OPERATIVNIH STROK
ZALOŠKA CESTA 7, 1000 LJUBLJANA, SLOVENIJA

Bureau Veritas Certification Holding SAS – UK Branch potrjuje, da je bila opravljena presoja sistema vodenja v navedeni organizaciji in da je uvedeni sistem vodenja skladen z zahtevami sledečega standarda

STANDARD

EN 15224:2012

PODROČJE CERTIFICIRANJA

PREDOPERATIVNA ANESTEZIOLOŠKA OBRAVNAVA PACIENTOV, ANESTEZIOLOŠKA OBRAVNAVA PACIENTOV ZA OPERATIVNE IN DIAGNOSTIČNO TERAPEVTSKE DEJAVNOSTI, POOPERATIVNA ANESTEZIOLOŠKA OBRAVNAVA PACIENTOV V ENOTAH POOPERATIVNEGA OKREVANJA, LAJŠANJE AKUTNE POOPERATIVNE BOLEČINE, AMBULANTNO ZDRAVLJENJE BOLEČINE, OBRAVNAVA PACIENTOV V ENOTI INTENZIVNE TERAPIJE OPERATIVNIH STROK, RESPIRATORNA TERAPIJA KIRURŠKIH PACIENTOV, OŽIVLJANJE IN ZDRAVLJENJE ŽIVLJENJSKO OGROŽENIH PACIENTOV NA ODDELKIH UKCL IN V URGENTNI DEJAVNOSTI UKCL, MEDBOLNIŠNIČNI HELIKOPTERSKI TRANSPORT ODRASLIH PACIENTOV

Datum začetka certifikacijskega cikla: 23/03/2015

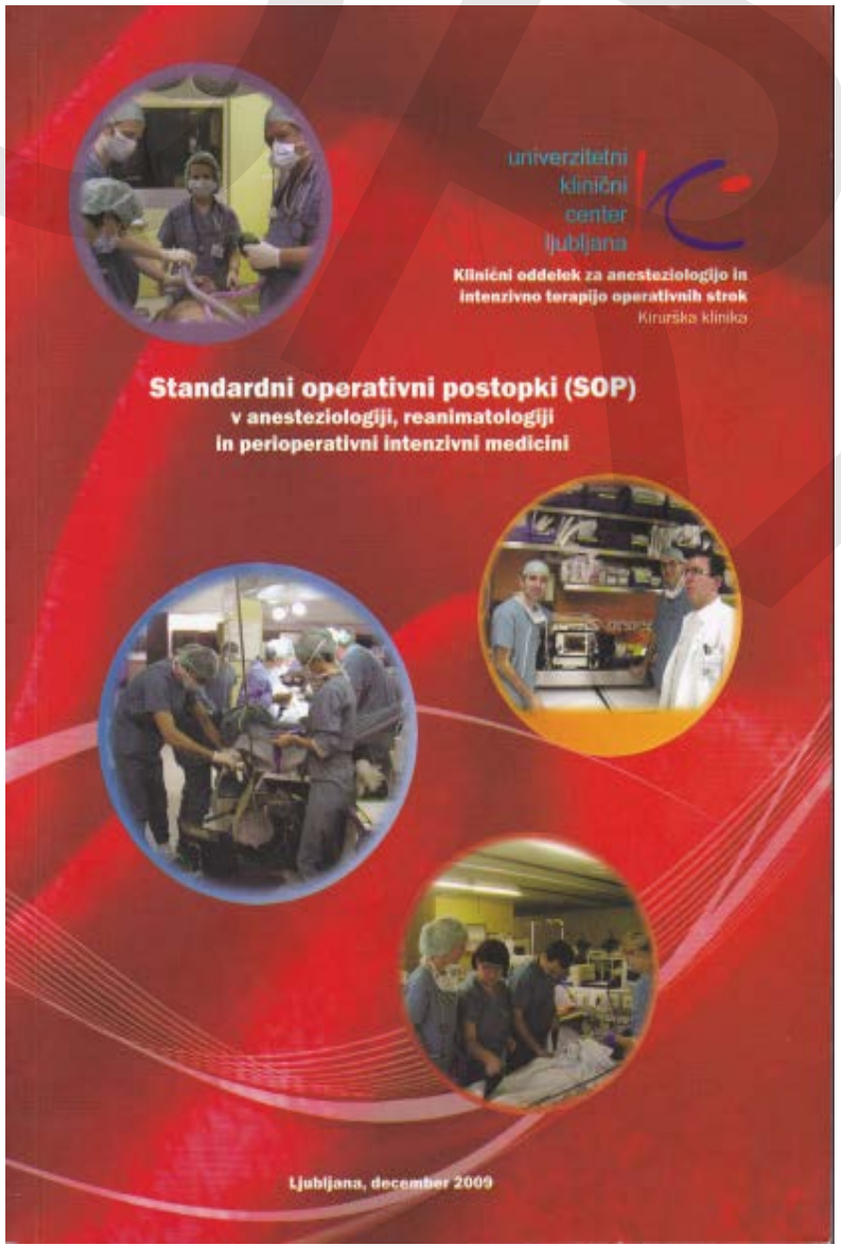
Pod pogojem, da organizacija neprekinjeno zagotavlja zadovoljivo delovanje sistema vodenja, je veljavnost tega certifikata do: 22/03/2018

Prvotni datum odobritve: 23/03/2015

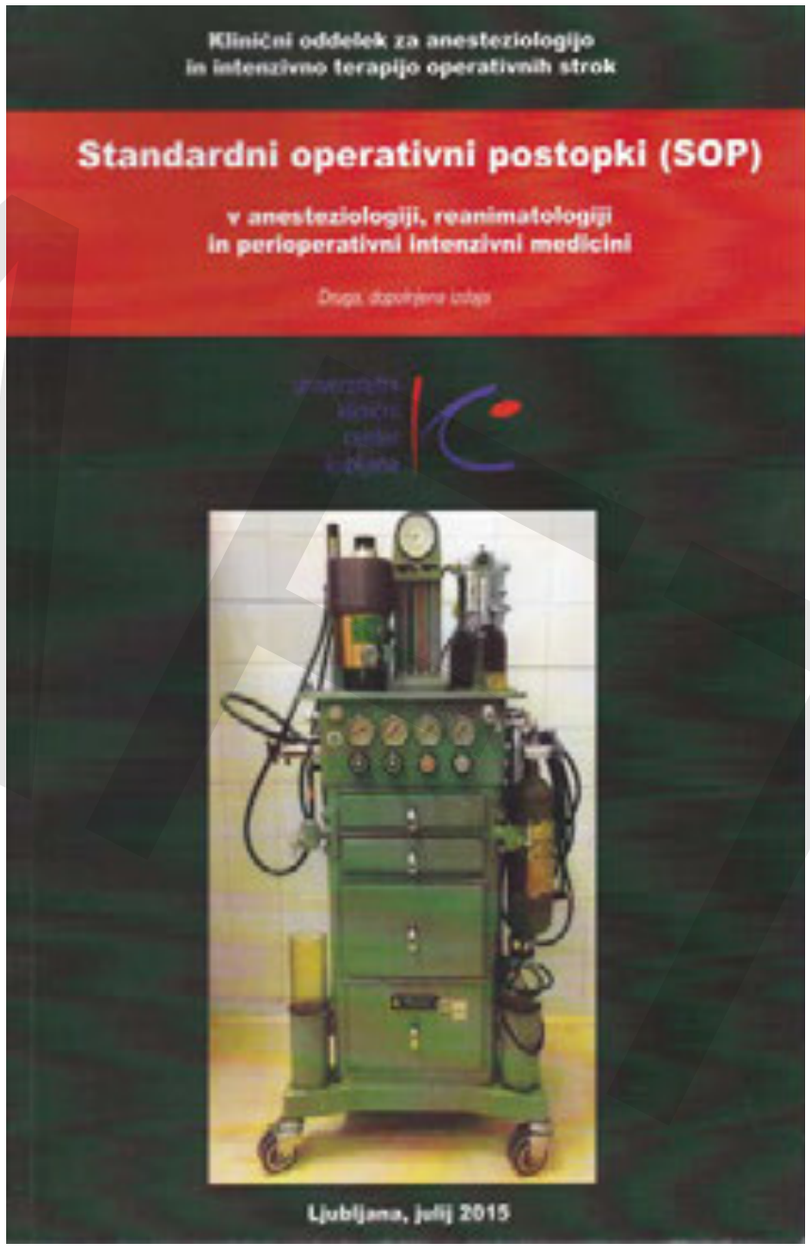
Številka certifikata: SL20794ME Izdaja: 01 Datum izdaje: 23/03/2015

Guidelines, protocols

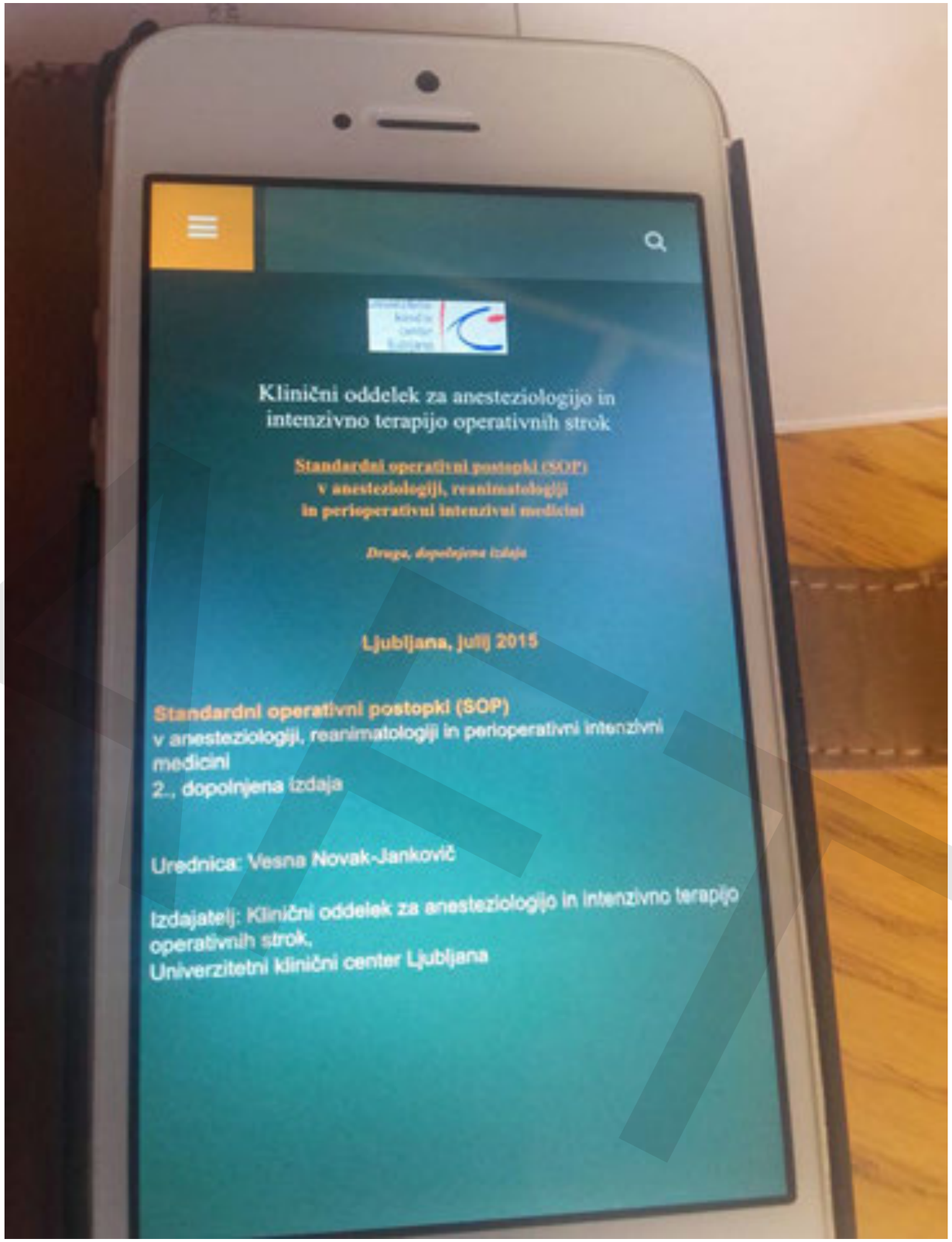
2009 – 1st edition SOP-i



2015 – 2nd edition SOP-ov



Mobile application smartphones 2016



From 1997 in UKCL ESA **EDAIC Part I**

May 2011 "OLA" - On-line exam of Anaesthesiology".

ESA meeting Geneve 2017-prof. Elizabeth Van Gessel, president HVTAP Committee (Hospital Visiting and Training Accreditation Programme), and prof. Andreas Sandner-Kiesling, president Education and Training Committee (Ljubljana, Munster, Dusseldorf)

European Society of Anaesthesiology ESA

EBA UEMS

Certificate of Accreditation of a European Centre for Training of Anaesthesiologists

Based on the accreditation process performed in March 2016 by
Dr. Bazil Ateleanu and Dr. Leila Niemi-Murola

Authorized by the Hospital Visiting and Training Accreditation Programme Joint Committee of the European Society of Anaesthesiology and the European Board of Anaesthesiology of the UEMS, we declare that

Clinical Department of Anaesthesiology and Intensive Therapy
University Medical Centre Ljubljana
Ljubljana, Slovenia

Fulfills the Criteria required to meet the European Standards of excellence and is declared to be a European Centre for training of Anaesthesiologists for the period 01 April 2016 – 31 March 2021

Zeev Goldik

Dr. Zeev Goldik
ESA President

Dr. Carmel Abela
EBA President

Dr. Elisabeth Van Gessel
Chairperson HVTAP Joint Committee

Kristina Radinovic MD phD (UMC Belgrade)

ESA fellow 2017(Jul,Aug,Sep)

Poleg že navedenega:

- sodelujemo pri številnih **terciarnih projektih** v sklopu UKCL (do sedaj **36**),
- sodelujemo s **Saint George Hospital** v Londonu pri hemodinamski optimizaciji kirurških bolnikov,
- smo uvedli uvajalne **izobraževalne tečaje za novozaposlene specializante** anesteziologije in za diplomirane medicinske sestre,
- v **Medicinskem simulacijskem centru** izvajamo številne tečaje in učne delavnice za zaposlene v UKCL: tečaji oživljanja, tečaji področne anestezije, tečaji uvajanja centralnih venskih katetrov, tečaji uvajanja intravenskih kanil, tečaji aspiracije intubiranih pacientov, tečaji za lajšanje akutne pooperativne bolečine, tečaji multimodalnega monitoringa (BIS, INVOS, LIDCO) za tuje udeležence, učne delavnice hipoksija in izvajanje NIV za respiratorne terapevte.

Clinical Department of Anaesthesiology and Surgical Intensive Therapy – UMC Ljubljana

Year 2014 – 3829 reg. anaesthesias

2010 European multicentric study
(**EuSOS**– European Surgical Outcomes Study)
chief investigator prof. Rupert Pearse
London ,UK

2012 Lancet (IF39.08)
PEARSE, Rupert M, MORENO, Rui P, BAUER, Peter, PELOSI, Paolo, METNITZ, Philipp, SPIES, Claudia, VALLET, Benoit, VINCENT, Jean Louis, HOEFT, Andreas, RHODES, Andrew, et al. Mortality after surgery in Europe: a 7 day cohort study. *The Lancet*, ISSN 0140-6736. [Print ed.], Sep. 2012, vol. 380, [no.] 9847, str. 1059-1065. [COBISS.SI-ID 4437567]

LAS VEGAS
APRICOT
NECTARINE
ETPOS

CREACTIVE
POPULAR

Cooperation with international organisations:

- World Federation of societies of anaesthesiologists (**WFSA**)
- European Society of Anaesthesiology (**ESA**)
- European Board of Anaesthesiology (**EBA) - UEMS**
- **EACTA** (European Association of cardiothoracic anaesthesiologists)
- Committee for European Education in Anaesthesiology (**CEEA**);
- European Society of Regional Anaesthesia (**ESRA)**
- **NASC** (National Anaesthesiologists Societies Committee)
- **ESPA** (European Society of Paediatric Anaesthesiology)
- **ERC** (European Resuscitation Council)

Cooperation with experts:

- **Rupert Pearse** - Royal Hospital White Chapel London, UK
- **Krešimir Matkovič** - VRVis Zentrum fur Virtual Reality and Visualizierung Forschungs, Wien, Austria
- **Kamen Vlasakov** - Harvard University, Boston, USA
- **Iliaz Hodžovič** - University of Cardiff, Cardiff, UK
- **Maurizio Cecconi** - St. George Hospital, London, UK
- **Admir Hadžič** - Columbia University, New York,USA
- **Robert Fitzgerald** - Karl Landsteiner Society Wien, Austria
- Jochen Hinkelbein-University medical centre Köln. Germany

Publications

<u>Journals:</u>

- 2008 – 94 articles (od tega z IF 7)
- 2009 – 200 articles (od tega z IF 7)
- 2010 – 75 (od tega z IF 13)
- 2011 – 99 prispevkov (od tega z IF 20)
- 2012 – 90 prispevkov (od tega z IF 17)
- 2013 - 80 prispevkov (od tega z IF 7)
- 2014 - 132 prispevkov (od tega z IF 11)

  (smo avtorji poglavja Anesteziologija (od strani 63-160)
  v univerzitetnem učbeniku Kirurgija, glavni urednik prof. Vladimir Smrkolj);
- 2015 – 222 prispevkov (od tega z IF 17)
- 2016 – 75 prispevkov (od tega z IF 19)
- 2017 – 155 prispevkov (od tega z IF 29)

EJA

Eur J Anaesthesiol 2017; **34**:1–19

GUIDELINES

European Society of Anaesthesiology and European Board of Anaesthesiology guidelines for procedural sedation and analgesia in adults

Jochen Hinkelbein, Massimo Lamperti, Jonas Akeson, Joao Santos, Joao Costa, Edoardo De Robertis, Dan Longrois, Vesna Novak-Jankovic, Flavia Petrini, Michel M.R.F. Struys, Francis Veyckemans, Thomas Fuchs-Buder* and Robert Fitzgerald†

Procedural sedation and analgesia (PSA) has become a widespread practice given the increasing demand to relieve anxiety, discomfort and pain during invasive diagnostic and therapeutic procedures. The role of, and credentialing required by, anaesthesiologists and practitioners performing PSA has been debated for years in different guidelines. For this reason, the European Society of Anaesthesiology (ESA) and the European Board of Anaesthesiology have created a taskforce of experts that has been assigned to create an evidence-based guideline and, whenever the evidence was weak, a consensus amongst experts on: the evaluation of adult patients undergoing PSA, the role and competences required for the clinicians to safely perform PSA, the commonly used drugs for PSA, the adverse events that PSA can lead to, the minimum monitoring requirements and post-procedure discharge criteria. A search of the literature from 2003 to 2016 was performed by a professional librarian and the retrieved articles were analysed to allow a critical appraisal according to the Grading of Recommendations Assessment, Development and Evaluation method. The Taskforce selected 2248 articles. Where there was insufficiently clear and concordant evidence on a topic, the Rand Appropriateness Method with three rounds of Delphi voting was used to obtain the highest level of consensus among the taskforce experts.

These guidelines contain recommendations on PSA in the adult population. It does not address sedation performed in the ICU or in children and it does not aim to provide a legal statement on how PSA should be performed and by whom. The National Societies of Anaesthesiology and Ministries of Health should use this evidence-based document to help decision-making on how PSA should be performed in their countries. The final draft of the document was available to ESA members via the website for 4 weeks with the facility for them to upload their comments. Comments and suggestions of individual members and national Societies were considered and the guidelines were amended accordingly. The ESA guidelines Committee and ESA board finally approved and ratified it before publication.

Published online xx month 2017

From the Department of Anaesthesiology and Intensive Care Medicine, University Hospital of Cologne, Cologne, Germany (JH), Anaesthesiology Institute, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland Clinic Abu Dhabi, Abu Dhabi, United Arab Emirates (ML), Department of Clinical Sciences Malmö, Anaesthesiology and Intensive Care Medicine, Lund University Faculty of Medicine, Malmö, Sweden (JA), Centre for Evidence-Based Medicine, Faculty of Medicine, University of Lisbon, Lisbon, Portugal (JS,JC), Department of Neurosciences, Reproductive and Odontostomatological Sciences, University of Naples 'Federico II', Naples, Italy (EDR), Department of Anaesthesiology and Intensive Care, Hôpitaux Universitaires Paris Nord Val de Seine, Paris, France (DL), Clinical Department of Anaesthesiology and Intensive Care, University Medical Centre, Ljubljana, Slovenia (VNJ), Perioperative Medicine, Pain Therapy, RRD and Intensive Care Department, Anaesthesiology and Intensive Care University of Chieti-Pescara, Chieti, Italy (FP), Department of Anaesthesiology, University of Groningen, University Medical Centre Groningen, Groningen, The Netherlands (MMRFS), Anesthésie, Hôpital Jeanne de Flandre, Lille (FV), Fuchs-Buder T, Department of Anaesthesiology and Critical Care, CHRU Nancy, University of Lorraine, Nancy, France (TFB); and Karl Landsteiner Institute for Anaesthesiology and Intensive Care Medicine, Vienna, Austria (RF)

Correspondence to Massimo Lamperti, Anaesthesiology Institute, Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland Clinic Abu Dhabi, Abu Dhabi, United Arab Emirates
Tel: +971 2 5019000x41080; fax: +971 2 4108374; e-mail: doctmassimomd@gmail.com

*Chairman of the ESA/EBA taskforce for procedural sedation and analgesia guidelines in adults.

†Co-chairman of the ESA/EBA taskforce for procedural sedation and analgesia guidelines in adults.

 DOI:10.1097/EJA.0000000000000683

Lecture 1.4

Introduction to the Department of Anesthesiology and Reanimatology, Faculty of Medicine Ljubljana

assoc. prof. Maja Šoštarič, MD, PhD

Head, Department of Anesthesiology and Reanimatology, Faculty of Medicine Ljubljana

President, Slovenian Society of Anesthesiology and Intensive Care

Anaesthesiology in Slovenia

- 1846 Massachusetts Boston - first anaesthesia
- 1847 Ljubljana – first anesthesia
- 1932 Oxford – first Department of anaesthesiology
- 1945-1946 VMA Beograd Department for plastic surgery – head anaesthesiologist from GB
- 1949 - establishment of anaesthesiology unit

Education of anaesthesiology in Slovenia

- First courses of anaesthesiology in WHO centres in Copenhagen
- After the return they started education of anaesthesiology in Slovenia
- 1953 - 1970 organised courses for anaesthesiologist lasted from 6-12 months on this courses also pathophysiologists, pulmonologists, cardiologists, pharmacologists participated
- The courses were organised in the hospital Golnik which was the leading institute for thoracic surgery and anaesthesiology
- At the end of the courses there was an exam which lasted for 3 days and this was the beginning of education of anaesthesiology in Slovenia
- At the same time the courses for anaesthesia nurses began, they lasted for 2 months
- In 1961 there was 35 anaesthesiologists in Slovenia

Department of anaesthesiology and reanimatology Medical Faculty Ljubljana

- 1987 the class for anaesthesiology was established in the Department of surgery at MF
- In the undergraduate study 15 hours of anaesthesiology lessons and 4 hours of reanimatology were included
- Already at that time the practical work in operating theatres and workshops on reanimatology were organised.
- To evaluate the knowledge and skills of the students an exam of anaesthesiology was introduced in curriculum for the first time
- 1994 the first independent Department of anaesthesiology and reanimatology was established at MF UL
- The department actively collaborate in the establishment of European school of anaesthesiology

Teaching

- The undergraduate education is the main part of our work
- We teach reanimation and anaesthesiology
- Obligatory subjects
- Optional subject

Obligatory subject

- Emergency medicine 1 and 2
- in 1st 2nd 6th year
- Together with all who are involved in emergency medicine
- BLS, IMLS, ALS
- Most of the lectures and practical work is performed in Simulation Centre

Anaesthesia

- In in 4th year
- Lectures
- Practical work in SC
- Individual practical work in operation theatre

Optional subject anaesthesia

- They gain deepened knowledge of anaesthesia
- 5th year class

Pain

- 6th year
- Together with Institute for pathophysiology and Institute for pharmacology
- Lectures
- Practical work

Topics

- Outline of pain pathophysiology
- Analgesics
- Chronic pain management
- Management of obstetric pain
- Acute pain service
- Alternative pain management
- Managemnet of cancer pain
- Presentation of seminar

Seminars

- Acute postoperative pain management
- Chronic back pain
- Pain during delivery

Practical work

- Acute pain service
- Multidisciplinary work in pain clinic

Airway management

- From basic airway management to difficult airway
- Lectures
- Practical work in simulation centre

US in anaesthesiology

- Basic knowledge
- US for i.v. catheters
- Regional anaesthesia and US
- Respiratory system and US
- US for perioperative haemodynamic evaluation

Scientific research work

- A close connecting of undergraduate and postgraduate teaching and clinical work is necessary for scientific research work in the field of anaesthesiology and perioperative intensive care medicine
- The performed scientific research work was possible due only to work on the clinic and cooperation with CD in UMC or other department in peripheral hospitals.

Lecture 1.5

Introduction to the International office at Faculty of Medicine Ljubljana and the Erasmus program

prof. Tomaž Marš, MD, PhD

Vice Dean, Faculty of Medicine Ljubljana

Head, Erasmus program at Faculty of Medicine Ljubljana

UNIVERSITY OF LJUBLJANA
FACULTY OF MEDICINE

Univerza v Ljubljani
Medicinska fakulteta
1919 2019

INTERNATIONALISATION and MOBILITY PROGRAMMES

- networking
- international programme
- outgoing students
- incoming students

ERASMUS+ International Credit Mobility

Prof. Dr. Tomaž Marš, Erasmus+ Coordinator

UNIVERSITY OF LJUBLJANA FACULTY OF MEDICINE
Institutional Mobility

Univerza v Ljubljani Medicinska fakulteta 1919 2019

UtrechtNetwork

The Guild

UNICA

EUA

ARC

CEEPUS

CEI Central European Initiative

CELSA

Scholars at Risk Network

- Utrecht Network
  - MAUI - Mid-American Universities International Network Member
  - AEN - Australian-European Network Members
- UNICA- Institutional Network of the Universities from Capitals of Europe
- Rector's conference: Alpe – Jadran
- EUA - European University Association
- CEEPUS - Central European exchange programme for University Studies
- CEI - Central European Initiative University Network
- SAR– Scholars at Risk
- Western Balkans platform
- CELSA
- The GUILD

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Medicinska fakulteta
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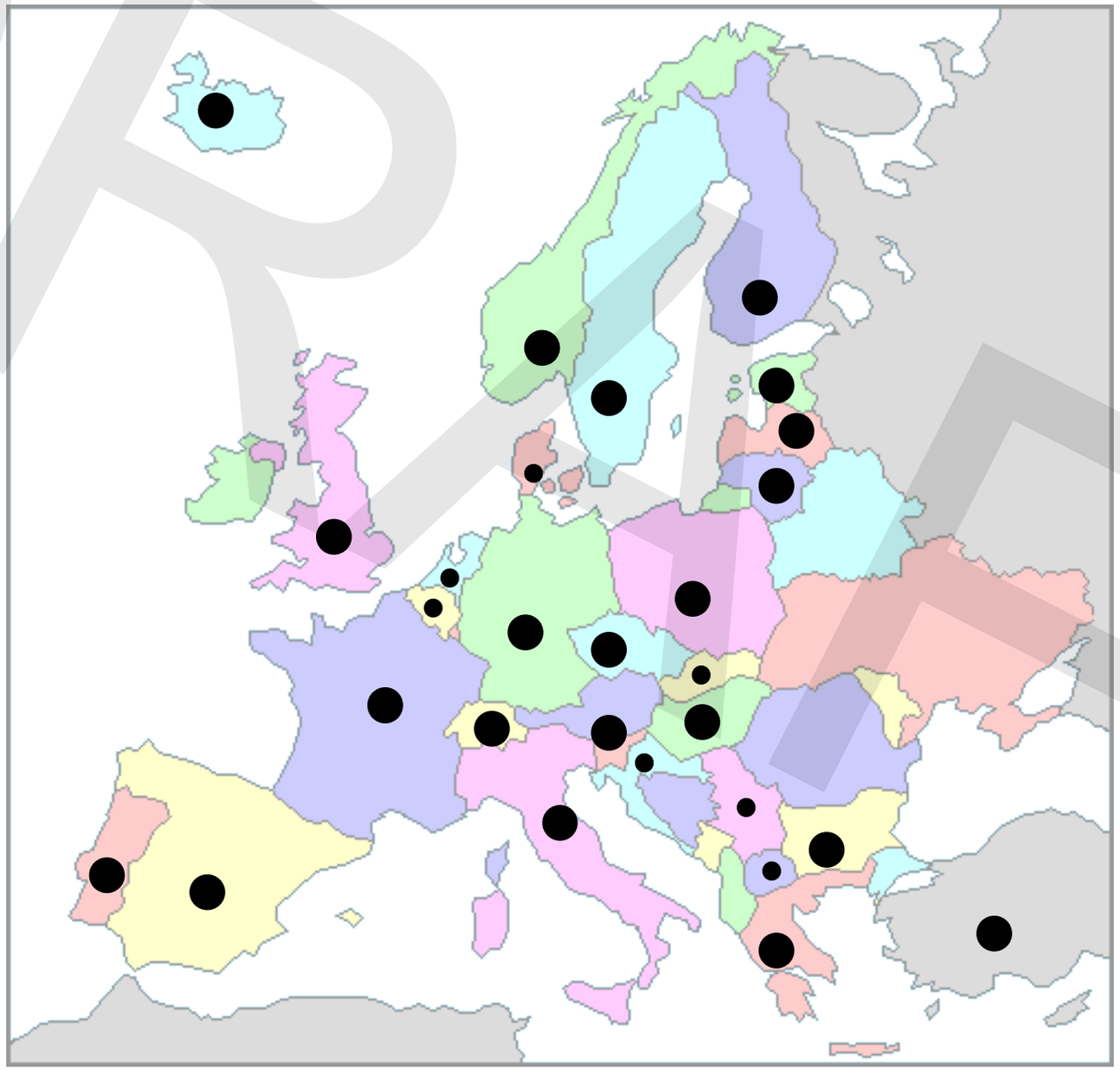
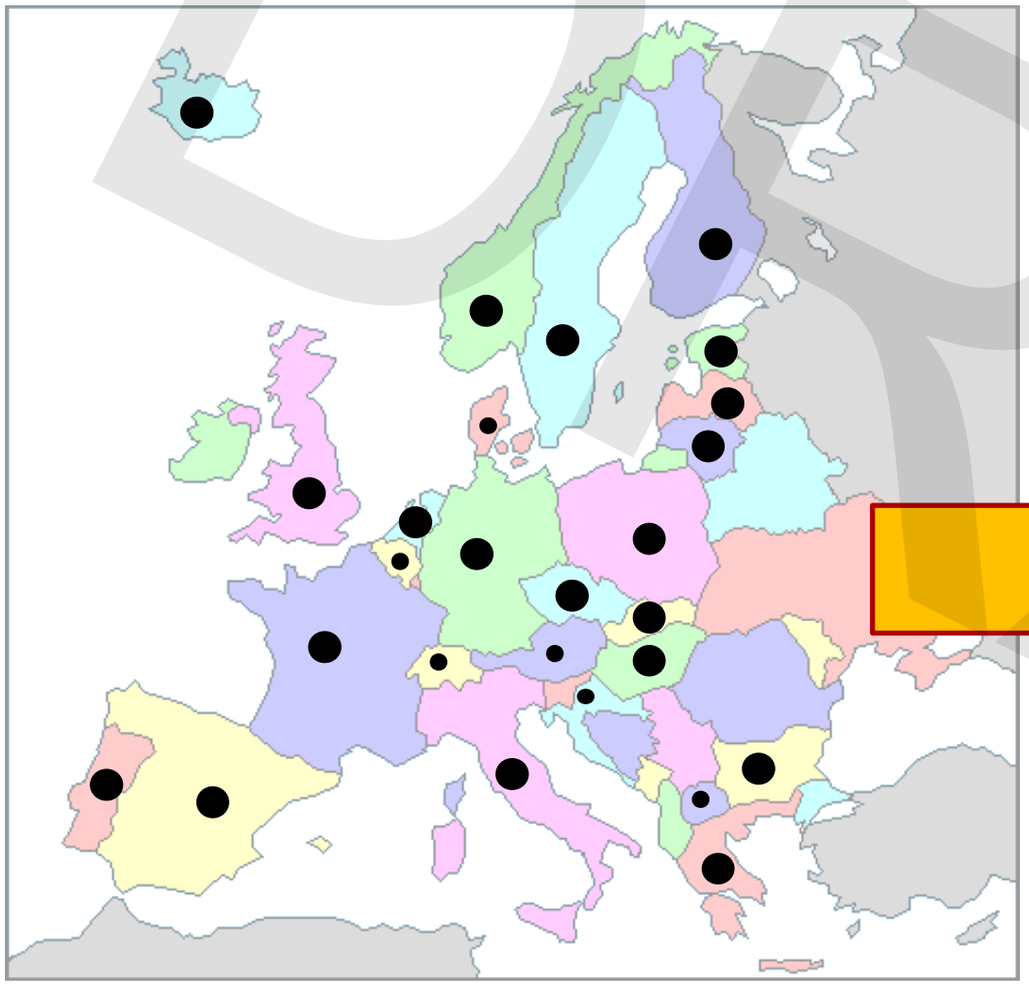
Education and Culture
Lifelong Learning Programme

Erasmus Code: SI LJUBLJA01



94 UNIVERSITIES in 24 COUNTRIES



94 partner universities in European Union and EEC, Turkey

Partner Universities in the World:
Argentina, Brazil, USA, Republic of South Africa, Japan, Lebanon, Kazakhstan, Georgia, Mexico, Dominican Republic, Serbia, Macedonia, Nepal, ...

UNIVERSITY OF LJUBLJANA
FACULTY OF MEDICINE

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Medicinska fakulteta
1919 2019

Full membership in **'ECTS-MA"**

and participates in **MEDINE II**

ECTS Medicine Association

http://www.med-ects.org/index.htm

Constitutive member of

"NPHC"

http://www.nphc.info/

MEDINE I and II, TRUNAK, HEPMP, ALLIANCE4 LIFE, ...

ECTS Medicine Association

ERASMUS+

2014 - 2020 programme for Education, Training, Youth, and Sport

Mobility programmes:

Erasmus + STT / STA mobility grants

Bilateral Inter-institutional Agreements /UL and UL MF

Institutional grants for researchers (UL and UL MF)

INTERNATIONAL RELATIONS OFFICE

Central Office of International Relations

norway grants

CEEPUS

UNIVERSITY OF LJUBLJANA
FACULTY OF MEDICINE
Mobility & (Re)Integration

Univerza v Ljubljani
Medicinska fakulteta
1919 2019

Strong holds:

- Open environment for students and researchers
- Academic excellence, Infrastructure and equipment
- Access to Clinical Institutions, Clinical Practice
- Social Benefits

OUTGOING STUDENTS

Univerza v Ljubljani
Medicinska fakulteta
1919 2019

ACADEMIC YEAR	Erasmus exchange	Erasmus+ placement	BASILEUS	BRAZIL (Surgery CR)	IFMSA	Tropical Medicine	HOUSTON	Lions Club	Kleve	TOGETHER
2006/2007	7	0	0	0	60	22	6		0	95
2007/2008	4	0	0	17	68	18	8		0	115
2008/2009	22	1	0	17	81	23	6		0	150
2009/2010	36	5	0	15	58	19	10		0	143
2010/2011	29	16	0	14	66	20	9		0	154
2011/2012	24	7	2	12	52	45	6	7	0	155
2012/2013	37	7	0	7	92	30	35	6	2	216
2013/2014	36	16	2	8	88	30	86	10	2	278
2014/2015	64	22	1	1	89	30	60	9	1	277
2015/2016	64	20	0	19	80	30	30	6	0	249

INCOMING STUDENTS

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Academic year	Erasmus exchange	BASILEUS	CEEPUS	IFMSA	Erasmus placement	Bilateral agreement	TOTAL
2006/2007	2	0	0	54			56
2007/2008	1	0	2	60			63
2008/2009	7	0	1	68			76
2009/2010	9	0	0	55			64
2010/2011	21	2	1	55			79
2011/2012	30	6	2	63	8	3	112
2012/2013	54	0	3	87	8	3	155
2013/2014	58	11	1	81	3	0	154
2014/2015	81	0	3	74	21	0	179
2015/2016	90	0	7	57	21	2	177

UNIVERSITY OF LJUBLJANA
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OUTGOING STUDENTS

- Rules and regulations
- Calls Announcements
- Selection process
- Workshop for Learning Agreements preparation
- Documents and procedure (prior, in between, after) mobility

Erasmus+

UNIVERSITY OF LJUBLJANA
FACULTY OF MEDICINE

Univerza v Ljubljani
Medicinska fakulteta
1919 2019

OUTGOING STUDENTS

Criteria for candidate selection:

- year of study
- average grade of study
- interview with teaching commission
- student tutor
- language knowledge

Education and Culture
Lifelong Learning Programme

UNIVERSITY OF LJUBLJANA
FACULTY OF MEDICINE

Univerza v Ljubljani
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INCOMING STUDENTS

-Informations

-Rules and regulations

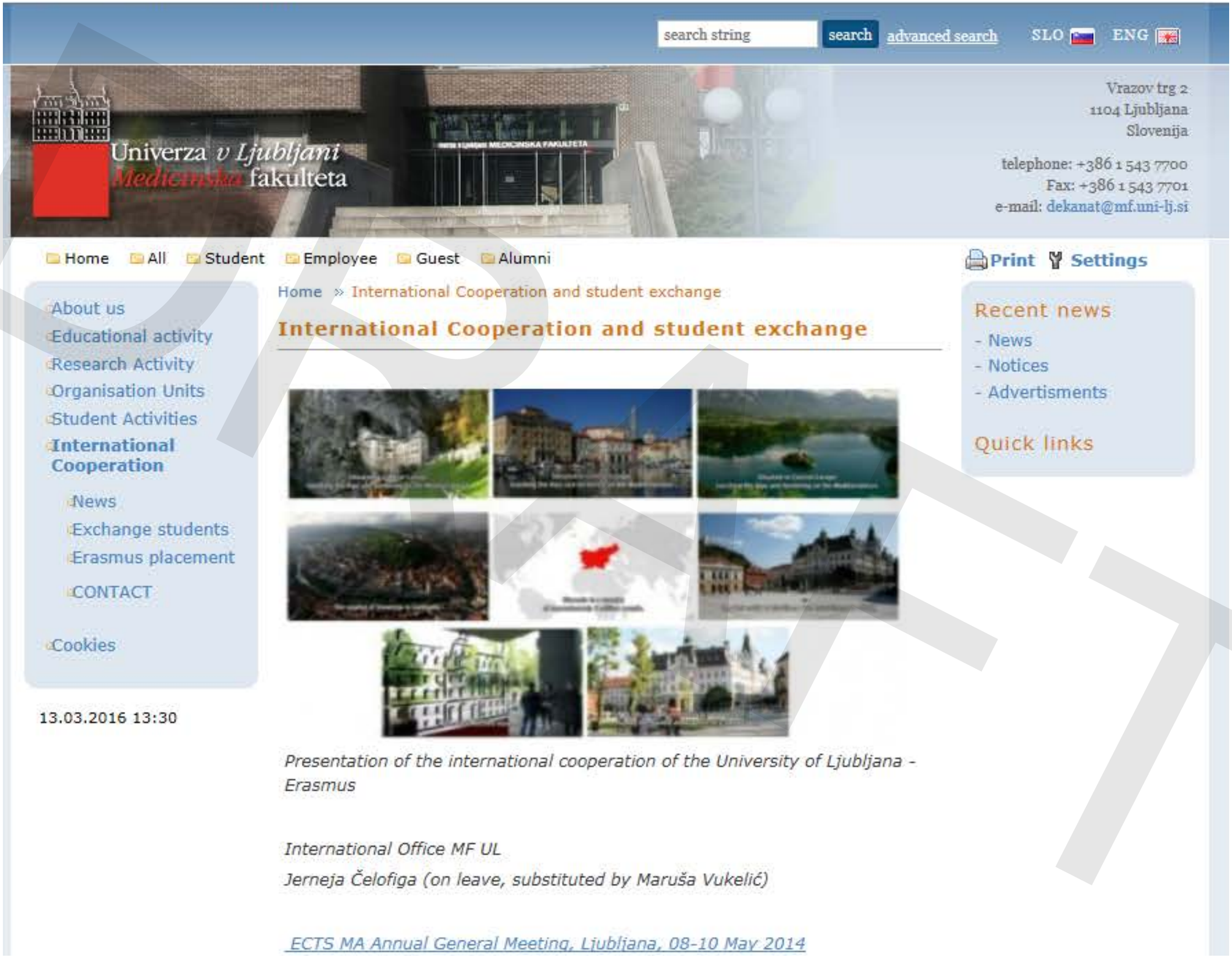
-Application procedure

-Learning Agreements and Study preparation

-Welcome day

-Documents and procedure (prior, inbetween, after) mobility

http://www.mf.uni-lj.si/vsebina/menu1/2410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Presentation of the international cooperation of the University of Ljubljana - Erasmus
International Office MF UL
Jerneja Čelofiga (on leave, substituted by Maruša Vukelić)
ECTS MA Annual General Meeting, Ljubljana, 08-10 May 2014

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SUBJECT SCHEDULE 3RD, 4TH AND 5TH YEAR

Erasmus+

SCHEDULE FOR LECTURES/SEMINARS/CR OF 3RD, 4TH AND 5TH YEAR SUBJECTS*

LECTURES, SEMINARS, CLINICAL ROTATIONS 2016/2017

week	date	national holidays	Individual subjects	IV. year subjects	V. year subjects
	26.9.-30.9.		Fundamentals of Investigative Methods (Radiology)		
1.	3.10.-7.10.		Pathology Pathophysiology Pharmacology Anaesthesiology Methods and Tools in Public Health (WHOLE YEAR COURSES)	NERVOUS SYSTEM	MAXILOFACIAL SURGERY with FUNDAMENTALS OF DENTAL MEDICINE
2.	10.10.-14.10.				
3.	17.10.-21.10.				OPHTHALMOLOGY
4.	24.10.-28.10.				
5.	31.10.-4.11.	31.10.&1.11.			
6.	7.11.-11.11.			EXAMINATION	
7.	14.11.-18.11.			MENTAL HEALTH	ORL
8.	21.11.-25.11.				
9.	28.11.-2.12.				
10.	5.12.-9.12.				
11.	12.12.-16.12.			EXAMINATION	EXAMINATION
12.	19.12.-23.12.			EXAMINATION	URINARY TRACT
13.	26.12.-30.12.	25.12.&26.12., 1.1.		Christmas & NY holidays	Christmas & NY holidays
14.	2.1.-6.1.				URINARY TRACT
15.	9.1.-13.1.			MUSKELOSKELETAL SYSTEM	GYNEACOLOGY&OBSTETRICS
16.	16.1.-20.1.				
17.	23.1.-27.1.				
18.	30.1.-3.2.				
19.	6.2.-10.2.	8.2.	EMC	EXAMINATION	EXAMINATION
20.	13.2.-17.2.			GASTROINTESTINAL TRACT SKIN AND VENEREAL DISEASES	PAEDIATRICS 1 and PEDIATRICS 2 OR IMMUNE DISEASES, METABOLIC DISEASES and FORENSIC MEDICINE
21.	20.2.-24.2.		Pathology Pathophysiology Pharmacology Anaesthesiology Methods and Tools in Public Health (WHOLE YEAR COURSES)		
22.	27.2.-3.3.				
23.	6.3.-10.3.				
24.	13.3.-17.3.				
25.	20.3.-24.3.			EXAMINATION	
26.	27.3.-31.3.				
27.	3.4.-7.4.	MON		INFECTIOUS DISEASES CANCER AND BLOOD DISEASES	EXAMINATION
28.	10.4.-14.4.				
29.	17.4.-21.4.				
30.	24.4.-28.4.	27.4.			
31.	1.5.-5.5.	1. & 2.5.			
32.	8.5.-12.5.			INFECTIOUS DISEASES CANCER AND BLOOD DISEASES	CIRCULATORY SYSTEM
33.	15.5.-19.5.				
34.	22.5.-26.5.				
35.	29.5.-2.6.				RESPIRATORY SYSTEM
36.	5.6.-9.6.				
37.	12.6.-16.6.			EXAMINATION	
38.	19.6.-23.6.				EXAMINATION

* This is a draft schedule and we reserve the right to eventual changes.

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VI. Year
Clinical Rotations

Erasmus+

Proposal for programme for CLINICAL ROTATIONS**** IN SURGERY, INTERNAL MEDICINE, PEDIATRICS AND PRIMARY HEALTH CARE (FAMILY ME

CLINICAL ROTATIONS 6th YEAR (2016/2017)

week	date	SURGERY ***	INTERNAL MEDICINE *	PEDIATRICS	PRIMARY HEALTH CARE **	GYNECOLOGY & OBSTETRICS
August	1.8.-5.8.					
	8.8.-12.8.					
	16.8.-19.8.			PAEDIATRICS CR		
	22.8.-26.8.					
September	29.8.-2.9.					
	5.9.-9.9.					GYNECOLOGY AND OBSTETRICS CR
	12.9.-16.9.					
	19.-23.9.					
	26.-30.9.					
1.	3.10.-7.10.	1st group clinical practices	CR (different subfields)			
2.	10.10.-14.10.					
3.	17.10.-21.10.					
4.	24.10.-28.10.					
5.	31.10.-4.11.					
6.	7.11.-11.11.					
7.	14.11.-18.11.					
8.	21.11.-25.11.					
9.	28.11.-2.12.					
10.	5.12.-9.12.	2nd group clinical rotations			PRIMARY HEALTH CARE	
11.	12.12.-16.12.					
12.	19.12.-23.12.					
13.	26.12.-30.12.	Holidays				
14.	2.1.-6.1.					
15.	9.1.-13.1.		CR (different subfields)		PRIMARY HEALTH CARE	GYNECOLOGY 5th year course
16.	16.1.-20.1.					
17.	23.1.-27.1.					
18.	30.1.-3.2.					
19.	6.2.-10.2.					
20.	13.2.-17.2.		CR (different subfields)	PEDIATRICS I (5th year course) and PEDIATRICS II (6th year course with CR)		
21.	20.2.-24.2.	3rd group clinical rotations				
22.	27.2.-3.3.					
23.	6.3.-10.3.					
24.	13.3.-17.3.					
25.	20.3.-24.3.					
26.	27.3.-31.3.					
27.	3.4.-7.4.					
28.	10.4.-14.4.					
29.	17.4.-21.4.					
30.	24.4.-28.4.	4th group clinical rotations				
31.	1.5.-5.5.		holidays			
32.	8.5.-12.5.		CR (different subfields)			
33.	15.5.-19.5.					
34.	22.5.-26.5.					
35.	29.5.-2.6.					
36.	5.6.-9.6.					
37.	12.6.-16.6.					
38.	19.6.-23.6.					

*	Students are required to take maximum three departments/rotation (minimal period in each department is 2 weeks; Places per week for the following number of Erasmus+ students: General Surg. (1 student), Oncologic Surg. (2 students), Thoracic Surg. (1 student), Urology (2 students), Abdominal Surg. (2 students), Cardiovascular Surg. (2 students), Plastic Surg. (2 students), Neurosurgery (2 students), Traumatology (2 students)
**	Students will be placed to nominated mentors outside Ljubljana, practice hours are variable, everyday presence is required, sufficient knowledge of Internal Medicine and practical skills is required
***	Students can choose max. three departments/rotation (minimal period in each department is 2 weeks)
****	Clinical rotations are available only for those students, who have already completed the theoretical part of the subject and passed the exam (that should be evident from the Transcript of Records).

2007 - 2013

Jean Monnet Tempus Youth in Action Erasmus Mundus

Lifelong Learning Programme

Comenius Leonardo Erasmus Grundtvig Transversal

2014 – 2020

Erasmus+

Key Action 1: Learning Mobility of Individuals

Key Action 2: Co-operation for Innovation and Good Practices

Key Action 3: Support for Policy Reform

The new programme is for organisations across all sectors actively involved in delivering formal and non-formal education and training, youth and sport activities

Lecture series 2

Education

Lecture 2.1

What do graduate students learn about pain medicine at the Faculty of Medicine Ljubljana

Blaž M. Geršak, MD

Resident, Anaesthesiology, reanimatology and perioperative intensive care medicine

Study years

PRE-CLINICAL SUBJECTS

CLINICAL SUBJECTS

1 2 3 4 5 6

Biophysics

Anatomy 1

Cell Biology

Introduction to Medicine

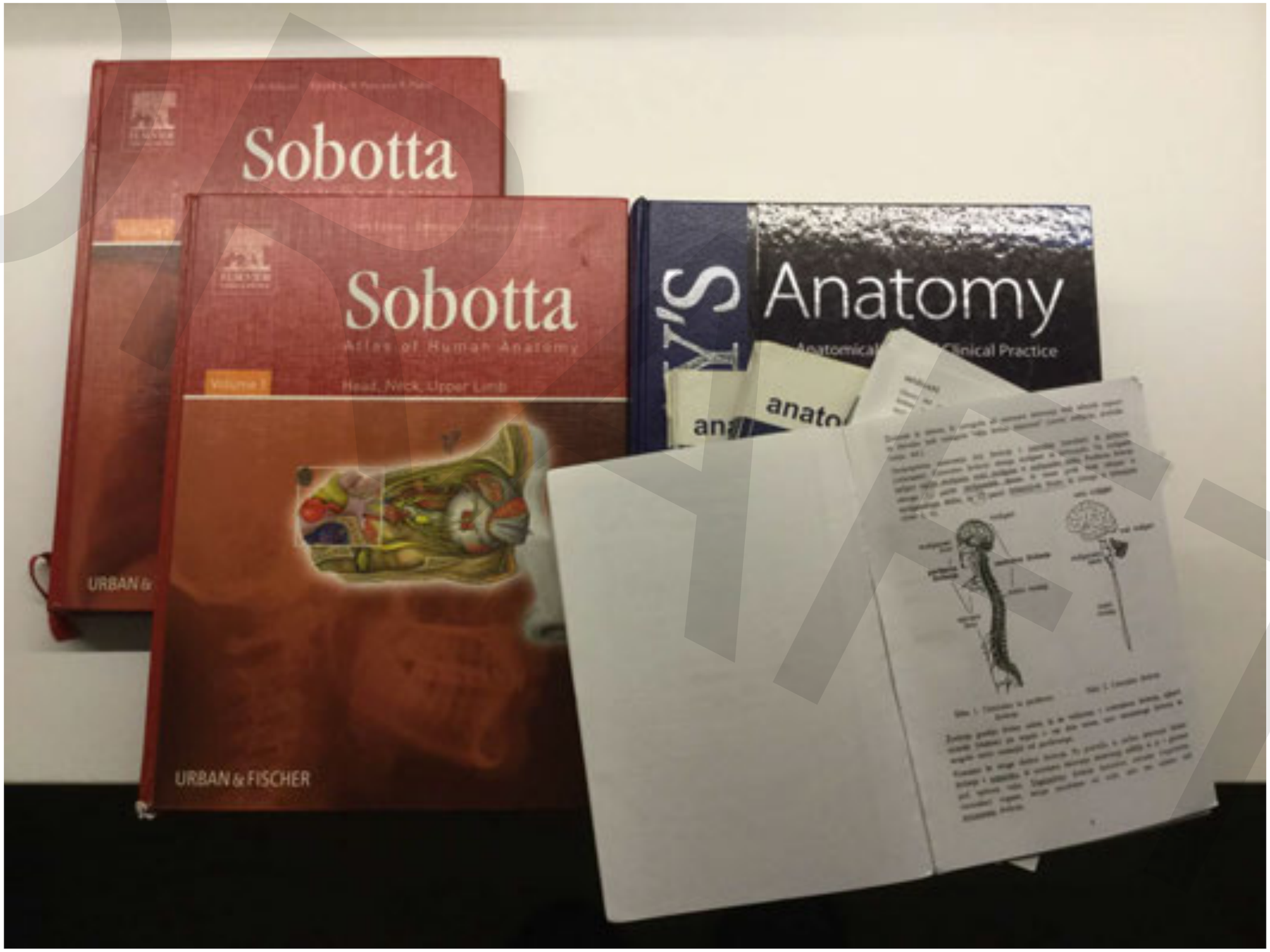
Study year 1

Concepts in Biochemistry

Communication

Emergency Medical Care 1

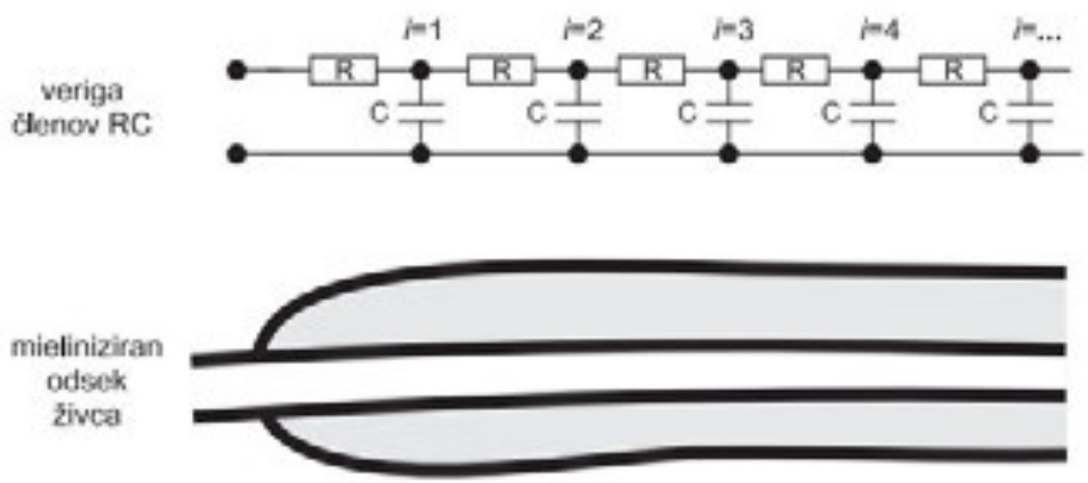
Anatomy 1 - peripheral nerves

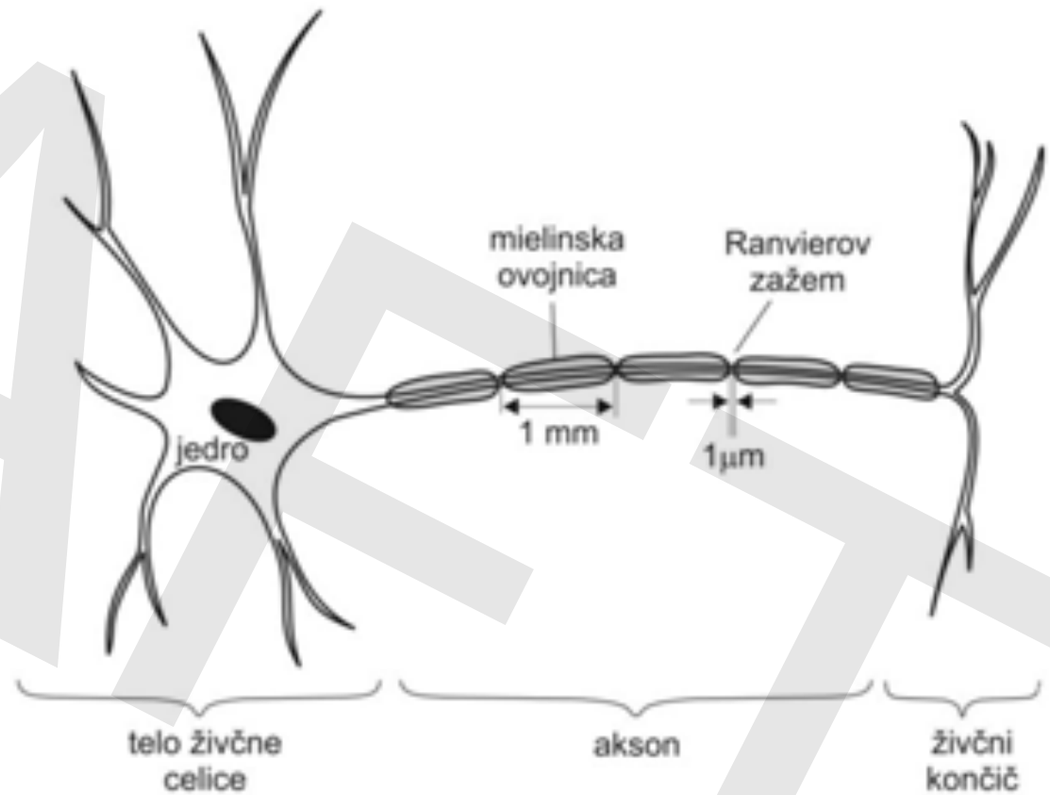


Biophysics - nerve transmission

8 Prevajanje električnih sunkov po živčnem vlaknu

Pri tej vaji se bomo seznanili z osnovnimi značilnostmi prevajanja električnih sunkov po mieliniziranem delu živčnih vlaken.





Introduction to Medicine - history of medicine

Introduction to Medicine (5 ECTS)

Aims

The student will get to know basic ethical principles in medicine, including modern deontological guidelines, he will recognize the importance of health for society, he will get to know basic public health concepts and approaches, he will understand the development of medicine, changing of health and disease aspects over time, he will comprehend universality, internationality and interdisciplinarity of medicine and will master the basics of information systems and information technology tools in health care.

Module 3

Development of medical science and practice throughout history – from ancient medicine to modern medicine. Achievements of Slovenian physicians abroad, of some foreign physicians in our country and development of organized medical associations, hospitals and health care education among Slovenes. Promoting student thinking and motivating students through seminars and excursions.

- **development of 19th century medicine**
- **therapeutic "boom" (morphine, caffeine, atropine, ...)**
- **advances in surgery + anaesthesia (systemic, local)**

Medical Biochemistry and Molecular Genetics

Anatomy 2

Physiology

Basics of Biostatistics

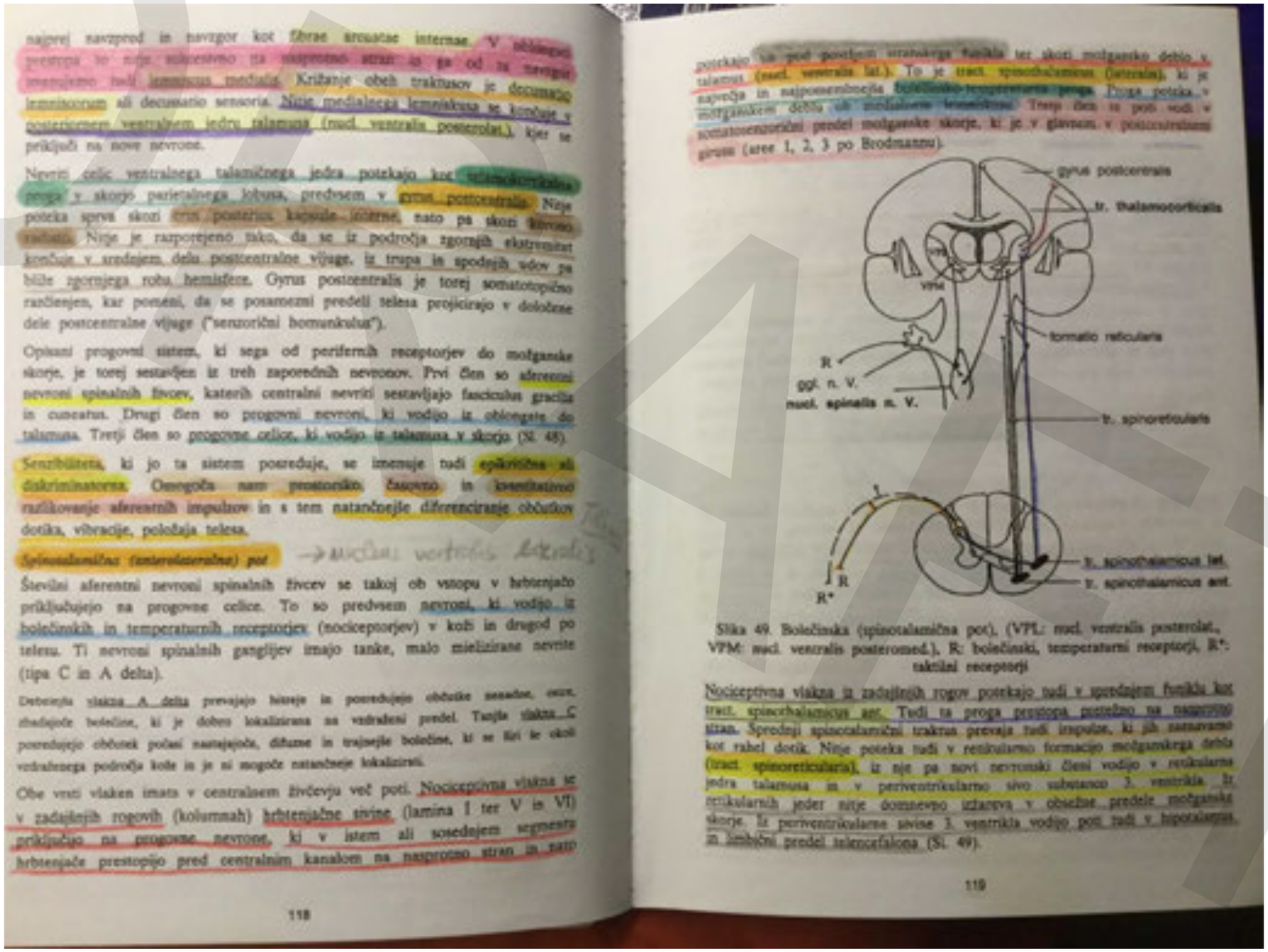
Study year 2

Histology and Embryology

Contact with the Patient

Health and Environment

Anatomy 2 - central/peripheral nervous system



najprej navzpred in navzgor kot fibrae arcuatae internae. V oblongati prestopa to nato sočasno na nasprotno stran in ga od tu naprej imenujemo tudi lemniscus medialis. Križanje obeh traktusov je decussatio lemniscorum ali decussatio sensoria. Nato medialnega lemniskusa se končuje v posteriornem ventralnem jedru talamusa (nucl. ventralis posterolat.), kjer se priključi na nove nevrone.

Nevriti celic ventralnega talamičnega jedra potekajo kot talamokortikalna proga v skorjo parietalnega lobusa, predvsem v gyrus postcentralis. Nato poteka sprva skozi crus posterius kapsule interne, nato pa skozi krono radiata. Nato je razporejeno tako, da se iz področja zgornjih ekstremitet končuje v srednjem delu postcentralne vijuge, iz trupa in spodnjih udov pa bliže zgornjega roba hemisfere. Gyrus postcentralis je torej somatotopično razčlenjen, kar pomeni, da se posamezni predeli telesa projicirajo v določene dele postcentralne vijuge ("senzorični homunkulus").

Opisani progovni sistem, ki sega od perifernih receptorjev do moždanske skorje, je torej sestavljen iz treh zaporednih nevronov. Prvi člen so aferentni nevroni spinalnih živcev, katerih centralni nevriti sestavljajo fasciculus gracilis in cuneatus. Drugi člen so progovni nevroni, ki vodijo iz oblongate do talamusa. Tretji člen so progovne celice, ki vodijo iz talamusa v skorjo (Sl. 48).

Senzibiliteta, ki jo ta sistem posreduje, se imenuje tudi epikritična ali diskriminatorna. Omogoča nam prostorsko, časovno in kvantitativno razlikovanje aferentnih impulzov in s tem natančnejše diferenciranje občutkov dotika, vibracije, položaja telesa.

Spinotalamična (anterolateralna) pot

Številni aferentni nevroni spinalnih živcev se takoj ob vstopu v hrbtenjačo priključujejo na progovne celice. To so predvsem nevroni, ki vodijo iz bolečinskih in temperaturnih receptorjev (nociceptorjev) v koži in drugod po telesu. Ti nevroni spinalnih ganglijev imajo tanke, malo mielizirane nevrite (tipa C in A delta).

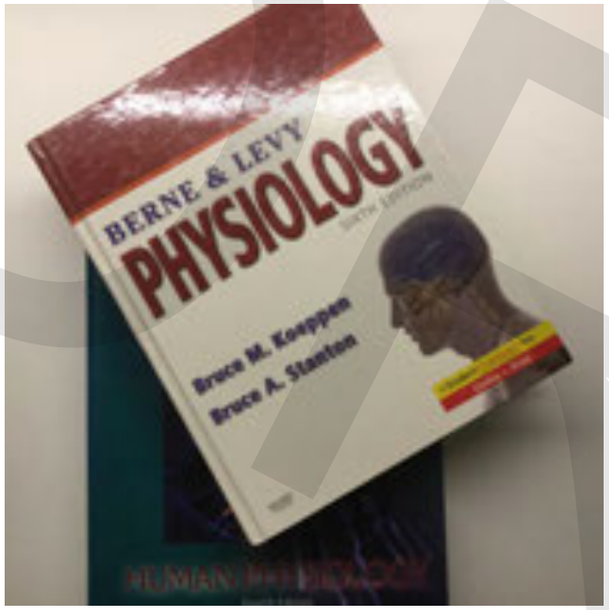
Debelejša vlakna A delta prevajajo hitreje in posredujejo občutke zmerne, ostre, zbadajoče bolečine, ki je dobro lokalizirana na vzdraženi predel. Tanjša vlakna C posredujejo občutek počasi nastajajoče, difuzne in trajnejše bolečine, ki se širi le okoli vzdraženega področja kože in je ni mogoče natančneje lokalizirati.

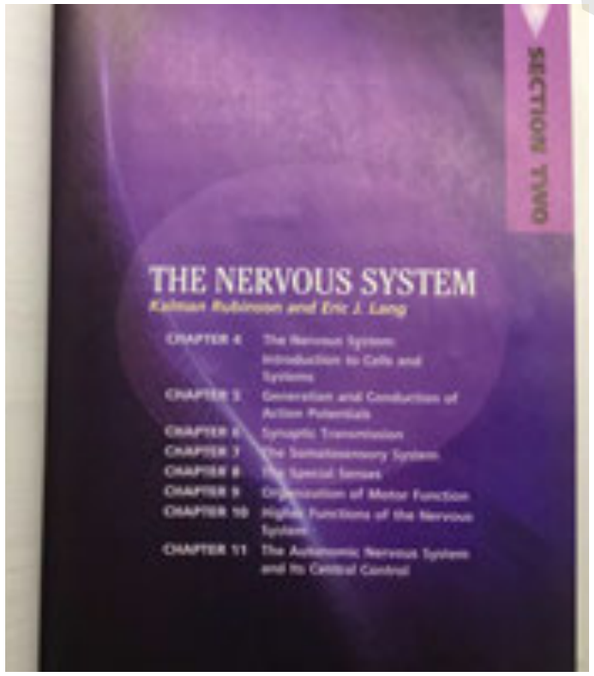
Obe vrsti vlaken imata v centralnem živčevju več poti. Nociceptivna vlakna se v zadajnjih rogovih (kolumnah) hrbtenjačne sivine (lamina I ter V in VI) priključijo na progovne nevrone, ki v istem ali sosednjem segmentu hrbtenjače prestopijo pred centralnim kanalom na nasprotno stran in nato potekajo na poti povprečnega vrstnega funikla ter skozi moždansko deblo v talamus (nucl. ventralis lat.). To je tract. spinothalamicus (lateralis), ki je največja in najpomembnejša bolečinsko-temperaturna proga. Proga poteka v moždanskem deblu ali medialnem lemniskusu. Tretji člen se poti vodi v somatosenzorični predel moždanske skorje, ki je v glavnem v postcentralnem girusu (area 1, 2, 3 po Brodmannu).

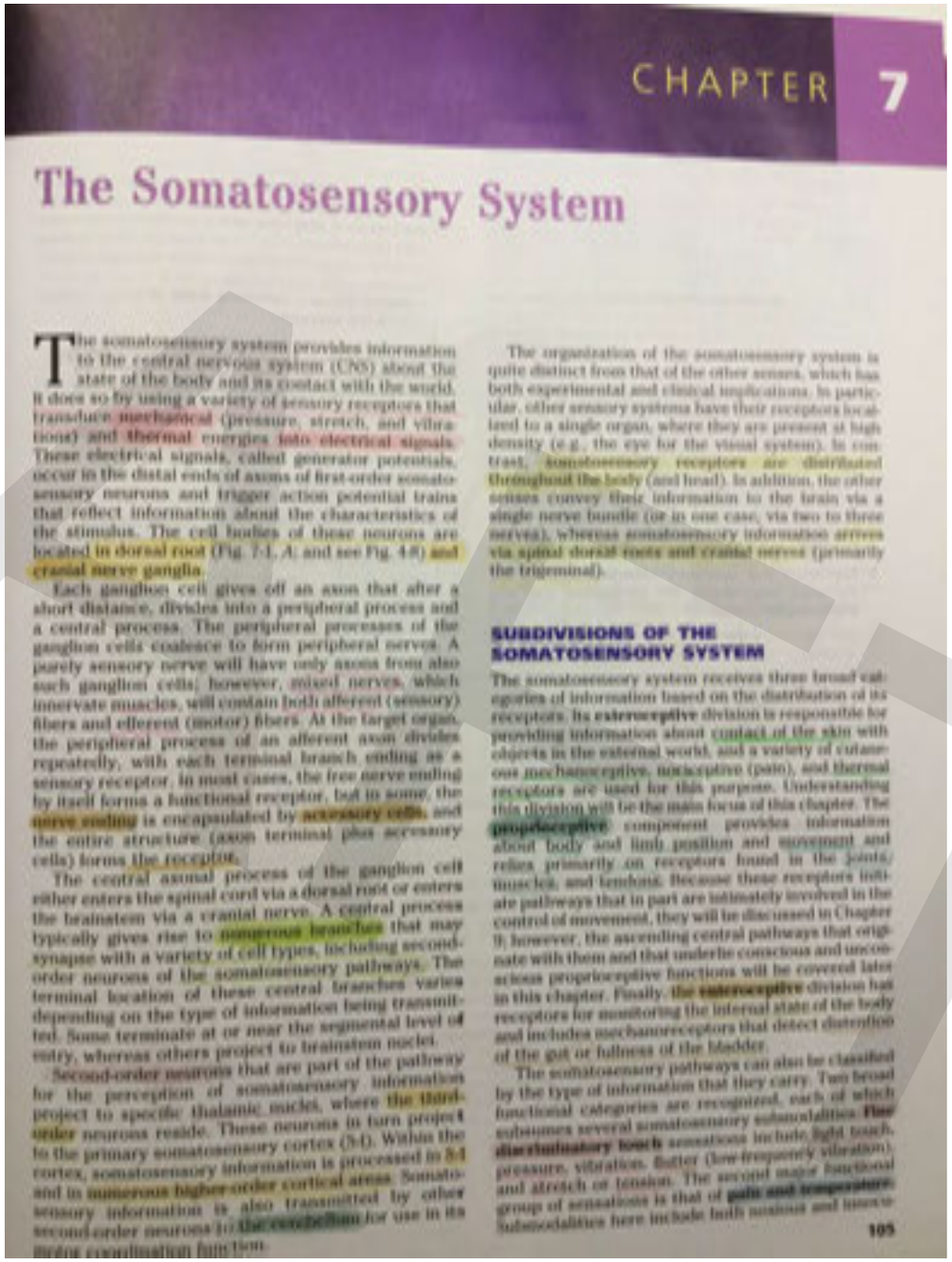
Slika 49. Bolečinska (spinotalamična pot). (VPL: nucl. ventralis posterolat., VPM: nucl. ventralis posteromed.). R: bolečinski, temperaturni receptorji, R*: taktilni receptorji

Nociceptivna vlakna iz zadajnjih rogov potekajo tudi v sprednjem funiklu kot tract. spinothalamicus ant. Tudi ta proga prestopa poteka na nasprotno stran. Sprednji spinotalamični traktus prevaja tudi impulze, ki jih zaznavamo kot rahel dotik. Nato poteka tudi v retikularno formacijo moždanskega debla (tract. spinoreticularis), iz nje pa novi nevronski členi vodijo v retikularna jedra talamusa in v periventrikularno sivo substanco 3. ventrikla. Iz retikularnih jeder nato domnevno izstopa v obsežne predele moždanske skorje. Iz periventrikularne sivine 3. ventrikla vodijo poti tudi v hipotalamus in limbični predel telencefalona (Sl. 49).

Physiology - somatosensory system







CHAPTER 7

The Somatosensory System

The somatosensory system provides information to the central nervous system (CNS) about the state of the body and its contact with the world. It does so by using a variety of sensory receptors that transduce mechanical (pressure, stretch, and vibrations) and thermal energies into electrical signals. These electrical signals, called generator potentials, occur in the distal ends of axons of first-order somatosensory neurons and trigger action potential trains that reflect information about the characteristics of the stimulus. The cell bodies of these neurons are located in dorsal root (Fig. 7-1, A; and see Fig. 4-8) and cranial nerve ganglia.

Each ganglion cell gives off an axon that after a short distance, divides into a peripheral process and a central process. The peripheral processes of the ganglion cells coalesce to form peripheral nerves. A purely sensory nerve will have only axons from also such ganglion cells; however, mixed nerves, which innervate muscles, will contain both afferent (sensory) fibers and efferent (motor) fibers. At the target organ, the peripheral process of an afferent axon divides repeatedly, with each terminal branch ending as a sensory receptor. In most cases, the free nerve ending by itself forms a functional receptor, but in some, the nerve ending is encapsulated by accessory cells, and the entire structure (axon terminal plus accessory cells) forms the receptor.

The central axonal process of the ganglion cell either enters the spinal cord via a dorsal root or enters the brainstem via a cranial nerve. A central process typically gives rise to numerous branches that may synapse with a variety of cell types, including second-order neurons of the somatosensory pathways. The terminal location of these central branches varies depending on the type of information being transmitted. Some terminate at or near the segmental level of entry, whereas others project to brainstem nuclei.

Second-order neurons that are part of the pathway for the perception of somatosensory information project to specific thalamic nuclei, where the third-order neurons reside. These neurons in turn project to the primary somatosensory cortex (3-1). Within the cortex, somatosensory information is processed in 3-1 and in numerous higher-order cortical areas. Somatosensory information is also transmitted by other second-order neurons to the cerebellum for use in its motor coordination function.

The organization of the somatosensory system is quite distinct from that of the other senses, which has both experimental and clinical implications. In particular, other sensory systems have their receptors localized to a single organ, where they are present at high density (e.g., the eye for the visual system). In contrast, somatosensory receptors are distributed throughout the body (and head). In addition, the other senses convey their information to the brain via a single nerve bundle (or in one case, via two to three nerves), whereas somatosensory information arrives via spinal dorsal roots and cranial nerves (primarily the trigeminal).

SUBDIVISIONS OF THE SOMATOSENSORY SYSTEM

The somatosensory system receives three broad categories of information based on the distribution of its receptors. Its **exteroceptive** division is responsible for providing information about contact of the skin with objects in the external world, and a variety of cutaneous mechanoreceptive, nociceptive (pain), and thermal receptors are used for this purpose. Understanding this division will be the main focus of this chapter. The **proprioceptive** component provides information about body and limb position and movement and relies primarily on receptors found in the joints, muscles, and tendons. Because these receptors initiate pathways that in part are intimately involved in the control of movement, they will be discussed in Chapter 9; however, the ascending central pathways that originate with them and that underlie conscious and unconscious proprioceptive functions will be covered later in this chapter. Finally, the **interoceptive** division has receptors for monitoring the internal state of the body and includes mechanoreceptors that detect distention of the gut or fullness of the bladder.

The somatosensory pathways can also be classified by the type of information that they carry. Two broad functional categories are recognized, each of which subsumes several somatosensory submodalities. The **discriminatory touch** sensations include light touch, pressure, vibration, flutter (low-frequency vibration), and stretch or tension. The second major functional group of sensations is that of **pain and temperature**. Submodalities here include both noxious and innocuous

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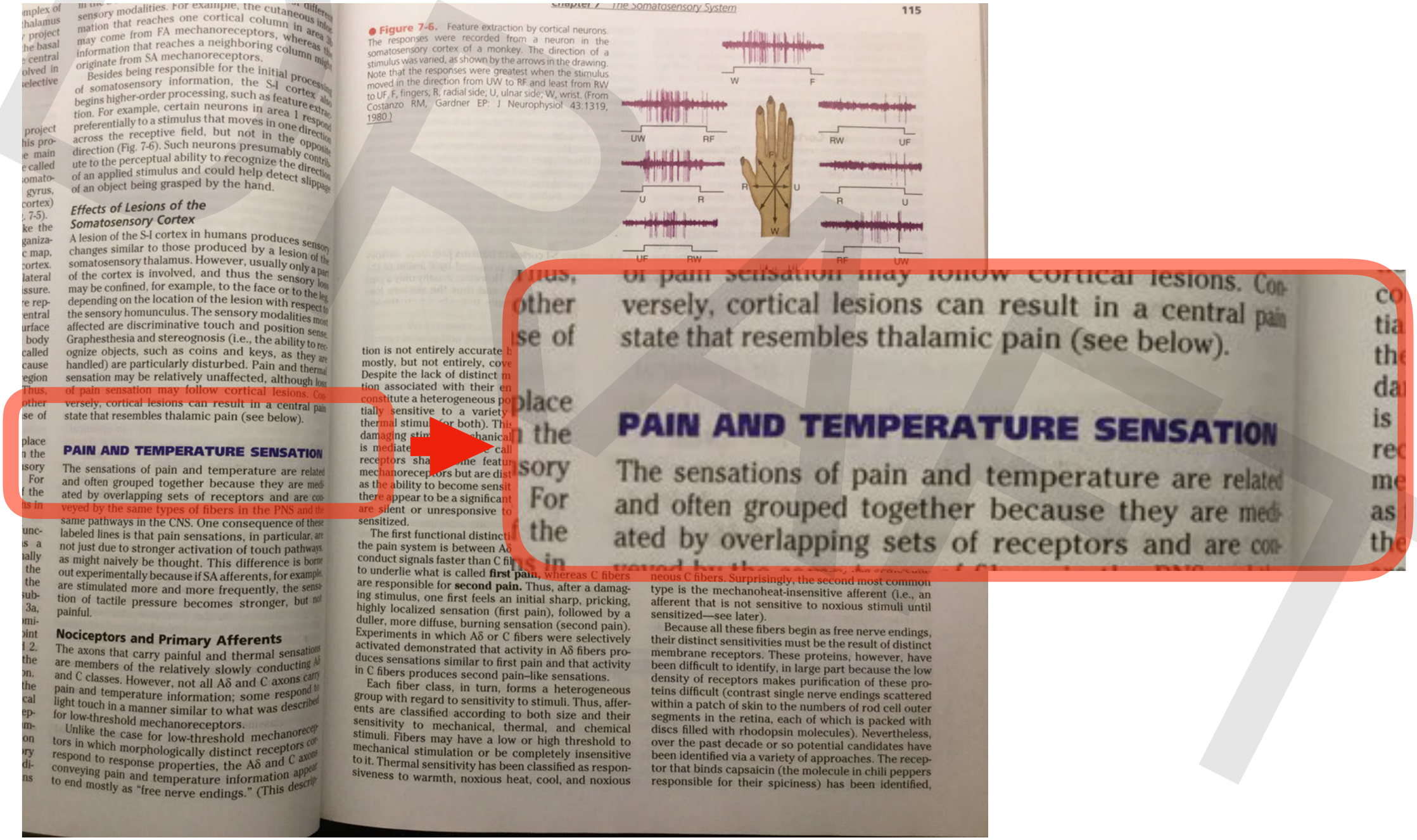
Physiology - somatosensory system



Chapter 7 The Somatosensory System 115

Figure 7-6. Feature extraction by cortical neurons. The responses were recorded from a neuron in the somatosensory cortex of a monkey. The direction of a stimulus was varied, as shown by the arrows in the drawing. Note that the responses were greatest when the stimulus moved in the direction from UW to RF and least from RW to UF. F, fingers; R, radial side; U, ulnar side; W, wrist. (From Costanzo RM, Gardner EP: J Neurophysiol 43:1319, 1980.)

Effects of Lesions of the Somatosensory Cortex

A lesion of the S-I cortex in humans produces sensory changes similar to those produced by a lesion of the somatosensory thalamus. However, usually only a part of the cortex is involved, and thus the sensory loss may be confined, for example, to the face or to the leg depending on the location of the lesion with respect to the sensory homunculus. The sensory modalities most affected are discriminative touch and position sense. Graphesthesia and stereognosis (i.e., the ability to recognize objects, such as coins and keys, as they are handled) are particularly disturbed. Pain and thermal sensation may be relatively unaffected, although loss of pain sensation may follow cortical lesions. Conversely, cortical lesions can result in a central pain state that resembles thalamic pain (see below).

PAIN AND TEMPERATURE SENSATION

The sensations of pain and temperature are related and often grouped together because they are mediated by overlapping sets of receptors and are conveyed by the same types of fibers in the PNS and the same pathways in the CNS. One consequence of these labeled lines is that pain sensations, in particular, are not just due to stronger activation of touch pathways as might naively be thought. This difference is borne out experimentally because if SA afferents, for example, are stimulated more and more frequently, the sensation of tactile pressure becomes stronger, but not painful.

Nociceptors and Primary Afferents

The axons that carry painful and thermal sensations are members of the relatively slowly conducting Aδ and C classes. However, not all Aδ and C axons carry pain and temperature information; some respond to light touch in a manner similar to what was described for low-threshold mechanoreceptors.

Unlike the case for low-threshold mechanoreceptors in which morphologically distinct receptors correspond to response properties, the Aδ and C axons conveying pain and temperature information appear to end mostly as "free nerve endings." (This descrip-

tion is not entirely accurate b
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there appear to be a significant
are silent or unresponsive to
sensitized.

The first functional distinct
the pain system is between Aδ
conduct signals faster than C fi
to underlie what is called **first pain**, whereas C fibers are responsible for **second pain.** Thus, after a damaging stimulus, one first feels an initial sharp, pricking, highly localized sensation (first pain), followed by a duller, more diffuse, burning sensation (second pain). Experiments in which Aδ or C fibers were selectively activated demonstrated that activity in Aδ fibers produces sensations similar to first pain and that activity in C fibers produces second pain–like sensations.

Each fiber class, in turn, forms a heterogeneous group with regard to sensitivity to stimuli. Thus, afferents are classified according to both size and their sensitivity to mechanical, thermal, and chemical stimuli. Fibers may have a low or high threshold to mechanical stimulation or be completely insensitive to it. Thermal sensitivity has been classified as responsiveness to warmth, noxious heat, cool, and noxious

neous C fibers. Surprisingly, the second most common type is the mechanoheat-insensitive afferent (i.e., an afferent that is not sensitive to noxious stimuli until sensitized—see later).

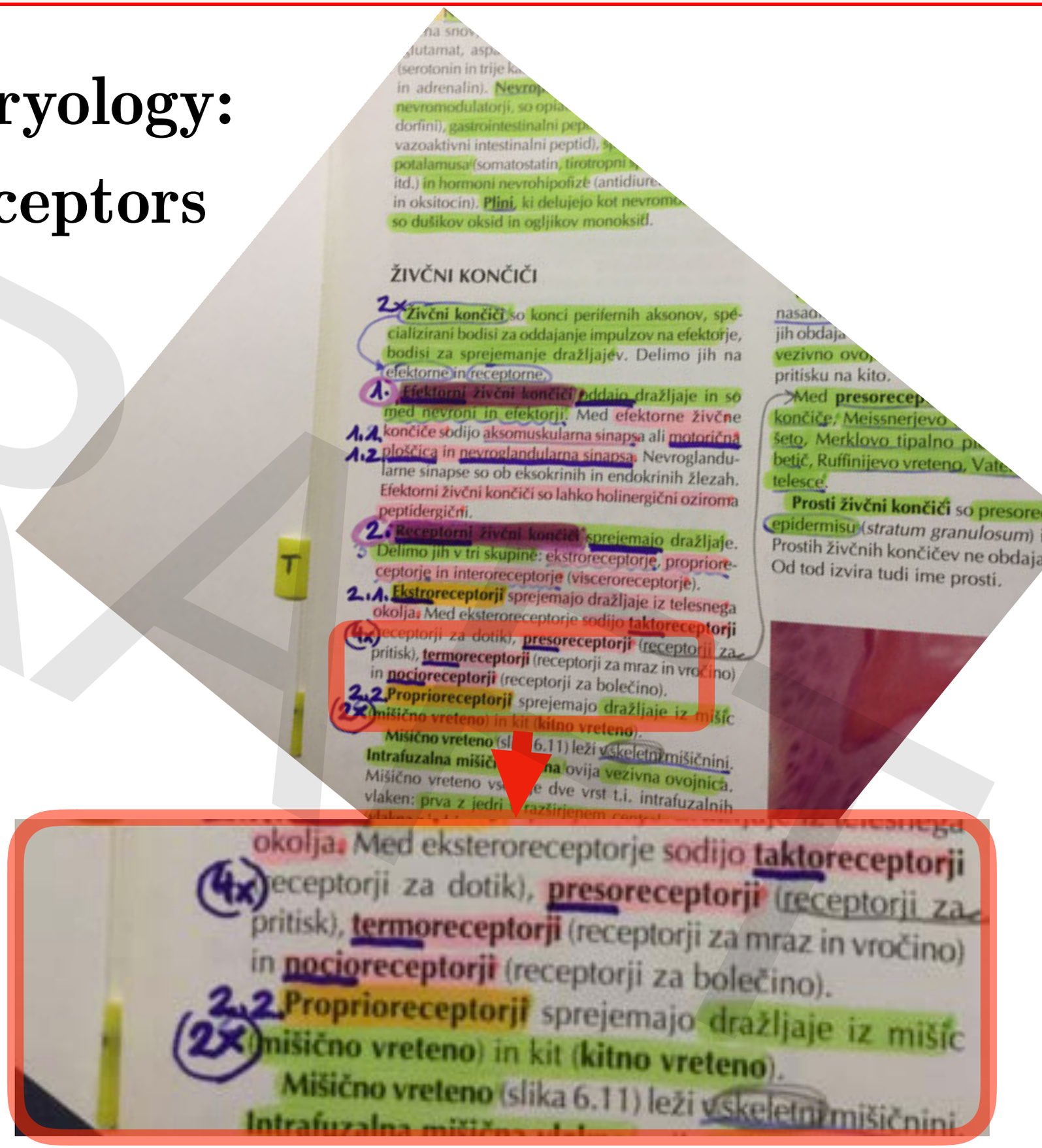
Because all these fibers begin as free nerve endings, their distinct sensitivities must be the result of distinct membrane receptors. These proteins, however, have been difficult to identify, in large part because the low density of receptors makes purification of these proteins difficult (contrast single nerve endings scattered within a patch of skin to the numbers of rod cell outer segments in the retina, each of which is packed with discs filled with rhodopsin molecules). Nevertheless, over the past decade or so potential candidates have been identified via a variety of approaches. The receptor that binds capsaicin (the molecule in chili peppers responsible for their spiciness) has been identified,

versely, cortical lesions can result in a central pain state that resembles thalamic pain (see below).

PAIN AND TEMPERATURE SENSATION

The sensations of pain and temperature are related and often grouped together because they are mediated by overlapping sets of receptors and are con-

Histology and Embryology: nervous system receptors



General Pharmacology and Toxicology

Special Pharmacology and Toxicology

Investigative Methods

Study year 3

Propaedeutics

Methods of Public Health

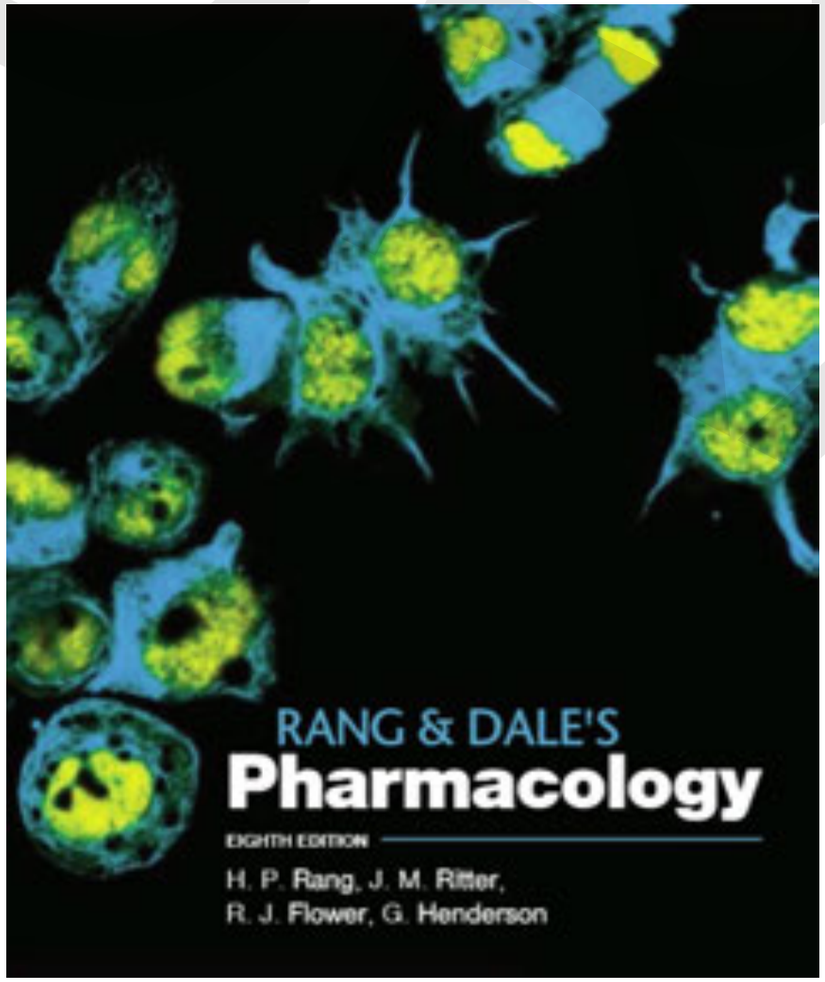
Emergency Medical Care 2

Basic Microbiology and Immunology

Pathophysiology

Pathology

Special Pharmacology and Toxicology: analgesic drugs



NERVOUS SYSTEM SECTION 4

Analgesic drugs 42

OVERVIEW

Pain is a disabling accompaniment of many medical conditions, and pain control is one of the most important therapeutic priorities.

In this chapter, we discuss the neural mechanisms responsible for different types of pain, and the various drugs that are used to reduce it. The 'classic' analgesic drugs, notably opioids and non-steroidal anti-inflammatory drugs (NSAIDs; described in ch. 36), have their origins in natural products that have been used for centuries. The original compounds, typified by morphine and aspirin, are still in widespread use, but many synthetic compounds that act by the same mechanisms have been developed. Opioid analgesics are described in this chapter. Next, we consider various other drug classes, such as antidepressants and antiepileptic drugs, which clinical experience has shown to be effective in certain types of pain. Finally, looking into the future, many potential new drug targets have emerged as our knowledge of the neural mechanisms underlying pain has advanced. We describe briefly some of those new approaches at the end of the chapter.

NEURAL MECHANISMS OF PAIN

Pain is a subjective experience, hard to define exactly, even though we all know what we mean by it. Typically, it is a direct response to an unpleasant event associated with tissue damage, such as injury, inflammation or cancer. But severe pain can arise independently of any obvious predisposing cause (e.g. trigeminal neuralgia), or persist long after the precipitating injury has healed (e.g. phantom limb pain). It can also occur as a consequence of brain or nerve injury (e.g. following a stroke or herpes infection). Painful conditions of the latter kind, not directly linked to tissue injury, are often described as 'neuropathic pains'. They are very common and a major cause of disability and distress, and in general they respond less well to conventional analgesic drugs than do conditions where the immediate cause is clear. In these cases, we need to think of pain in terms of disordered neural function rather than simply as a 'normal' response to tissue injury.

The perception of noxious stimuli (termed nociception by Sherrington) is not the same thing as pain, which is a subjective experience and includes a strong emotional (affective) component. The amount of pain that a particular stimulus produces depends on many factors other than the stimulus itself. It is recognised clinically that many analgesics, particularly those of the morphine type, can greatly reduce the distress associated with pain. The affective component may be as least as significant as the antinociceptive component in the action of these drugs.

Good accounts of the neural basis of pain can be found in Melzack & Koltzenburg (2006).

NOCICEPTIVE AFFERENT NEURONS

Under normal conditions, pain is associated with impulse activity in small-diameter (C and Aδ) primary afferent fibres of peripheral nerves. These nerves have sensory endings in peripheral tissues and are activated by stimuli of various kinds (mechanical, thermal, chemical). The majority of unmyelinated (C) fibres are associated with polymodal nociceptive endings and convey a dull, diffuse, burning pain, whereas myelinated (Aδ) fibres convey a sensation of sharp, well-localised pain. C and Aδ fibres convey nociceptive information from muscle and viscera as well as from the skin.

With many pathological conditions, tissue injury is the immediate cause of the pain and results in the local release of a variety of chemicals that act on the nerve terminals, either activating them directly or enhancing their sensitivity to other forms of stimulation (Fig. 42.1). The pharmacological properties of nociceptive nerve terminals are discussed in more detail below.

The cell bodies of spinal nociceptive afferent fibres lie in dorsal root ganglia; fibres enter the spinal cord via the dorsal roots, ending in the grey matter of the dorsal horn. Most of the nociceptive afferents terminate in the superficial region of the dorsal horn, the C fibres and some Aδ fibres innervating cell bodies in laminae I and II (also known as the substantia gelatinosa), while other Aδ fibres penetrate deeper into the dorsal horn (lamina V). The substantia gelatinosa is rich in both endogenous opioid peptides and opioid receptors, and may be an important site of action for morphine-like drugs (see p. 313, Fig. 42.4).

Cells in laminae I and V give rise to the main projection pathways from the dorsal horn to the thalamus. For a more detailed account of dorsal horn circuitry, see Fields et al. (2006).

The nociceptive afferent neurons release glutamate and possibly ATP as the fast neurotransmitters at their central synapses in the dorsal horn. Glutamate acting on AMPA receptors is responsible for fast synaptic transmission at the first synapse in the dorsal horn. There is also a slower NMDA receptor-mediated response, which is important in relation to the phenomenon of 'wind-up' (see Fig. 42.2). The nociceptive afferent neurons also contain several neuropeptides (see Ch. 18), particularly substance P, calcitonin gene-related peptide (CGRP) and galanin. These are released as mediators at both the central and the peripheral terminals, and play an important role in the pathology of pain. In the periphery, substance P and CGRP produce some of the features of neurogenic inflammation, whereas galanin is anti-inflammatory. CGRP antagonists have potential for the treatment of migraine (see Ch. 13) but have not proved effective for other pain states. In animal models, substance P acting on NK_1 receptors was shown to be involved in wind-up and central sensitisation in the dorsal horn (see Fig. 42.2). Surprisingly, however, antagonists of substance P at NK_1 receptors turned out to be ineffective as analgesics in humans, although they do have antiemetic activity (Ch. 36).

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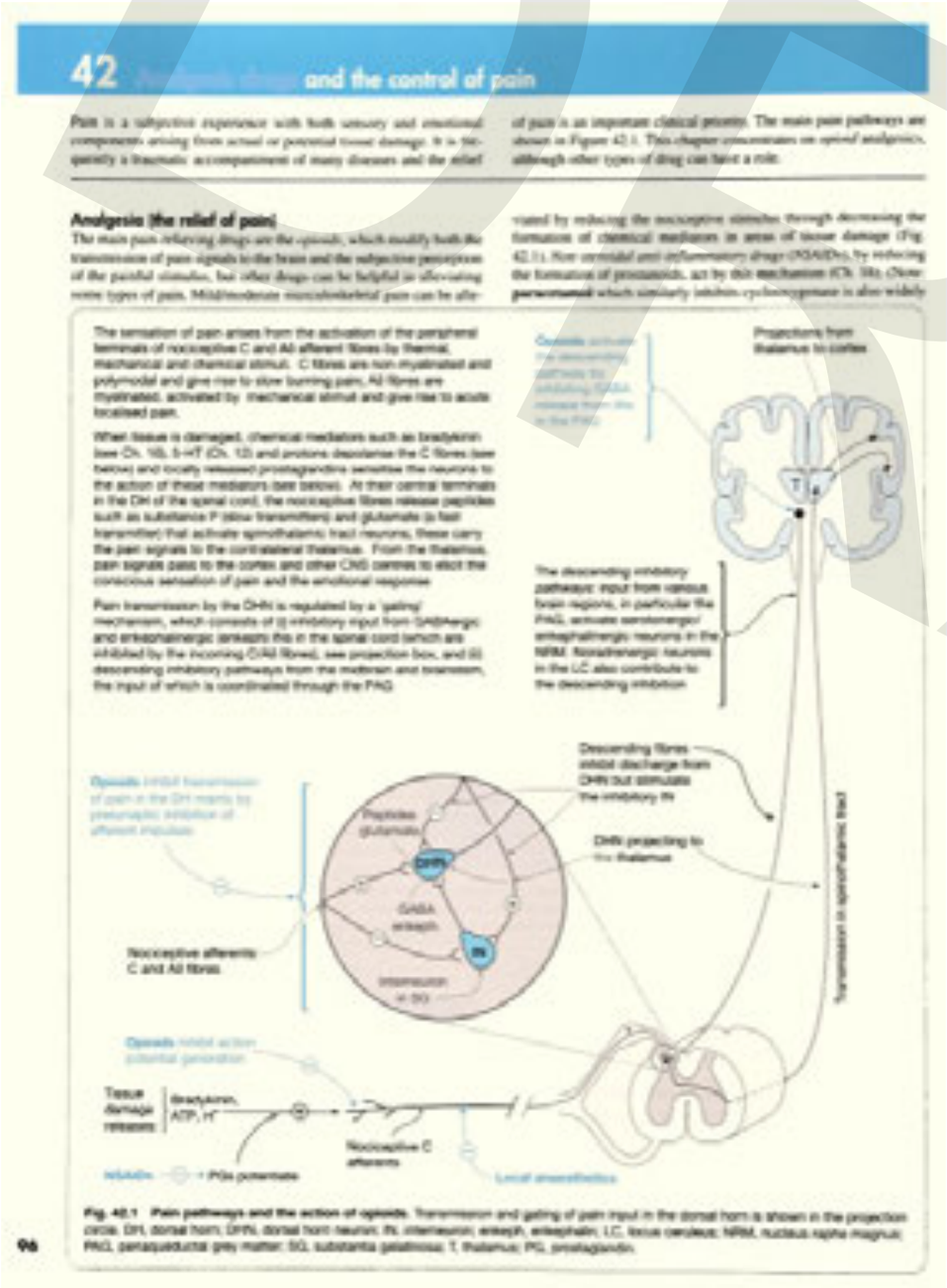
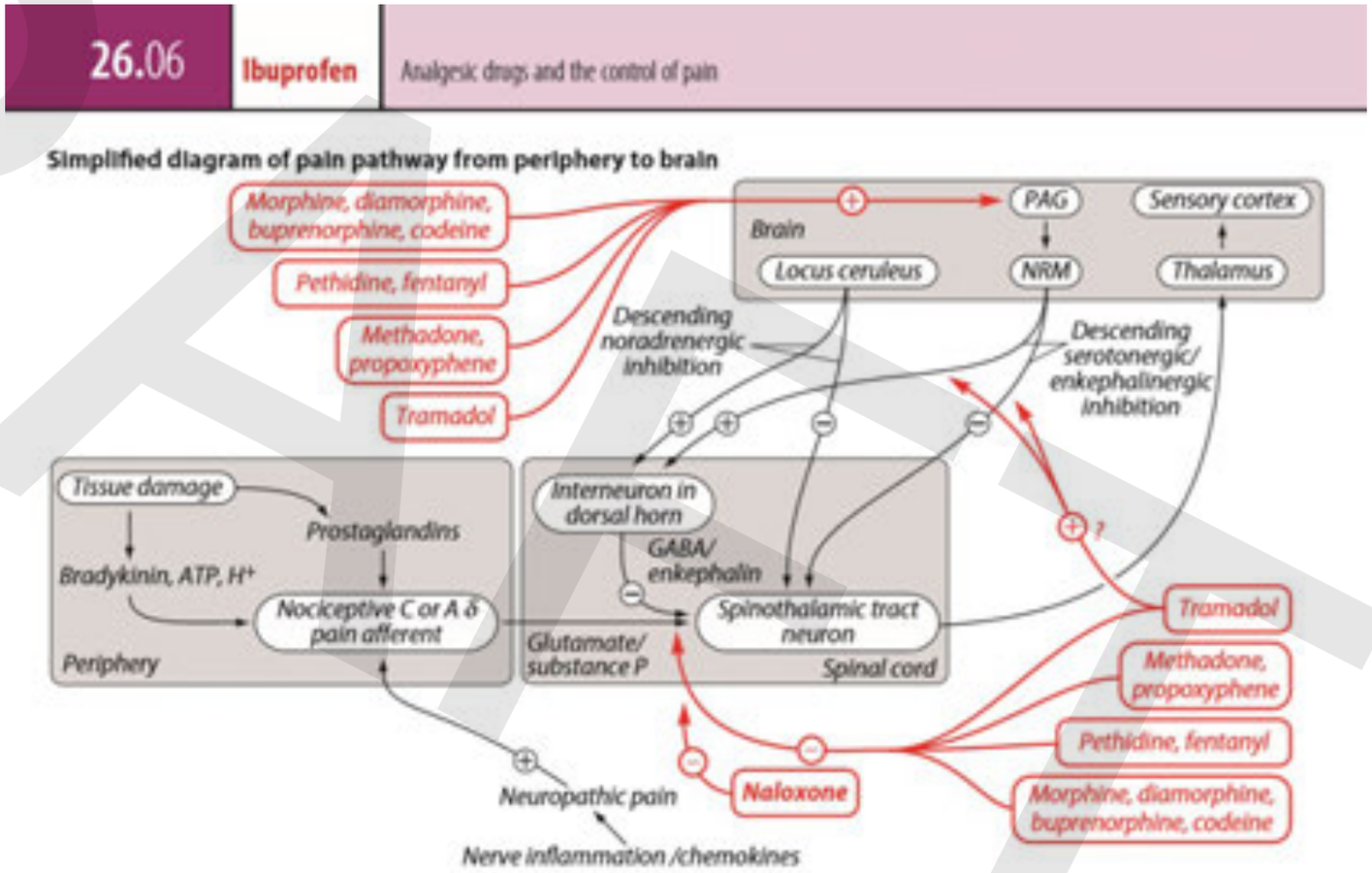
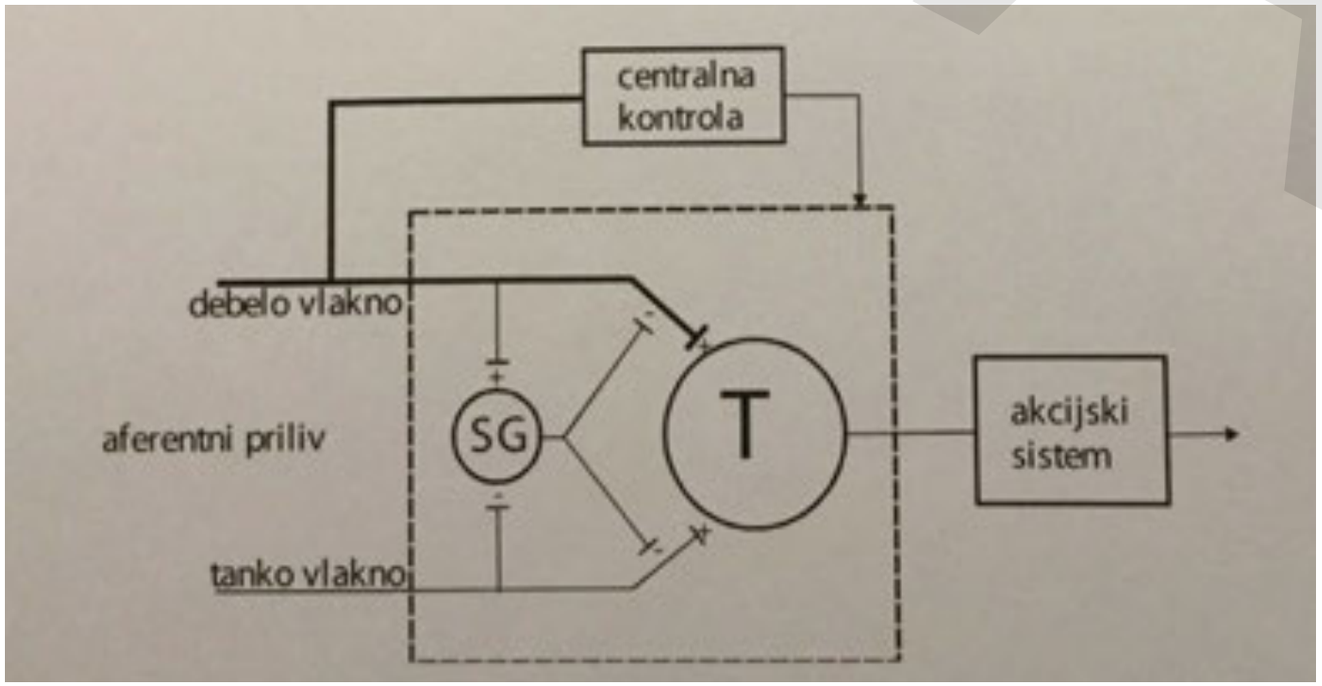
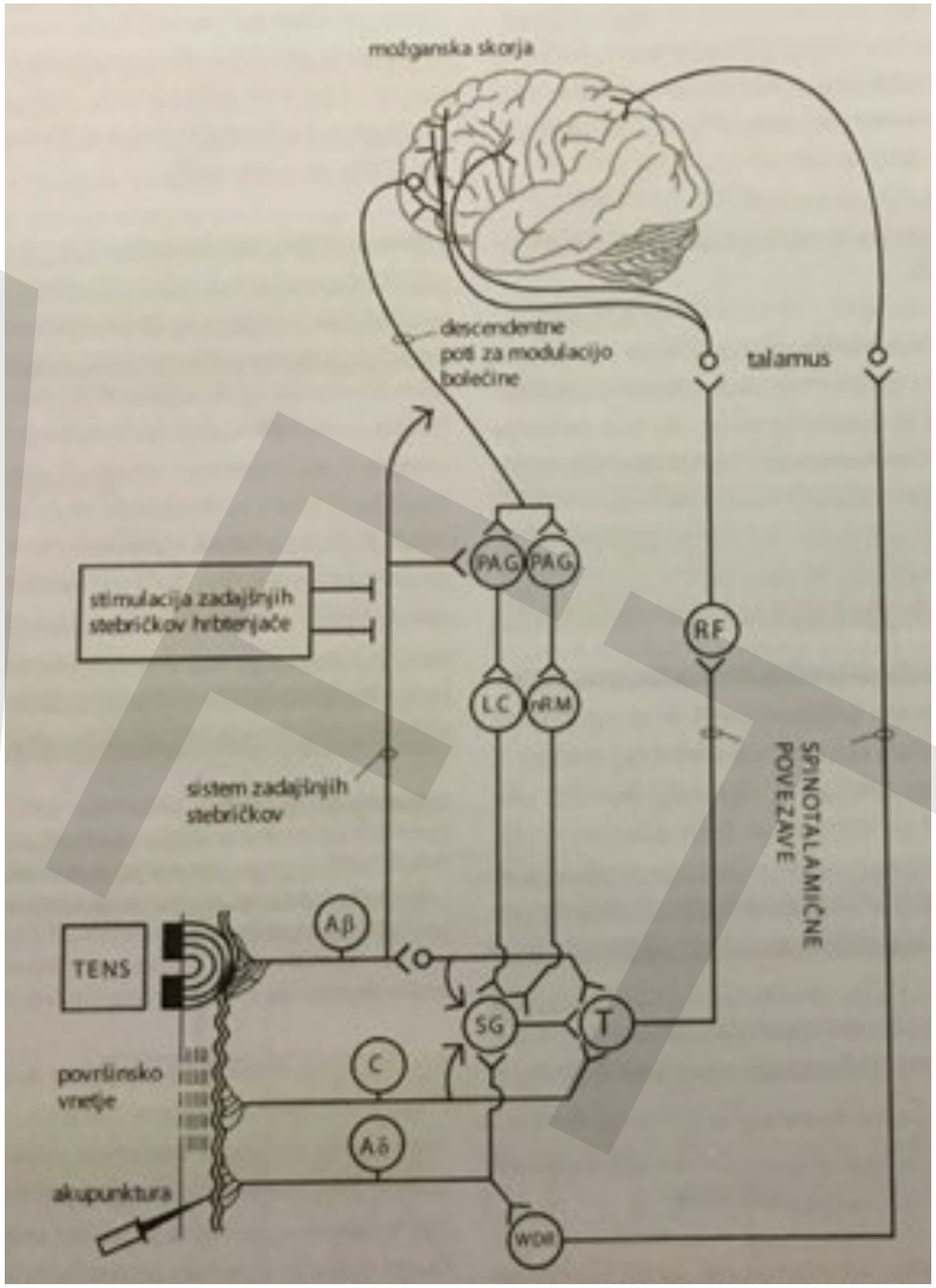
Special Pharmacology and Toxicology: analgesic drugs, control of pain



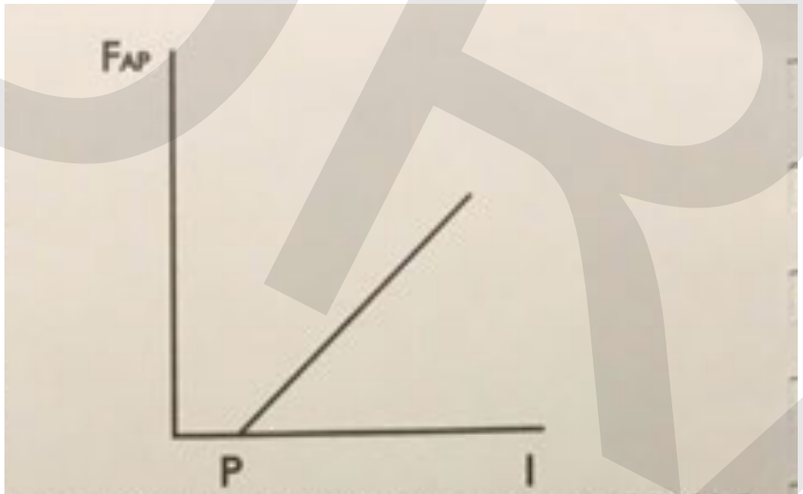


Pathophysiology - pain sensing theories, nervous system modulation, TENS

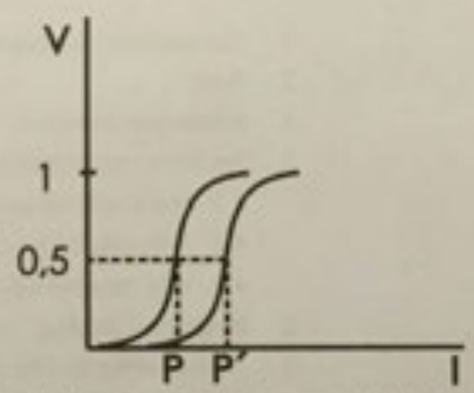




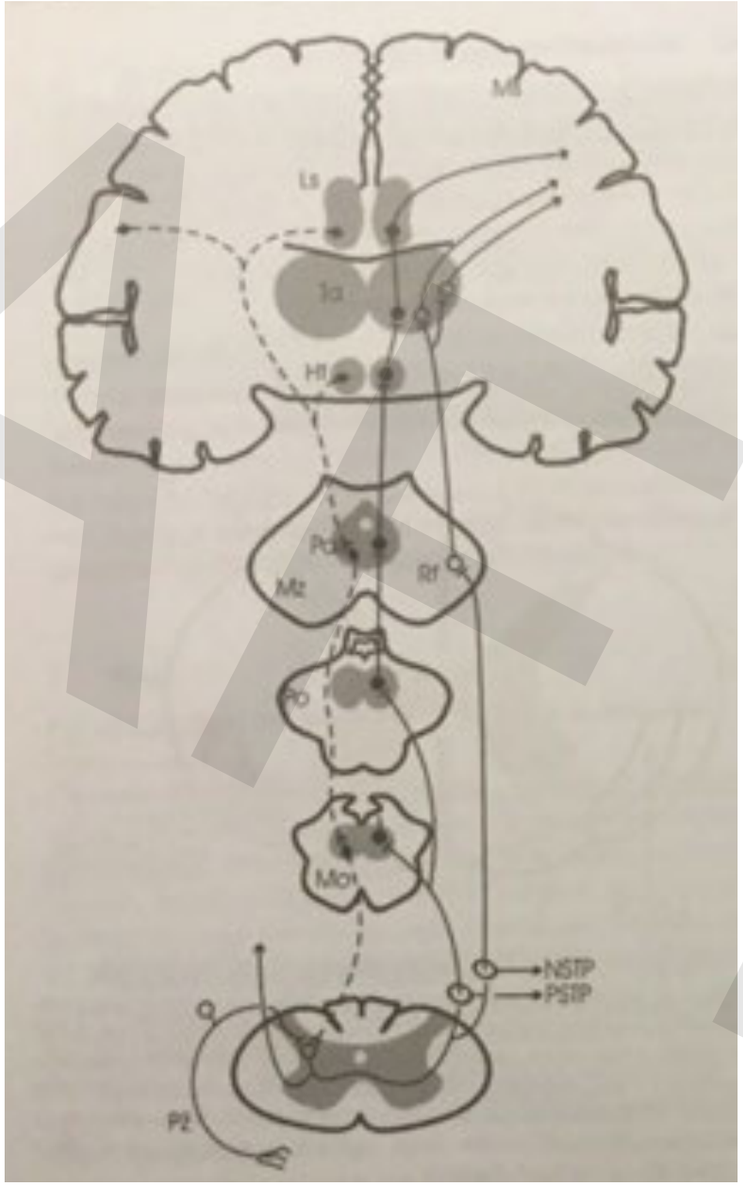
Pathophysiology - pain sensing theories, nervous system modulation, TENS, action potential freq. and thresholds, ...



Slika 1. Odvisnost frekvence proženja akcijskih potencialov (F_{ap}) v vlaknih primarnih nociceptorjev od jakosti (I) bolečinskega dražljaja.
P = prag.



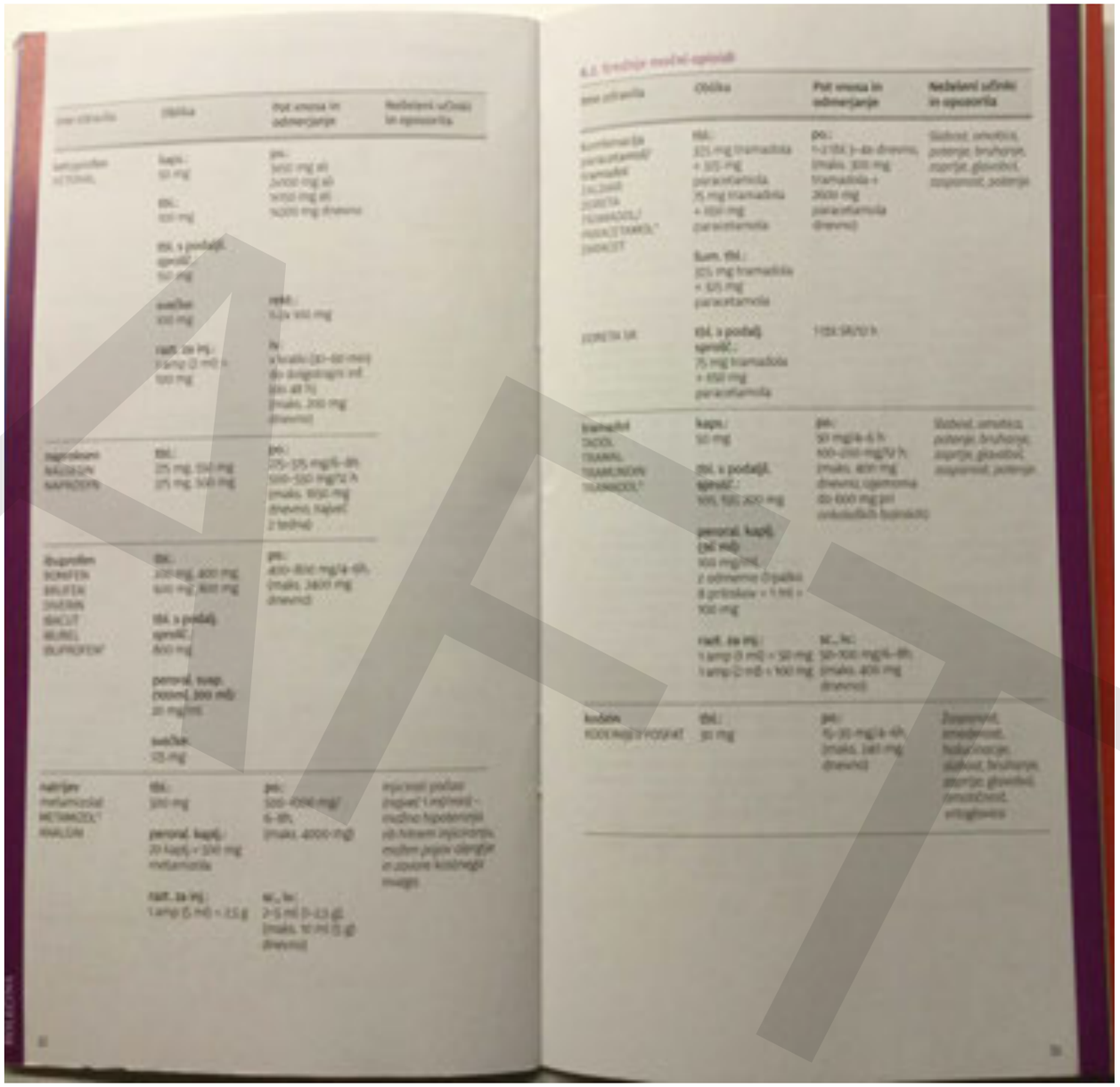
Slika 2. Odvisnost verjetnosti za zaznavo bolečinskega dražljaja (V) od njegove jakosti (I). P = prag za zaznavo bolečine, P' = zvišan prag pri iztem preiskovancu.



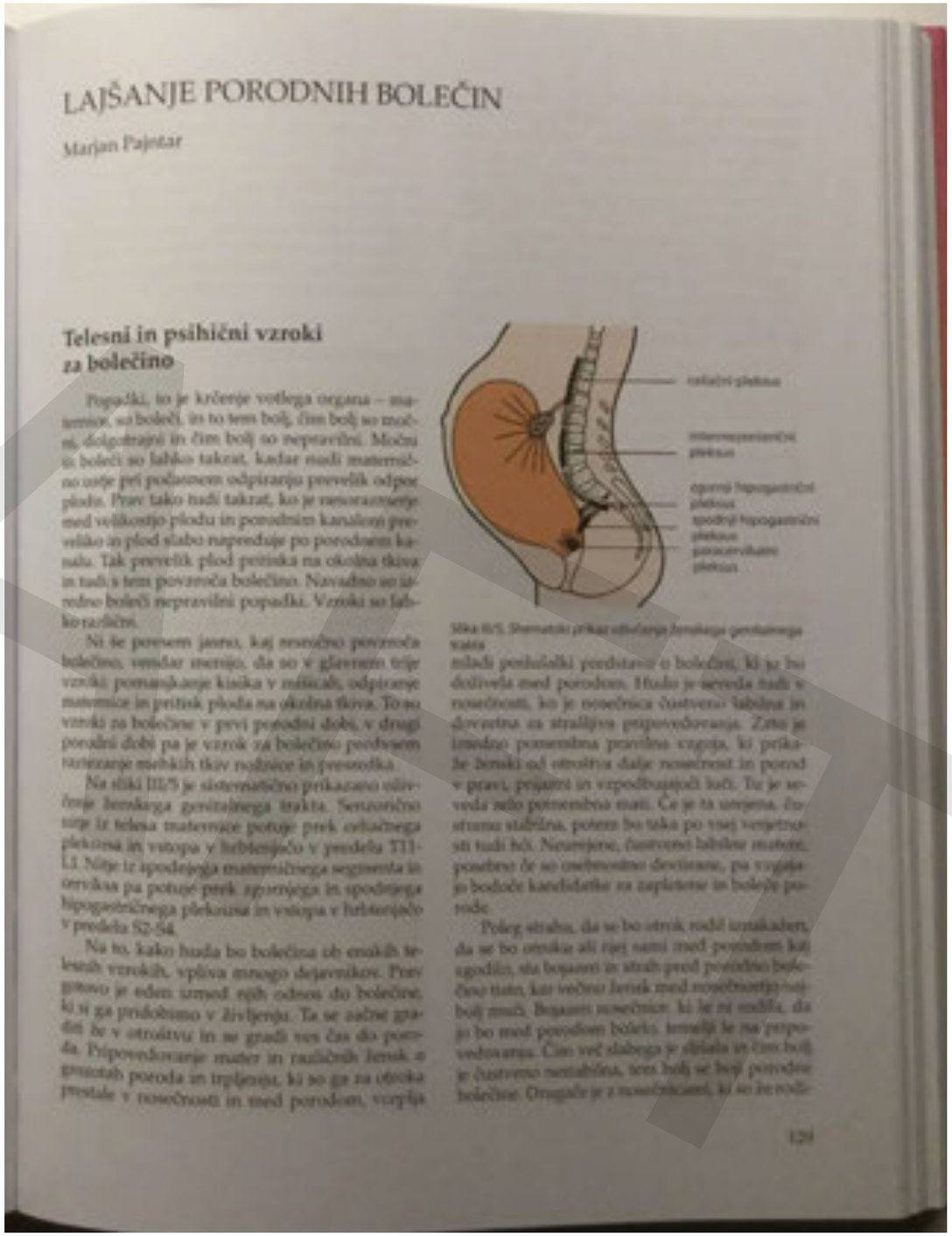
CLINICAL SUBJECTS

Study years 4 - 6

Study years 4 - 6: Oncology



Study years 4 - 6: Gynaecology and obstetrics



LAJŠANJE PORODNIH BOLEČIN

Marjan Pajntar

Telesni in psihični vzroki za bolečino

Pogadki, to je krčenje votlega organa – maternice, so boleči, in to tem bolj, čim bolj so močni, dolgotrajni in čim bolj so nepravilni. Močna in boleči so lahko takrat, kadar nadi maternično usta pri počasnem odpiranju prevelik odpor ploda. Prav tako tudi takrat, ko je neuravnovešje med velikostjo ploda in porodnim kanalom preveliko in plod slabo napreduje po porodnem kanalu. Tak prevelik plod pritiska na okolna tkiva in tudi s tem povzroča bolečino. Navadno so izredno boleči nepravilni pogadki. Vzroki so lahko različni.

Ni še poveem jasno, kaj resnično povzroča bolečino, vendar menijo, da so v glavnem trije vzroki: pomanjkanje kisika v mišicah, odpiranje maternice in pritisk ploda na okolna tkiva. To so vzroki za bolečine v prvi porodni dobi, v drugi porodni dobi pa je vzrok za bolečino predvsem raztezanje mehkih tkiv rodnice in presnodka.

Na sliki III/5 je sistematično prikazano oživčenje ženskega genitalnega trakta. Senzorično vlakna iz telesa maternice potuje prek celiačnega plekzusa in vstopa v hrbtenjačo v predelu T11-L1. Nitje iz spodnjega maternišnega segmenta in cervikza pa potuje prek zgornjega in spodnjega hipogastričnega plekzusa in vstopa v hrbtenjačo v predelu S2-S4.

Na to, kako huda bo bolečina ob enakih telesnih vzrokih, vpliva mnogo dejavnikov. Prav gotovo je eden izmed njih odnos do bolečine, ki si ga pridobimo v življenju. Ta se začne graditi že v otroštvu in se gradi ves čas do porada. Pripovedovanje mater in različnih žensk o gnostab poroda in trpljenju, ki so ga za otroka prestale v nosečnosti in med porodom, vzgaja mladi podzavedki predstavo o bolečini, ki ga bo doživela med porodom. Hudo je seveda tudi v nosečnosti, ko je nosečnica čustveno labilna in dovzetna za strašljive pripovedovanja. Zato je izredno pomembna pravilna vzgoja, ki prikaže ženski od otroštva dalje nosečnost in porod v pravi, prijazni in vzpodbujajoči luči. Tu je seveda zelo pomembna mati. Če je ta umirjena, čvrstna stabilna, potem bo taka po vsej verjetnosti tudi hči. Neurejene, čustveno labilne matere, posebno če so osebnostno deviantne, pa vzgajajo bodoče kandidatke za zapletene in bolečje porode.

Poleg strahu, da se bo otrok rodil izmakaden, da se bo otrokar ali rjet sami med porodom kaj zgodilo, sta bojazen in strah pred povečano bolečino tista, kar večino žensk med nosečnostjo najbolj zmuči. Bojazen nosečnice, ki le ni vedila, da jo bo med porodom bolelo, temelji le na pripovedovanja. Čim več slabega je slišala in čim bolj je čustveno nestabilna, tem bolj se boji porodne bolečine. Drugače je z nosečnicami, ki so že rodile.

Study years 4 - 6:

Internal medicine, Surgery, Family medicine, ...

+ elective subject: "Pain"

PAIN MANAGEMENT

Lecture 2.2

What do residents learn about pain medicine: Curriculum of the anesthesiology, reanimatology and intensive care medicine residency in Slovenia

prof. Vesna Novak Jankovič, MD, PhD

Head, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

UNION EUROPÉENNE DES MÉDECINS SPÉCIALISTES
EUROPEAN UNION OF MEDICAL SPECIALISTS

Association internationale sans but lucratif *International non-profit organisation*

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Training Requirements for the Specialty of Anaesthesiology, Pain and Intensive Care Medicine

European Standards of Postgraduate Medical Specialist Training

Preamble

The UEMS is a non-governmental organisation representing national associations of medical specialists at the European Level. With a current membership of 34 national associations and operating through 39 Specialist Sections and European Boards, the UEMS is committed to promote the free movement of medical specialists across Europe while ensuring the highest level of training which will pave the way to the improvement of quality of care for the benefit of all European citizens. The UEMS areas of expertise notably encompass Continuing Medical Education, Post Graduate Training and Quality Assurance.

It is the UEMS' conviction that the quality of medical care and expertise is directly linked to the quality of training provided to the medical professionals. Therefore the UEMS committed itself to contribute to the improvement of medical training at the European level through the development of European Standards in the different medical disciplines. No matter where doctors are trained, they should have at least the same core competencies.

In 1994, the UEMS adopted its Charter on Post Graduate Training aiming at providing the recommendations at the European level for good medical training. Made up of six chapters, this Charter set the basis for the European approach in the field of Post Graduate Training. With five chapters being common to all specialties, this Charter provided a sixth chapter, known as "Chapter 6", that each Specialist Section was to complete according to the specific needs of their discipline.

More than a decade after the introduction of this Charter, the UEMS Specialist Sections and European Boards have continued working on developing these European Standards in Medical training that reflects modern medical practice and current scientific findings. In doing so, the UEMS Specialist Sections and European Boards did not aimed to supersede the National Authorities' competence in defining the content of postgraduate training in their own State but rather to complement these and ensure that high quality training is provided across Europe.

At the European level, the legal mechanism ensuring the free movement of doctors through the recognition of their qualifications was established back in the 1970s by the European Union. Sectorial Directives were adopted and one Directive addressed specifically the issue of medical Training at the European level. However, in 2005, the European Commission proposed to the European Parliament and Council to have a unique legal framework for the recognition of the Professional Qualifications to facilitate and improve the mobility of all workers throughout Europe. This Directive 2005/36/EC established the mechanism of automatic mutual

President: Dr Romuald Krajewski
Treasurer: Dr Giorgio Berchico
1
Secretary-General: Dr Edwin Borman
Liaison Officer: Dr Zlatko Fras

ANAESTHESIOLOGY, PAIN AND INTENSIVE CARE MEDICINE

SYLLABUS TO THE POSTGRADUATE TRAINING PROGRAM

FROM THE STANDING COMMITTEE ON EDUCATION AND TRAINING OF THE SECTION AND BOARD OF ANAESTHESIOLOGY

Duration and structure – old vs new

Domain	Old (months)	New (months)
General and regional anaesthesia	14	11,5
Special anaesthesia	15	15,5
ICU	24	23,5
Respiratory therapy	2	1
Pain management (acute ,chronic)	3	2
Reanimatology and emergency medicine	2	2
Selected programme	2	5
Simulation centre	-	1
Courses	-	1,5
	= 62	**= 63**
+ study time	-	2
+ holidays	10	7
Skupaj	**72**	**72**

Curriculum - new vs old

Domain	Duration (old)	Number of cases (old)
Introduction and preoperative evaluation	1 month (1)	20 (50-10)
Abdominal surgery	2 months (3)	100 anesthesias (300) 20 emergency(50), 20 laparoscopic (10), 20 epidural blocks (0)
Gynecology	0,5 month (1)	20 anesthesias (100) 10 emergency operations (10)
Ortopedic surgrgery	1 month (1)	50 anesthesias (100) 10 Special operations (10)
Day case surgery	2 months (2)	150 anesthesas (150) 20 inhalat. (50), 130 i.v. (50), 0 (50 regional)

General anaesthesia - curriculum

Traumatology	2 months (2)	100 anesthesias (200) 20 emergency (50), 10 shock(20), 20 peripheral nerve blocks (0)
Urology	1 month (2)	60 anesthesiasj (75) 30 TUR (25), 5 mayor surgery (5)
Plastic surgery	1 month (1)	30 operations (30) 2 free flap (0)
CPR and emergency	1 month (1)	10 CPR (10) 15 emergency(25)
Skupaj:	**11,5 months (14)**	

Special anaesthesia

Special domain	duration	**number of procedures**
Cardiovascular surgery	2 months (1)	50 anaesthesias(50) 20 ECC (20)
Maksilofacial and oral surgery, stomatology	1 month (1)	45 anesthesias(45) 5 anesthesias(5)
Neurosurgery	2 month (2)	40 anesthesias (30) 20 intracranial (20), 4 beach chair position (4)
Ophtalmology	1 month (1)	45 anesthesias (45)
ORL	2 month (2)	130 anesthesias(130)
Pediatric surgery	2 month (2)	70 anesthesias (70) 10 newborn 1<1y (10)
Major Plasic surgery and burns	0,5 month (1)	10 anestezij (30) 5 major burns (5)

Special domain

Obstetric	2 months (1)	25 anestezij – 15 regional (25), 5 CPR new borns (10), 25 epidural, **25 iv.** (25 analgesias, 15 regional.)
Radiologic procedures	1 month (1)	30 anestezij (30) 5 catheterisations(5), 10 MRI (5), 10 CT scans (10), 5 emergency CT (5 + 5 bronhografij)
Thoracic surgery	2 months (2)	50 anaesthesias (50) 20 lung surgery (20)
Organ transplantation	During circulation (-)	5 procedures(5) explantation 2-3 (=) Kidney implantation 2 (=) Heart and liver (=)
Sum:	**15,5 months** **(15)**	

ICU

Domain	New	Old
Surgical Intensive care unit A degree (III)	13 months	12
Cardiovascular surgery	2 m	0
Department for cardiovascular disease	-	1
Internal intensive care unit A degree	3 m	2
Infectios diseases	2 m	2
Pulmonology	-	2
ICU pediatric	0,5 m	1
ICU newborns	-	1
Neurology	1 m	1
Endocrinology	-	1
Dialysis	-	1
	23,5 m	**24**

Education modules

1. modul	**General anesthesia 1**
	Physic,Statistic Documentation Anaesthetic machines Anaesthetic systems Monitoring Preoperative evaluation
2. modul	**General anaesthesia 2**
	Mechanism of action of anaesthetics Intravenous (TIVA, TCI) and,inhalational anaesthesia Pharmacology Neurophysiology (BIS, INVOS…) Physiology of neuromuscular junction-muscle relaksants

3. modul	**General anaesthesia 3**
	Gynecology and obstetrics (epidural and iv analgesia, eclampsy…) Abdominal surgery ,major, liver…) Urology Traumatology Orthopaedic surgery Day case surgery
4. modul	**Regional anaesthesia**
	Pharmacology of local anaesthetics Central nerve blocks Peripheral nerve blocks Ultrasound guided regional anaesthesia Cadaver workshop

5. modul	**Special anaesthesia 1**
	Cardiovascular surgery (pharmacology of inotrope and vasoactive drugs, US - TEE, ECMO, 0n-pump,off-pump…) Thoracic(bronchoscopy, drainage, VATS..) Transplantation Anaesthesia (TAVI, radiophreqency ablation,catheterisation,
6. modul	**Special anaesthesia 2**
	ORL Maxilofacial surgery and stomatology Neurosurgery Neuroradiologic procedures Ophtalmology

7. modul	**Specialna anaesthesia 3**
	Pediatric surgery Procedural sedation Recovery Difficult airway management
8. modul	**Intensive medicine 1**
	Haemodynamic management (LiDCO, PiCCO, VIGILEO…) Fluids Drugs Shock Coagulation- ROTEM, Multiplate… Blood, blood products

9. modul	**Intensive medicine 2**
	Respiratory phisiology and pathophisiology Acidobase state Respiratory failure Mechanical ventilation Coma Head injuries Politrauma
10. modul	**Intensive medicine 3**
	Enteral nutrition Parenteral nutrition Electrolyte disturbances Acute renal failure Sepsis, pancreatitis, acute abdomen…

11. modul	**BLS, ALS, ATLS.PLS**
12. modul	**Pain management**
	Pathophisiology of pain Pharmacology Acute pain management Chronic pain management Acupuncture, TENS….

XI ESRA South-Eastern Europe Workshop

Anatomy for Regional Anaesthesia

Ljubljana, Slovenia · October 4–5, 2013

THE EUROPEAN SOCIETY OF REGIONAL ANAESTHESIA & PAIN THERAPY

UNIVERSITY MEDICAL CENTRE LJUBLJANA
Clinical department of Anaesthesiology and Intensive Therapy

UNIVERSITY LJUBLJANA MEDICAL FACULTY
Institute of Anatomy

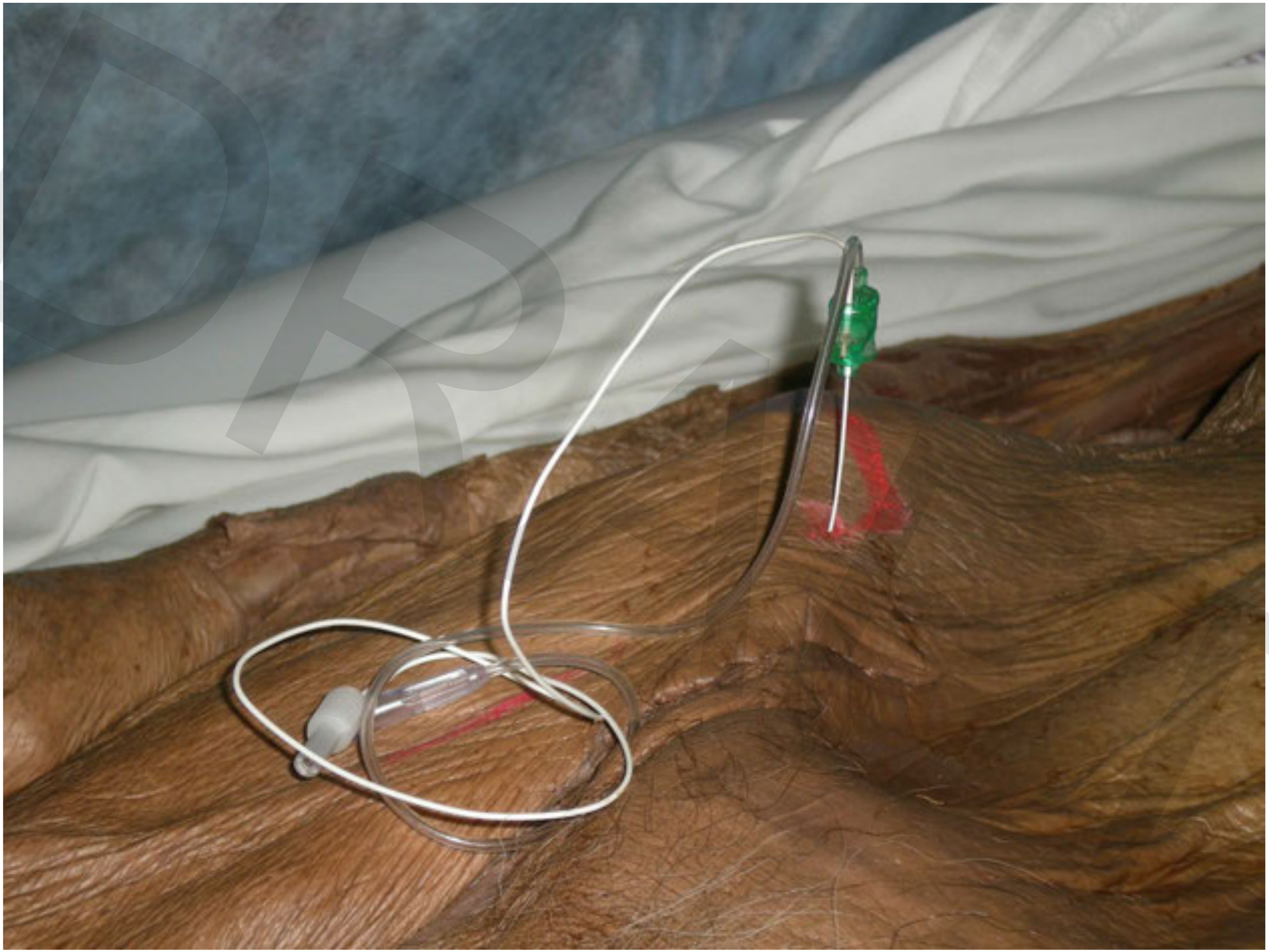
LECTURE BOOK

ESRA South-eastern Europe XI. Workshop

Anatomy for Regional Anaesthesia

Institute of Anatomy, Medical Faculty Ljubljana, Slovenia

Ljubljana, Slovenia – October 4/5, 2013



Prof. Vesna Paver Eržen MD PhD

CEEA courses

Medical simulation centre

CEEA

Committee for European Education in Anaesthesiology

ESA

20. TEČAJ CEEA

Kontinuirano podiplomsko izobraževanje iz anesteziologije (CME)

Ljubljana, 13. do 15. april 2012

SLOVENSKO ZDRAVNIŠKO DRUŠTVO

MEDICINSKA FAKULTETA UNIVERZE V LJUBLJANI

UNIVERZITETNI KLINIČNI CENTER V LJUBLJANI

Review Article

Korean J Anesthesiol 2013 March 64(3): 204-211
http://dx.doi.org/10.4097/kjae.2013.64.3.204

Medical simulation is needed in anesthesia training to achieve patient's safety

Chul-Ho Chang

Department of Anesthesiology and Pain Medicine and Anesthesia and Pain Research Institute, Yonsei University College of Medicine, Seoul, Korea

Many medical schools and hospitals throughout the world are equipped with a simulation center for the purpose of training anesthesiologists to perform both technical and non-technical skills. Because induction, maintenance, and emergence of general anesthesia are critical to patient welfare, various simulation mannequins and tools are utilized for the purpose of training anesthesiologists for safer patient care. Traditionally, anesthesia residency training mostly consisted of didactic lectures and observations. After completion of "traditional" training, anesthesia residents were allowed to perform procedures on patients under supervision. However, simulation would be a more effective training tool for which to teach anesthesiologists the skills necessary to perform invasive procedures, such as endotracheal intubation, central venous catheter insertion, and epidural catheter insertion. Recently, non-technical skills, such as the Anesthesia Non-Technical Skills developed by anesthesiologists from Aberdeen University, have been emphasized as an important training resource. Technical skills and non-technical skills can be learned by anesthesiology residents through a standardized and organized simulation program. Such programs would be beneficial in training anesthesia residents to work efficiently as a team in the operation room. (Korean J Anesthesiol 2013; 64: 204-211)

Key Words: Anesthesia, Non-technical skill, Simulation, Simulator, Training.

Univerzitetni klinični center Ljubljana
Medicinski simulacijski center

Medicinski simulacijski center, UKC Ljubljana

Klinični oddelek za anesteziologijo in intenzivno terapijo operativnih strok, UKC Ljubljana

SIMULACIJSKI TEČAJ

ANESTEZIOLOG NOVINEC

Ljubljana, 13., 14. december 2011

Medicinski simulacijski center, 1. klet UKC Ljubljana, Zaloška 7

SIMULACIJSKI TEČAJ: ANESTEZIOLOG NOVINEC

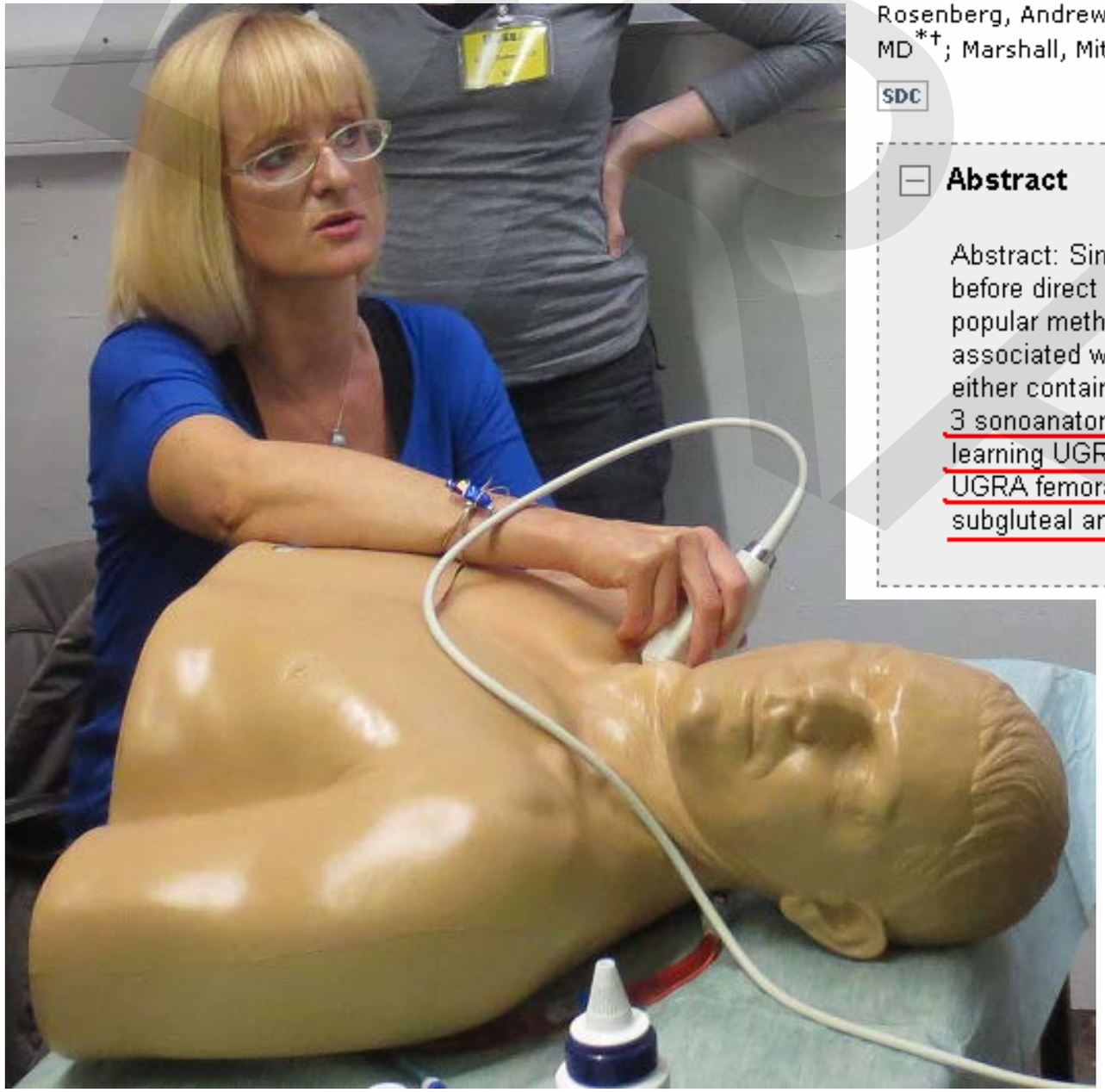
Torek 13.12.2011	Trajanje	A	B
8:00 – 8:30	0:30	Dobrodošlica Spoznavanje simulatorja	
8:30 – 8:50	0:20	Simulacija 1	Delavnica anestezijski aparat
8:50 – 9:30	0:40	Debriefing	
9:30 – 9:50	0:20	Delavnica anestezijski aparat	Simulacija 1
9:50 – 10:30	0:40		Debriefing
10:30 – 11:00	0:30	Odmor s kavo	
11:00 – 11:20	0:20	Simulacija 2	Predavanje – Človeški dejavniki
11:20 – 12:00	0:40	Debriefing	
12:00 – 12:20	0:20	Predavanje - človeški dejavniki	Simulacija 2
12:20 – 13:00	0:40		Debriefing

Sreda 14.12.2011	Trajanje	A	B
8:00 – 8:20	0:20	Simulacija 3	Delavnica – Pripomočki za oskrbo dihalne poti
8:20 – 9:00	0:40	Debriefing	
9:00 – 9:20	0:20	Delavnica – Pripomočki za oskrbo dihalne poti	Simulacija 3
9:20 – 10:00	0:40		Debriefing
10:00 – 10:30	0:30	Odmor s kavo	
10:30 – 10:50	0:20	Simulacija 4	Delavnica – Osnovni monitoring v anesteziji
10:50 – 11:30	0:40	Debriefing	
11:30 – 11:50	0:20	Delavnica – Osnovni monitoring v anesteziji	Simulacija 4
11:50 – 12:30	0:40		Debriefing
12:30 – 13:00	0:30	Zaključne besede – podelitev certifikatov	

Vodja tečaja: Dušan Viahović
Sodelavci: Vesna Paver-Eržen, Peter Poredoš, Bojana Čosić, Andrej Brian


MAQUET
ALPHA-PORT


Ultrasound anatomy



Regional Anesthesia & Pain Medicine:
January/February 2012 - Volume 37 - Issue 1 - p 106–110
doi: 10.1097/AAP.0b013e31823699ab
Brief Technical Reports

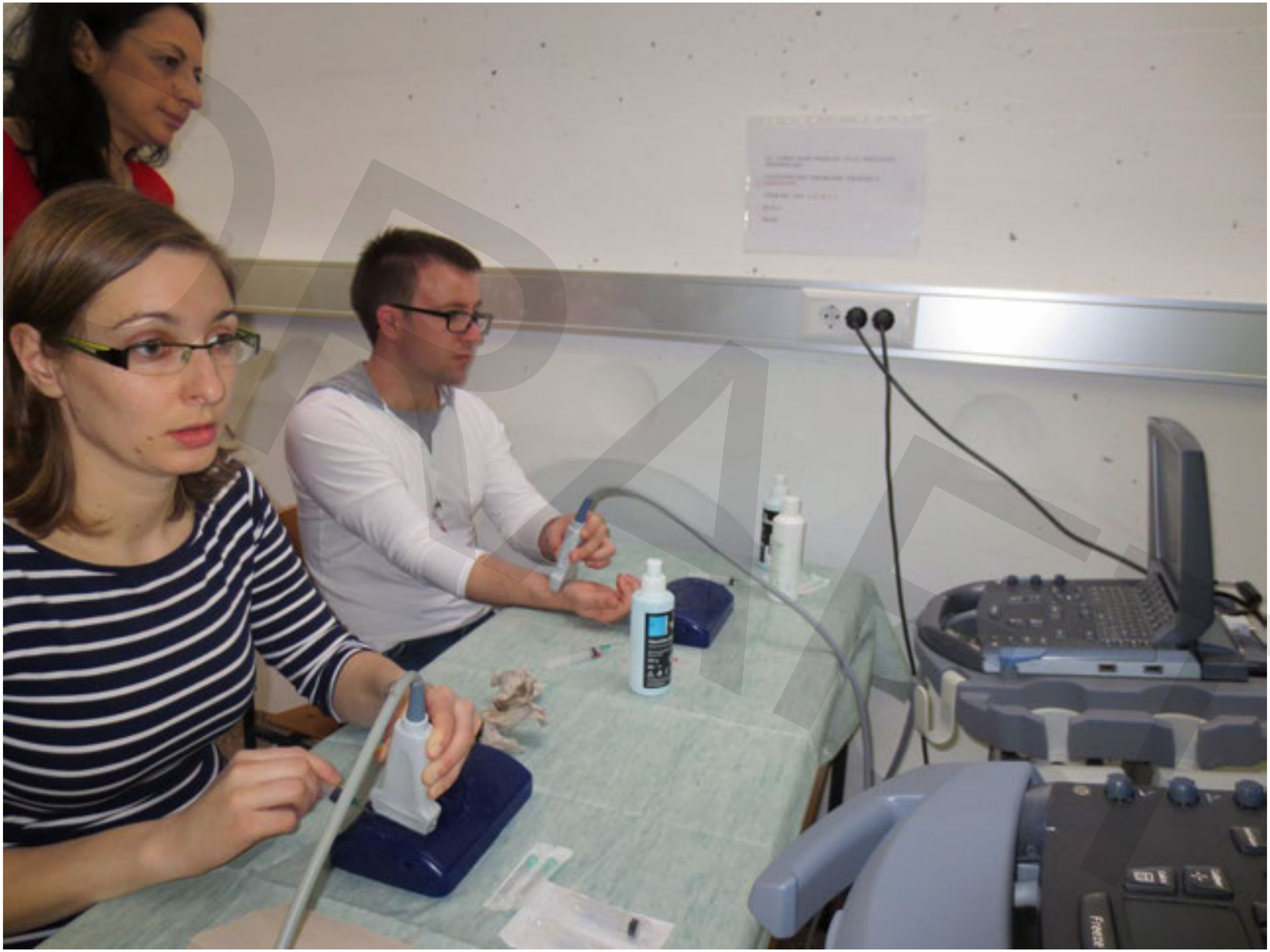
Three Partial-Task Simulators for Teaching Ultrasound-Guided Regional Anesthesia

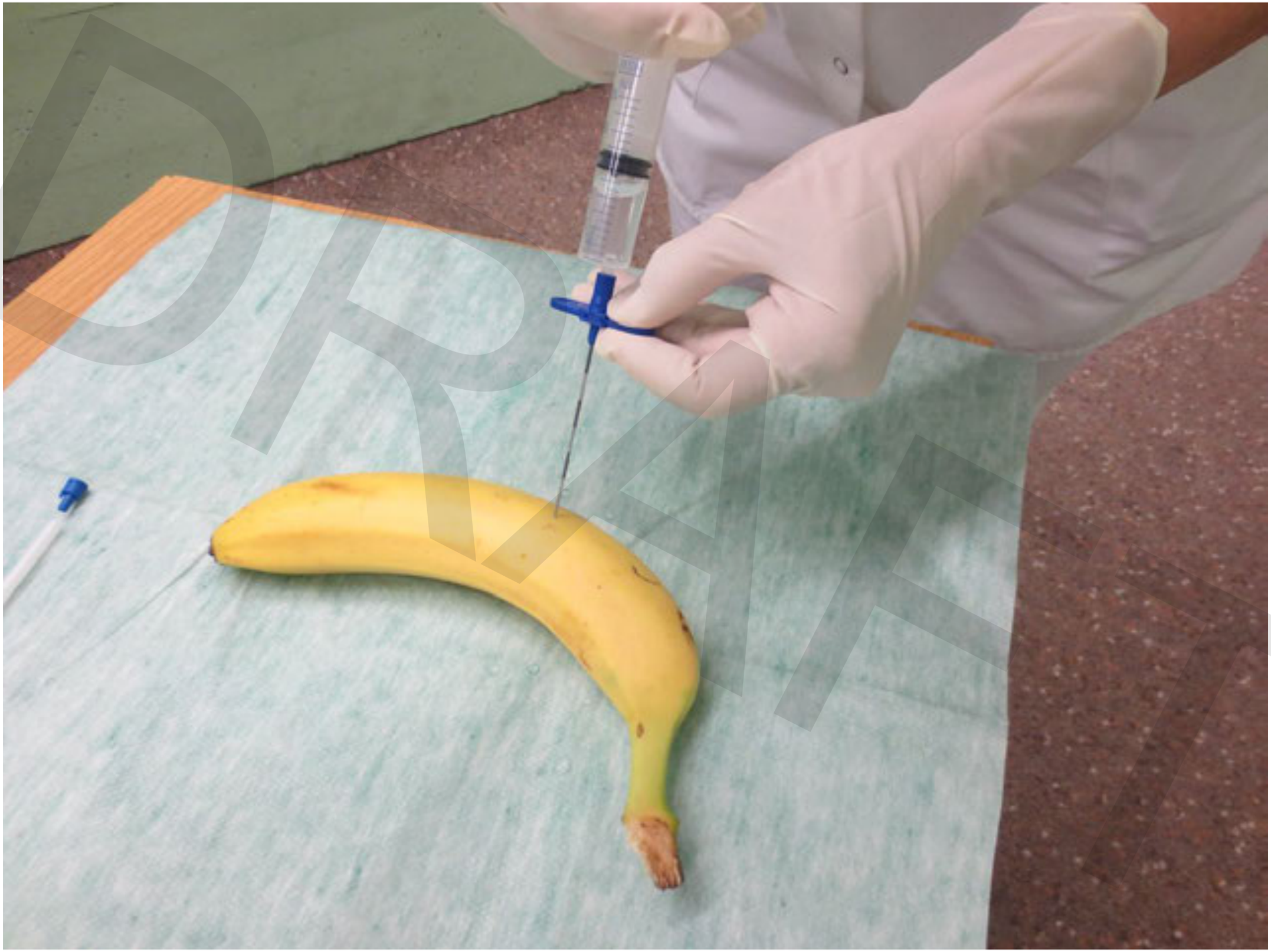
Rosenberg, Andrew D. MD[*†]; Popovic, Jovan MD, FRCPC[*†]; Albert, David B. MD[*†]; Altman, Robert A. MD[*†]; Marshall, Mitchell H. MD[*†]; Sommer, Richard M. MD[†]; Cuff, Germaine RN, MPH[*†]

SDC

Abstract

Abstract: Simulation-based training is becoming an accepted tool for educating physicians before direct patient care. As ultrasound-guided regional anesthesia (UGRA) becomes a popular method for performing regional blocks, there is a need for learning the technical skills associated with the technique. Although simulator models do exist for learning UGRA, they either contain food and are therefore perishable or are not anatomically based. We developed 3 sonoanatomically based partial-task simulators for learning UGRA: an upper body torso for learning UGRA interscalene and infraclavicular nerve blocks, a femoral manikin for learning UGRA femoral nerve blocks, and a leg model for learning UGRA sciatic nerve blocks in the subgluteal and popliteal areas.






Anatomija

Debriefing

1st Module basic sciences 02.02.2018

Petek 2. 2. 2018

8:00 – 9:00 REGISTRACIJA

9:00 – 12:15 PREDAVANJA - predavalnica

1. 9:00 – 9:15

Fizika za anesteziologe (15 min)

izr.prof. dr. Miljenko Križmarić, univ. dipl. inž. el.

2. 9:20 – 9:35

Anestezijski aparat (15 min)

asist. dr. Peter Poredoš dr. med.

3. 9:40 – 9:55

Pojasnilna dolžnost in privolitev bolnika na poseg v anesteziji (15 min)

asist. Polona Mušič dr. med.

4. 10:00 – 10:15

Priprava bolnika na diagnostični ali operativni poseg v anesteziji (15 min)

doc. dr. Maja Šoštarič dr. med.

5. 10:20 – 10:35

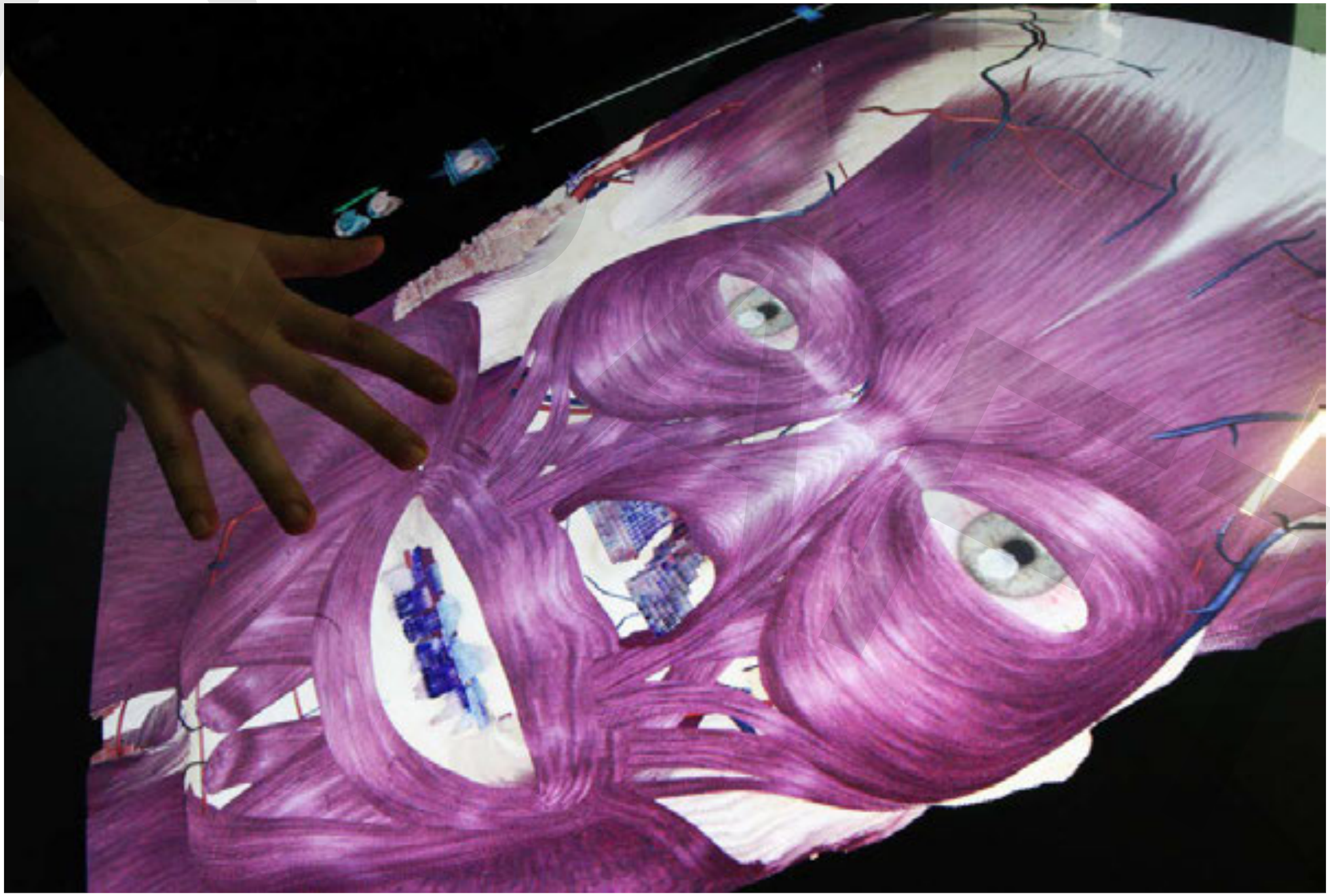
Transport kisika in ogljikovega dioksida (15 min)

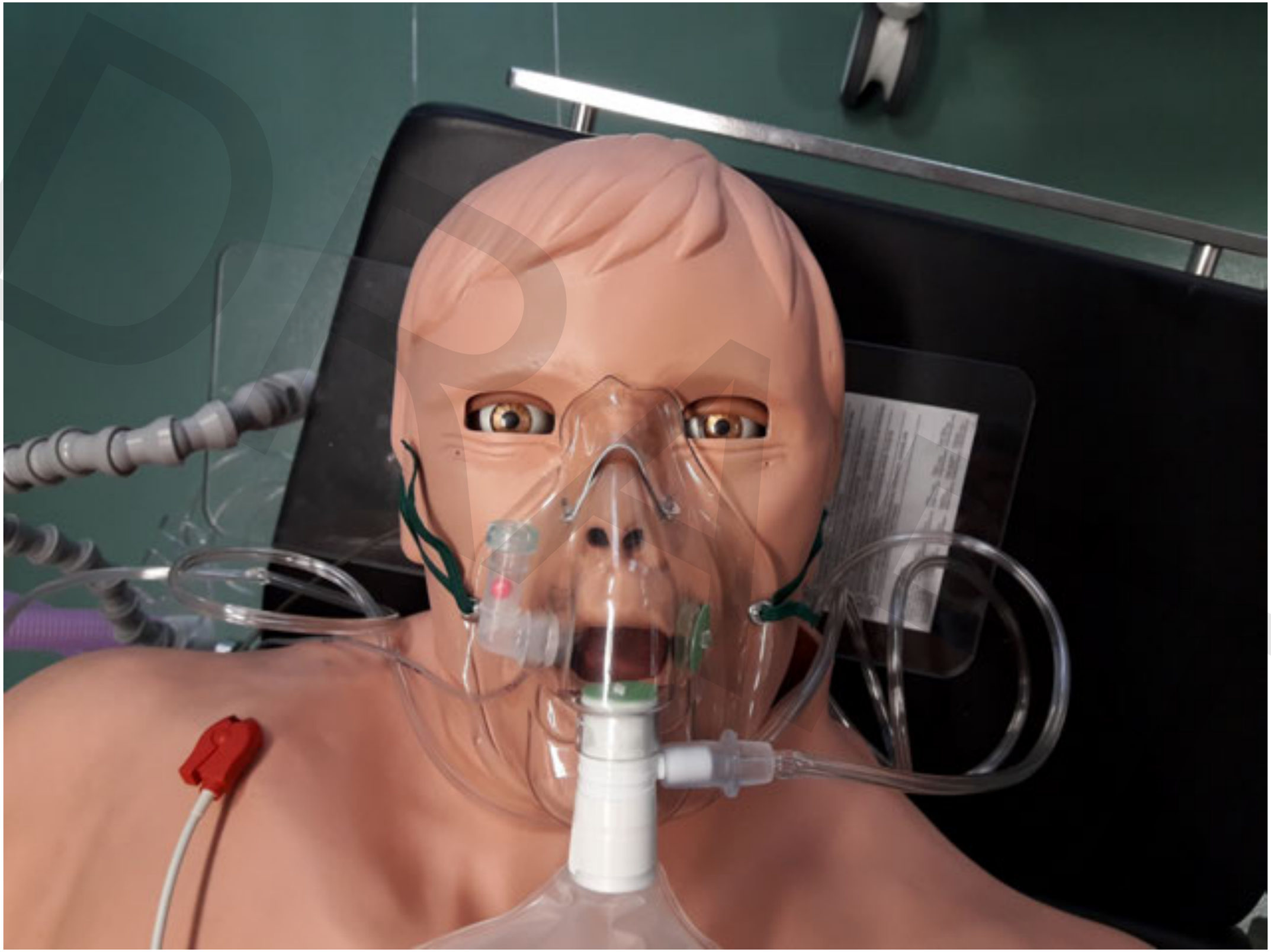
izr. prof. dr. Dušan Mekiš dr. med.

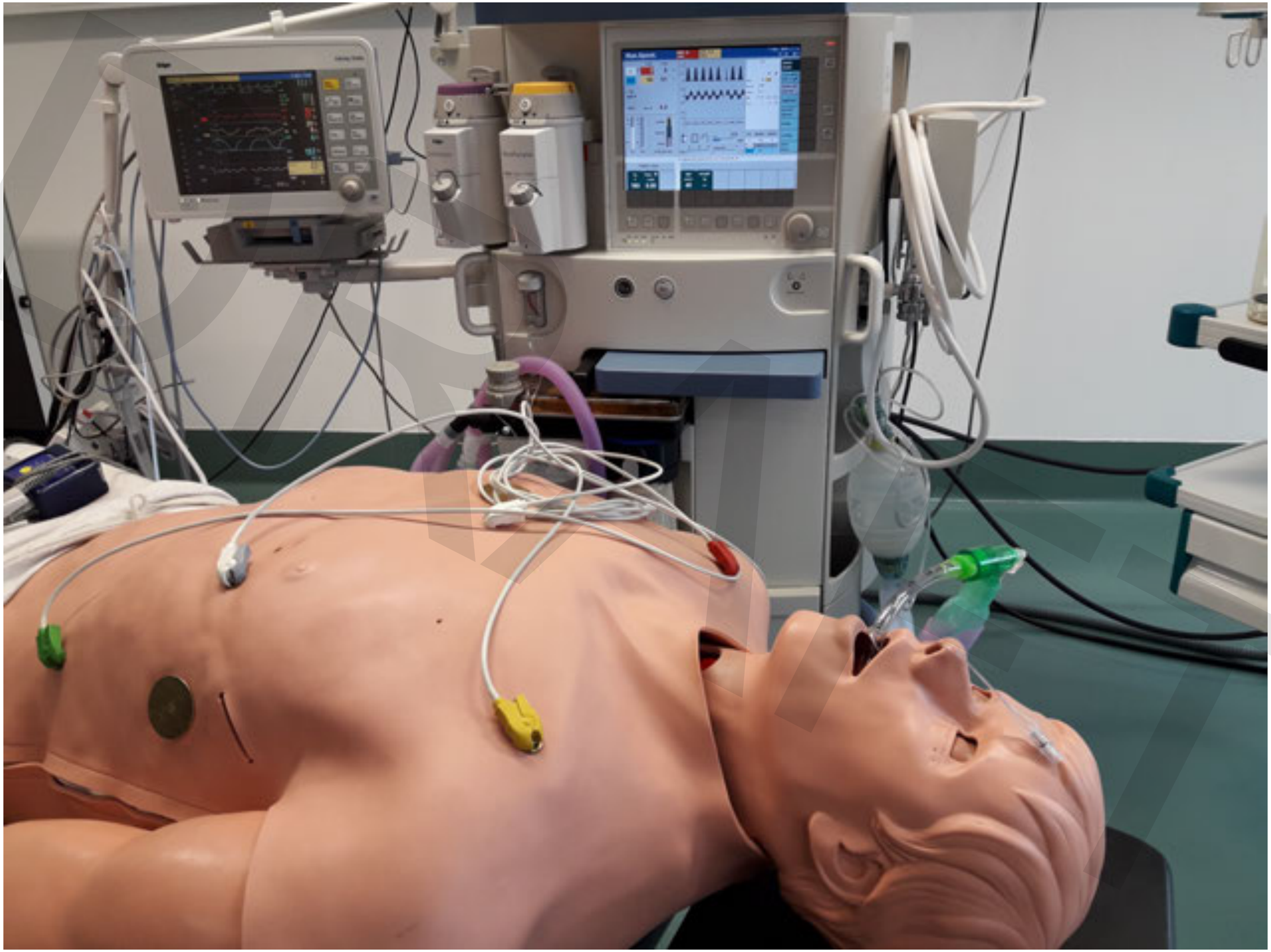
10:40 – 11:00 Odmor za kavo

6. 11.00 – 11.15

Institute of anatomy MF Maribor








Dräger
Primus
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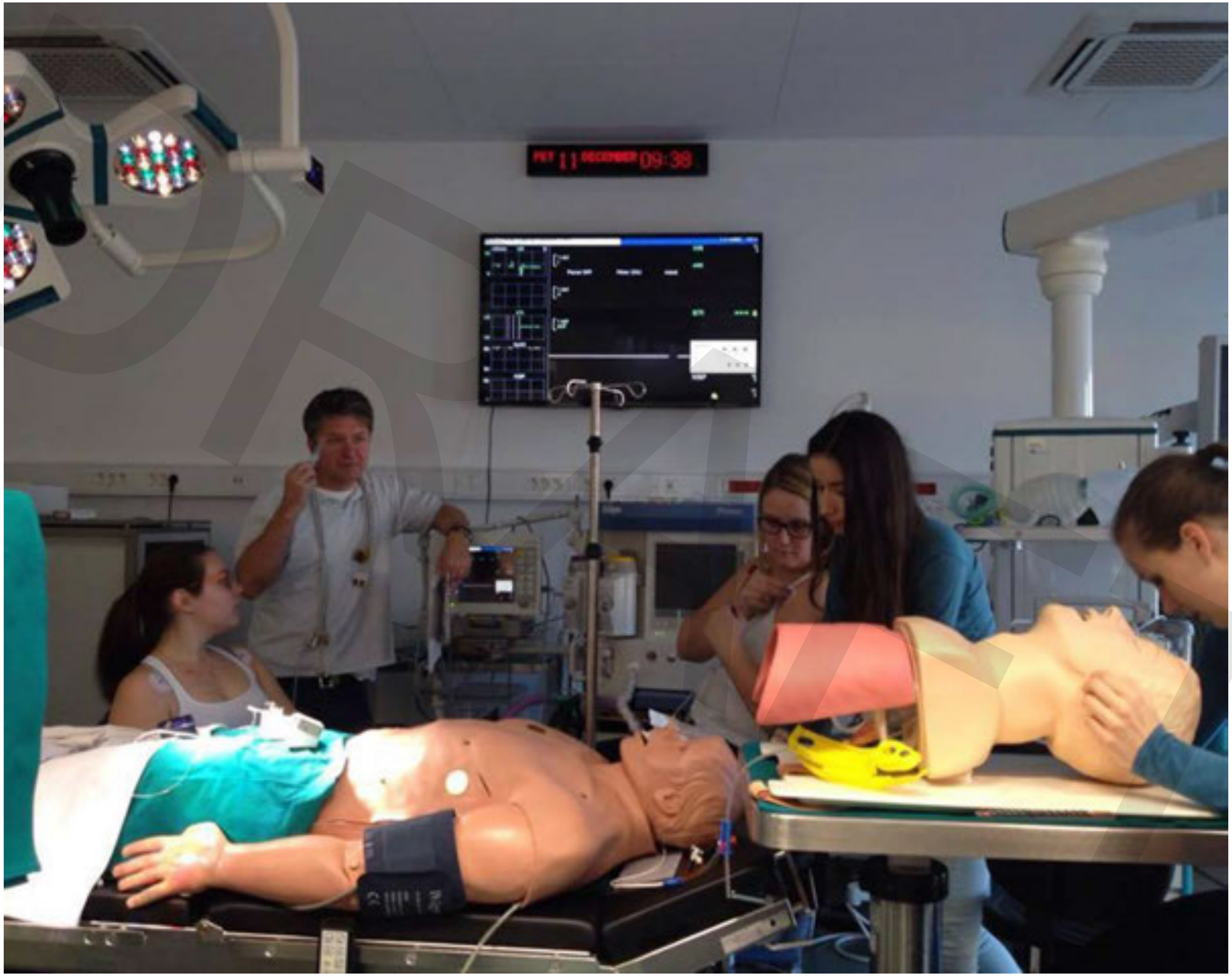

PET 11 DECEMBER 09:38


SERIMUS
METIMUS
QUOD
DAMUS
ACCIPIMUS

Lecture 2.3

Education on pain medicine for family medicine practitioners

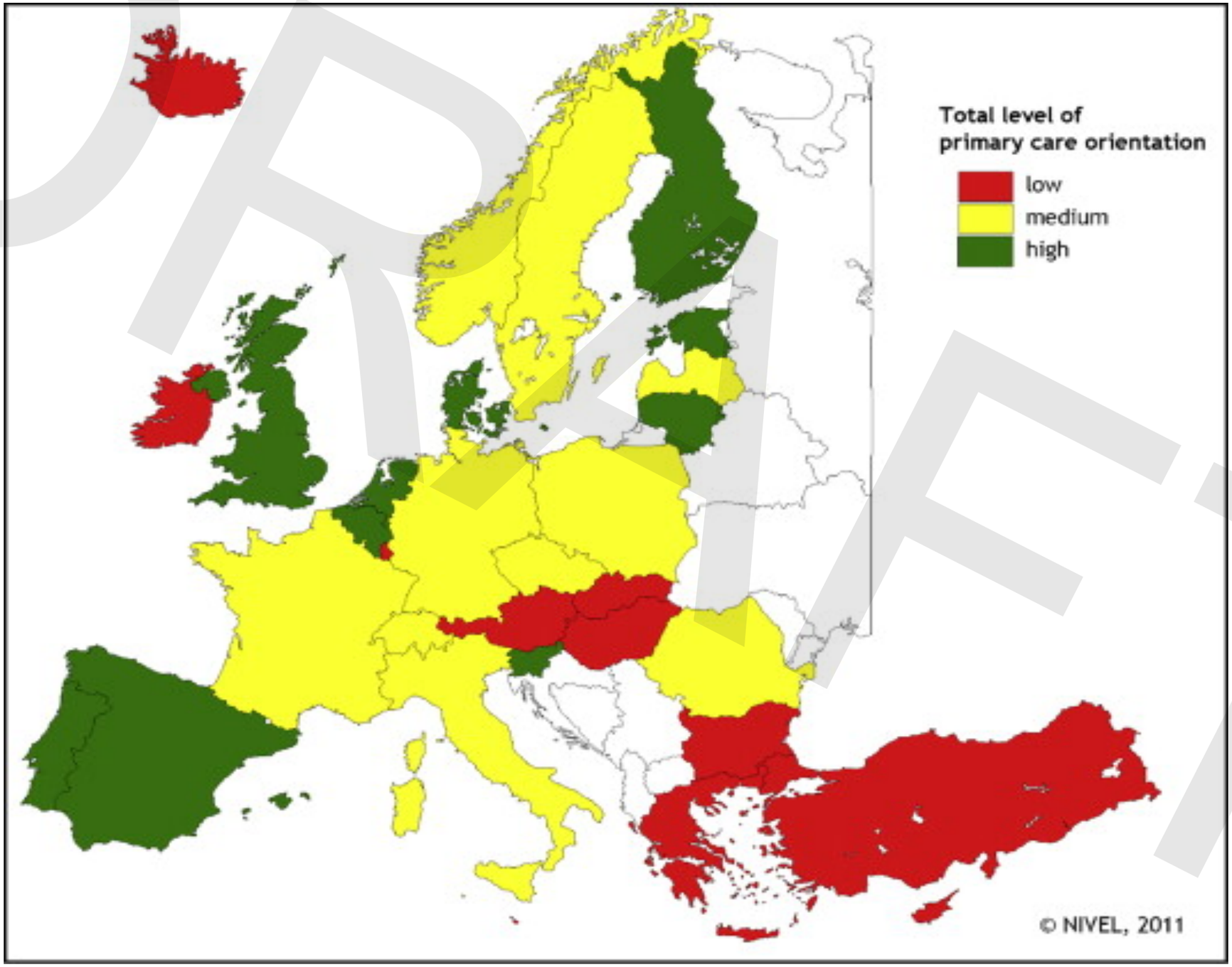
assoc. prof. Aleksander Stepanović, MD, PhD

Specialist, Family Medicine

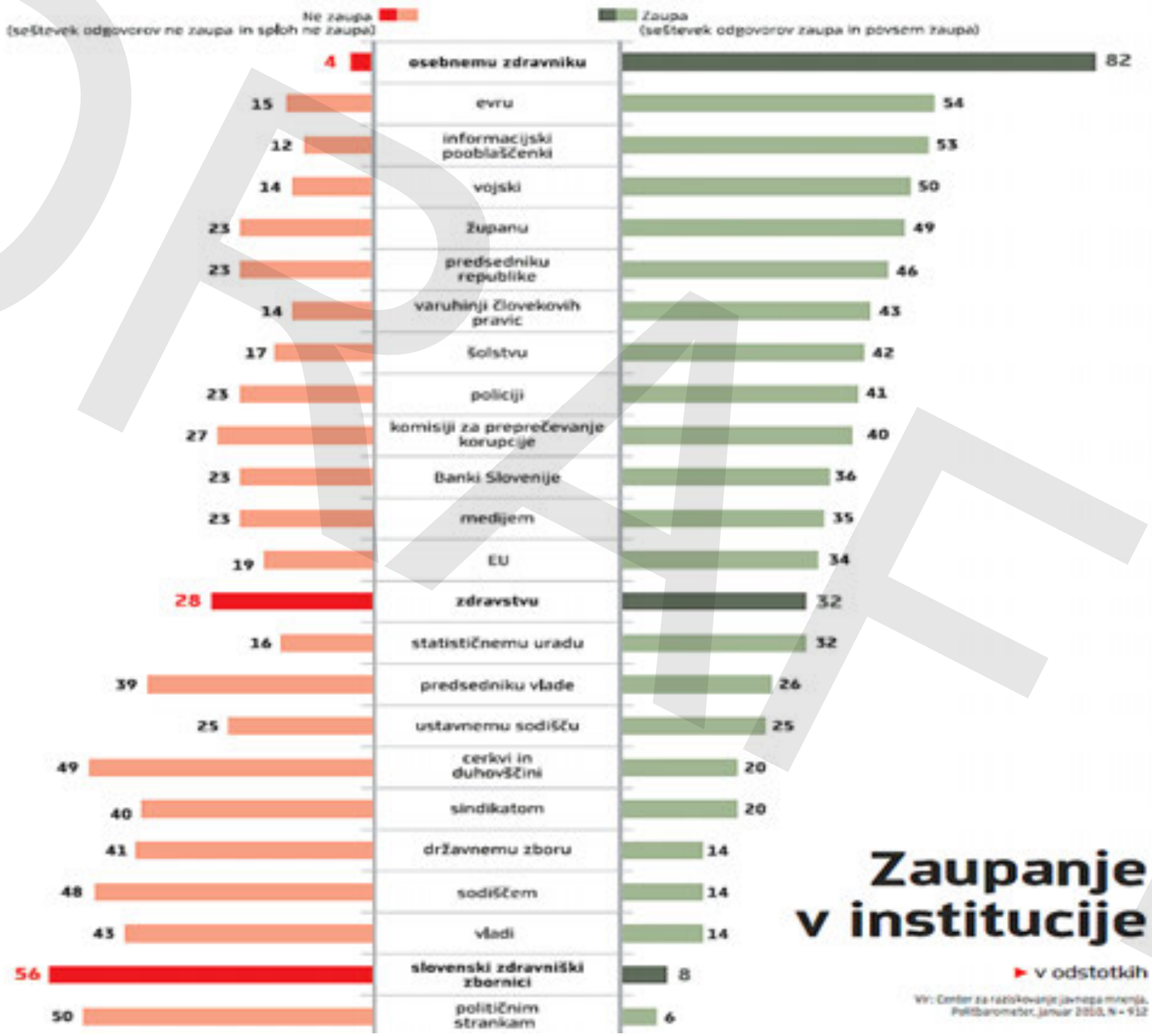
Slovenia in numbers

- Area: 20.273 km^2
- Population: 2.065.895
- GDP: 21.304 $ per capita (2016)
- Approx. 950 family medicine practices

Are we any good?



Are we any good?



Provision of primary health care services

- jurisdiction of municipalities, which are:
  - responsible for health policy development at local level
  - owners of community-level primary health care centres.
- 65 health care centres, delivering primary health care through 459 locations

Provision of primary health care services

- 76% of all physicians and 42% of dentists working in primary care are based in publicly owned primary health care centres
- primary care is also provided by contracted, office-based physicians in private practice, including GPs, paediatricians and gynaecologists

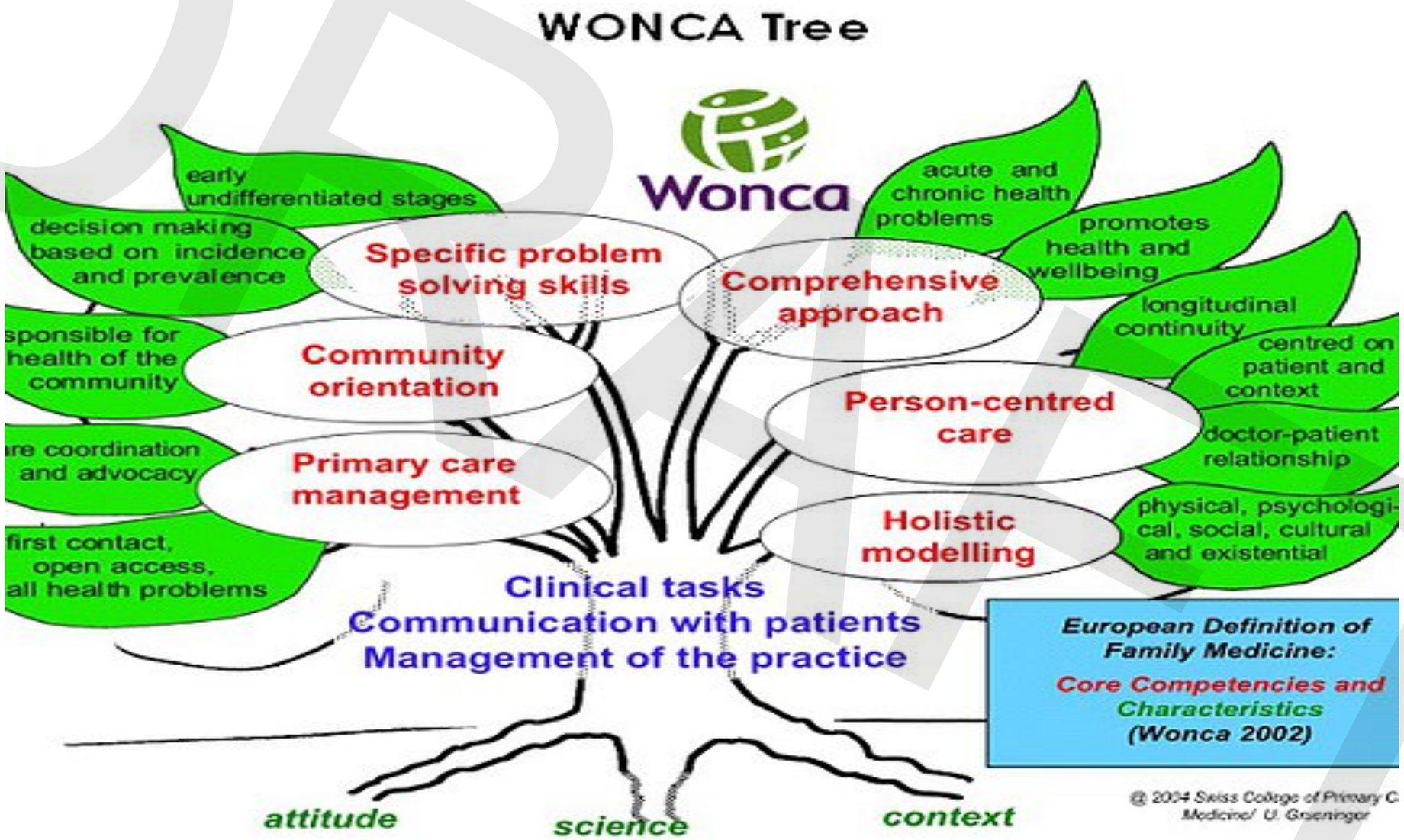
Remuneration

- combined system of capitation and fee-for-service payments
- financial incentives to reduce the number of referrals and provide preventive services
- health workers working in publicly owned health centres are salaried public servants

Primary health care versus other health services

- Slovenia operates a gatekeeper system: patients need a referral from their personal physician to be treated by a clinical specialist.
- aim to strengthen the public health role of primary health care centres. Several interventions have been carried out through primary care:
  - early detection of cardiovascular risk factors
  - establishment of health-promoting centres in primary health care centres.

The Core Competencies of a Family Doctor in Slovenia



Source: http://www.woncaeurope.org/Publications.htm

Curriculum of the family medicine residency in Slovenia

- **Duration: 4 years** (48 months)
- **Ambulatory – modular work,** lasting 24 months, divided in two parts
  - **introduction in family medicine,** lasting 2 to 6 months
  - **study of family medicine**, lasting 18 to 22 months
- **Clinical rotation** – working in specialist outpatient clinics and hospital departments, lasting 24 months

The modular part consists of the following topics in the modules:

- Introduction into specialisation
- Principles of family medicine
- Family in health and illness
- Basics of communication
- Health system
- Organisation of the practice
- Quality Assurance
- Ethics, professionalism and health legislation
- Evidence-based medicine and an introduction to scientific research
- Preventive
- **Health care for the elderly**
- Healthcare workers
- Health care in the pre-school and school period
- Diseases of addiction
- **Physical and rehabilitation medicine**
- Communication in special situations
- Prescribing medicines
- Prehospital emergency medical help
- Home visits and home care
- **Dying patient and palliative treatment**
- Teamwork
- Changing your lifestyle
- Medical unexplained conditions in the family medicine dispensary
- Collaboration with clinical specialists
- Family medicine in the community
- Medical anthropology and humanism
- Management of patients with chronic disease
- Co-morbidity

Ambulatory work

- Resident regularly follows at least 50 patients:
  - 10 patients with arterial hypertension,
  - 5 patients with diabetes,
  - **5 patients with pain** in the spine or joints - arthrosis,
  - 5 patients with neurosis, depression, dementia or psychosis,
  - **3 patients with cancer**,
  - 3 with addiction or harmful use of psychotropic substances,
  - 3 patients with other chronic diseases
  - 1 or 2 patients who are mainly treated at home.

Clinical rotation – obligatory part 20 months

- INTERNAL MEDICINE 5-7 m
- INFECTOLOGY 1-2 m
- SURGERY 2-4 m
- PEDIATRICS 3-4 m
- GYNECOLOGY 2-3 m
- PSYCHIATRY 2-3 m
- NEUROLOGY 1-2 m
- DERMATOLOGY 1-2 m
- ORTHOPEDICS 1-2 m
- OPHTALMOLOGY 1-2 m
- ORL 1-2 m
- ONCOLOGY 1-2 m

Clinical rotation – optional part 4 months

- PHYSIATRY 1-2 m
- CLINICAL PSYCHOLOGY 1-2 m
- UROLOGY 1-2 m
- GERIATRICS 1-2 m
- EMEGRENCY MEDICINE 1-2 m
- RADIOLOGY 1-2 m

Medical Chamber of Slovenia

Medical Chamber of Slovenia

Prolongation of licence:

collect credit points (professional achievements as proof of professional competence).

fulfill the condition that a medical service is performed in the professional field for which the licence has been granted

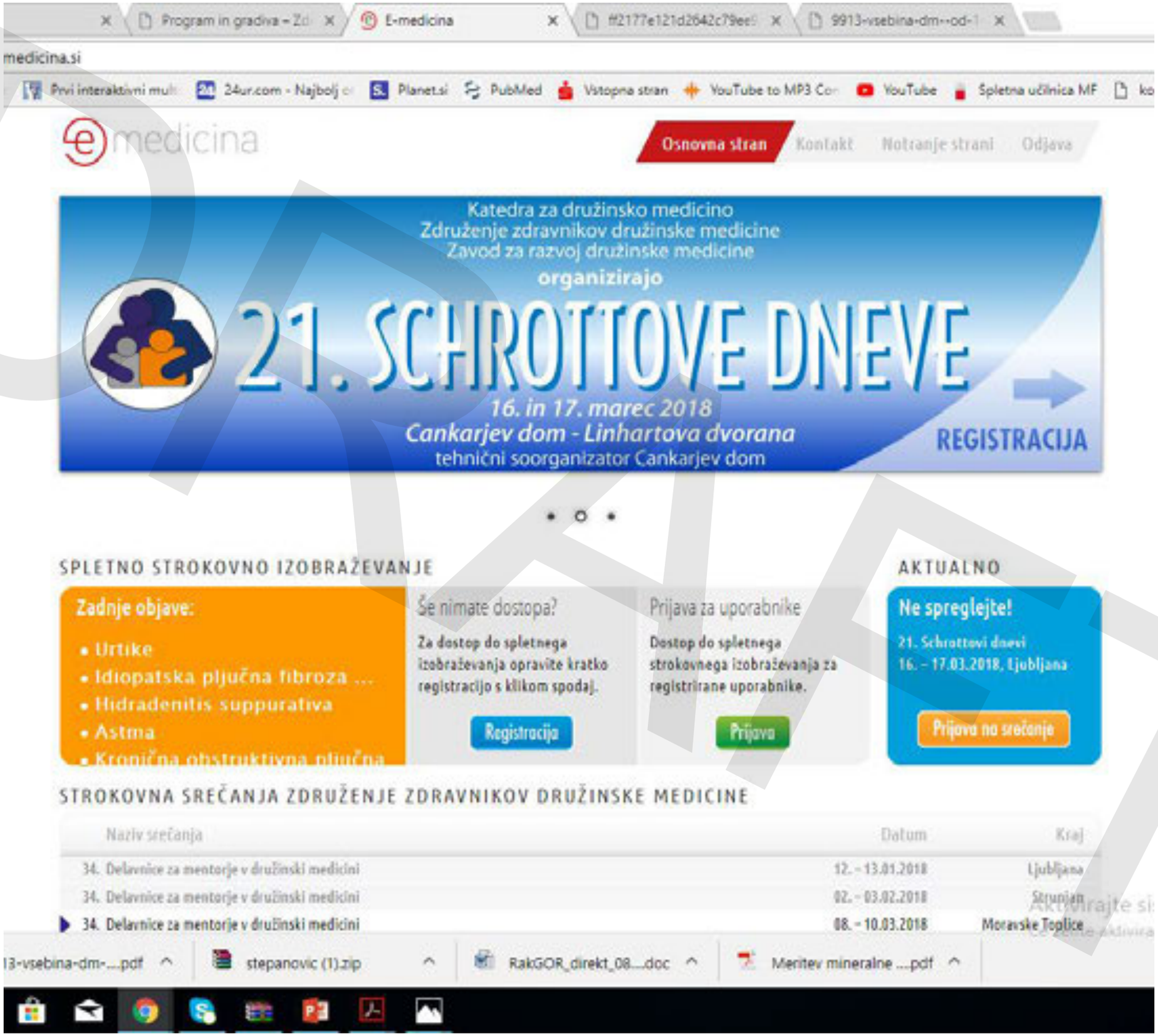
SLOVENIAN MEDICAL ASSOCIATION
-
SLOVENIAN FAMILY MEDICINE SOCIETY

Meetings

Workshops

Web site

Literature


E-medicina
medicina.si
Planet.si
PubMed
YouTube
Spletna učilnica MF
emedicina
Osnovna stran
Kontakt
Notranje strani
Odjava
Katedra za družinsko medicino
Združenje zdravnikov družinske medicine
Zavod za razvoj družinske medicine
organizirajo
21. SCHROTTOVE DNEVE
16. in 17. marec 2018
Cankarjev dom - Linhartova dvorana
tehnični soorganizator Cankarjev dom
REGISTRACIJA
SPLETNO STROKOVNO IZOBRAŽEVANJE
Zadnje objave:
Urtike
Idiopatska pljučna fibroza ...
Hidradenitis suppurativa
Astma
Kronična obstruktivna pljučna
Še nimate dostopa?
Za dostop do spletnega izobraževanja opravite kratko registracijo s klikom spodaj.
Registracija
Prijava za uporabnike
Dostop do spletnega strokovnega izobraževanja za registrirane uporabnike.
Prijava
AKTUALNO
Ne spreglejte!
21. Schrottovi dnevi
16. - 17.03.2018, Ljubljana
Prijava na srečanje
STROKOVNA SREČANJA ZDRUŽENJE ZDRAVNIKOV DRUŽINSKE MEDICINE
Naziv srečanja
Datum
Kraj
34. Delavnice za mentorje v družinski medicini
12. - 13.01.2018
Ljubljana
34. Delavnice za mentorje v družinski medicini
02. - 03.02.2018
Strunjan
34. Delavnice za mentorje v družinski medicini
08. - 10.03.2018
Moravske Toplice
stepanovic (1).zip
RakGOR_direkt_08....doc
Meritev mineralne ....pdf

Online professional education

27 different topics:

Measuring, evaluating and classifying pain

Spondyloarthritis

Rheumatoid arthritis

....

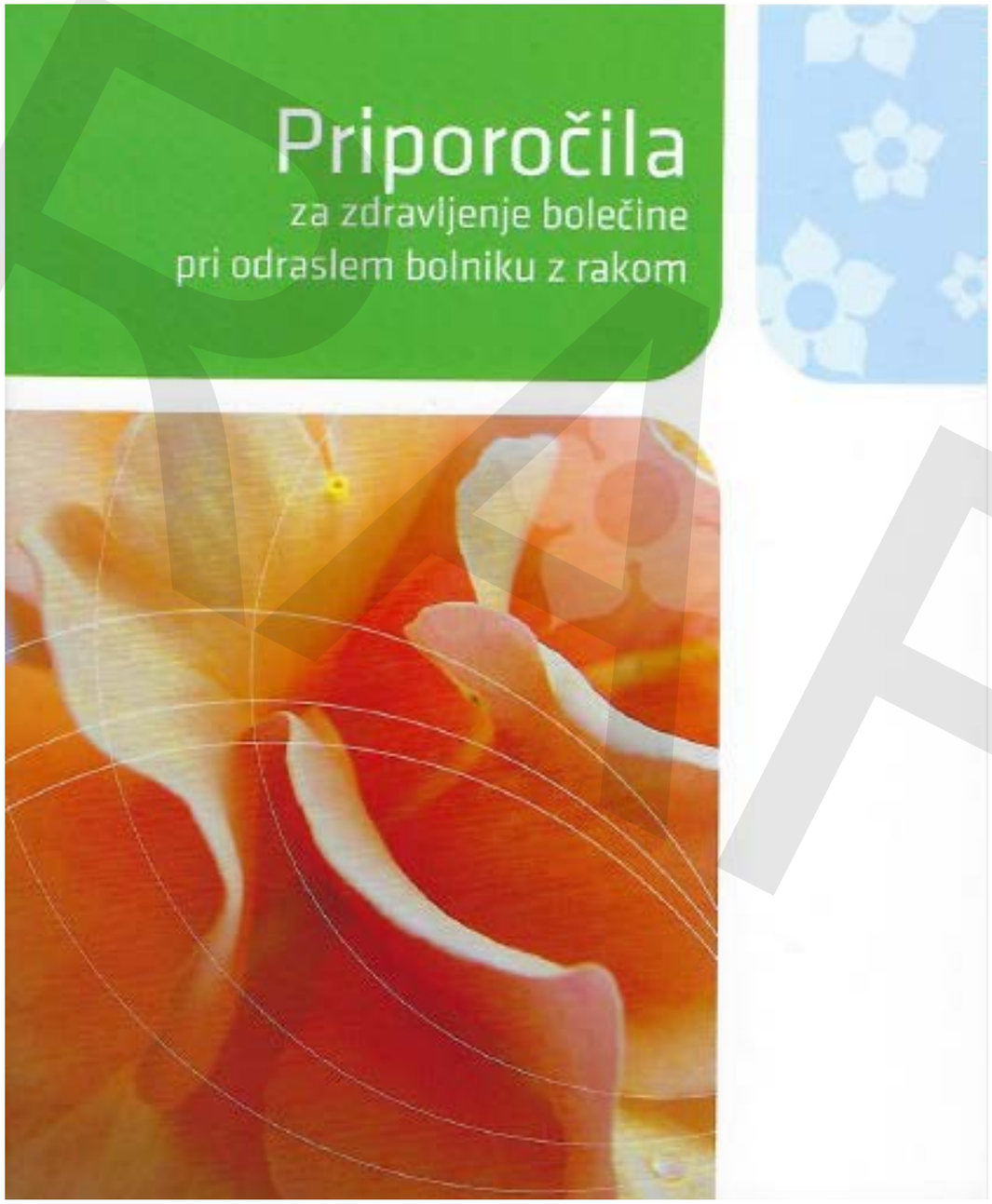
Professional meetings

STROKOVNA SREČANJA ZDRUŽENJE ZDRAVNIKOV DRUŽINSKE MEDICINE

Naziv srečanja	Datum	Kraj
34. Delavnice za mentorje v družinski medicini	12. – 13.01.2018	Ljubljana
34. Delavnice za mentorje v družinski medicini	02. – 03.02.2018	Strunjan
34. Delavnice za mentorje v družinski medicini	08. – 10.03.2018	Moravske Toplice
21. Schrottovi dnevi	16. – 17.03.2018	Ljubljana
18. Kokaljevi dnevi	20. – 21.04.2018	Laško
44. Strokovno srečanje timov	01. – 02.06.2018	Ljubljana
27. Mednarodni Janko Kersnik EURACT tečaj	11. – 15.09.2018	Bled
11. Zadravčevi dnevi	14. – 15.09.2018	Moravske Toplice
20. Fajdigovi dnevi	19. – 20.10.2018	Kranjska Gora
10. Mariborski kongres družinske medicina	23. – 24.11.2018	Maribor

Literature

Collaboration with Slovenian society of pain medicine



Lecture series 3

Office of Outpatient Pain Management

3.1 Establishment of Office of Outpatient Pain Management
3.2 Multidisciplinary approach to chronic pain management
3.3 The role of Slovenian Society of Pain Medicine
2.4 Pain medicine education for healthcare providers

▶ joined lectures

Lecture 3.1

The establishment of Office of Outpatient Pain Management as a part of the Clinical Department of Anesthesiology and Surgical Intensive Therapy at University Medical Center Ljubljana

prim. Gorazd Požlep, MD

Office of Outpatient Pain Management, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

President, Slovenian Society of Pain Medicine

Začetki protibolečinske ambulante v UKC Ljubljana

40 let ATB

- 6 marec 1978 – 6 marec 2018!!!

1998 APS

Število anestezijskih obravnav

Obravnava	2013	2014
Splošna anestezija	28331	32805
Regionalna anestezija	4236	3829
Sedacija	520	786
Nadzor	544	734
Obporodna – intravenska analg		795
Obporodna – epiduralna analg		375
CVK	106	150
Reanimacija	286	326
EPO	12904	22701
Anest ambulanta	6744	9276
EKG		115
Terapija bolečine – pregledi	2120	3028
Terapija bolečine – posegi	11871	9620
SLAPB	14713	14957
Skupaj	**82375**	**99497**

- Do 2005, 1 do 2 specialist
- 3 sestre
- 1 administrator

- AKP, blokade, konzilijarna služba, …

2013

- Nova lokacija – BPD
- Od 2016 samo BPD (blokade)
- 4 specialist, 1 – 3 specializanti
- 1 – 2 administrator
- 4 – 7 MS, DMS, VMS

	2015	2017
Prvi pregled algološki	1461	1590
Prvi pregled nevrološki	0	141
Prvi pregled ortopedski	0	159
Psihološki pregled	0	80
Kontroni pregledi	1149	1690
Blokada	852	902
Iv infuzija	479	562
Nujna	346	202
Akupunktura redno	7715	7153
Akupunktura EDP	0	5966
Točke	101826	140783

CUB KV	DR.ŽIVKOVIČ	
CUB RO	DMS GRMOVŠEK	
SEPTIKA POLIKLINIKA (DR.1 8702), (AMS 82-03)	DR.ŽLIČAR, DR.JORDAN DZ ZUPANC	
ANESTEZIJSKA AMBULANTA (28-55)	DR.MUŠIČ P., DR.RUPERT SMS GRGIČ, VMS FINŽGAR	
KONZ. TRAVMA (8749)	DR.MITROVIČ	
KVIT (I.NAD. 31-30, II.NAD. 31-84)	DR.KONTESTABILE, DR.TALESKA, DR.HORVAT, DR.POČKAR, DR.PRAPER, DR.MENCIN, DR.GRBEC	
KV AMBULANTA (14-01)	DR.TOMAŽINČIČ	
NUJNI POSEGI - KONZILIARNI (8748)		
RT (82-73)	DR.MERZELJ, DR.PREVOLŠEK, DR.VUJIČ	
TERAPIJA BOLEČINE (54-53, 54-56)	DR.POŽLEP, DR.JUREČIČ, DR.SIMENDIĆ, DR.MARIN VMS OBLAK, SMS MRVAR, ZT KALABIČ, ZT TUZLAK	
TB-APB (DR. 72-00, AMS 86-23)	DR.GNEZDA, VMS SVILENKOVIČ, DMS TROBEC, DMS KAVČIČ, DMS KOČUVAN	

Cilji do 2020

- 6 do 8 specialistov anesteziologov + specializanti
- 10 – 15 MS, VMS, DMS
- 2 administratorja
- Psiholog 1 – 2
- psihiater 1 – 2
- Fiziater 1
- Fth ?

Lecture 3.2

Multidisciplinary approach to chronic pain management

prim. Gorazd Požlep, MD

Office of Outpatient Pain Management, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

President, Slovenian Society of Pain Medicine

Why do we need a pain clinic?

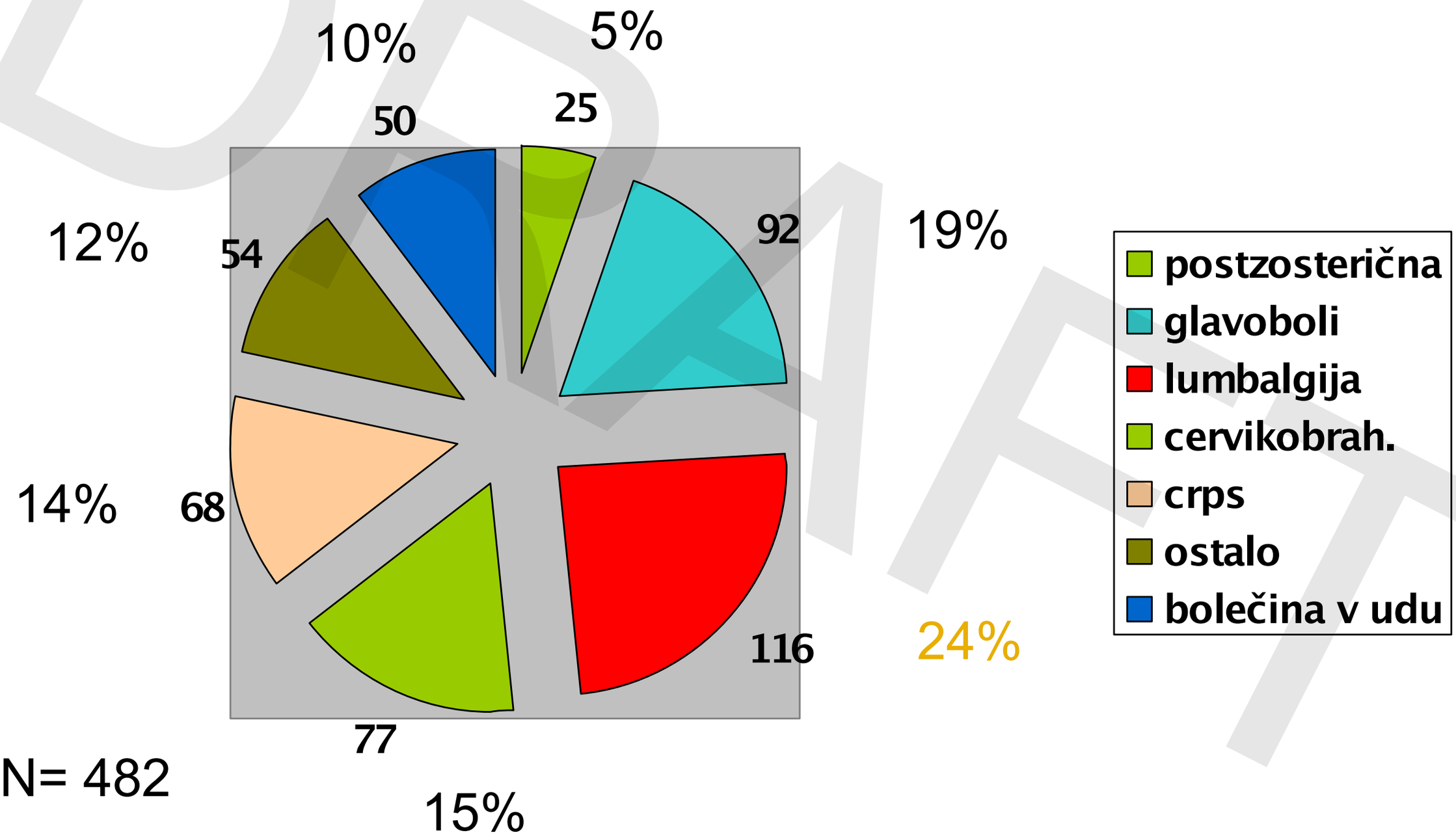
(multidisciplinary, interdisciplinary, transprofessional)

Introduction

- Chronic pain is the most common cause for a doctor's visit
- It is one of the most common causes of the sick stock

- Great impact on life, causes many limitations
  - Personal
  - Professional
  - Academic
  - Social
  - Familiar

Main pain syndromes in our pain clinic



- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage

  "Pain is what the patient says it is and exists when the patient says so."

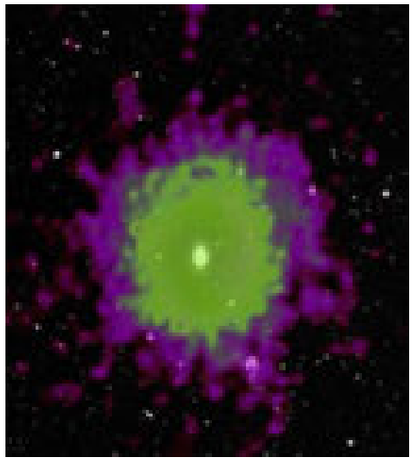
  The person who comes to the outpatient clinic because of the pain has a problem!

Acute pain

- Acute pain is a system that allows us to detect potentially harmful and harmful stimuli
- It represents a defense mechanism, without which we would have a significantly lower chance of survival
- It takes a limited time, it responds well to treatment
- It's useful!

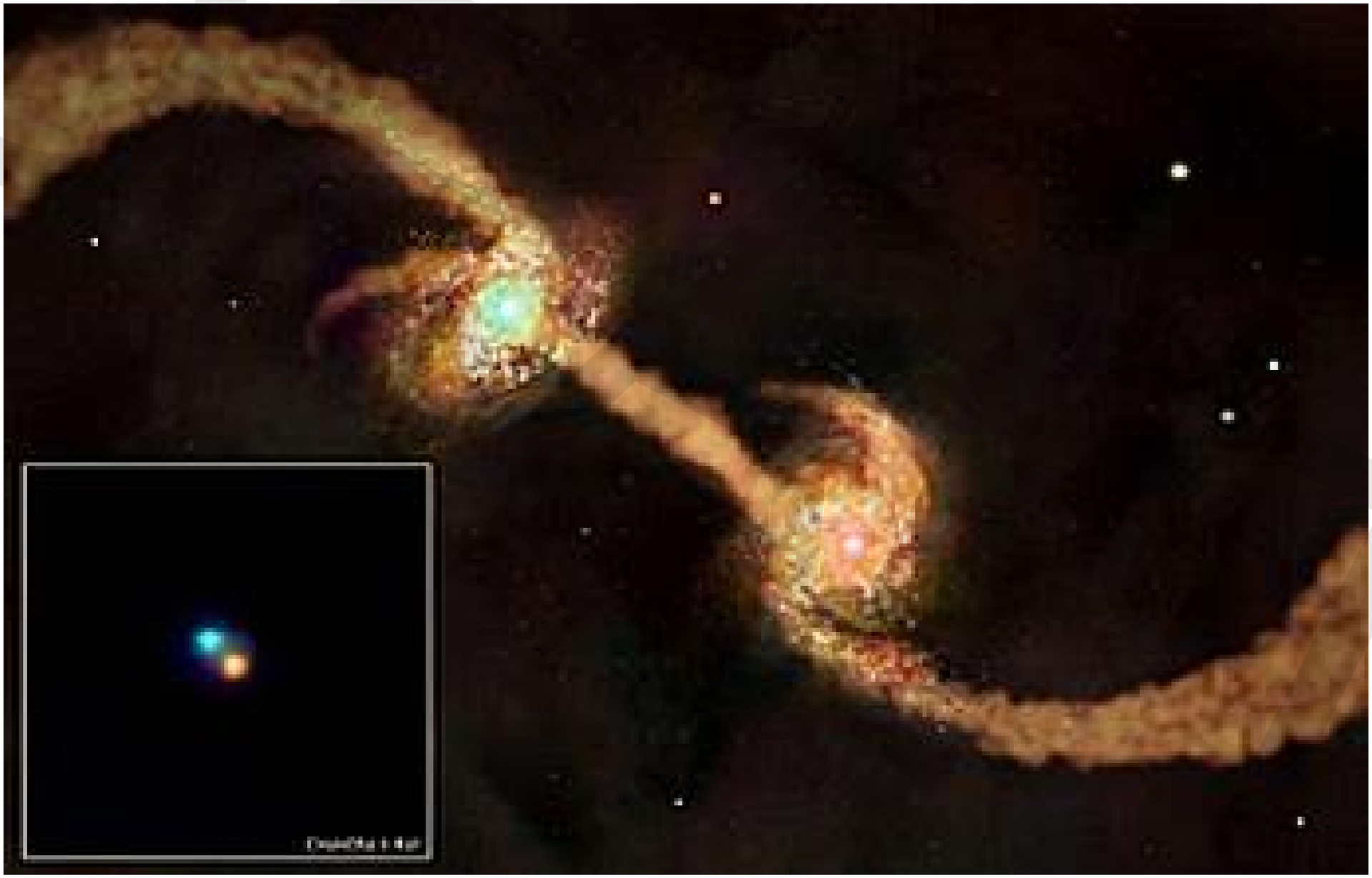
Relationship between acute and chronic pain

ACUTE

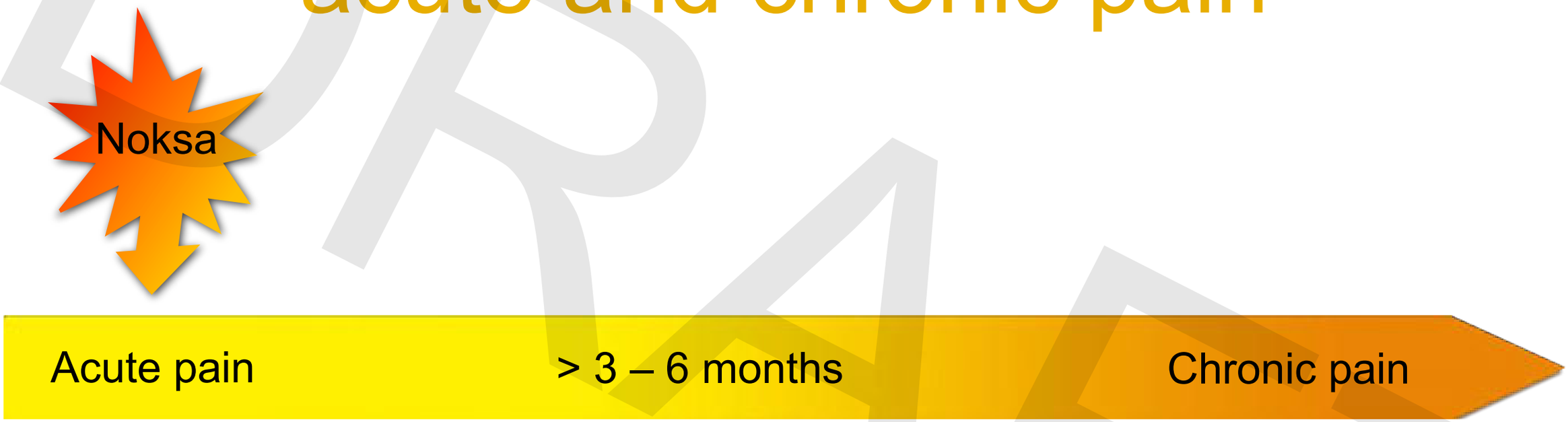


CHRONIC

Acute and chronic pain



Relationship between acute and chronic pain



It has a protective function	Loses the protection function
The cause is known	Deteriorates the quality of life

Are the mechanisms of AP and CP the same?

Chronic pain

- It often remains when the trigger factor is no longer persistent (exceeding the time of healing)
- It is caused by:
  - chronic pathological events in somatic structures or internal organs
  - disturbance of the peripheral or central nervous system
  - It is not a symptom of a disease, it is itself a disease (depression, anxiety, insomnia ...)

What is chronic pain?

- We only have a time definition for CP!!!
- CP includes many very different conditions, so we compare apples, oranges, ….
- Many times in patients with CP, pain is not the main problem

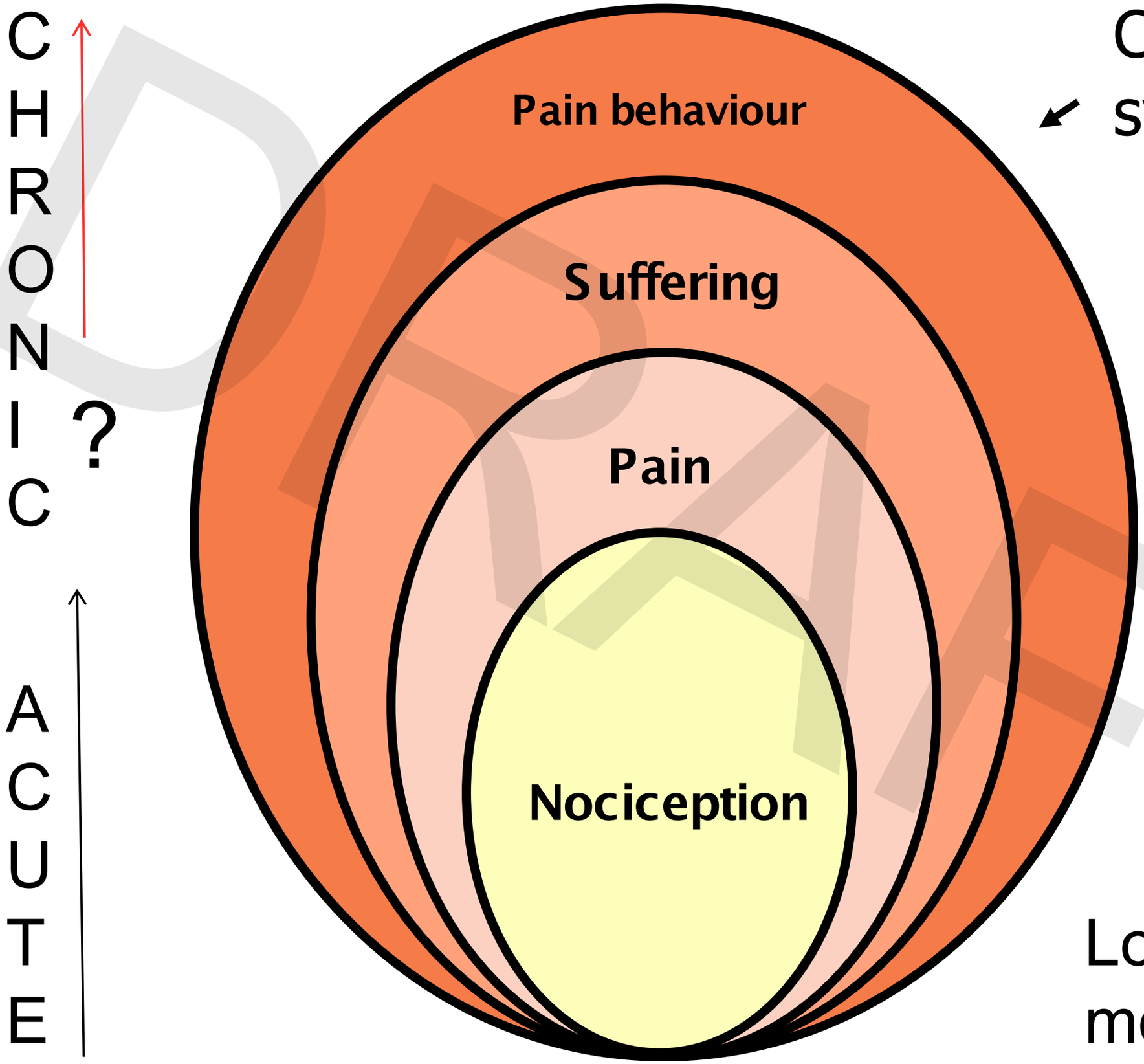
Example of chronic pain

- Chronic generalised musculoskeletal pain
- CP in a patient who has survived cancer
- Chronic pain after polytrauma
- Chronic tension headache
- Chronic headache after injury

The main causes for the transition of acute to chronic pain

- Genetic predisposition
- Epigenetics - ?
- Strong, poorly treated acute pain
- Great use of analgesics
- Patient's attitude to pain (catastrophysing)
- Expecting chronic pain
- Belief in pain
- Low economic status
- Lack of education

Preventing chronic pain?



Chronic pain syndrome

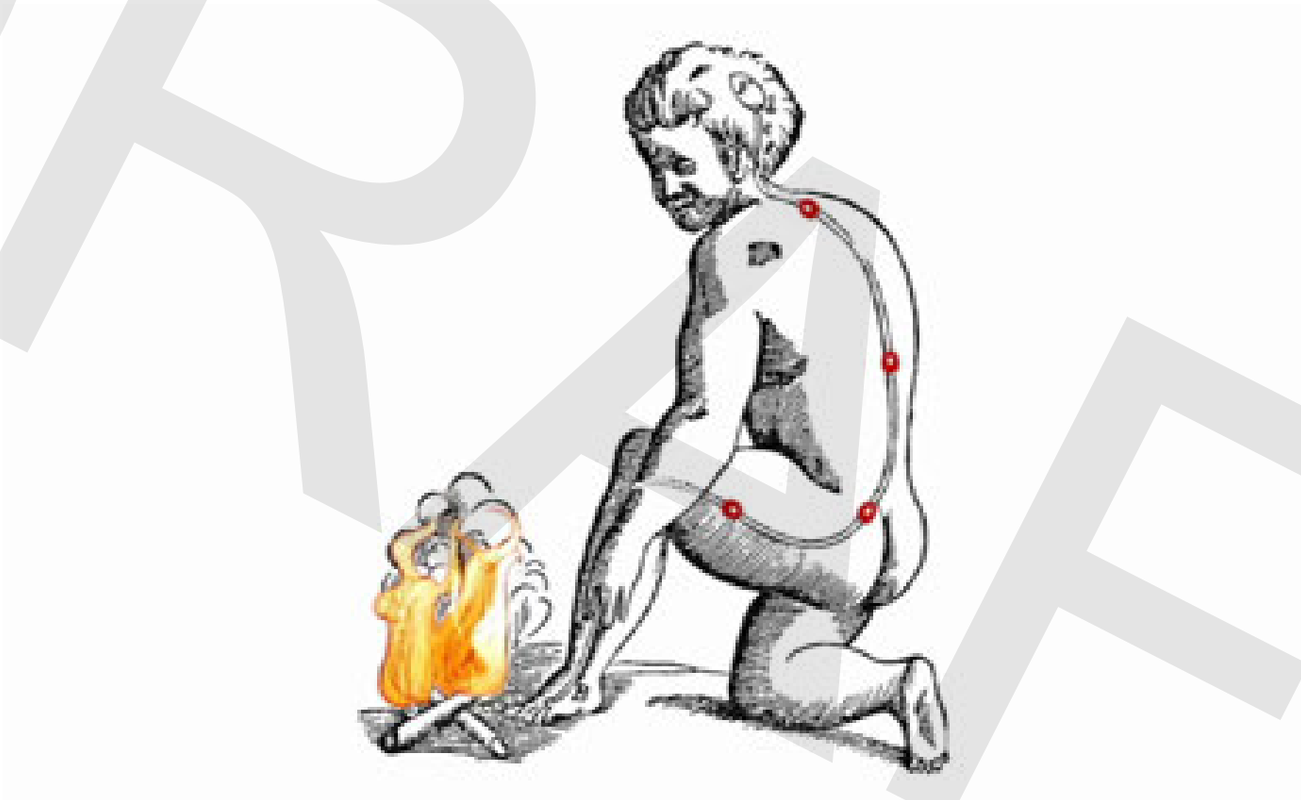
Loeser pain model

Pain perception - a biological model

- Nociceptors - free nerve endings in peripheral tissues
- They only respond to very strong, potentially harmful stimuli
- A delta and C fiber

- Nociceptive stimuli
- Mechanical (punch)
  Thermal (hot, cold)
  Chemical (internal, external)
- Electricity (artificial stimulus)

Pain = injury



Pain is a direct consequence of injury, stimuli are transmitted through "hollow tubes" to the brain, where pain occurs

- The traditional model assumes that symptoms ALWAYS have an organic cause, but they try to eliminate it, and when this is not possible, they would want to interrupt or block the pain pathways pharmacologically or even surgically.

Components of pain sensation

- Stimulation of pain receptors is not enough to cause pain
- The stimuli must be sufficiently strong (overhanging)
- Many mechanisms can block or reinforce these stimuli
- Basically, nociception involves two components:

Sensory discriminative and Affective motivational

Components of pain sensation

Sensory discriminative

- Rarely appears alone, isolated
- Example: a person in a laboratory, only a verbal response to pain
- The person does not suffer, because the conditions are under control (he can stop the pain)
- Strength, location, features

Affective motivational

- Is probably older and more primitive
- It represents an emotional response to the occurrence of pain

Treating chronic pain must address both components !

Specialists involved in the treatment of chronic pain

- Family medicine
- Physiatrist
- Internal medicine
- Surgeon
- Radiologist
- Neurologist
- Algology
- Psychiatrist
- Psychologist
- Emergency medicine,
- ...

Patient's "journey"

- Family medicine
- Physiatrist
- Int. med.
- Surgeon
- X ray
- Neurologist

- Anaesthesiologist (Algologist)
- Psychiatrist
- Psychologist
- Emergency medicine
- …

How long?

PAIN PERCEPTION: Biopsychosocial model

CHRONIC PAIN IS A BIOPSYCHOSOCIAL PHENOMENON!!!

A biopsy-social (BPS) view of CP is now a widely accepted model for understanding and treating chronic pain, replacing the old biomedical reductionistic model

BPS model looks at CP as a complex, dynamic interaction between biological, psychological and social factors that maintain or even exacerbate CP

Factors that can affect pain experience

Psychological factors

- Mood
- Beliefs
- Spirituality
- Religion
- Anxiety and fear

Socioeconomic factors

- Family
- Work
- Cultural environment

What is a pain clinic and why we need it?

- The pain clinic offers an interdisciplinary approach to the patient!!!

Interdisciplinary approach to CP

- Simultaneous treatment of a patient by a team of various experts (med. and nonmedical)
- Faster and better treatment
- Shorter hospital stay
- Cheaper treatment - ???
- In any case, many patients are more satisfied with the treatment, as the treatment objectives are more realistic

The pain team

- Opinions on the composition of such a team are not completely uniform; according to the prevailing biopsychosocial model of chronic pain, it is imperative that the team exceeds the involvement of only one profile - like medical doctors.

  Experts from other profiles must also be involved such as a psychologist, social worker, work therapist ...

Only the team that will treat the patient and at the same time coordinate their activities and therapeutic goal, can offer the patient "something more"

Pain team

- Team members must co-ordinate and co-operate.
- The therapeutic approach must be comprehensive, integrative and include different methods of treatment.
- Treatment should not only focus on biological, but also psychological, social and professional factors, as they can greatly affect pain.

Operation of the team

- The patient is part of the team. We must be aware that the patient is the greatest "expert" for his pain. He needs to know this. This automatically increases the level of communication between the patient and the doctor, which is crucial for treatment.
- In the "unilateral" communication where the doctor and patient are in different positions, often leads to frustration on both sides.

Operation of the team

- Continuity of therapy and maintenance of stability.
- Most patients with chronic pain will need care in the long run. It is difficult to expect patients to be healed at some point - even after successful therapy.
- The vast majority of patients will need additional care in the future.
- Ensuring the availability of all (different) treatment methods that are foreseen, otherwise the system can not come to life in practice.

- We help the patient to stay functional - !!!

”Pain clinic “ in UKC Ljubljana

- 4 specialists anesthesiologists
- Neurologist
- Orthopedic surgeon
- Psychologist
- Psychiatrist
- 5 to 8 nurses
- 1 medical administrator

Goals of the treatment ?

Two main goals:

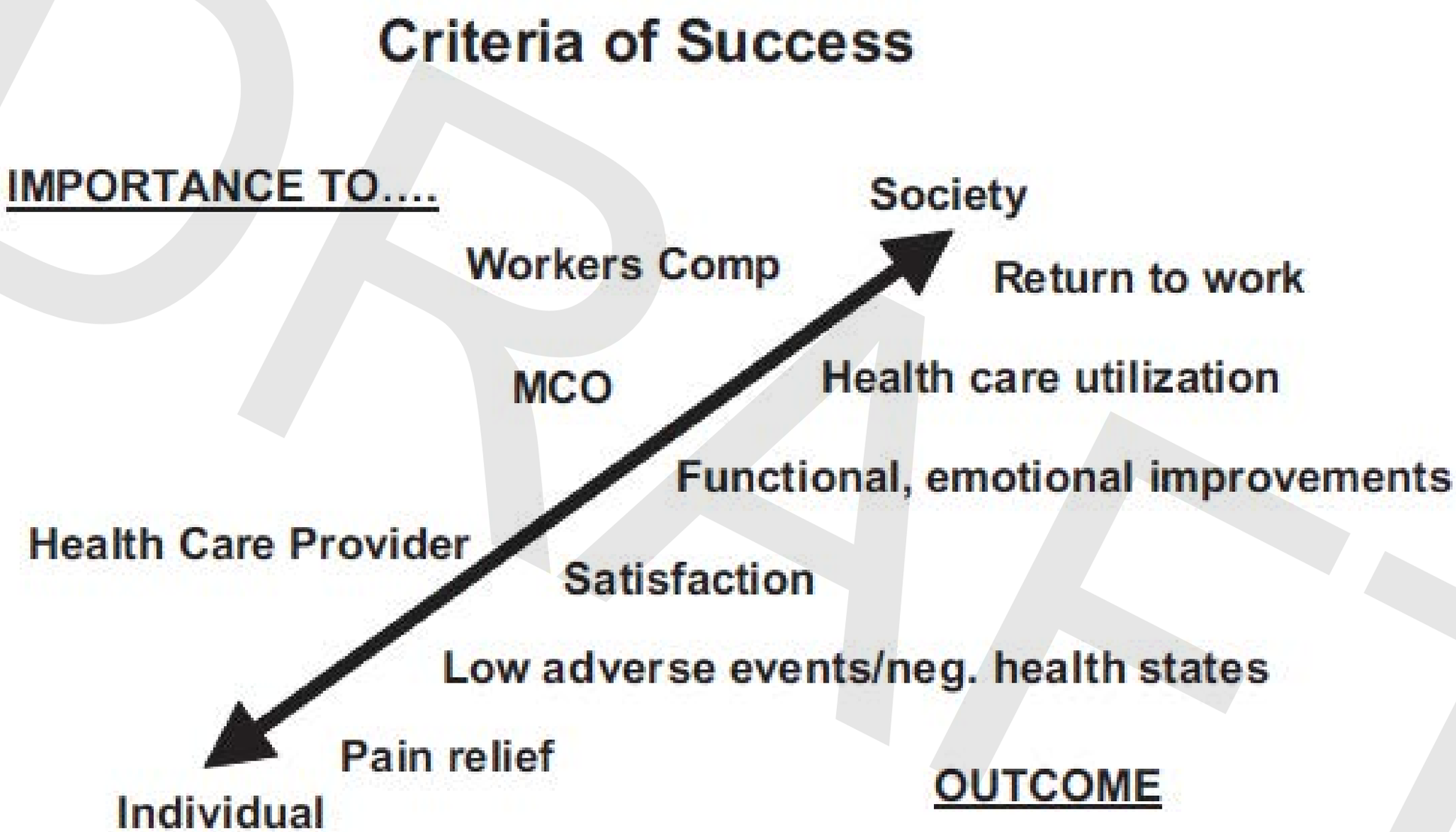
reduce pain and disability

improve function

(physical, psychological and social)

Improve the quality of life!

Criteria for the evaluation of the treatment



Gatchel JR, Okifuji A: Evidence-Based Scientific Data Documenting the Treatment and Cost-Effectiveness of Comprehensive Pain Programs for Chronic Nonmalignant Pain. The Journalof Pain Vol 7, No 11,2006 pp 779 – 793.

Take home message I

- Pain is a complex sensory and emotional experience.
- Today a biopsychosocial model of chronic pain is widely accepted.
- For resistant cases, we will only be able to help patients with such an approach.
- We all need an (interdisciplinary) pain treatment clinic (s) to relieve resistant cases of chronic pain.

Take home message II

- Effective interdisciplinary care for the patient is more than just the sum of efforts of individuals.
- Team members must effectively combine different treatment strategies to achieve the same goal.
- Despite extensive knowledge, we can never eliminate all of the chronic pain (relief) because it is much more than just biological events (lack of ability to influence the psychological and in particular, the social component of the pain).

Lectures 3.3 and 2.4

The role of Slovenian Society of Pain Medicine in the development of better pain management on all levels of healthcare

The organization of education on pain medicine for healthcare providers in Slovenia: The role of Slovenian society of pain medicine

prim. Gorazd Požlep, MD

Office of Outpatient Pain Management, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

President, Slovenian Society of Pain Medicine

SZZB
Slovensko združenje
za zdravljenje bolečine

20 let SZZB
Od ideje do danes

Člani Mednarodnega združenja za preučevanje bolečine:

as. mag. Nevenka KRČEVSKI-ŠKVARČ,dr.med.
prim. dr. M. GODEC
prof. dr. M. PEČAN
prim.dr. D. AŽMAN

Prisrčno vabimo Vas in vse kolege, ki imajo večji interes za zdravljenje bolečine na ustanovni občni zbor Slovenskega združenja za zdravljenje bolečine, ki bo dne **07.11.1996 ob 15 uri** v predavalnici Onkološkega inštituta v Ljubljani.

Ob tej priložnosti bo kratek strokovni prispevek in pogostitev, ki ga pripravlja L E K .

Lep pozdrav!

Maribor, 30.10.1996

(priloga 2)

ZAPISNIK USTANOVNEGA OBČNEGA ZBORA SLOVENSKEGA ZDRUŽENJA ZA ZDRAVLJENJE BOLEČINE

Ljubljana, 7.11.1996,
Predavalnica onkološkega inštituta v Ljubljani ob 15 $^{00\,h}$.

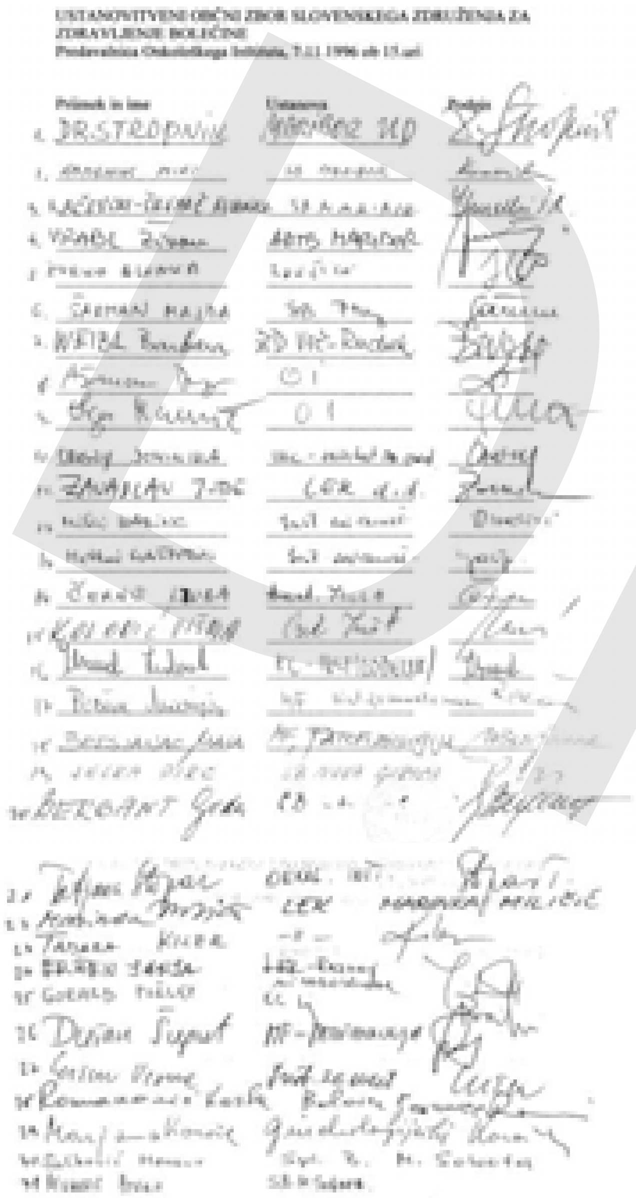
Pred ustanovnim občnim zborom so o bolečini, pomenu zdravljenja bolečine in o organizaciji te novejše medicinske vede spregovorili prof. dr. J. Trontelj, as. Mag. Dr. N. Krčevski-Škvarč, prim. dr. M. Godec, prim. dr. D. Ažman in prof. dr. M. Pečan.
Za tem strokovnim uvodom mag.dr.Nevenka Krčevski-Škvarč poda predlog dnevnega reda ustanovnega občnega zbora Slovenskega združenja za zdravljenje bolečine, ki se glasi:
1. Izvolitev predsedstva (predsednika in dveh članov)
2. Izvolitev zapisnikarja in dveh overoviteljev zapisnika
3. Ugotovitev prisotnosti
4. Razprava o predlogu statuta in njegov sprejem
5. Izvolitev organov združenja
6. Razno

Predlog dnevnega reda je soglasno sprejet z javnim glasovanjem.
Na predlog mag.dr.Nevenke Krčevski-Škvarč so v predsedstvo občnega zbora v ustanavljanju sprejeti, mag. dr. Nevenka Krčevski-Škvarč kot predsednik, mag.dr.Marija Godec kot član in dr. Lučka Obernauer kot član.
Za zapisnikarja je predlagan mag.dr.Mirt Kamenik, za overovitelja zapisnika pa dr.Majda Šarman in dr. Živan Vrabl. Predlog je soglasno sprejet.
Na ustanovnem občnem zboru je prisotnih 41 udeležencev.
Za tem mag.dr.Mirt Kamenik prebere predlog statuta Slovenskega združenja za zdravljenje bolečine. Predlog je podan v razpravo in je sprejet soglasno z javnim glasovanjem brez dopolnil. Za tem mag.dr. Mirt Kamenik prebere predlog članov za upravni odbor združenja, nadzorni odbor združenja in za častno razsodišče združenja:

ORGANI ZDRUŽENJA

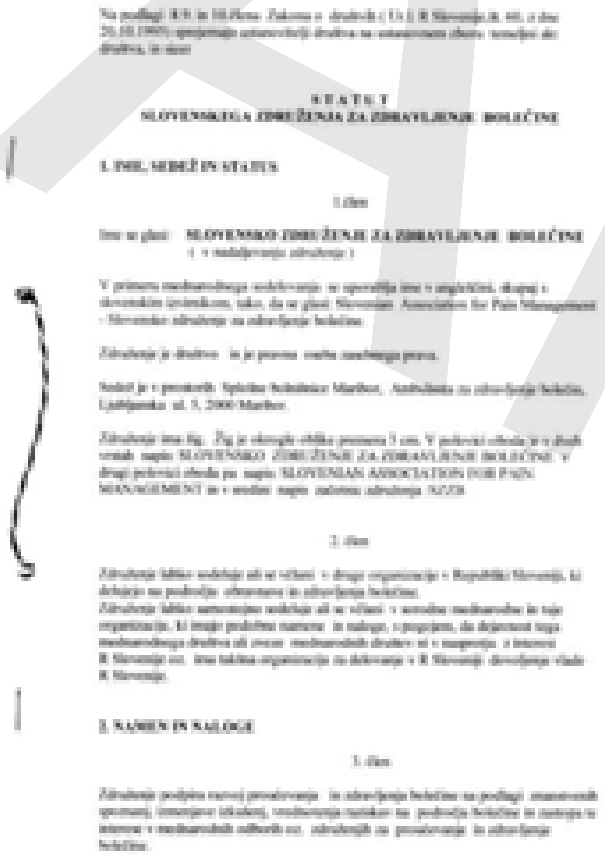
1.OBČNI ZBOR ZDRUŽENJA - VSI ČLANI
2. UPRAVNI ODBOR

PREDSEDNIK - as.mag.dr.NEVENKA KRČEVSKI-ŠKVARČ
(anesteziolog, SBM)
PODPREDSEDNIK - mag.dr.MARIJA GODEC
(anesteziolog, KC Ljubljana)



USTANOVITVENI OBČNI ZBOR SLOVENSKEGA ZDRUŽENJA ZA ZDRAVLJENJE BOLEČINE
Predavalnica Onkološkega Inštituta, 7.11.1996 ob 15.uri

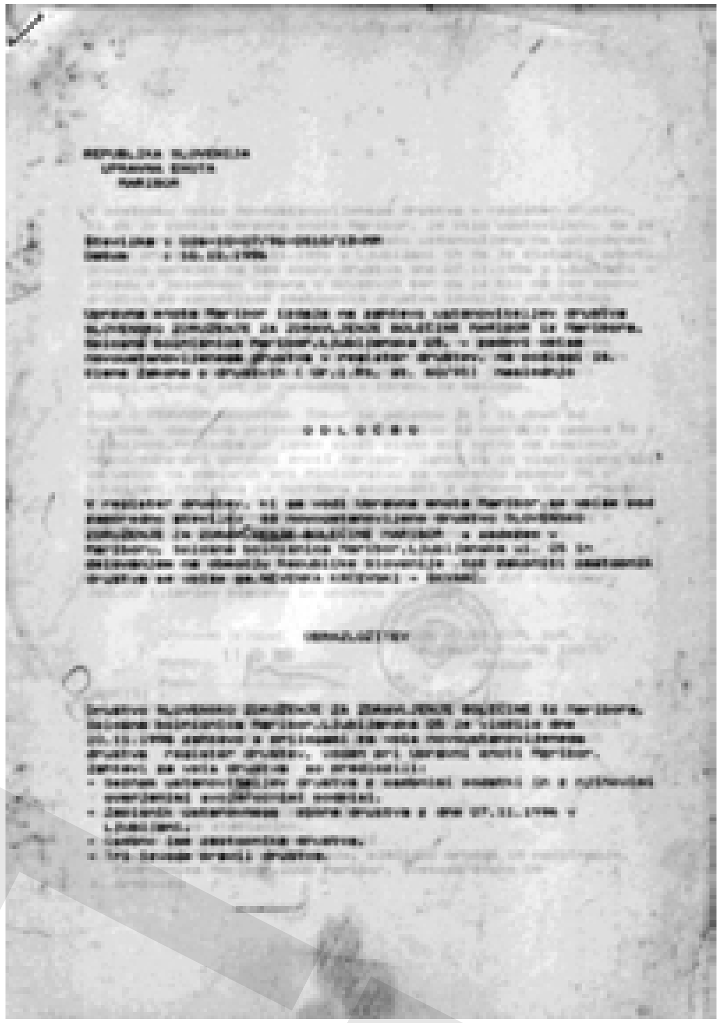
USTANOVITVENI OBČNI ZBOR SLOVENSKEGA ZDRUŽENJA ZA ZDRAVLJENJE BOLEČINE
Predavalnica Onkološkega Inštituta, 7.11.1996 ob 15.uri



STATUT
SLOVENSKEGA ZDRUŽENJA ZA ZDRAVLJENJE BOLEČINE

1. IME, SEDEŽ IN STATUS

1. člen



REPUBLIKA SLOVENIJA

SLOVENSKO ZDRAVNIŠKO DRUŠTVO
SLOVENIAN MEDICAL SOCIETY
1001 LJUBLJANA – KOMENSKEGA 4
P.P. 26 – TELEFON 323-468 13-10-306

Ljubljana, 11.12.1996
Številka: 02-135/54-96

As.mag. dr. KRČEVSKI-ŠKVARČ Nevenka
Učna bolnišnica Maribor
Odd. za anesteziologijo, intenzivno terapijo in...
Ljubljanska 5
2000 MARIBOR

Zahvaljujemo se Vam za obvestilo o ustanovitvi Vašega združenja in se veselimo sodelovanja z Vami.

Za vključitev v SZD je potrebno, da na Vašem najvišjem organu (skupščini...) sprejmete statut, ki je usklajen s statutom SZD. Vzorec Vam prilagamo, z željo, da ga prilagodite Vašim specifičnim potrebam in ciljem. Ko boste sprejeli novi statut na Vaši skupščini, je potrebno še formalno soglasje Glavnega strokovnega sveta SZD. S tem je Vaš statut verificiran in ga zavodemo v knjigo društev, združenj in sekcij in ko Vam sporočimo operativno številko, je registracija Vašega združenja do SZD končana.

Lepo pozdravljeni!

Generalni sekretar:
dr. Matija CIRVC

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5. Prim. dr. AŽMAN Drago	Britof 327, 4000 Kranj	064/ 241-558
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9. Mag.dr.KRČEVSKI-ŠKVARČ Nevenka	Dogoška 88, 2000 Maribor	062/411-038
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12 dr.HAJEWSKA-KOSI Jadwiga	Cesta v Bevče 15, 3320 Velenje	063/863-347
13. dr.KMET Dragica	Linhartova 9, 1000 Ljubljana	061/1317002
14. dr. KOKALJ Jani	I.Krivca 15, Kr. Gora	064/883-073
15 dr.LAHAJNER Slavica	Kopališka 6, 4000 Kranj	064/223-628
16. dr. MAHKOVIC-HERGOUTH Ksenija	Trnovska 6, 1000 Ljubljana	061/1250388
17. dr.MARN-SKOK Sonja	Bogatajeva 17, 1215 Medvode	061/611-846
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19. dr.MATKOVIČ-LONZARIČ Nives	Ljubljanska 3 a,2000 Maribor	062/304-448
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22. dr. RAFAJ Tomislav	Brkinska 10, 6310 Izola	066/63-327
23. dr. SZEPESSY Nikolaj	Mladinska 8, 9231 Beltinci	069/ 42-091
24. dr.ŠIPEK Metka	Kralja Matjaža 2,Metlika	0602/35-524
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26. dr.ŠUŠTARIČ-ČAMPA Slavka	Volčičeva 51, Novo Mesto	068/ 321-672
27. dr.BERGANT Gordana	Ivana Sulčia4c,5290 Šempeter pri G.	065/31-694
28. dr.CESAR-KOMAR Marija	Kotlje 92, Sl. Gradec	0602/22-095
29. dr. OBERAUNER Lucija	Krtina 94, 1233 DOB	711-716
30. dr. PIRC Jelka	Gradnikove brigade 33,5000N.Gorica	065/24536
31. dr. POLANOVIČ Katarina	Zdrav. Atomske toplice,Podčetrtek	063/8297829
32. dr.SALIHOVIČ Mensur	Kocljeva 10, 9000 M. Sobota	069/32-010
33. dr. STERLE Magda	Kmečka pot 20, Ljubljana	061579292
34. dr. ŠARMAN Majda	Potrčeva 23, 2250 Ptuj	062/23-893
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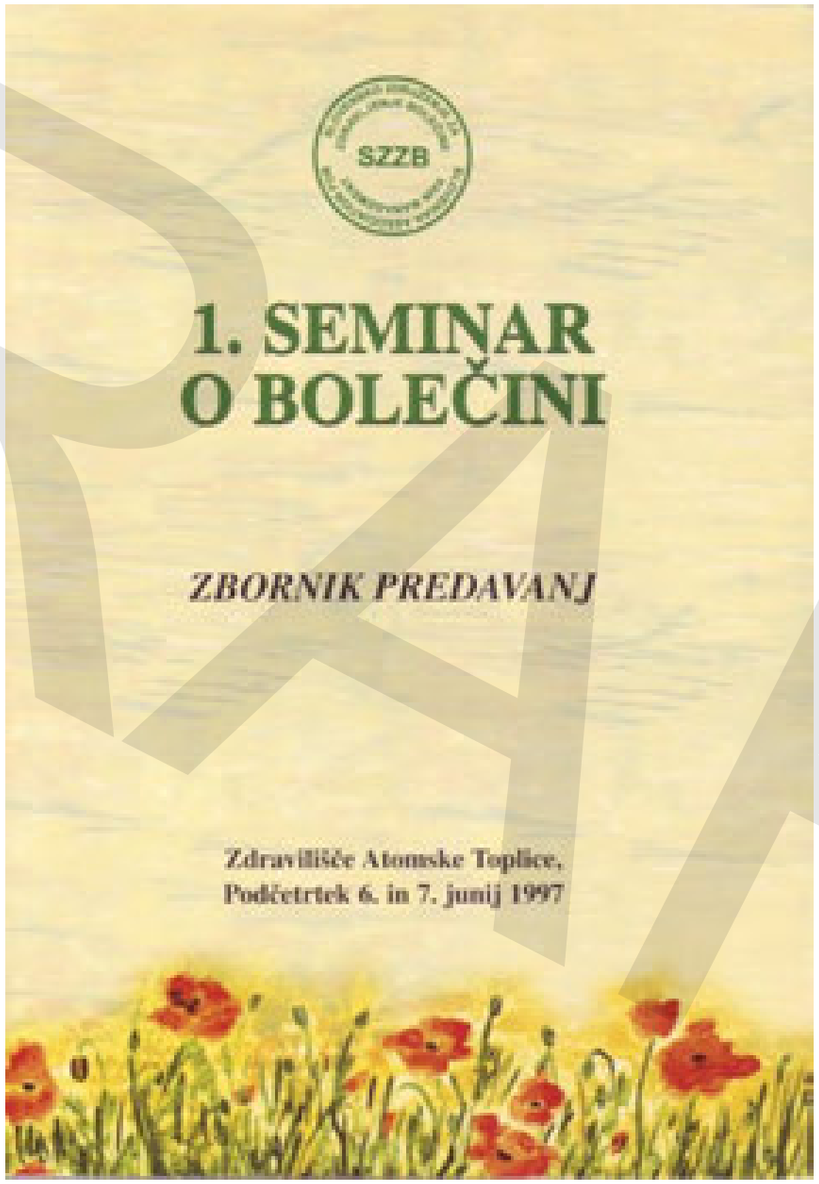
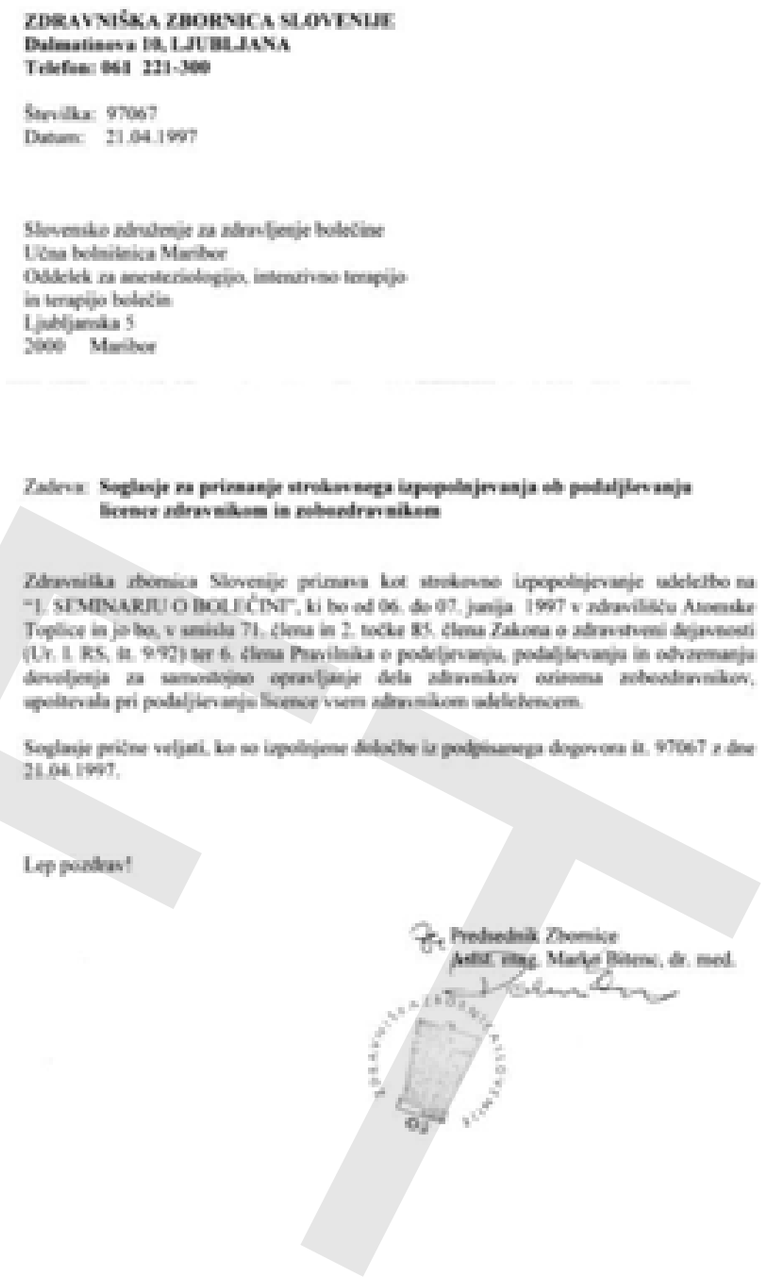
36. dr. VILČ Branka	Glavni trg 8, 3000 Celje	063/483-963
37. dr. VRABL Živan	Hajdoše 51/a	062/782-271
38. dr. ZUPANČIČ Martina	Moste 64/a, 4274 Žirovnica	064/801-667
39. dr.MEKIŠ Dušan	Heroja Bračiča 12, 2000 Maribor	222-224
40. dr. FLIS Ivica	Zdrav.Atomske toplice, Podčetrtek	063/829-000
41. dr. Stropnik Evgen	Špičnik 46, 2201 Špičnik	062/57-534





ZDRAVNIŠKA ZBORNICA SLOVENIJE
Dalmatinova 10, LJUBLJANA
Telefon: 061 221-300

Številka: 97067
Datum: 21.04.1997

Slovensko združenje za zdravljenje bolečine
Učna bolnišnica Maribor
Oddelek za anestezziologijo, intenzivno terapijo
in terapijo bolečin
Ljubljanska 5
2000 Maribor

Zadeva: **Soglasje za priznanje strokovnega izpopolnjevanja ob podaljševanja licence zdravnikom in zobozdravnikom**

Zdravniška zbornica Slovenije priznava kot strokovno izpopolnjevanje udeležbo na "1. SEMINARJU O BOLEČINI", ki bo od 06. do 07. junija 1997 v zdravilišču Atomske Toplice in je bo, v smislu 71. člena in 2. točke 85. člena Zakona o zdravstveni dejavnosti (Ur. l. RS, št. 9/92) tar 6. člena Pravilnika o podeljevanju, podaljševanju in odvzemanju dovoljenja za samostojno opravljanje dela zdravnikov oziroma zobozdravnikov, upoštevala pri podaljševanju licence vsem zdravnikom udeležencem.

Soglasje prične veljati, ko so izpolnjene določbe iz podpisanega dogovora št. 97067 z dne 21.04.1997.

Lep pozdrav!

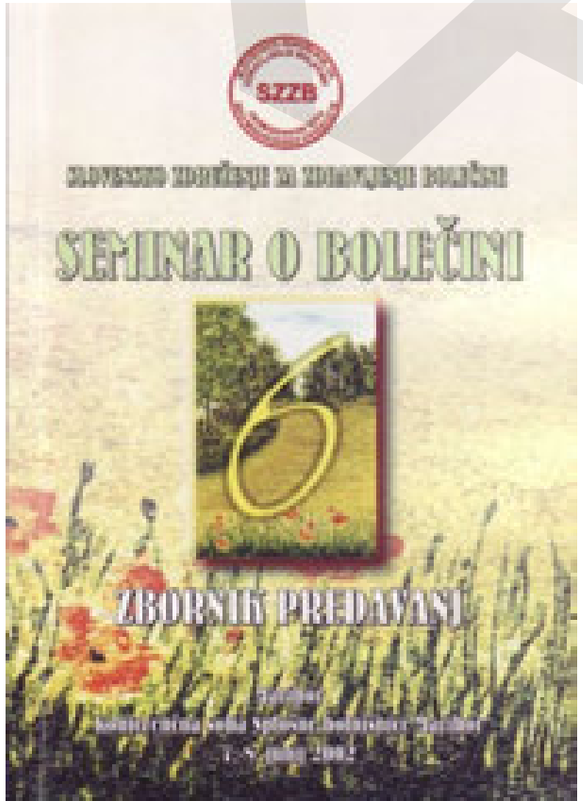
Predsednik Zbornice
Asist. mag. Marko Bitenc, dr. med.

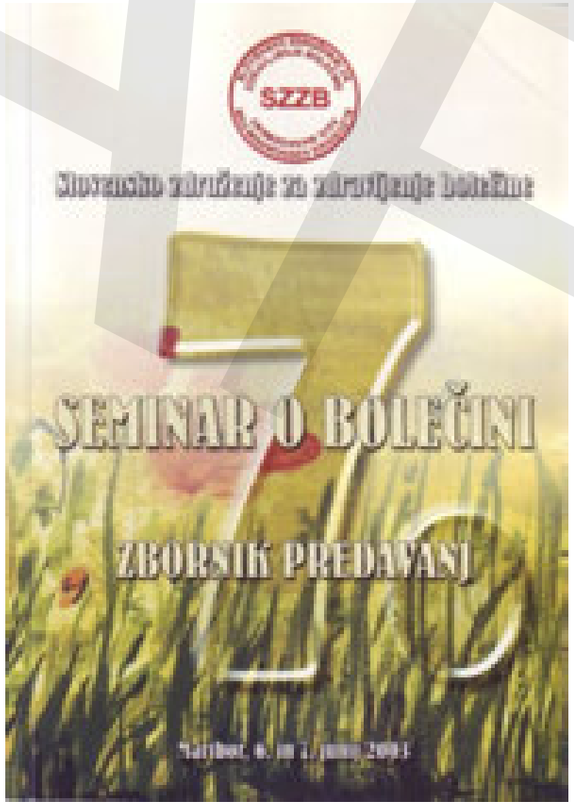

25 LET
MEDNARODNEGA ZDRUŽENJA
ZA RAZISKOVANJE BOLEČINE -
IASP
SZZB
2. SEMINAR
O BOLEČINI
ZBORNIK PREDAVANJ
Zdravilišče Atomske Toplice
Podčetrtek, 12. in 13. junij 1998


SZZB
3. SEMINAR
O BOLEČINI
ZBORNIK PREDAVANJ
Zdravilišče Atomske toplice
Podčetrtek, 18. in 19. junij 1999


SZZB
4. SEMINAR
O BOLEČINI


SZZB
5. SEMINAR O BOLEČINI
ZBORNIK PREDAVANJ


SZZB
SEMINAR O BOLEČINI
6
ZBORNIK PREDAVANJ


SZZB
7
SEMINAR O BOLEČINI
ZBORNIK PREDAVANJ


SZZB
Slovensko združenje za zdravljenje bolečine
Splošna bolnišnica Maribor
8.
SEMINAR
O BOLEČINI
ZBORNIK PREDAVANJ

Maribor, 2001

80 priznanih strokovnjakov iz tujine

Maribor, 2005

Interdisciplinarna strokovna srečanja

454 domačih avtorjev vseh medicinskih strok

Maribor, 2010


SZZB
9. seminar o bolečini
9th SEMINAR ON PAIN
Zbornik predavanj
Book of Lectures


ZBORNIK predavanj
10. seminar o bolečini
PALIATIVNA MEDICINA
z mednarodno udeležbo
SZZB

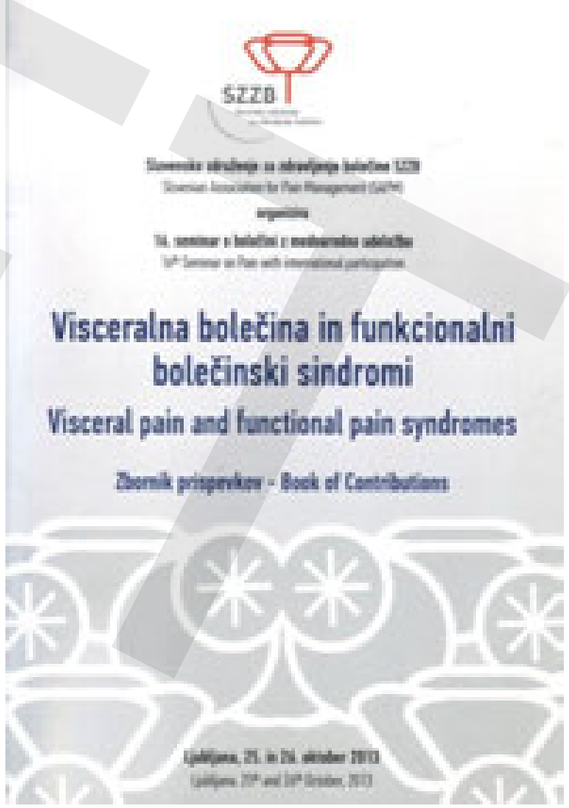

ZBORNIK predavanj
11. SEMINAR O BOLEČINI
AKUTNA BOLEČINA
z mednarodno udeležbo
Maribor, 1. in 2. junij 2007
Splošna bolnišnica Maribor
SZZB


ZBORNIK
POOPERACIJSKA BOLEČINA
12. SEMINAR O BOLEČINI
z mednarodno udeležbo
6. in 7. junij 2008 UKC Maribor
SZZB
UKC


SZZB
13. seminar o bolečini
13th Seminar on Pain
Zbornik predavanj / Book of lectures
10. - 11. december 2010 Maribor,
velika predavalnica UKC Maribor
UKC


SZZB
Slovenska association for Pain Treatment (SAPT)
together with National Council of Republic of Slovenia
and University Rehabilitation Institute (URI) Soča
Vpliv bolečine na družbo
The societal impact of pain
Zbornik prispevkov - Book of Contributions
21. - 22. oktober 2011
21st and 22nd October, 2011


SZZB
Invazivni postopki zdravljenja bolečine
Invasive Techniques of Pain Treatment
Zbornik prispevkov - Book of Contributions


SZZB
Visceralna bolečina in funkcionalni bolečinski sindromi
Visceral pain and functional pain syndromes
Zbornik prispevkov - Book of Contributions

IASP programski odbor,
Ptuj, 2000

SLOVENSKO ZDRUŽENJE ZA ZDRAVLJENJE BOLEČINE
IN
UČNA BOLNIŠNICA MARIBOR

SLOVENIAN ASSOCIATION FOR PAIN MANAGEMENT,
SLOVENIAN IASP CHAPTER IN FORMATION AND
MARIBOR TEACHING HOSPITAL

DELAVNICA O OBRAVNAVI BOLEČINE
Z RADIOFREKVENČNO LEZIJO
z mednarodno udeležbo

RF PAIN TREATMENT WORKSHOP
- international -

PROCEEDINGS

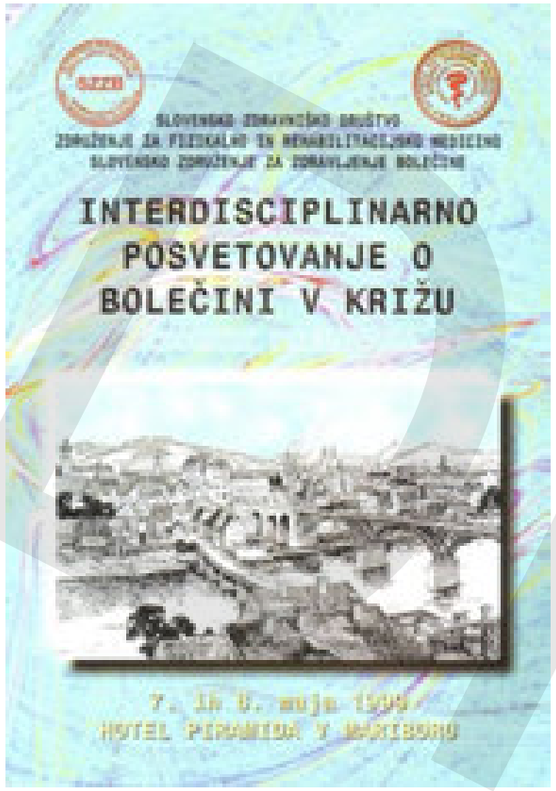
MOTO DELAVNICE
THE WORKSHOP MOTTO

25. OBLETNICA MEDNARODNEGA ZDRUŽENJA
ZA PREUČEVANJE BOLEČINE

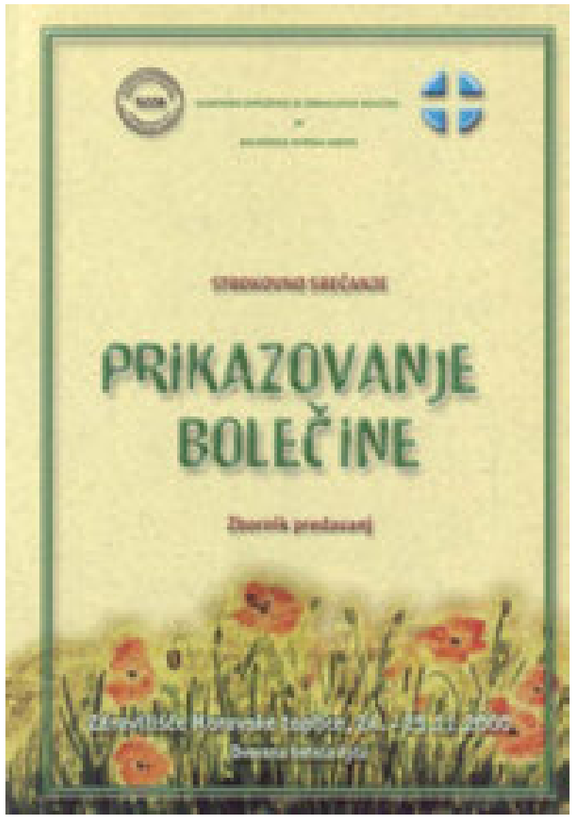
CELEBRATING THE 25th ANNIVERSARY OF IASP - 1973 - 1998

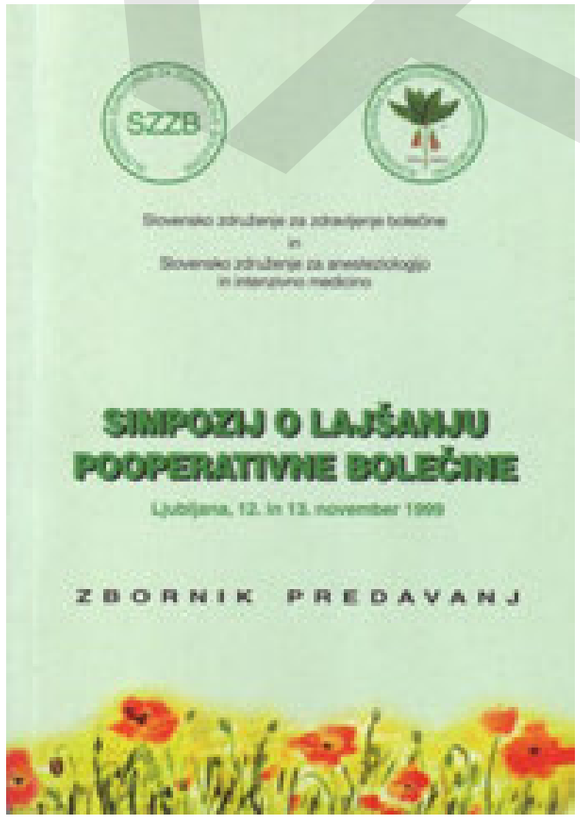
MARIBOR, SLOVENIJA - SLOVENIA
6. - 7. marec 1998
March 6th - 7th, 1998

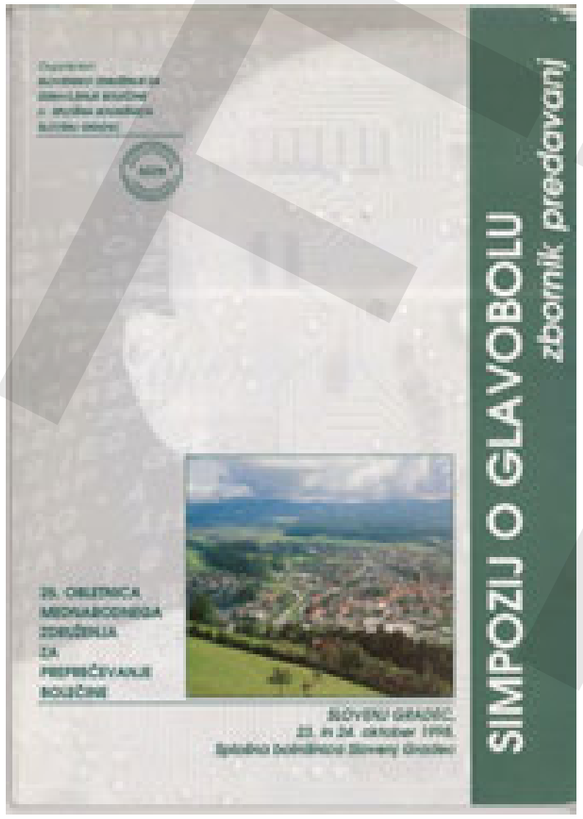
Maribor, 1998



Maribor, 1999

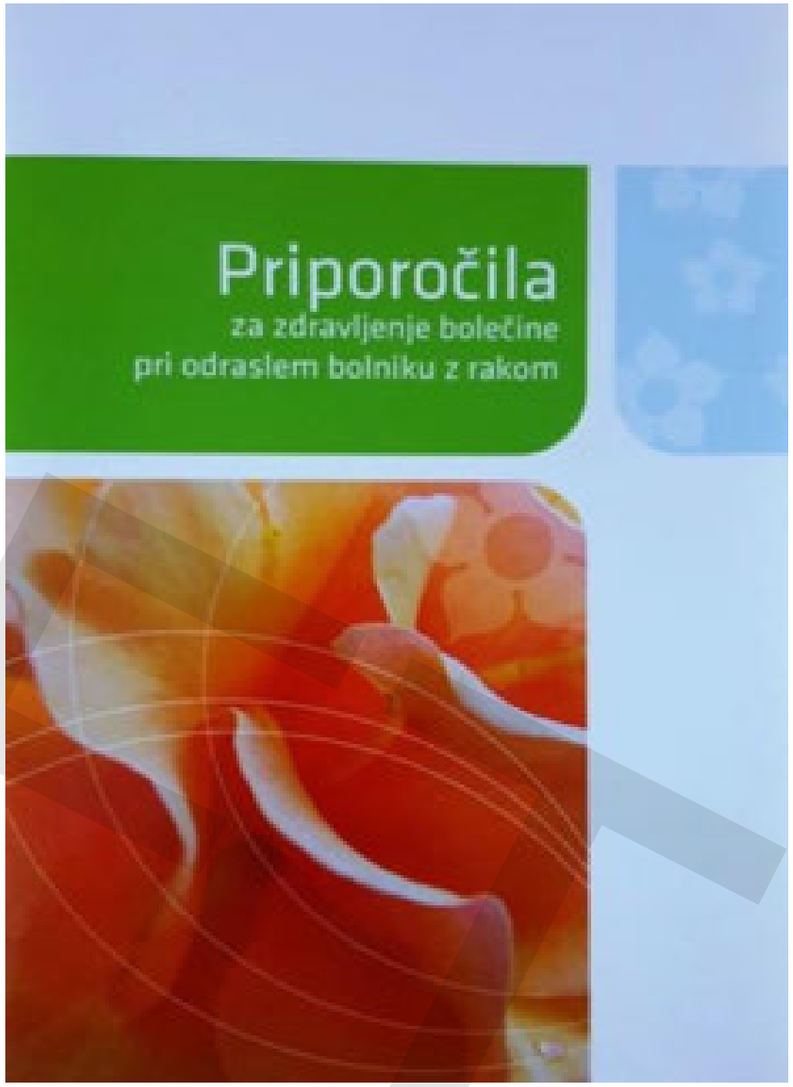




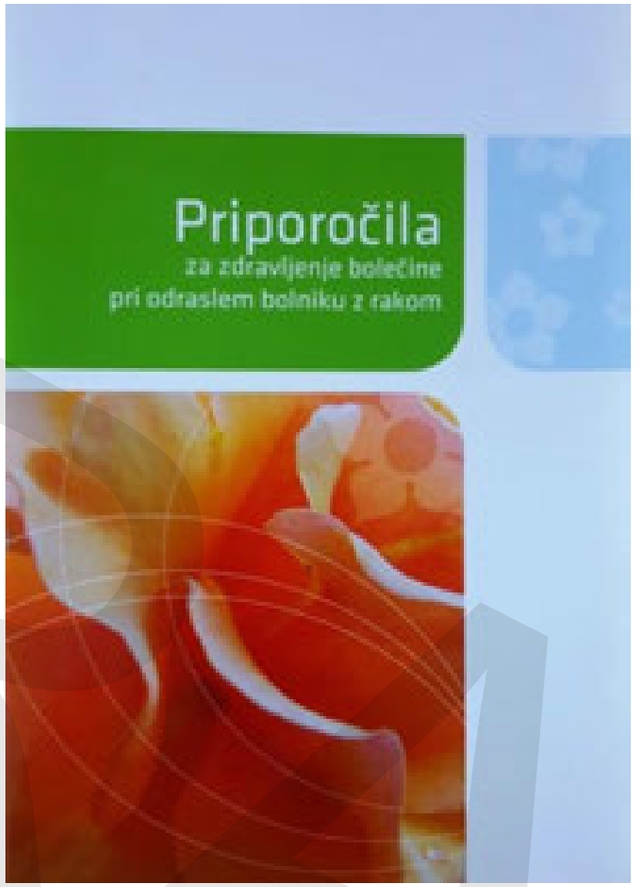



SZZB
Slovenska združenje za zdravljenje bolečine SZZB
Slovenian Association for Pain Management (SAPM)
organizira
17. seminar o bolečini z mednarodno udeležbo
17th Seminar on Pain with international participation
Nevropatska bolečina
Neuropathic Pain
Zbornik prispevkov - Book of Contributions
Ljubljana, 24. in 25. oktober 2014
Ljubljana, 24th and 25th October, 2014

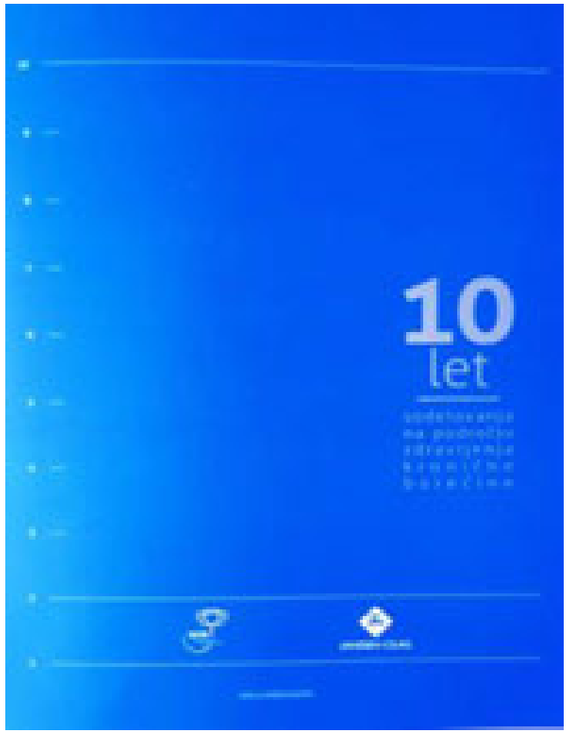

SZZB
Slovenska združenje za zdravljenje bolečine SZZB
Slovenian Association for Pain Management (SAPM)
organizira / organizes
18. seminar o bolečini z mednarodno udeležbo
18th meeting on pain management with international participation
Izbrana poglavja iz lajšanja bolečine
Selected topics on Pain management
Zbornik prispevkov - Book of Contributions
Ljubljana, 27. in 28. november 2015
Ljubljana, 27th and 28th November, 2015


Priporočila
za zdravljenje bolečine
pri odraslem bolniku z rakom


1. KONGRES
SLOVENSKEGA ZDRUŽENJA ZA ZDRAVLJENJE BOLEČINE
SIMPOZIJEM O KLINIČNI NEVROFIZIOLOGIJI BOLEČINE
1st Congress of the Slovenian Association for Pain Therapy
with international participation
and
Symposium on Clinical Neurophysiology of Pain
PROGRAM IN ZBORNIK PRISPEVKOV
Programme and Proceedings


Priporočila
za zdravljenje bolečine
pri odraslem bolniku z rakom

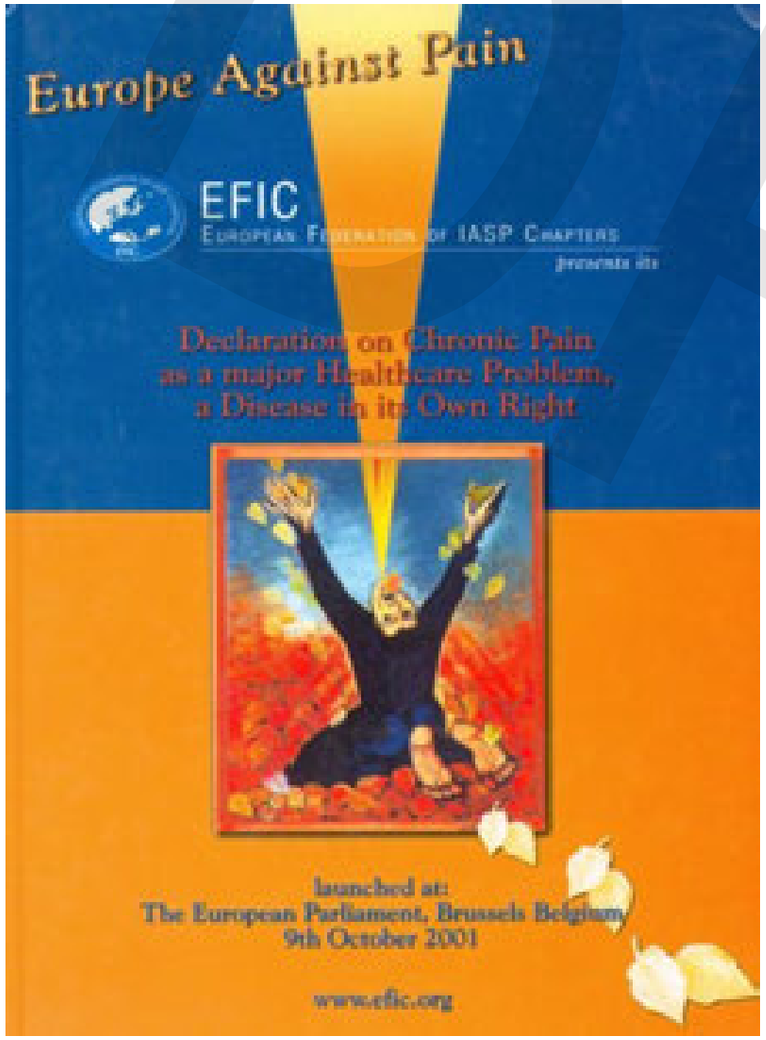

KRONIČNA BOLEČINA V SLOVENIJI


10
let


O avtorjih
Marija Cesar Kornar
Neverika Krčevski Škvarč


Slavica Lahajnar Čavlovič
Jeřka Prc
Aleksander Stepanovič


Ob 1. Kongresu Slovenskega združenja
za zdravljenje bolečine
Simpozijem o
kliničnimevrofiziologiji bolečine



EFIC
European Federation of IASP Chapters

celebrates the launch of the

EUROPEAN WEEK AGAINST PAIN
(Oct. 8-13, 2001)

9th October 2001
at the European Parliament, Brussels

"Don't Suffer in Silence"

www.efic.org

Some Facts and Figures About Pain

- In a prevalence study of persistent pain in Denmark, researchers found that approximately 36% of the general population suffers from some type of chronic pain, esp. backache, arthritis and headaches (Andersen and Worm-Pedersen 1989).
- In an attempt to quantify the total cost of chronic non-cancer pain to the Irish economy in 1995, a study estimated that a sample of 97 patients had already cost the economy £1.9 million at the time of their referral to a multidisciplinary pain clinic (Obermanns et al. 1996).
- An epidemiological survey of chronic pain in Sweden found that 45% of all adults have experienced recurrent or persistent pain, 8% severe persistent pain (von Korff et al. 1990).
- A British survey found that 7% of a large random sample of adults questioned at a single point in time were in substantial pain (Bowsher et al. 1991).
- A recent study in Finland found that, from a pool of 3686 patient visits to primary healthcare services, 40% identified pain as the reason for their visit. One fifth of patients reported having experienced pain for over six months. One quarter of the pain patients of active working age were receiving paid sick leave (Mustyoikka et al. 2001).
- A study in the Netherlands found that painful musculoskeletal diseases are the fifth most expensive disease category regarding hospital care, and the most expensive regarding work absenteeism and disability (1.7% of GNP) (van Tulder et al. 1995).

8-19

EFIC's Declaration

"Pain is a major healthcare problem in Europe. Although acute pain may reasonably be considered a symptom of disease or injury, chronic and recurrent pain is a specific healthcare problem, a disease in its own right"

Unlike acute pain, which constitutes a useful signal to a conscious brain about the presence of noxious stimuli and/or ongoing tissue damage, Chronic pain, persists long after its usefulness as an alarm signal has passed. It can bring with it a number of burdensome physical and psychological changes which include:

- Immobility
- Dependence on medication
- Inability to work, disability
- Isolation from society and family, anxiety, fear, bitterness, depression, and even suicide

Authoritative sources estimate the overall financial costs of chronic pain to society to be comparable to those of cancer and cardiovascular disease. Currently the magnitude of the chronic pain epidemic in terms of human suffering and costs to society are not widely appreciated within the larger biomedical community, among politicians and in the public at large.

By endorsing the Declaration, Governments can benefit the large population of chronic pain sufferers in Europe by:

1. Increasing the attention devoted to the problem by healthcare professions, including increased awareness and use of existing pain relief modalities, increased training in the management of chronic pain, and increased research efforts towards the discovery of novel treatments
2. Facilitating efforts by pain professionals at the national level to recruit more human and financial resources in the battle against chronic pain.

What Patients Have To Say...

"I had had a bad back for a while but that was nothing, I just got on with life. Gradually though it got worse and worse and I found it more and more difficult to do the normal everyday things. It began to affect my ability to work and 3 years later I gave up my job. This was incredibly hard and I felt that I had no value in life anymore. I felt useless."

Gary, 37, delivery truck driver, non-specific low back pain

"The means by which I kept touch with the external environment had been reduced to pain. My position in relation to the ground and to others could only be perceived by painful signals. My thoughts, my conversation, were so heavily infused with the pain I was feeling that it was not authentic conversation and not reasonable thought. For example, I resent the effort necessary to write this down, because I am in pain."

Henry, 56, physician, central pain

"It was just a minor accident; a small bump and I jolted my neck. I had many tests and different treatments, but nobody could tell me what was wrong. I began to feel that they did not believe me, that it was all in my head. Even I began to doubt myself, was the pain real?"

Mary, 48, whiplash injury

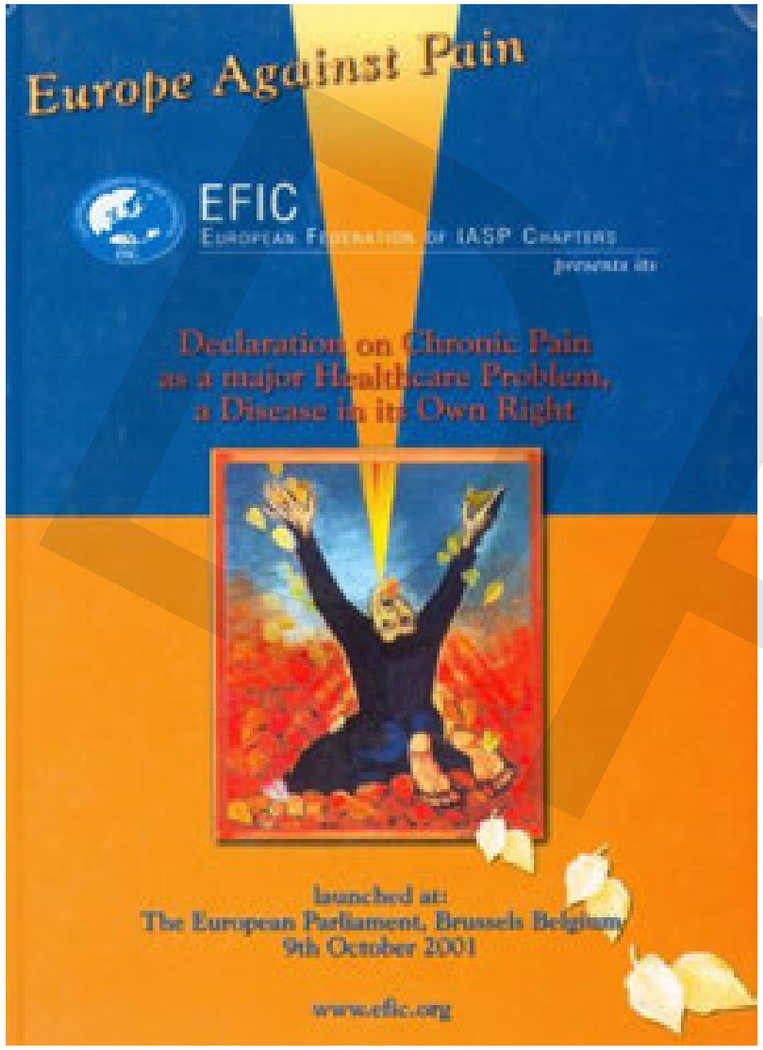
"Chronic pain is not life threatening but it can threaten every aspect of your life."

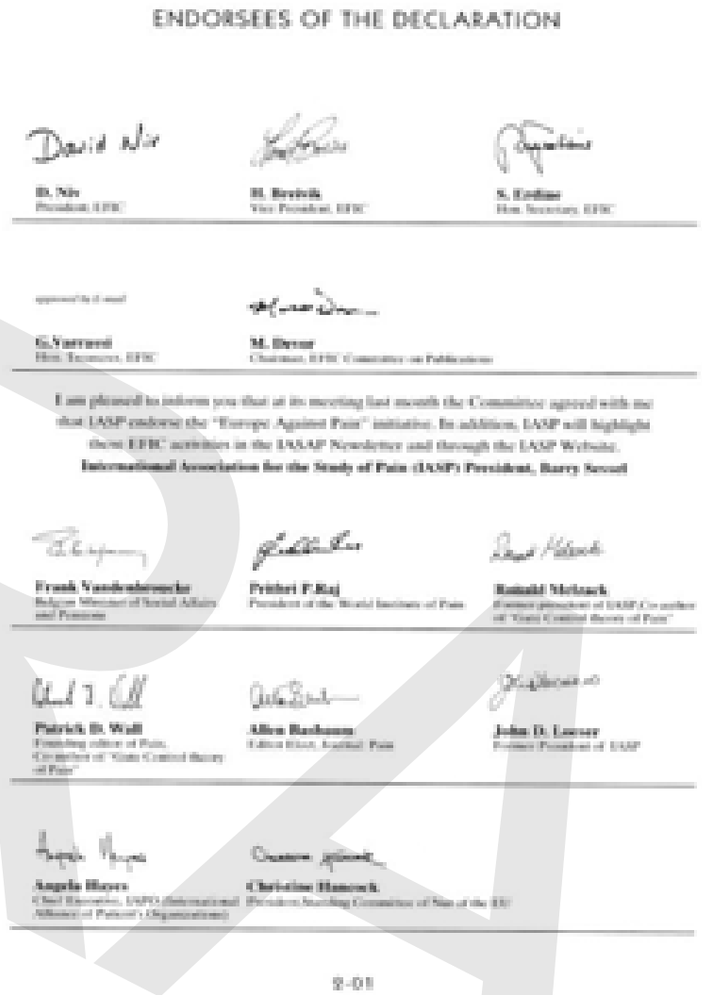
Anna, 35, osteoarthritis

"I have changed from being a person whose life was controlled by pain to being merely influenced by it."

John, 55, lawyer

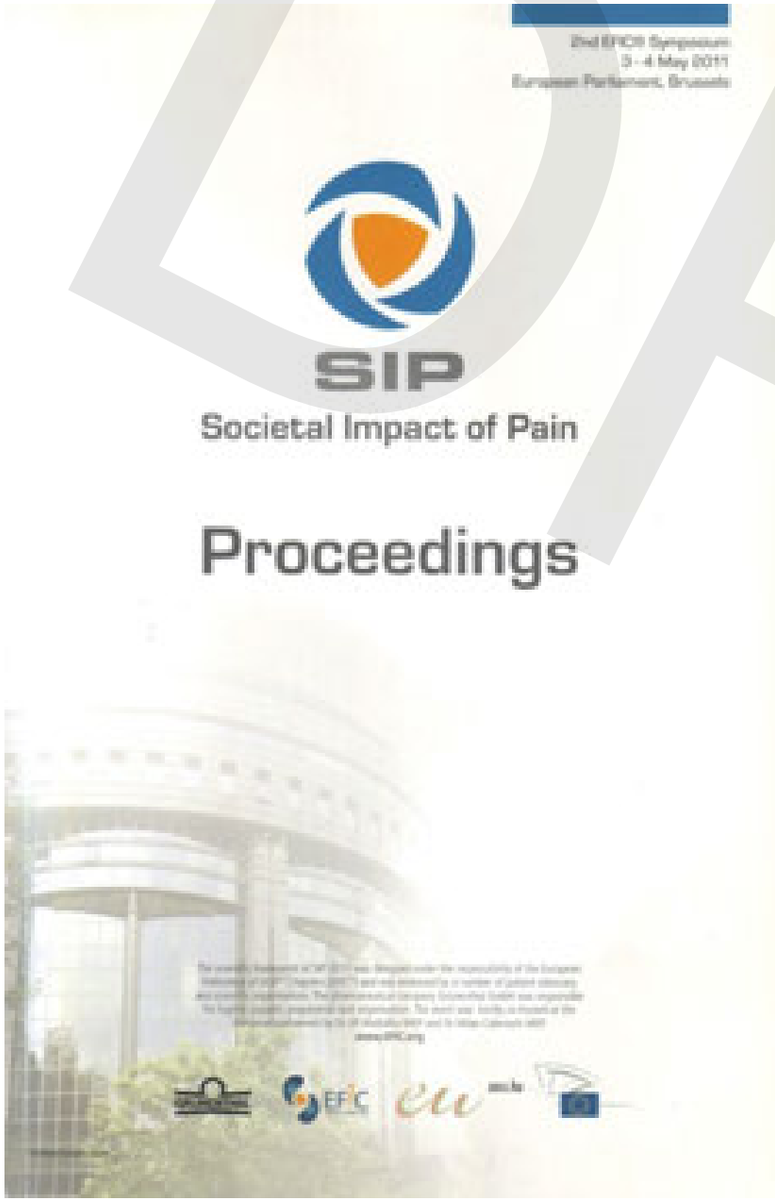
8-20





2001: Evropska deklaracija o kronični bolečini
2002: Ne trpite v tišini
2003: Bolečina kot osnovna človekova pravica
2004: Pravica do lajšanja bolečine
2005: Bolečina pri otrocih
2006: Bolečina pri starostnikih
2007: Bolečina pri ženskah
2008: Bolečina zaradi raka
2009: Mišično-kostna bolečina

2010: Akutna bolečina
2011: Glavobol
2012: Visceralna bolečin
2013: Bolečina v ustih in obrazu
2014. Nevropatska bolečina
2015: Bolečina v sklepih
2016: Bolečina po operaciji
2017: Odličnost v edukaciji o bolečini

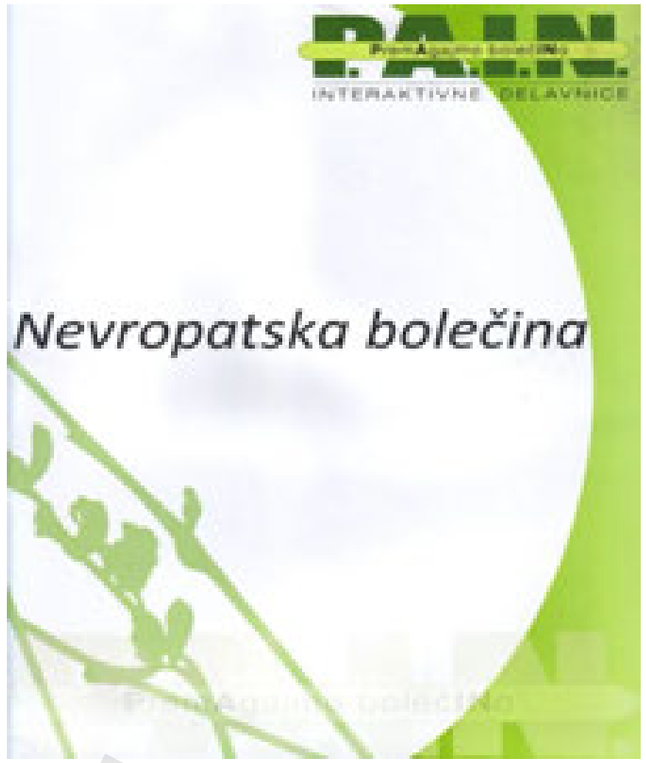

SIP
Societal Impact of Pain
Proceedings


SIP
Societal Impact of Pain
Abstract
& Background
Booklet
TIME FOR ACTION!
#SIP2016action


SZZB
Slovenska združenje za zdravljenje bolečine SZZB
v sodelovanju z Državnim svetom RS in URI Soča
Slovenian Association for Pain Treatment (SAPT)
together with National Council of Republic of Slovenia
and University Rehabilitation Institute (URI) Soča
Vpliv bolečine na družbo
The societal impact of pain
Zbornik prispevkov - Book of Contributions
21. - 22. oktober 2011
21st and 22nd October, 2011


P.A.I.N.
INTERAKTIVNE DELAVNICE
Bolečina zaradi raka

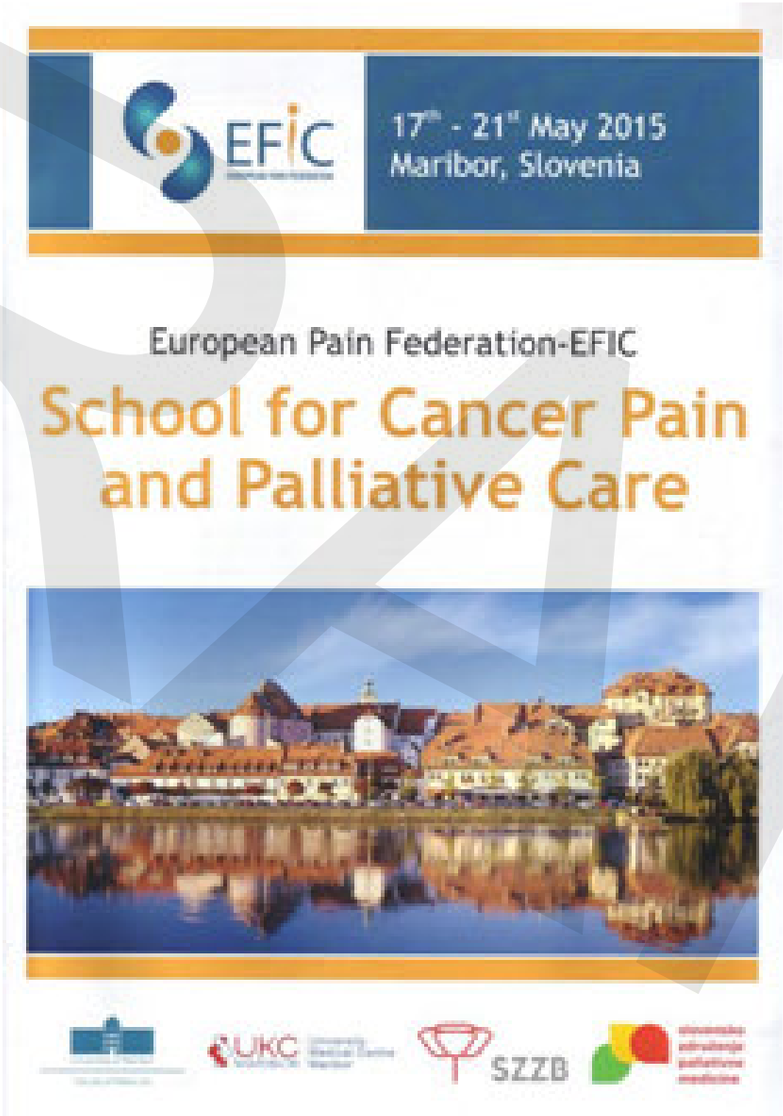

P.A.I.N.
INTERAKTIVNE DELAVNICE
Mišično-kostna bolečina
Osteoartritis

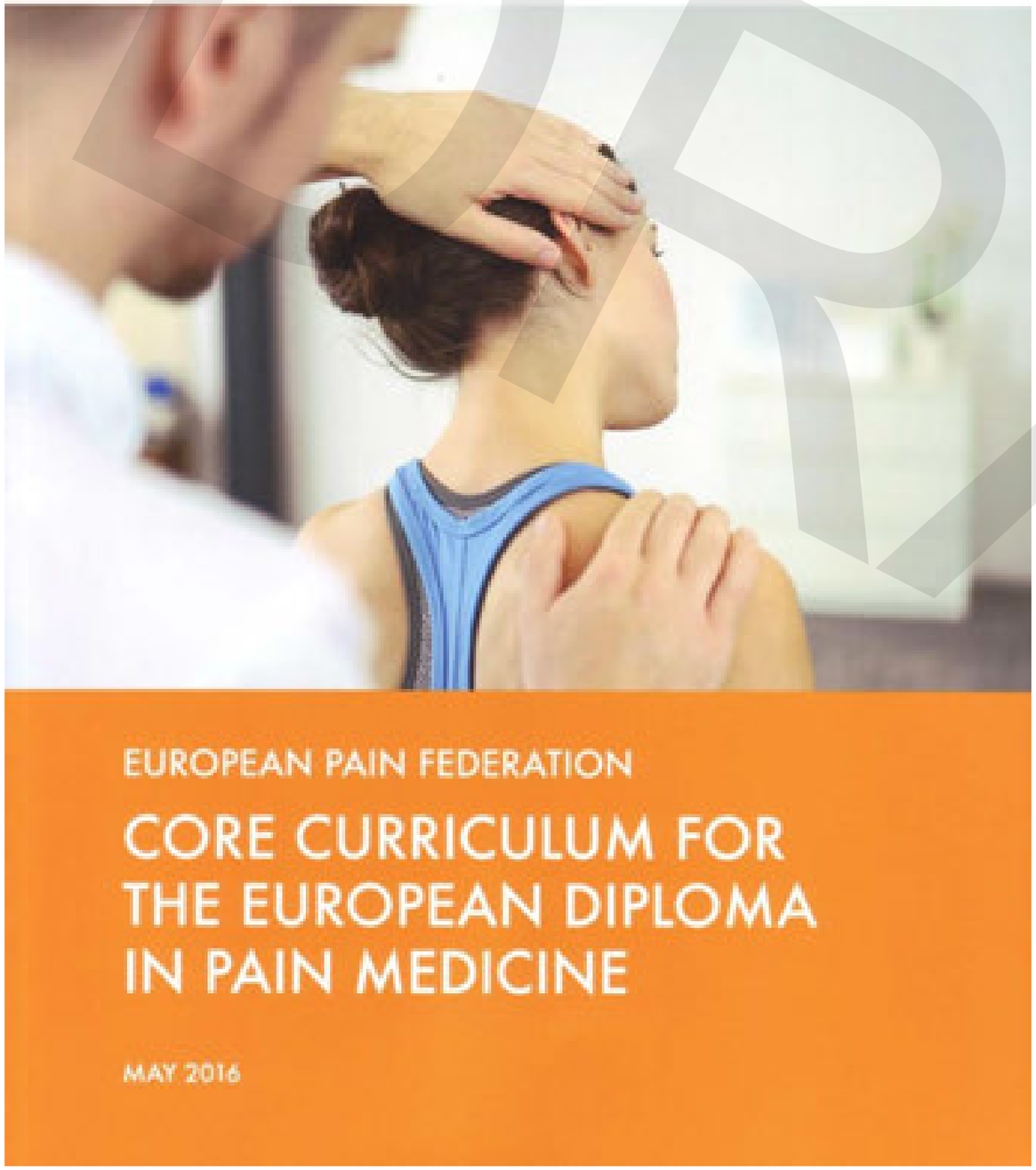

P.A.I.N.
INTERAKTIVNE DELAVNICE
Nevropatska bolečina

Bled, 2006

The Pain Management Core Curriculum
for European Medical Schools

EFIC




EFIC
EUROPEAN PAIN FEDERATION
CORE CURRICULUM FOR THE EUROPEAN DIPLOMA IN PAIN MEDICINE
MAY 2016


EFIC
CERTIFICATE OF AWARD OF THE EUROPEAN PAIN FEDERATION DIPLOMA IN PAIN MEDICINE
THE EUROPEAN DIPLOMA IN PAIN MEDICINE - EDPM
Madrid, 1st April 2017
We hereby certify that the person named below has today been awarded the EDPM and has been registered with the European Pain Federation as a Medical Practitioner with adequate training and knowledge to manage the care of patients with all types of pain.
Nevenka Kregienski Skvarč, MD, MS, PhD, EDPM
Maribor, Slovenia
LIAM CONNOR, CHAIR
College of Examiners

SZZB
Slovensko združenje
za zdravljenje bolečine

Leta prihodnosti SZZB

Lecture series 4

Obstetric Analgesia

Lecture 4.1

The establishment of a modern obstetric anesthesia service at University Medical Center Ljubljana

prof. Tatjana Stopar Pintarič, MD, PhD

Office of Obstetric Anesthesia, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

History

1660 „Mestni špital“

1789 Maternity room and midwifery school

1879 „Frauenklinik“

1923 First independent clinic for ob /gyn

Porodnišnica Ljubljana

1987

Department of Perinatology

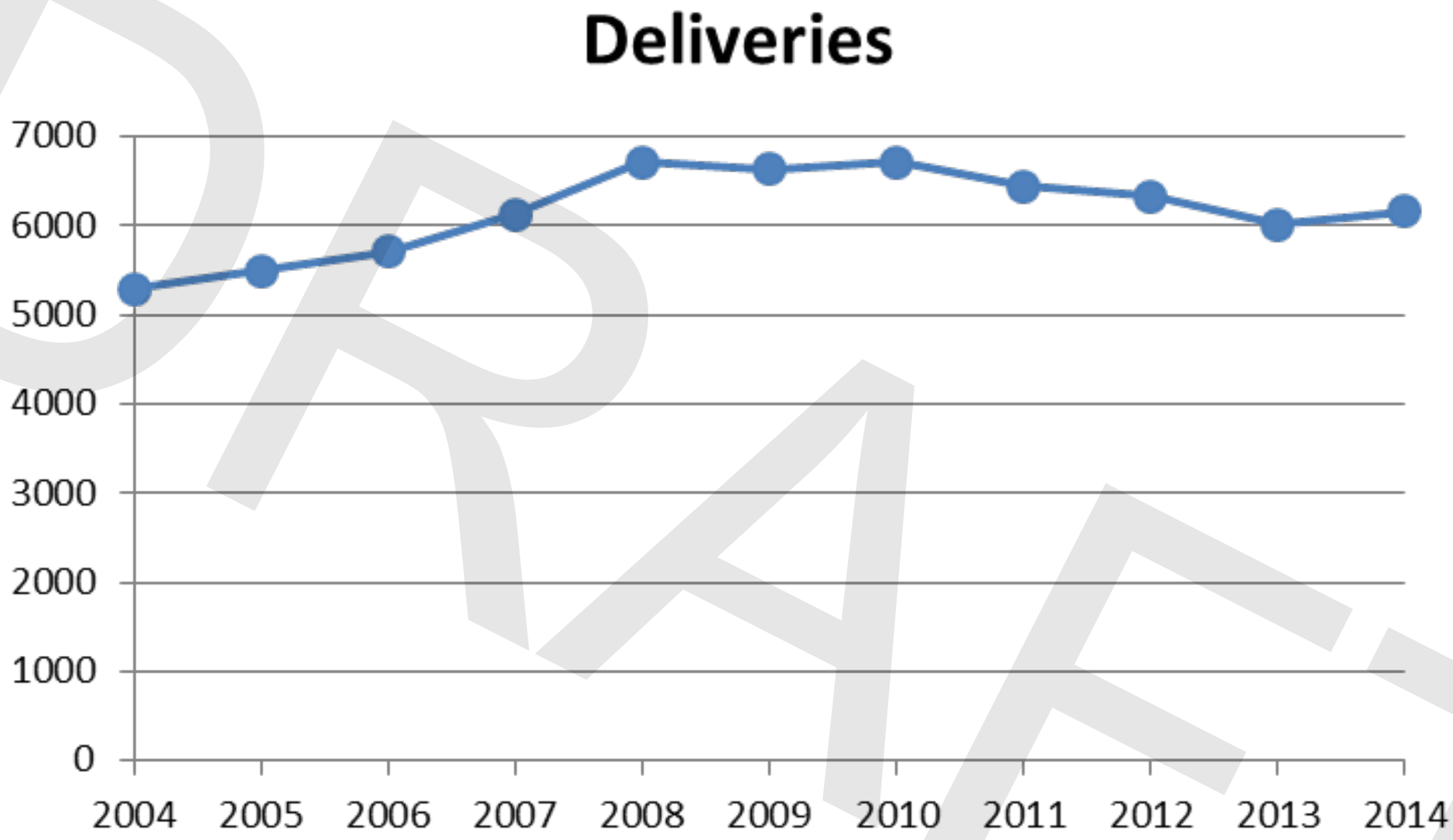
Ward	No. of beds
Labour ward	13
High-risk pregnancy ward	29
Postpartum wards (3 wards)	78 (+78 baby beds)
Unit for perinatal intensive care medicine	8 (int th) + 16 (care)
Unit for neonatal intensive care medicine	10 (int th) +24 (care)
	178 (256)

Department of Perinatology

Outpatient Clinics	
Admission & triage clinic	1
High-risk pregnancy clinic	1
Prenatal ultrasound & feto-maternal clinic	3
Neonatal follow up (pediatric)	1
Psychology unit	1
Parenting classes	1

Department of Perinatology

Outpatient & inpatient
Physiotherapy
Clinic for Medical Genetics
Clinic for Internal Medicine
Pathology Department



Porodnišnica Ljubljana

Quality indicators in obstetrics

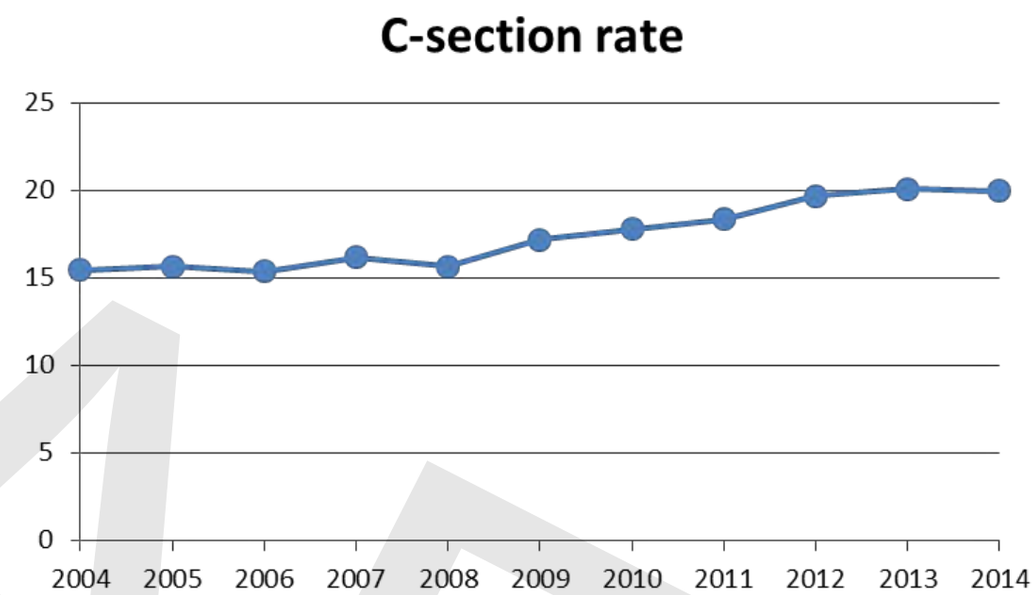
- Cesarean section rate

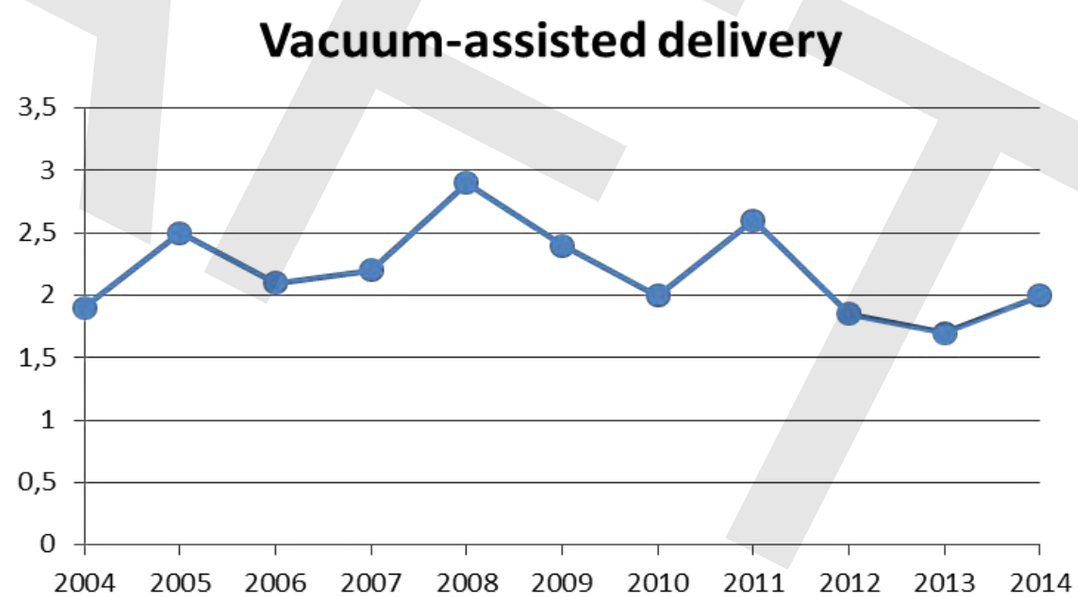
  (15% (2002) → 21,5% (2017)

- Severe injuries - vaginal births (3rd, 4th degree lacerations)

  (0,3% (2002) → 0,7% (2014)

- Severe loss of blood (>500 ml) 3% → 6%
- Transfusion rate (1%)
- Induction of labour (15% (2002) → 20% (2014)
- Preterm births(9,6% (2002) → 11% (2014)
- Neonatal mortality (2,5%) of total
- Apgar <7 at 5 min (2,5% of total)





Quality indicators in obstetrics

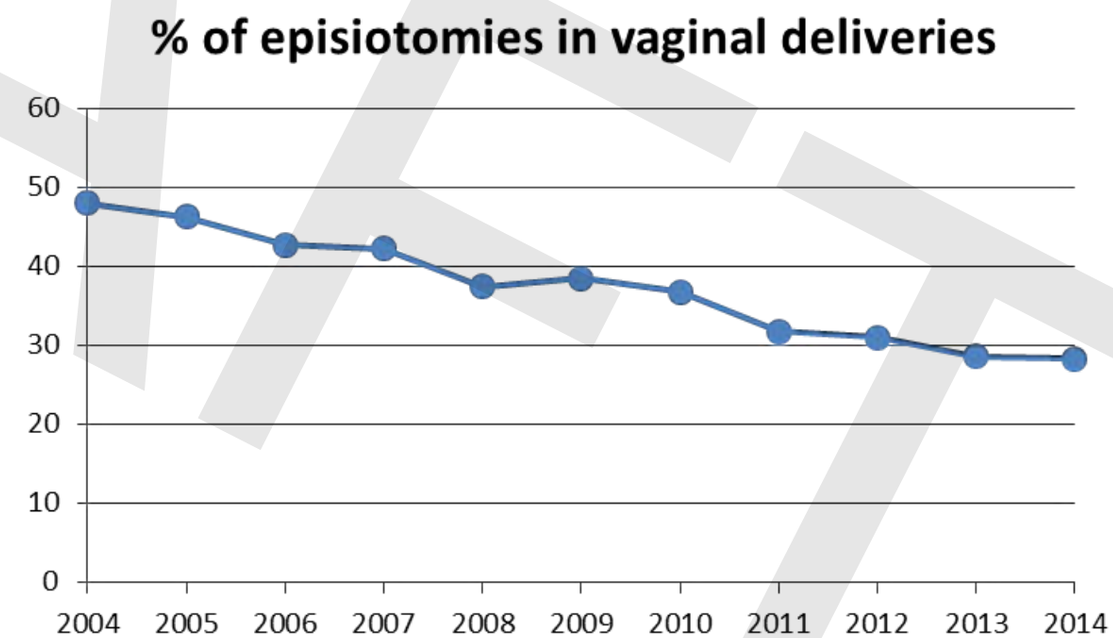
- Births without medical interventions (spontaneous onset, no augmentation, no episiotomy, no operative delivery)

(2002) 23,4% ➡ (2013) 31,9%

- Rate of episiotomy

(2002) 50% ➡ (2013) 30%

- Breastffeding



Quality indicators in obstetric anaesthesia

- The incidence of postpuncture headache
- The rate of conversion from RA to GA during CS
- Patient satisfaction

SOAP, Boston 2016

NO REGIONAL ANAESTHESIA IN OBSTETRICS

↓

NO QUALITY OF OBSTETRIC ANAESTHESIA

Regional anaesthesia in obstetrics (up to 2014)

- Epidural rate (0,5%)
- RA for SC (10%)
- 24/7 analgesic service not provided
- Staff shortage

Regional anaesthesia in obstetrics (up to 2014)

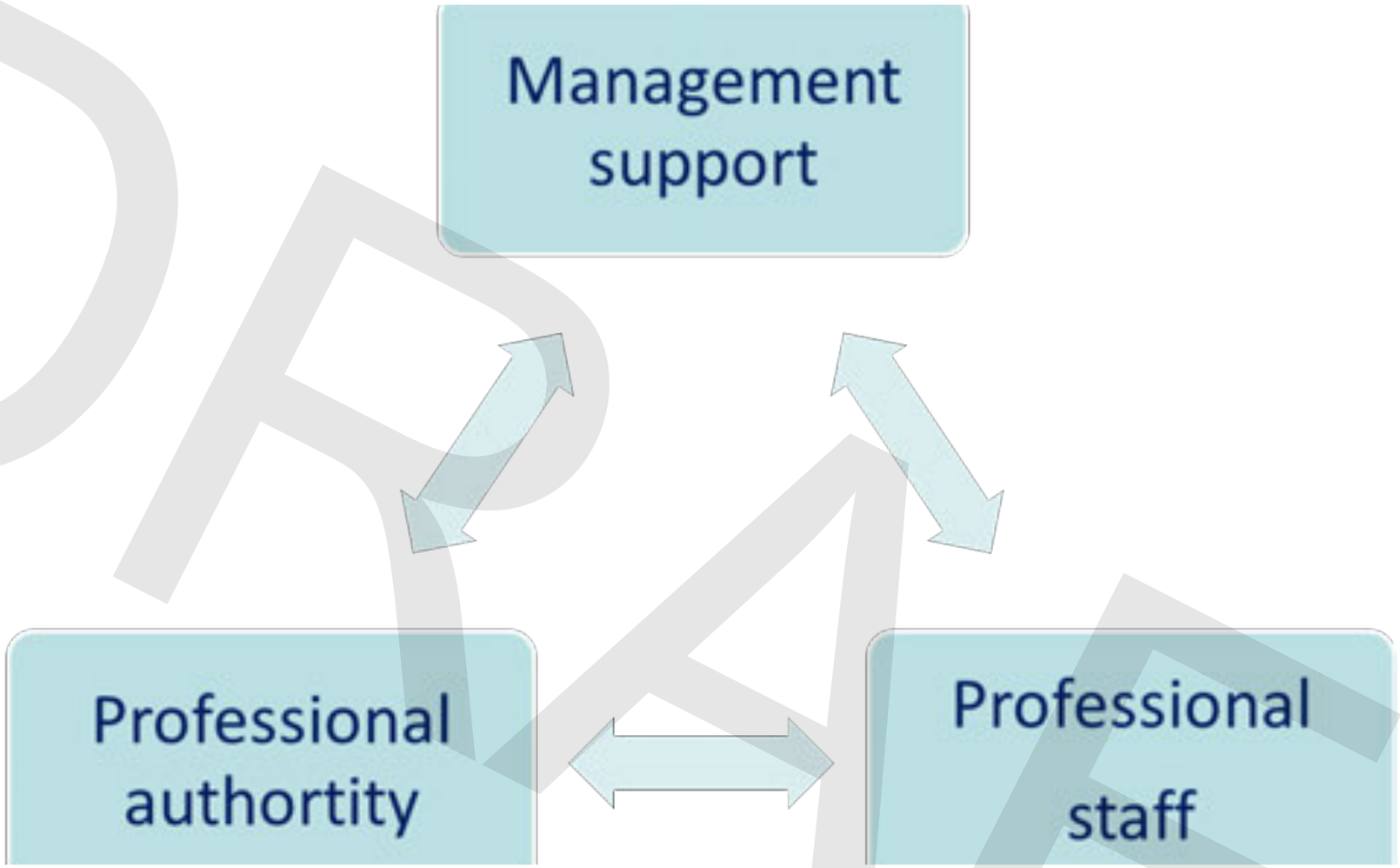
- KOAIT (full 24/7 analgesic service)
- 2 specialists + 2 nurses ± residents (8h)
- 1 specialist + 1 resident + 2 nurses (16h)

- Epidural rate (28%)
- RA for SC (70%)
- Remifentanil (26%)

Opposition/critiques of RA

- EA affects the progress and outcome of labour
- It takes too long to place the epidural catheter/spinal block
- Spinal block drops the pressure and causes vomiting during CS

These statements are true when RA is not provided as a routine clinical practice!!!



The prerequisite for a successful establishment of RA as state of the art

The practice of OB anaesthesia, more than any other subspecialty area within current anaesthesia practice, is rooted in RA techniques, primarily neuraxial blockade.

Palmer CM: Obstetric anesthesia. Oxford University Press. 2011

RA for SC

RA
and a neonate

- ↓drug transfer
- ↓early foetal respiratory depression
- important for preterm neonates more susceptible to anaesthetics
- in case of prolonged extraction times (high BMI, previous abdominal surgery, multiple pregnancies)

RA and a parturient

- Difficult intubation is the leading cause of maternal morbidity and mortality due to anaesthesia
- The incidence is 1:250
- Anatomical and physiological characteristics of pregnancy

- Less intraoperative awareness
- Less uteral atony
- 4x lower risk of transfusion
- Better and longer postoperative pain relief
- Faster postoperative recovery
- Faster bonding between the mother and the baby
- Additional DVT prophylaxis
- Less chronic pain

RA and obstetrician and neonatologist

No time pressure

Less interventions

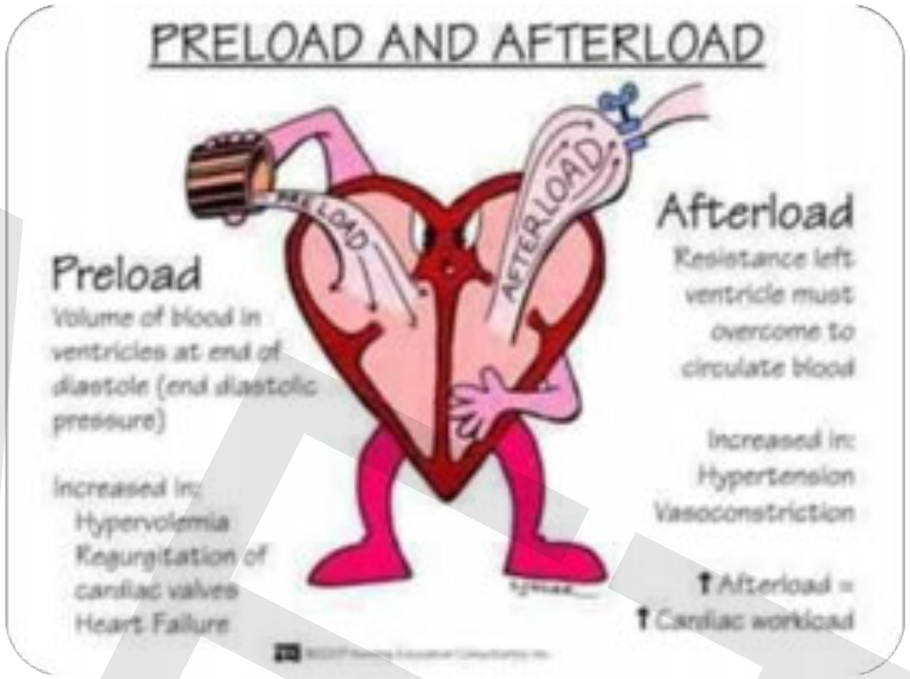
RA and anaesthesiologist

Dermatomes

A dermatome is an area of skin innervated by sensory fibers from a single spinal nerve. To achieve surgical anesthesia for a given procedure, the extent of spinal anesthesia must reach a certain dermatomal level.

Dermatomal Levels of Spinal Anesthesia for Common Surgical Procedures

Procedure	Dermatomal Level
Upper abdominal surgery	T4
Intestinal, gynecologic, and urologic surgery	T6
Transurethral resection of the prostate	T6
Vaginal delivery of a fetus, and hip surgery	T10
Thigh surgery and lower leg amputations	L1
Foot and ankle surgery	L2
Perineal and anal surgery	S2 to S5 (saddle block)



Proactive vasoactive and fluid support

RA in preeclamptic patients

Beneficial due to

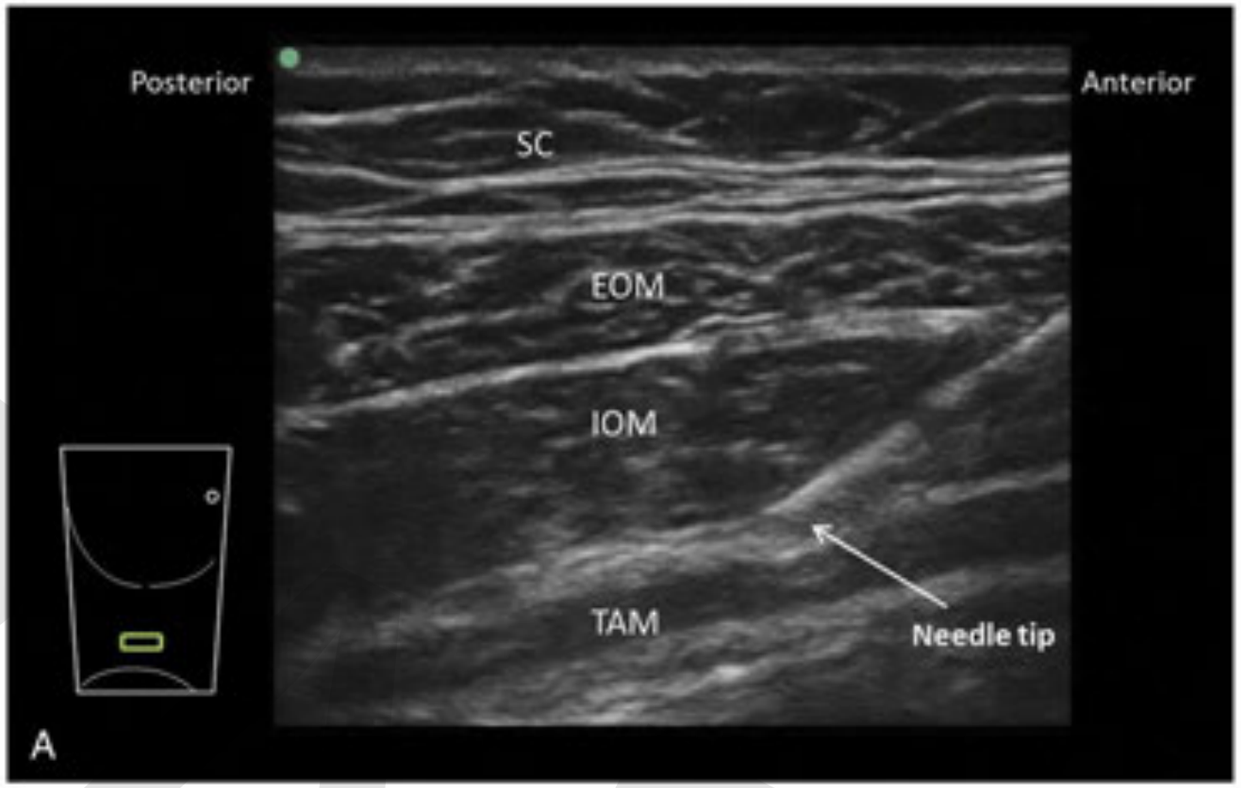
- therapeutical reduction of blood pressure in spite of high level sympathetic block
- Increased perfusion of placenta up to 70%
- but danger of fluid overload due to
  - ✓ increased vessel permeability
  - ✓ reduced intravascular volume up to 40%
  - ✓ diastolic disfunction
- restrictive haemodynamic approach - fluid therapy!!!!

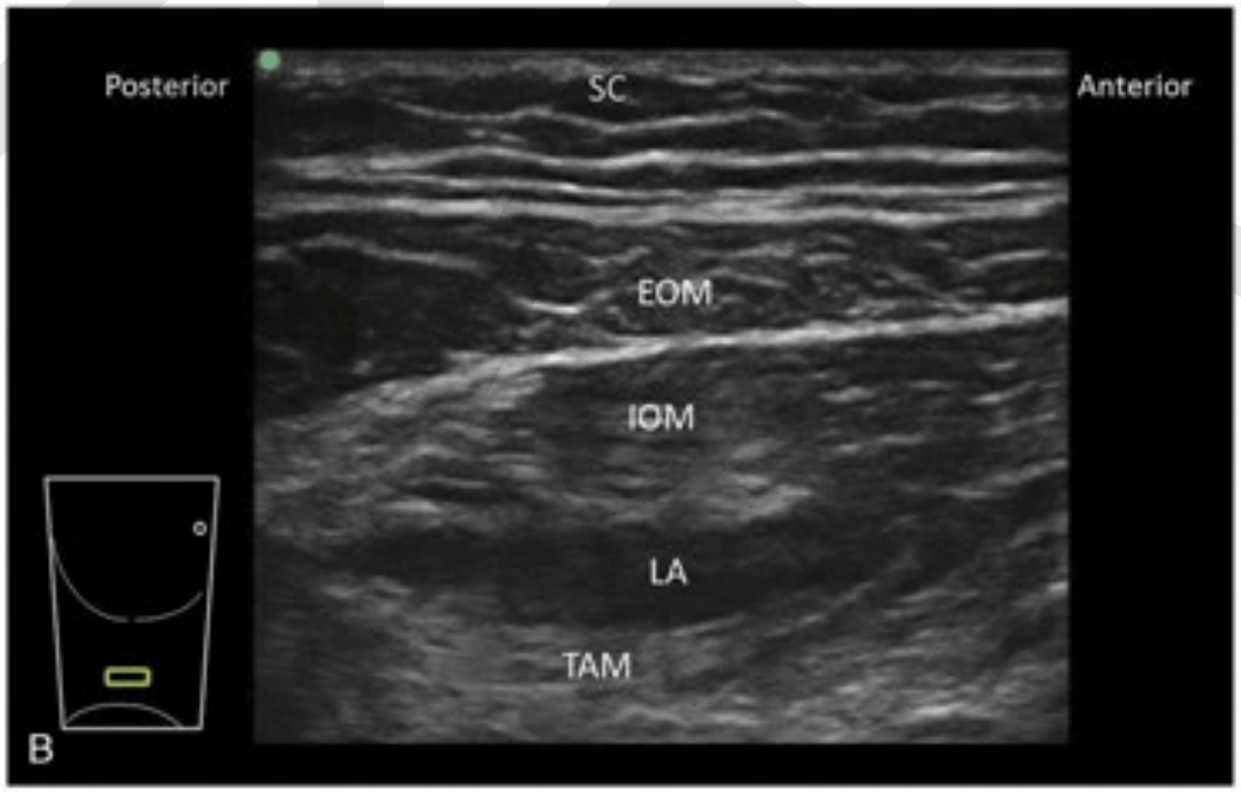
Barash, Cullen, Stoelting. Clinical Anesthesia, 2nd Edn. Chapter 46

Postoperative pain relief using RA techniques

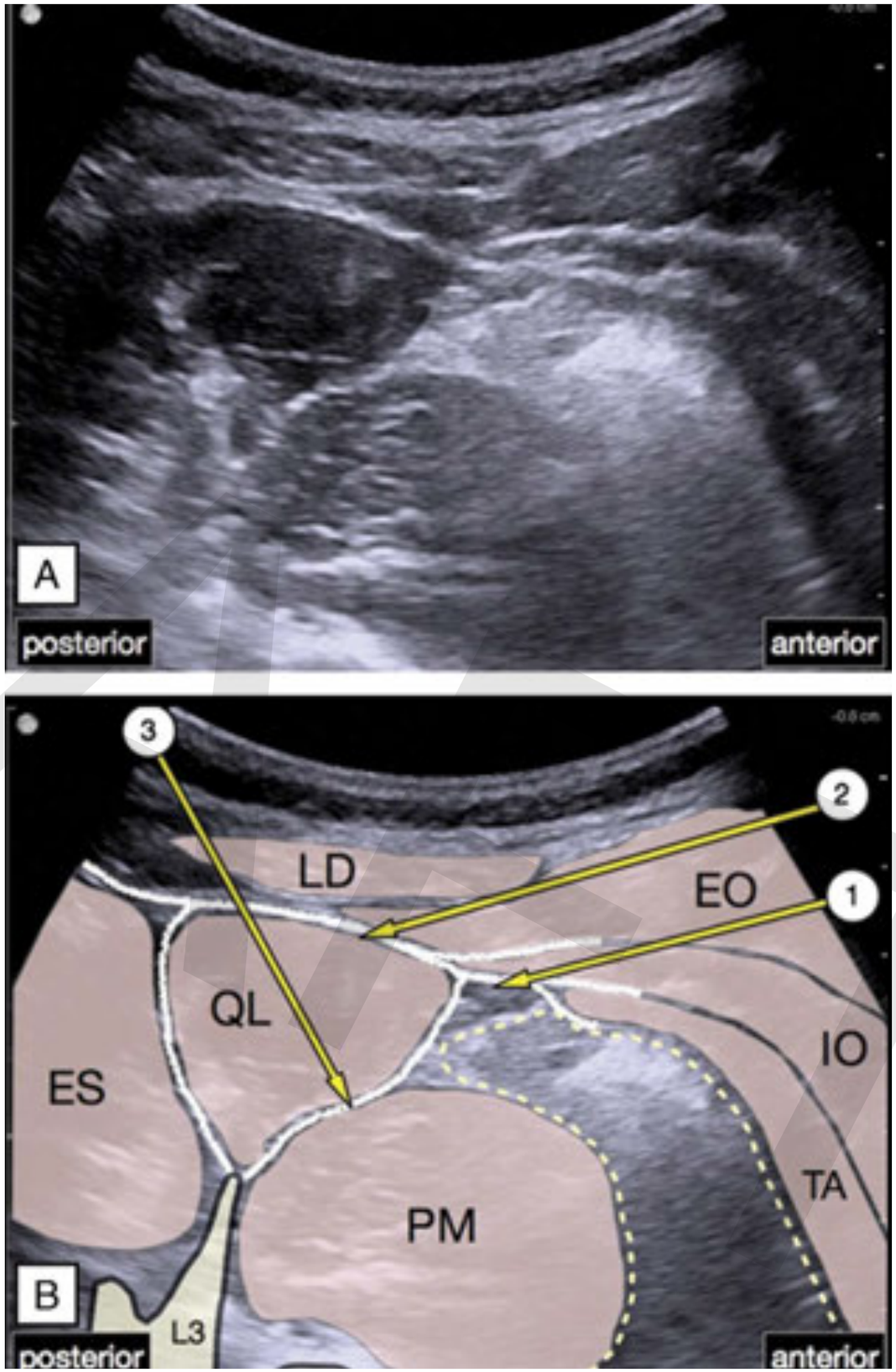
- Intrathecal morphine (0,1 mg)
- Epidural morphine (2-4 mg)
- PCEA LA+fentanil
- TAP or QL blocks

TAP block


Posterior
Anterior
SC
EOM
IOM
TAM
Needle tip
A


Posterior
Anterior
SC
EOM
IOM
LA
TAM
B

QL blocks



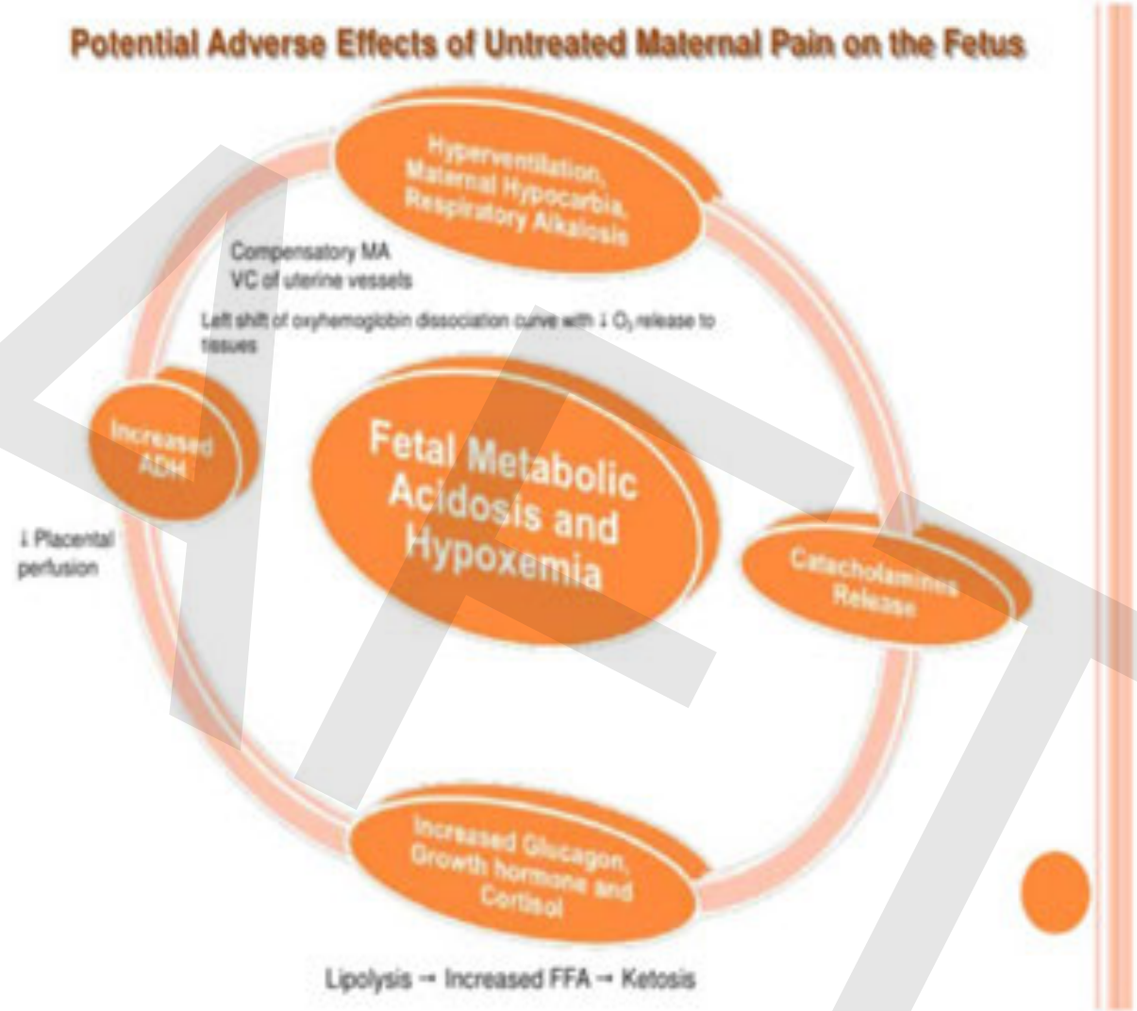

Neuraksialni UZ
PARAMEDIALNI
TRANSPLAMINALNI
POGLED
L3-L4
TRANSVERZALNI
POGLED
Posteriorni
kompleks
Anteriorni
kompleks

Neuraxial analgesia

- The most efficient analgesia technique

  and a

- Therapy for dysfunctional labour



	Carski rez	Vakuumska ekstrakcija	Trajanje poroda≥7h
Intravenska analgezija	0,4 (0,4 – 0,5)*	1,7 (1,6 – 1,8)*	1,8 (1,8 – 1,9)*
Epiduralna analgezija	0,6 (0,5 – 0,6)*	4,0 (3,7 – 4,4)*	5,1 (4,8 – 5,4)*
Prvi porod	3,1 (3,0 – 3,2)*	5,5 (5,1 – 6,0)*	7,5 (7,2 – 7,9)*
Spontan začetek poroda z razpokom mehurja	1,8 (1,7 – 1,9)*	1,1 (1,0 – 1,2)*	1,2 (1,2 – 1,3)*
Iatrogeno sprožen porod	2,5 (2,4 – 2,6)*	1,1 (1,0 – 1,2)*	0,9 (0,9 – 1,0)*

EA and labour outcome in Slovenia between 2003-13

Obstetrical reasons

for higher risk of vacuum extractions and longer labours

- Primiparae
- Induced labours
- OP presentations

Anaesthesiological reasons

for higher risk of vacuum extractions and longer labours

- Higher concentrations/dosages of LA
- Continuous infusions →higher incidence of a motor block and OP presentations

- Combination of 0,1% bupivacaine + fentanil 2µg/ml (Bufend)
- Combination of intermittent mandatory boluses + PCB

  without continuous infusion

Protocols

<u>Standard operative procedures (SOP) for</u>

- accidental dural puncture
- perioperative management of preeclamptic parturient
- usage of ROTEM for managing peripartal bleeding
- anaesthesia for cesarean section
- anaesthesia for minor obstetric procedures
- managing labour pain with neuraxial techniques
- managing labour pain with remifentanil
- the role of anaesthesiologist during vaginal delivery of twins and a neonate in breech presentation

<u>Guidelines for managing obstetric haemorrhage</u>

Teaching

- Teaching institution for neuraxial blocks
- US guided truncal blocks
- Obstetric anaesthesia subspecialty topics
- Contribution to Slovene Obstetric anaesthesia Association, SSRA; SSAiCM, Slovene School of RA
- Organization of meetings „Advances in patient safety“ in collaboration with Mayo Clinic from Rochester

Tertiary funding

Conclusion

- Modern obstetric anaesthesia is based on

✓ 24/7 regional anaesthesia and analgesia service

✓ supported by institutional SOP and interdisciplinary guidelines

✓ sufficient fundings for obtaining modern technology

Lecture 4.2

Multidisciplinary research projects in the fields of obstetrics and obstetric anesthesia

assoc. prof. Miha Lučovnik, MD, PhD

Specialist, Obstetrics and Gynaecology

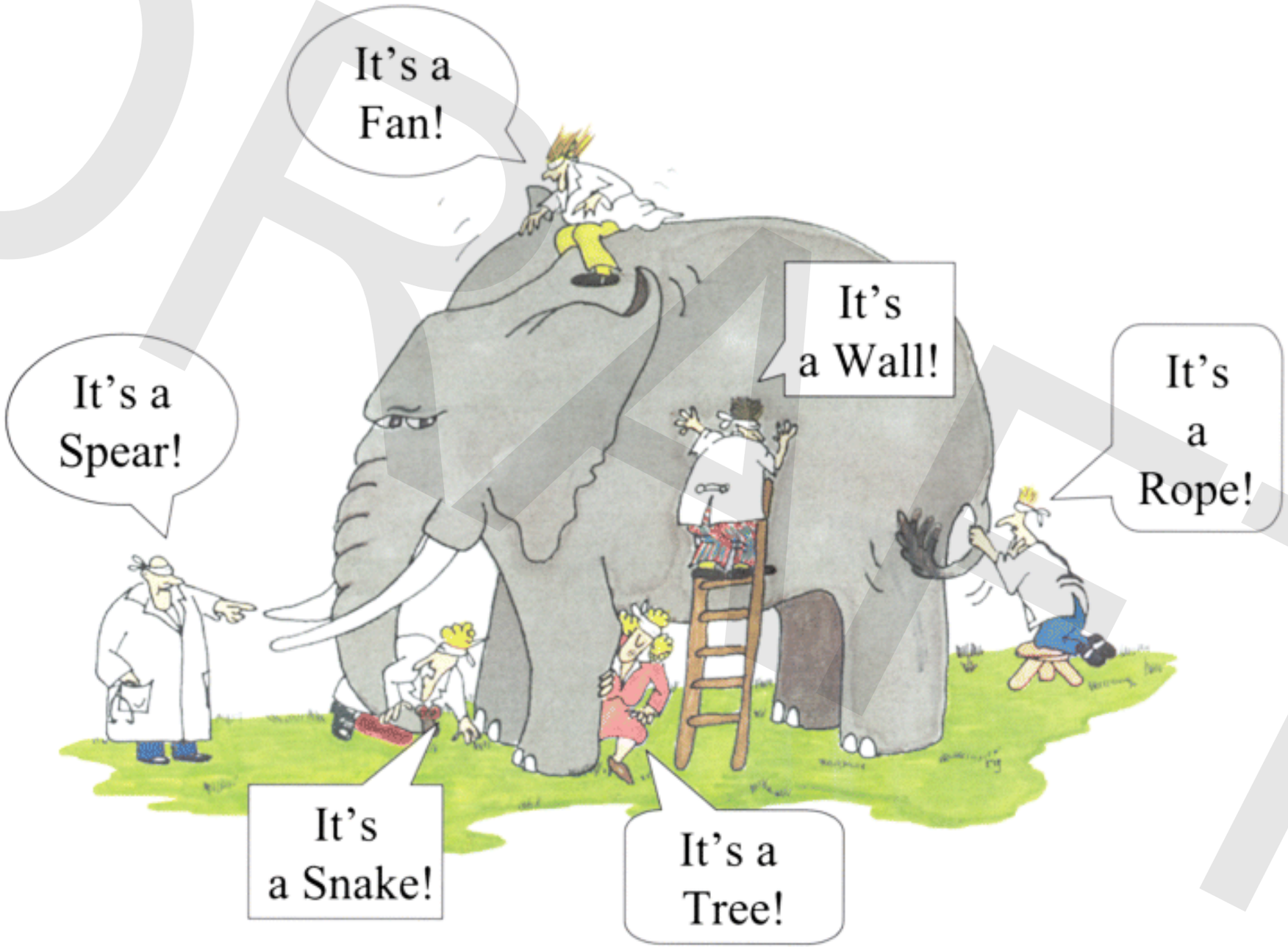
Medicine is becoming more and more sub-specialised

Medicine is becoming more and more sub-specialised

Simulation team training in OB emergencies, Medical Simulation Center Ljubljana

klinični center ljubljana
University Medical Centre Ljubljana

Conducting multidisciplinary research



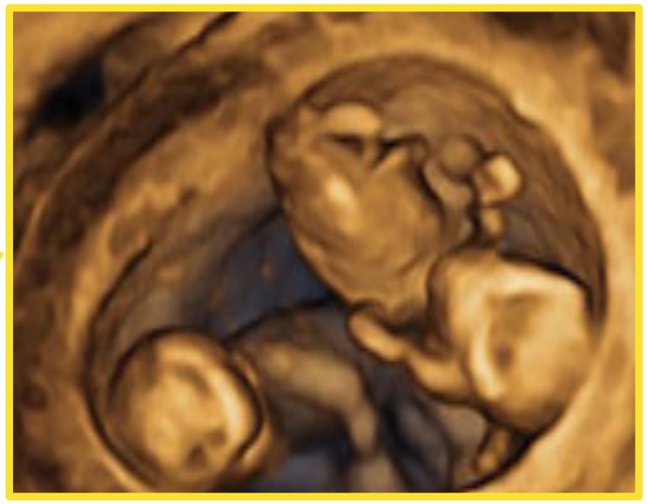
Does epidural analgesia increase cesarean section operative vaginal delivery rates?

THE COCHRANE COLLABORATION®

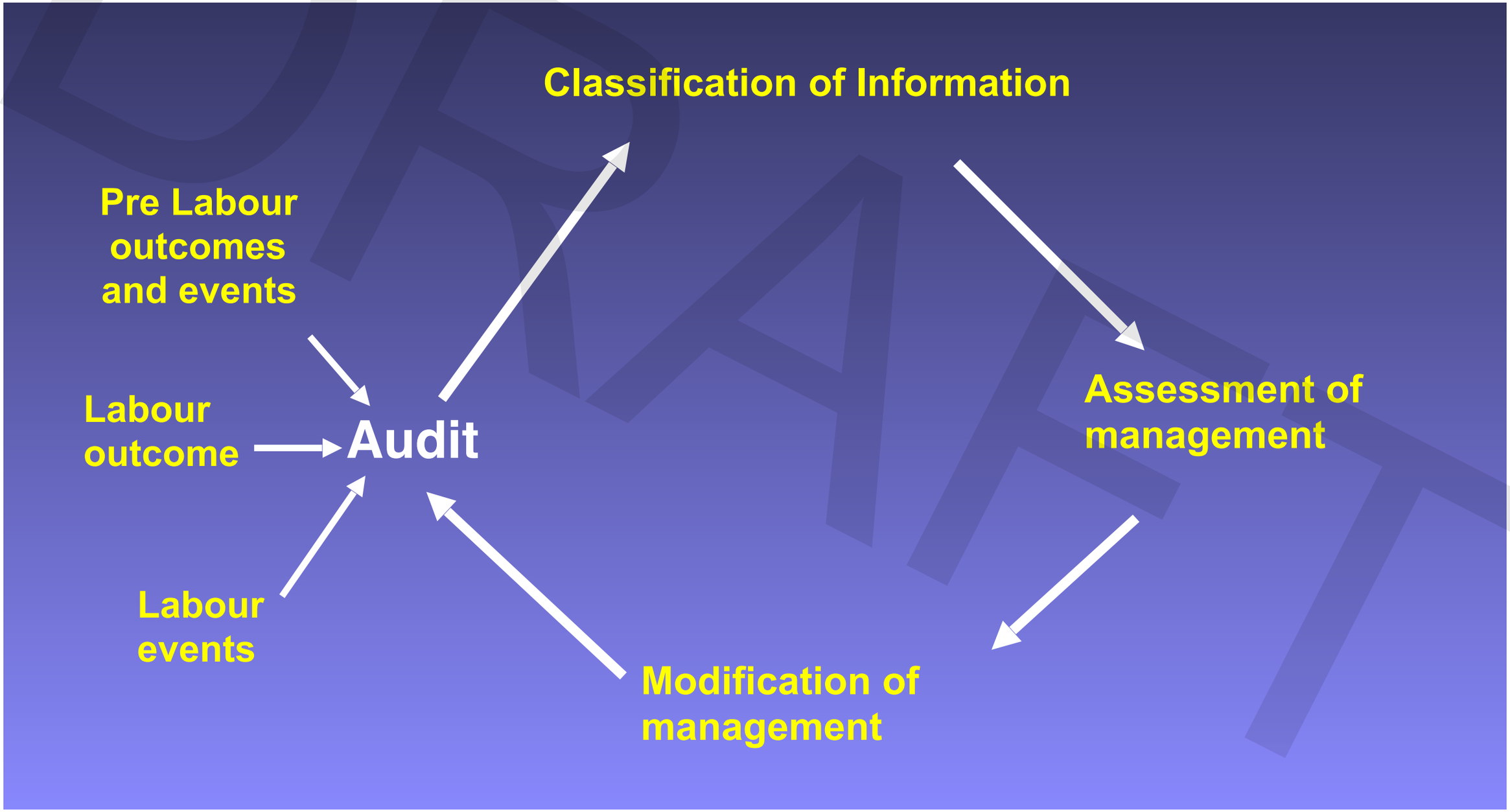
STUDY	EPIDURAL SAMPLE/TOTAL	NARCOTIC SAMPLE/TOTAL	PETO ODDS RATIO 95% CI	WEIGHT %	PETO ODDS RATIO N (95% CI)
Bofill (1997)	5/49	3/51		5.5	1.79 (0.42, 7.53)
Clark (1998)	15/156	22/162		24.3	0.68 (0.34, 1.35)
Loughan (1997)	28/238	17/214		30.0	1.53 (0.83, 2.83)
Muir (1996)	3/28	2/22		3.4	1.19 (0.19, 7.53)
Nikkola (1997)	0/10	0/10		0.0	Not estimable
Philipsen (1989)	10/57	6/54		10.2	1.68 (0.58, 4.81)
Sharma (1997)	12/243	14/259		18.3	0.91 (0.41, 2.00)
Thalme (1974)	0/14	0/14		0.0	Not estimable
Thorp (1993)	12/48	1/45		8.4	6.51 (2.03. 20.91)
TOTAL	85/843	65/831		100.0	1.30 (0.93, 1.83)

Howell CJ. Epidural versus non-epidural analgesia for pain relief in labour. Cochrane Database Syst Rev. 2000.

Does one ~~size~~ answer fit all?



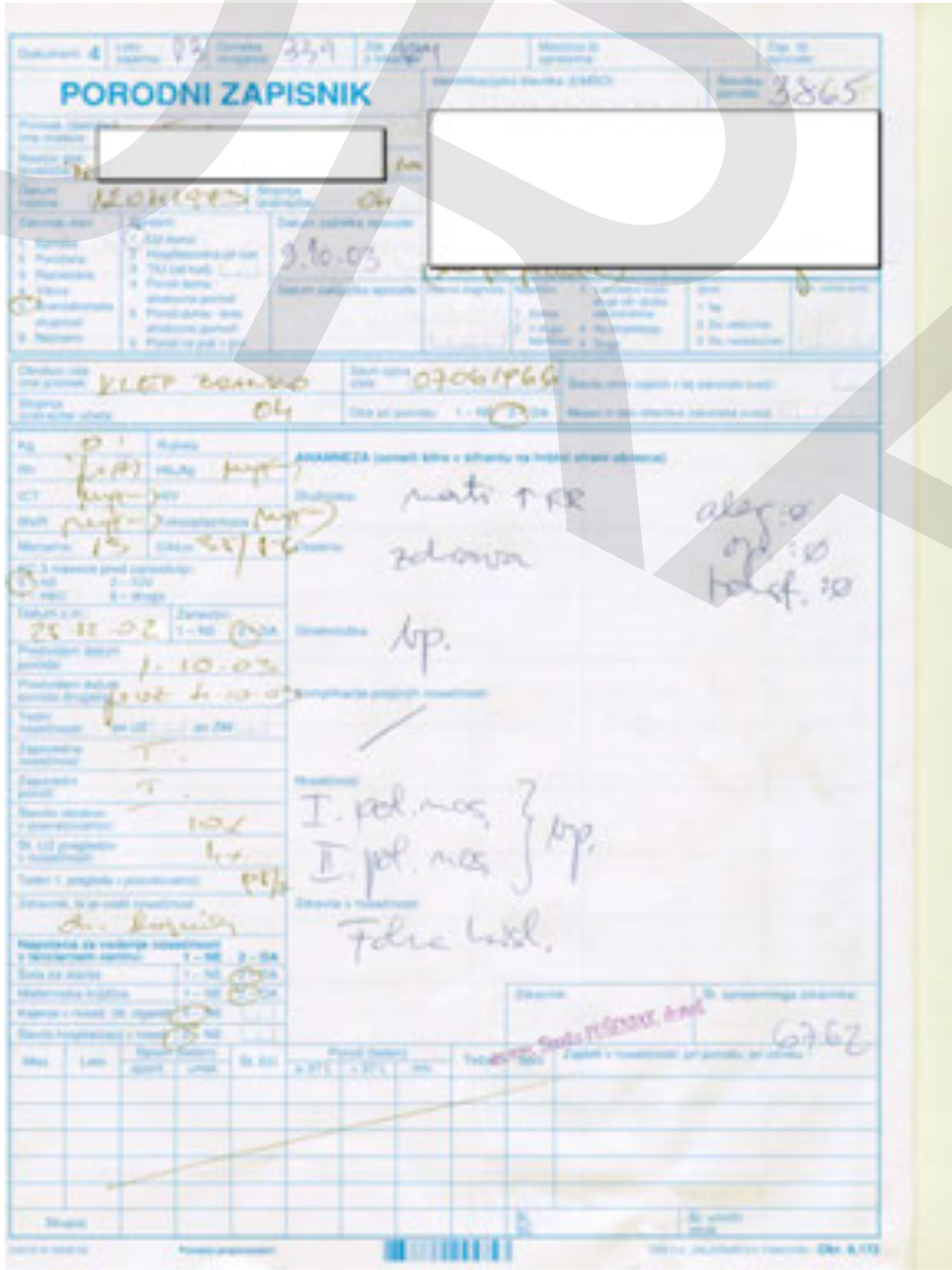
Multidisciplinary Commitment to Quality Care



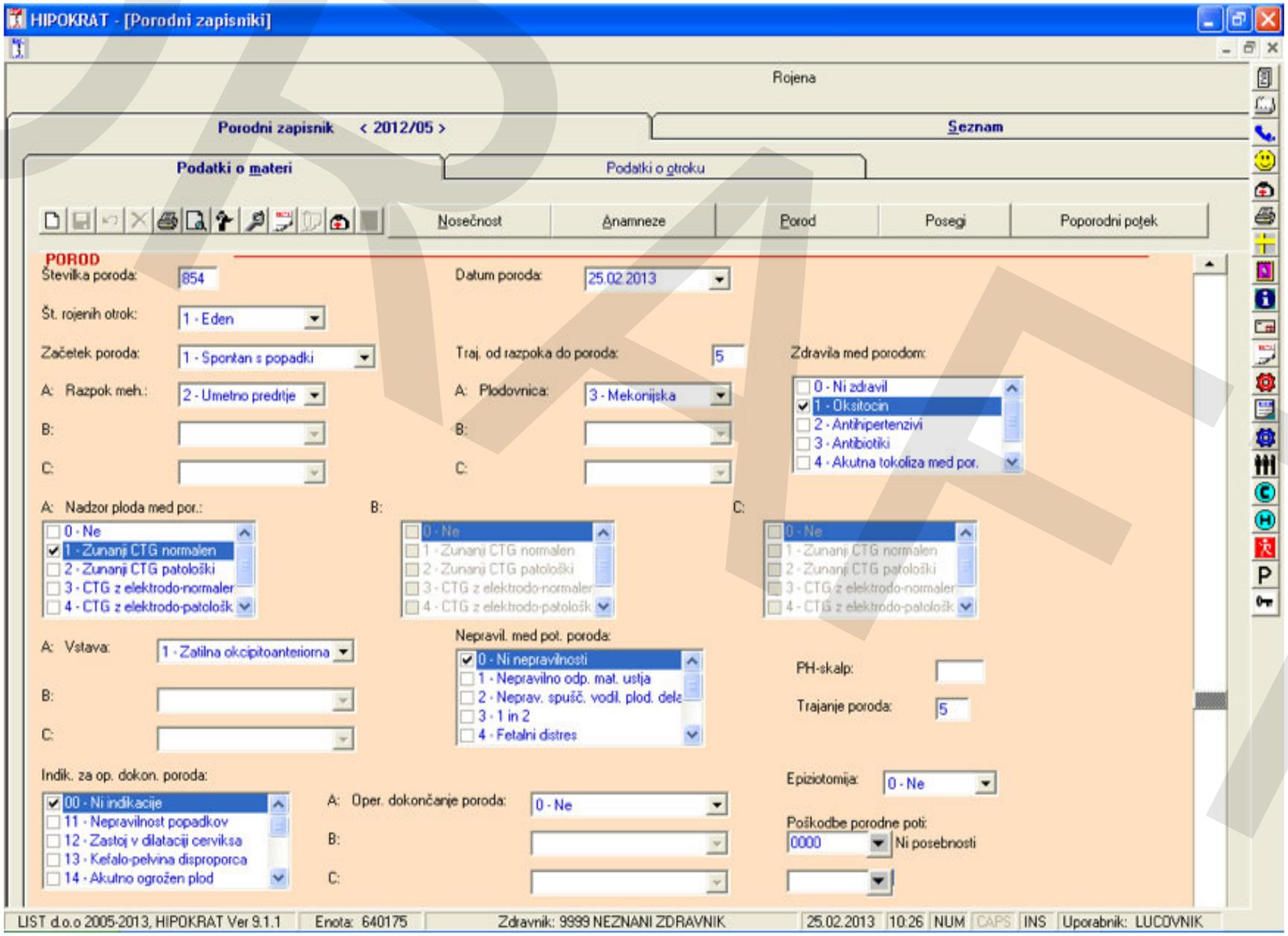
National Perinatal Information System

- Established in 1987
- Registration is mandatory by law
- Registers all deliveries ≥ 500 g/ ≥ 22 wks in Slovenia
- >140 variables are entered immediately postpartum

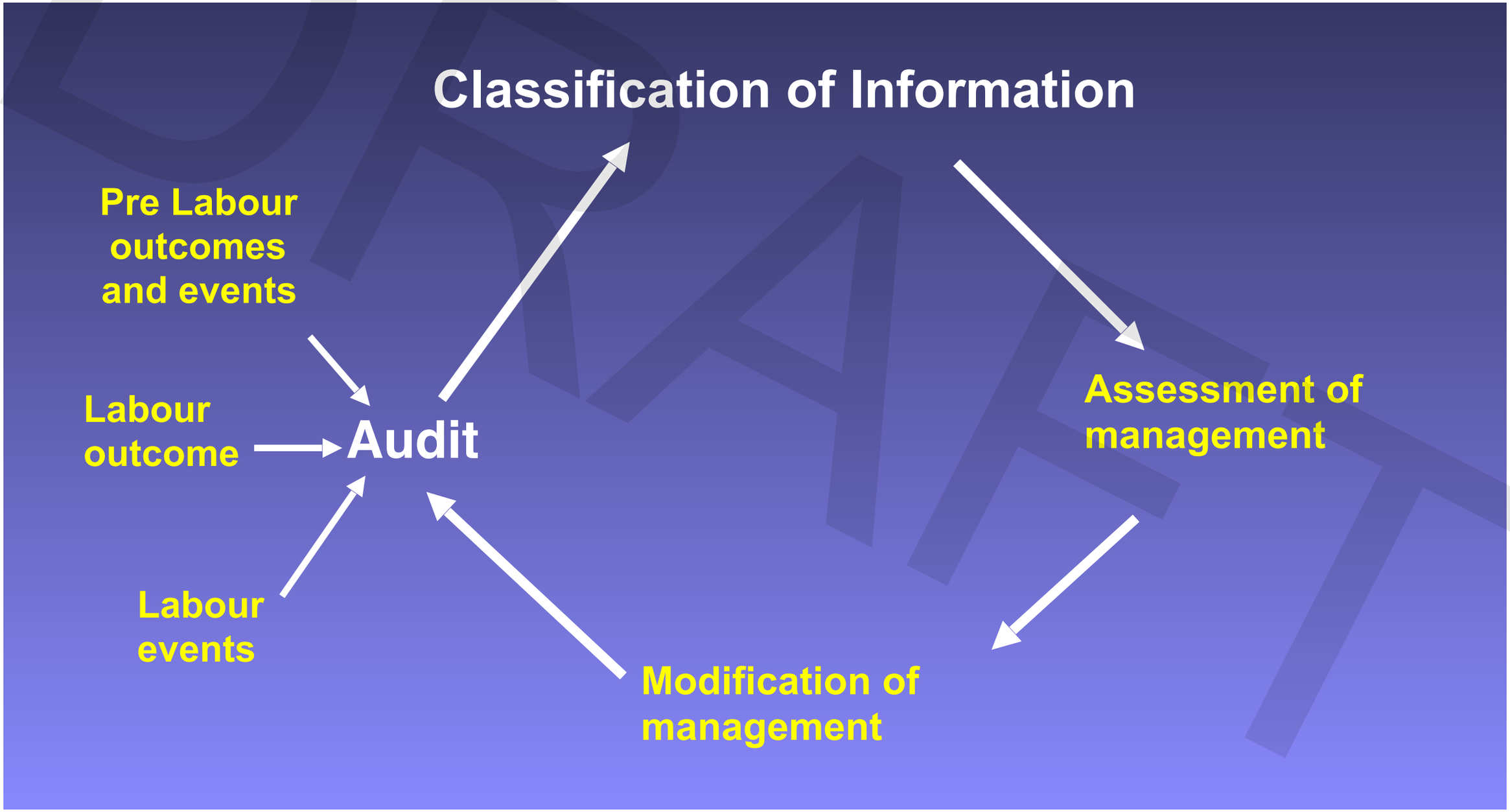
National Perinatal Information System



National Perinatal Information System



Multidisciplinary Commitment to Quality Care



The Ten Group Classification System

Group 1	Nulliparous, single cephalic, ≥ 37 weeks, in spontaneous labour
Group 2	Nulliparous, single cephalic, ≥ 37 weeks, induced or CS before labour
Group 3	Multiparous (excluding prev. CS), single cephalic, ≥ 37 weeks, in spontaneous labour
Group 4	Multiparous (excluding prev. CS), single cephalic, ≥ 37 weeks, induced or CS before labour
Group 5	Previous CS, single cephalic, ≥ 37 weeks
Group 6	All nulliparous breeches
Group 7	All multiparous breeches (including prev. CS)
Group 8	All multiple pregnancies (including prev. CS)
Group 9	All abnormal lies (including prev. CS)
Group 10	All single cephalic, ≤ 36 weeks (including prev. CS)

Robson M et al. Methods of achieving and maintaining an appropriate caesarean section rate. Best practice & research Clinical obstetrics & gynaecology 2013

Int J Obstet Anesth. 2018 Feb 28. pii: S0959-289X(17)30271-6. doi: 10.1016/j.ijoa.2018.01.003. [Epub ahead of print]

Impact of epidural analgesia on cesarean and operative vaginal delivery rates classified by the Ten Groups Classification System.

Lucovnik M[1], Blajic I[2], Verdenik I[3], Mirkovic T[2], Stopar Pintaric T[4].

Table 3 Cesarean and assisted vaginal delivery rates, according to the Ten Group Classification System (TGCS), for women with and without epidural analgesia

TGCS groups	CD		AVD	
	EA	No EA	EA	No EA
Group 1	1248 (13.3%)*	6000 (10.1%)	1000 (10.6%)*	2942 (5.0%)
Group 2a	688 (22.3%)*	5710 (32.3%)	366 (11.8%)*	935 (5.3%)
Group 3	86 (2.3%)	1632 (2.6%)	72 (1.9%)*	350 (0.6%)
Group 4a	58 (3.7%)*	2873 (17.6%)	51 (3.2%)*	140 (0.9%)
Group 5a	110 (30.6%)*	1995 (49.2%)	21 (5.8%)*	122 (3.0%)
Group 5b	46 (43.4%)*	5916 (95.1%)	6 (5.7%)*	19 (0.3%)
Group 6a	39 (38.6%)*	1411 (69.4%)	2 (2.0%)*	2 (0.1%)
Group 6b	14 (60.9%)*	2681 (96.1%)	0 (0.0%)	0 (0.0%)
Group 7a	6 (22.2%)*	567 (52.4%)	0 (0.0%)	1 (0.1%)
Group 7b	6 (54.5%)*	1132 (90.4%)	1 (9.1%)	0 (0.0%)
Group 8a	14 (21.5%)*	813 (43.7)	5 (7.7%)	30 (1.6%)
Group 8b	12 (17.1%)*	1201 (71.7%)	12 (17.1%)*	18 (1.1%)
Group 9	6 (67.0%)	1130 (91.0%)	0 (0.0%)	0 (0.0%)
Group 10a	21 (5.0%)	1027 (13.8%)	22 (5.3%)	112 (1.5%)
Group 10b	15 (16.1%)*	1307 (58.0%)	1 (1.1%)	13 (0.6%)

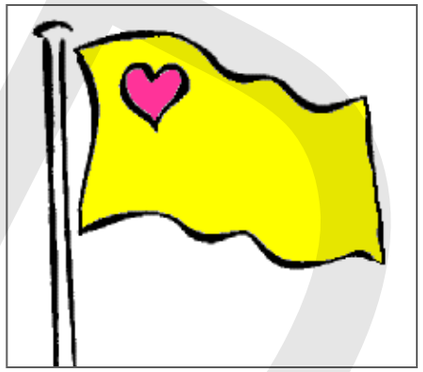
Data are presented as number (N) and percentage (%). *P <0.003 for groups with versus without EA.;
TGCS: Ten Group Classification System; CD: cesarean delivery; EA: epidural analgesia; AVD: assisted vaginal delivery (vacuum or forceps).

Summary

In most TGCS groups women with epidural analgesia had lower cesarean delivery rates.

Women in group 1 with epidural analgesia had higher cesarean delivery rate.

In most TGCS groups women with epidural analgesia had higher vacuum delivery rates.



Conclusions

Embrace differences

Communicate

Learn from each other

Lecture 4.3

The 10-year experience with remifentanil usage for labor analgesia at University Medical Center Ljubljana

Iva Blajić, MD

Specialist, Anaesthesiology, reanimatology and perioperative intensive care medicine

Neuraxial labor analgesia

- is most effective method of pain relief during labor
- is not available in all obstetric units
- Its use may be contraindicated
- Parturient may prefer less invasive treatment
- Alternative method of pain relief may be required

Parenteral opioid-based analgesia

- Pethidine, fentanil, tramadol, alfentanil or sufentanil
- Last two decades, remifentanil has been studied as either an alternative to neuraxial analgesia or as the preferred parenteral opioid to treat labor pain
- Remifentanil is a potent opioid with pharmacological properties that potentially makes it an ideal parenteral analgesic for labor
- Off-label use of remifentanil

10 recent years

LOW RATE OF EPIDURAL ANALGESIA (less than 1%)

REMIFENTANIL was introduced as a response to the need for an effective alternative to epidural analgesia.

	2011	2012	2013	2015	2017
Remifentanil	281 (4,4%)	450 (7%)	375 (6%)	758 (15%)	1210 (26%)

Remifentanil - pharmacokinetics

- Selective mu opioid agonist with rapid onset and offset of action
- Remifentanil has a quick onset of action in 1 minute, peak effect at 2 minutes and constant context-sensitive half life of 3 minutes
- Due to ester linkage, remifentanil is subject to rapid metabolism by nonspecific blood and tissue esterase by both mother and foetus

Remifentanil and pregnancy

- Plasma concentration in pregnancy is ½ of that in non-pregnancy due to a larger volume of distribution and higher clearance
- Crosses the placenta rapidly but is rapidly metabolised in foetus
- Large patient variability in pregnant individuals – be explained by heterogeneity in uterine contractions as labor progresses
- The rapid onset and offset of remifentanil with effect-site concentration peaking at 1-2 min might be beneficial for labor analgesia, especially if timing of remifentanil peak effect can be matched to uterine contractions.

Fetal exposure

- Uterine vein/Maternal artery ratio: 0.88
- Umbilical artery/umbilical vein ratio: 0.29
- redistribution, rapid fetal metabolism

Current practice

- In Europe, remifentanil PCIA is increasingly used either as a primary mode of labor analgesia or as an alternative to neuraxial analgesia, when the later is contraindicated
- This practice is not uniform over Europe
- There are many different protocols, which have been investigated

Van De Velde and Carvalho

IJOA 2016; 15: 66-74

Table 2 Studies of remifentanil patient-controlled intravenous analgesia in labor

	Bolus	Lockout (min)	Infusion rate (μg/kg/min)	Maximum hourly dose (μg)	Number of remifentanil patients	Alternative analgesia required
Olufolabi 2000[19]	0.25–0.5 μg/kg	2–5	0	NR	4	NR
Blair 2001[20]	0.25–1.0 μg/kg	2	0.0–0.05	NR	21	38% (epidural)
Volikas 2001[31]	0.5 μg/kg	2	0	NR	9	45% (nitrous oxide); 11% (epidural)
Volmanen 2002[21]	0.2–0.8 μg/kg	1	0	No limit	20	NR
Thurlow 2002[32]	20 μg	3	0	NR	18	55% (nitrous oxide)
Blair 2005[33]	40 μg	2	0	NR	20	90% (nitrous oxide)
Volmanen 2005[26]	0.4 μg/kg	1	0	No limit	20	NR
Evron 2005[34]	20–70 μg	3	0	No limit	43	11% (epidural)
Volikas 2005[22]	0.50 μg/kg	2	0	NR	50	14% (epidural)
Balki 2007[7]	0.25–1 μg/kg	2	0.075–0.1	NR	20	5% (epidural)
Volmanen 2008[40]	0.1 μg/kg	1	0	NR	27	NR
D'Onofrio 2009[24]	0	0	0.025–0.15	NR	205	NR
Douma 2010[35]	40 μg	2	0	1200	52	NR
Douma 2011[41]	40 μg	2	0	1200	10	10% (epidural)
Volmanen 2011[51]	0.4 μg/kg	1	0	NR	45	NR
Ng 2011[36]	25–30 μg	3.75–4.5	0	500	34	>40% (pethidine & nitrous oxide)
Marwah 2012[37]	0.25 μg/kg	2	0.025–0.05	3000 over 4 h	47	6% (epidural)
Ismail 2012[42]	0.1–0.9 μg/kg	1	0	NR	380	NR
Tveit 2012[43]	0.15 μg/kg	2	0	NR	19	10% (epidural)
Stourac 2012[44]	20 (10 μg increases)	3	0	NR	12	NR
Shen 2013[49*]	0.1–0.4 μg/kg	2	0.05–0.2	NR	53	11% (epidural)
Stocki 2013[47]	20–60 μg	2	0	NR	19	NR
Tveit 2013[23]	0.15–1.0 μg/kg	2	0	0	41	5% (epidural)
Lin 2014[46]	0.4 μg/kg	5	0.04–0.05	NR	170	NR
Freeman 2015[48]	30–40 μg	3	0	NR	402	13% (epidural)

*Comparison of bolus only with continuous infusion. NR: not reported.

Current practice

Literature

- A bolus of 20–40 μg (0.25–0.5 μg/kg) is used most widely with a lockout of 1–5 min.
- Background infusions are less frequently applied due to maternal side effects and safety concerns, but are occasionally used as they may improve analgesic efficacy.

Our practice

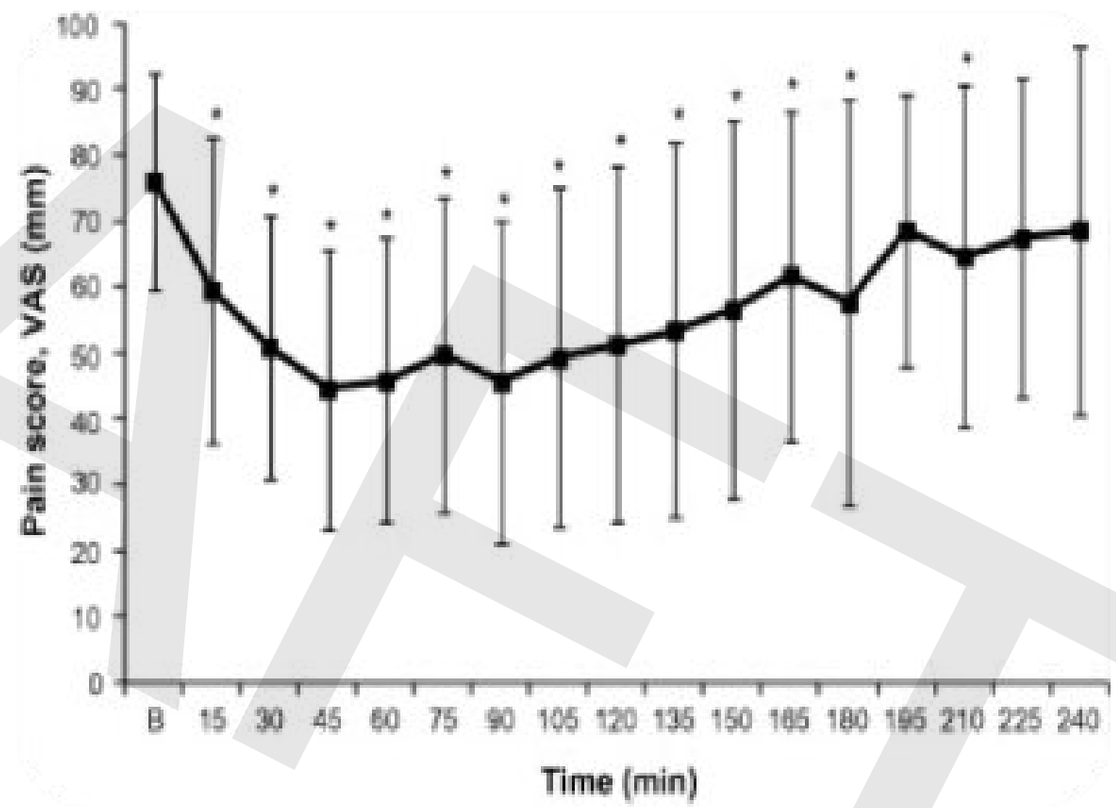
- Bolus 10 –40 μg with lockout of 2 min
- No background infusion

Analgesic efficacy

- remifentanil PCIA used in labor can reduce pain scores from the severe (e.g. 8 out of 10) to the moderate (e.g. 4 out of 10) range
- provides better analgesia than nitrous oxide
- provides better pain relief than other opioids, but only during the first two hours
- Less effective compared to neuraxial analgesia

Analgesic efficacy of remifentanil

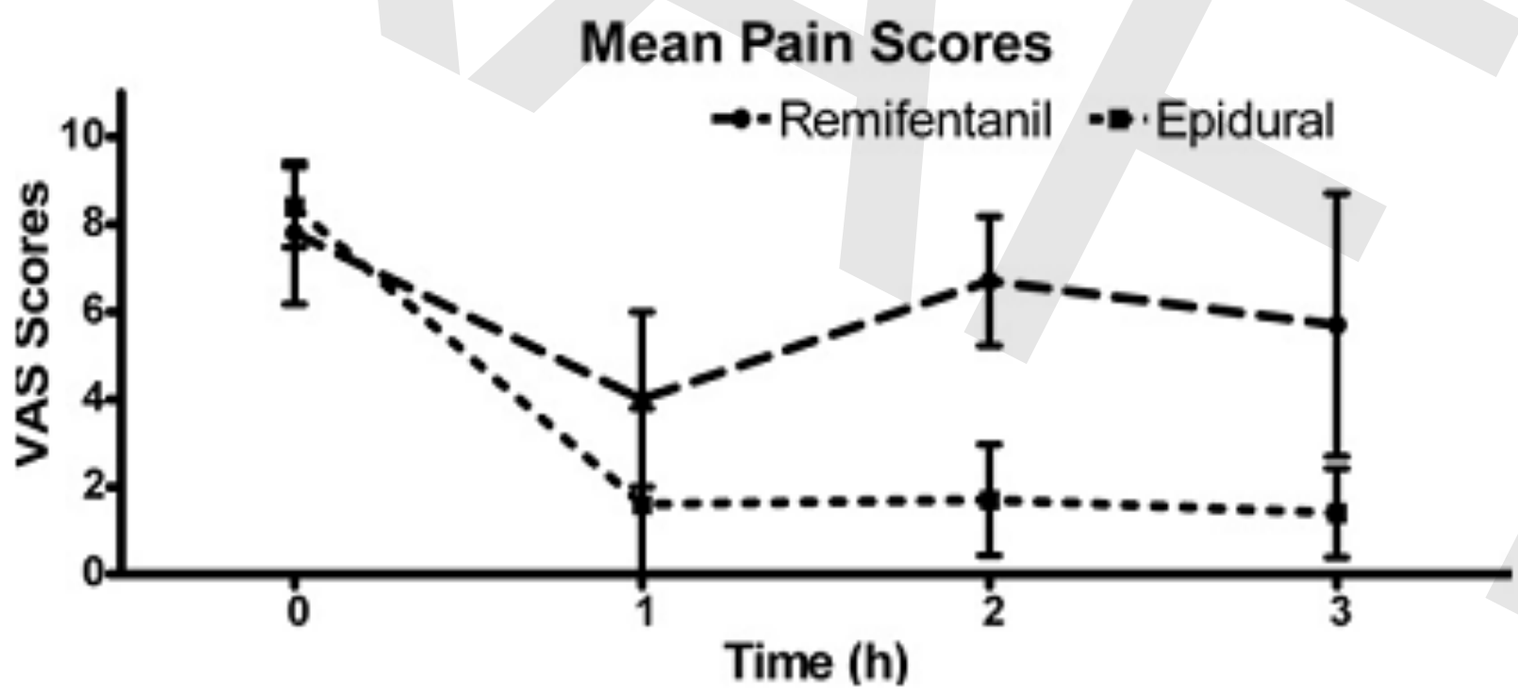
- Remifentanil appears most effective during the first few hours of use, after which pain scores gradually return to baseline preanalgesia levels.
- This is due to opioid-induced hyperalgesia, increase of pain as labor progresses and more difficulty timing peak remifentanil effect with regular and frequent contractions



- Douma MR. BJA 2010 and Tveit TO. IJOA 2013

Analgesic efficacy of remifentanil

- Epidural analgesia is superior analgesic option with better pain scores
- The effect size difference between remifentanil PCIA and epidural as measured by pain score (0-10 cm) 2 h after initiation is estimated to be 3.0 cm (95% CI 0,7to5,2) (Schnabel, Eur J Anaesth 2012)



Satisfaction with pain relief - remifentanil

Our experience

- Primiparae with long and painfull labour less satisfied with RF.
- Multiparae with shorter labours show similar satisfaction with RF as compared to neuraxial analgesia.

Literature

- PCA with RF vs EA in labour: randomised multicentre equivalence trail; (Freeman LM, BMJ 2015)
- 1414 parturients
- Epidural analgesia produced significantly better labor analgesia than remifentanil, but maternal satisfaction seemed unaffected indicating that many women were satisfied with analgesia despite pain remaining relatively high.

Remifentanil: standard operative procedure

- Indications:
  - medical contraindications for EA
  - refusal of EA
- Patient selection:
  - ↑34 weeks of gestation
  - no fetal distress
  - no previous strong opiates
- Patient preparation:
  - informed consent
  - i.v. access
  - nasal oxygen
  - monitoring (EKG, BP, pulse oximeter, capnography, CTG)

Informed consent

- The patient should be issued with, and have read the remifentanil PCA patient information leaflet and had the opportunity to ask questions.
- **The patient should be informed of the possible side-effects including drowsiness, itching, nausea, dizziness and respiratory depression**
- Every patient must sign inform consent before procedure

Remifentanil: standard operative procedure

Preparation of the drug

- Mix 2mg remifentanil with 50mls 0.9% sodium chloride
  - concentration 40 µg/ml
  - PCA bolus dose 10-40µg
  - bolus duration 20 sec
  - lockout interval 2 min
  - no continuous infusion

Remifentanil: standard operative procedure

Patient observation

- midwife 1:1
- vital signs (RR,SpO2, CTG)
- end-tidal CO2 and apnea monitor
- sedation scoring (Ramsey)
- VAS scoring

Maternal side effects - literature

Reference	Bolus (mcg/kg) or infusion (mcg/kg/min)	Mean total dose (mcg)	Sedation	Number of respiratory desaturation episodes	Apgar scores at 1 and 5 min	Fetal heart rate changes
Blair	Bolus: 0.25–0.5	2241	9.5% (2/21)	23.8% (5/21)	Median 8 and 9	9.5% (2/21)
Volmanen	Bolus: 0.2–0.8	NR	100% (17/17) mild sedation	59% (10/17)	Median 9 and 9	29% (5/17)
Douma	Bolus: 0.7 Infusion: 0.025	1840	NR	74% (37/50)	Mean 8.9 and 9.9	NR
Shahriari	Bolus: 0.35–0.7	NR	5% (1/20)	5% (1/20)	≥7 and ≥9	NR
Thurlow	Bolus: 0.3	NR	NR	39% (7/18)	NR	NR
Blair	Bolus: 0.5	NR	NR	NR	Median 8 and 9	7% (1/15)
Volikas	Bolus: 0.5	3670	NR	NR	Median 9 and 10	NR
Douma	Bolus: 0.5	2817	10% (1/10)	5% (1/20)	NR	NR
Ismail	Bolus: 0.1–0.9	NR	0	0	NR	NR
Tveit	Bolus: 0.15 + 0.15 mcg/kg increments until relief	NR	65% (11/19)	65% (11/19)	Median 9 and 9	10.5% (2/19)
Stourac	Bolus: 0.24	NR	NR	NR	NR	8.3% (1/12)
Volmanen	Bolus: 0.3–0.7	NR	29% (7/24)	54% (13/24)	Median 9	54% (13/24)
Marwah	Bolus: 0.25 Infusion: 0.025–0.05 mcg/kg/min	NR	2.3% (1/47)	14.9% (7/47)	Median 9 and 9	NR

Stocki D et ali. A Randomized Controlled Trial of the Efficacy and Respiratory Effects of Patient-Controlled Intravenous Remifentanil Analgesia and Patient-Controlled Epidural Analgesia in Laboring Women. Anesthesia Analgesia 2014

	Remifentanil, *n* = 19	Epidural, *n* = 19[a]	95% CI of difference	*P*
Respiratory rate (bpm)[d]	18.2 ± 4.1	21.1 ± 3.9	−2.9 (−5.6 to 0.2)	0.03
Saturation (%)[d]	96.8 ± 1.4	98.4 ± 1.2	−1.6 (−2.49 to 0.76)	<0.001
$ETCO_2$ (mm Hg)[d]	34.2 ± 1.8	32.9 ± 2.4	1.3 (−0.14 to 2.6)	0.08
Respiratory rate alarm triggered (<8 bpm) (*n*, (%))[e]	10 (52.6%)	11 (57.9%)	−0.28 to 0.36	1.00
Number of respiratory rate alarms triggered per woman (<8 bpm)[c]	1;0–34[0–3]	1;0–43[0–3]		0.65[b]
Hypoxemia alarm (Sao2 <94%) triggered (*n*, (%))[e]	13 (68.4%)	3 (15.8%)	0.17 to 0.74	0.003
Number of hypoxemia alarms triggered per woman (Sao_2 <94%)[c]	4;0–18[0–9]	0;0–23[0]		0.002[b]
Apnea alarm triggered (>20 s of zero respiratory rate) (*n*, (%))[e]	5 (26.3%)	0	−0.0038 to 0.51	0.046
Number of apnea alarms triggered per woman (> 20 s of zero respiratory rate)[c]	0;0–2[0–0]	0		0.018[b]

Data for apnea alarm triggers have unequal variance.

n = number.

[a]One patient refused to use the capnograph throughout the first hour, so 19 patients are analyzed.

[b]Levene's test showed that data for alarms for hypoxemia and respiratory rate triggers have equal variance, despite the zero median.

[c]Mann-Whitney *U* test median;range [IQR]).

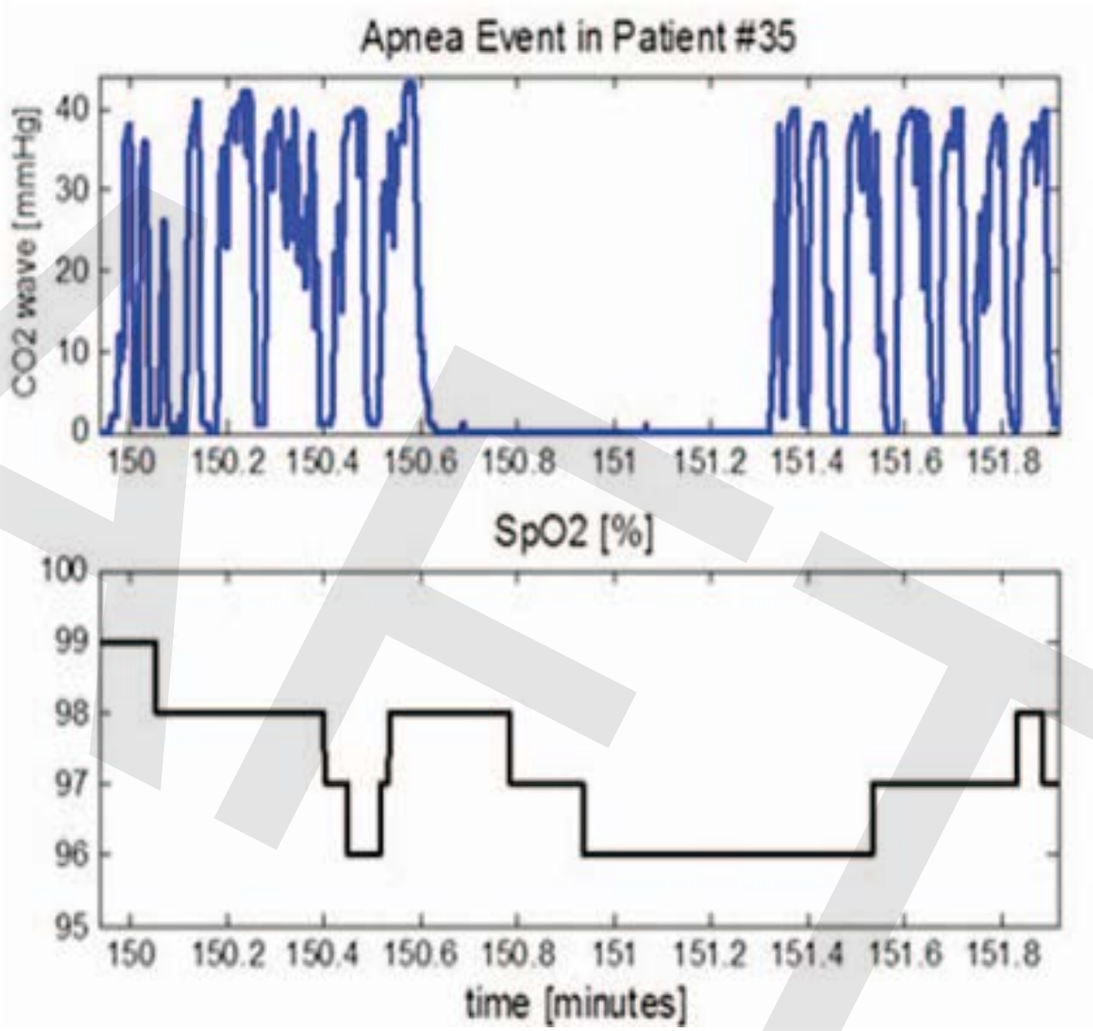
[d]Independent sample *t* test, mean ± SD.

[e]Fisher exact test.

Maternal side effects - literature

- This figure presents an example of an etCO2 wave graph and saturation graph during an apnea event.
- The apnea event lasted over 30 seconds without a decrease in SpO2.
- The SpO2 does not alert the staff to a respiratory problem, whereas the respiratory rate monitoring would prompt a response

(Stocki at all.2014)



Side effects - our observations

- No major adverse effects (respiratory or cardiac arrest) were observed
- Apnea without desaturation
- Dizziness
- Oversedation >3 according to Ramsey scoring
- Reduced foetal heart rate variability

Neonatal side effects

- Stourac et al. 2012
- Ismail and Hassanin 2012
- Tveit et ali. 2012
- Douma et ali. 2011
- Volmanen et ali. 2008

- No Apgar score differences at 1 and 5 min were observed in any of the trials between PCA with remifentanil and epidural analgesia.

Complications

- Cardiorespiratory arrest in patient diagnosed with IUD who received for pain relief for vaginal delivery (RF PCA + Entonox + codein 60 mg and diamorphine 40 mg) – Marr et al. Anaesthesia 2013
- Respiratory arrest in obstetric patient diagnosed with IUD who received for pain relief for vaginal delivery (PCA 40 µg, LO 2min and Entonox) – Bonner JC et al. Anaesthesia 2012
- REASONS:
  - large remifentanil dosages
  - concomitant administration of potent opiates
  - addition of Entonox
  - insufficient monitoring

Dosage regimen

- There are large variations between individuals.
- We use stepwise adjustable dosing regimen starting with a bolus of 15µg and increasing it up to 30, rarely 40 µg with no background infusion.
- Sedation level rather than VAS scoring is decisive when modifying the dosage.

Monitoring to determine respiratory depression should consist of

- continues uninterrupted one-to-one midwifery care to evaluate respiratory rate and sedation
- monitoring for adequate ventilation: apnea monitoring and capnography
- continuous maternal pulse oximetry oxygen saturation

Observation chart

- We must every 30-40 min to document time, blood pressure, etCO2, Ramsey sedation score and pain score

- Ramsey scale (1-6)

Score	Response
1	Anxious or restless or both
2	Cooperative, orientated and tranquil
3	Responding to commands
4	Brisk response to stimulus
5	Sluggish response to stimulus
6	No response to stimulus

Conclusion

- RF has a unique profile to be used in obstetrics.
- When is neuraxial analgesia contraindicated
- It should be an alternative to meperidine as it provides better pain relief with less neonatal depression.
- Apart from medical indication, remifentanil is not an alternative for epidural analgesia in parturients where long and painful labour is expected (primiparae, parturients with induced labours with PG and low pain tolerance)
- Remifentanil could be an alternative to neuraxial analgesia in parturients where short labour is expected (multiparae).
- Remifentanil requires permanent midwife presence with careful monitoring of sedation, saturation and ventilation

There are many ways

Lecture series 5

Acute Pain Management

Lecture 5.1

The establishment of acute pain management service at University Medical Center Ljubljana

assoc. prof. Neli Vintar, MD, PhD

Office of Acute Pain Management, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

DOES APS IMPROVE POSTOPERATIVE OUTCOME?

- Werner, MU et al. Does APS improve postoperative outcome? Anesth Analg 2002;95:1361-72.
- Lee A et al. The costs and benefits of extending the role of APS on clinical outcomes after major elective surgery. Anesth Analg 2010;111:1042-50
- Kainzwaldner V et al. Qualitat der postoperativen Schmerztherapie. Der Anaesthesist 2013;62:453-9.
- Rawal N. Current issues in postoperative pain management. Eur J Anaesthesiol 2016;33:160-71.

ACUTE PAIN SERVICE LJUBLJANA

Prim Godec / prof Rawal: **N Rawal. Pain 1994 Organization of APS. Nurse- based anesthesiologist-supervised low-cost model.**

Prim Godec: National project of postoperative pain management (1998)

IS POSTOPERATIVE PAIN SUCCESSFULLY TREATED?

Rawal N. Current issues in postoperative pain management. EJA 2016;33:160-71.

- No optimal postoperative pain control in Europe and USA
- Written protocols only in 60% hospitals
- Nurses are not allowed to adjust the treatment
- Postoperative analgesia is most often prescribed by surgeons

AIMS OF EFFECTIVE POSTOPERATIVE PAIN RELIEF

- **PATIENT SATISFACTION** patient wellbeing,
  good sleep and appetite

- **GOOD OUTCOME SUPPORT :** effective and quick recovery
  intact immune system: good wound heeling
  effective mobilisation and rehabilitation
  short hospital staying
  lower costs

UNSUCCESSFULLY TREATED POSTOPERATIVE PAIN

- **Increased stress, sleep disturbance, eating disturbance**
- **Immune system suppression: postoperative infection, impaired wound healing, respiratory infection, prolonged recovery, prolonged hospital stay**
- **Hypercoagulability, thrombotic complications**
- **Severe postoperative pain: leads to chronic pain syndrome (5 – 50% incidence)**

Institute of Medicine. Relieving pain in America. USA: National Academies Press; 2011;

Chaparro LE, Smith SA, Moore RA, et al. Pharmacotherapy for the prevention of chronic pain after surgery in adults. Cochrane Database Syst Rev (7):2013;

Andreae MH, Andreae DA. Regional anaesthesia to prevent chronic pain after surgery: a Cochrane systematic review and meta-analysis. Br J Anaesth 2013;

HOW TO START WITH APS?

- Written protocols for postoperative analgesia
- New nurse profile: pain nurse
  - Education of surgeons, ward nurses and patients
  - Make pain visible: pain assessment
  - Recording VAS and analgesic consumption
  - Recording side effects and complications
    - Statistical analysis
    - Regular meetings and improvement plans

Prim Godec et al PROTOCOLS

Klinični oddelek za anesteziologijo in intenzivno terapijo operativnih strok

ZAPLETI PRI ZDRAVLJENJU POOPERATIVNE BOLEČINE

VEDNO NAJPREJ KLIČI ODDELČNEGA ZDRAVNIKA!

I. ZAPLETI, KI OGROŽAJO ŽIVLJENJE

Ravnaj se po navodilih v kvadratku, nato pokliči dežurnega anesteziologa po multitonu (MT) 511.

1.DEPRESIJA DIHANJA
(frekvenca dihanja <10/min)
1. kisik 8l/min preko obrazne maske
2. dihalna podpora z masko in ambujem
3. 1 amp naloksona (Narcanti 0.4 mg) razredči z 10 ml fiziološke raztopine in dodajaj po 1 ml i.v. do učinka
4. kliči reanimacijo (21-12)

2.HIPOTENZIJA
(padec tlaka za več kot 25%)
1. pospeši infuzijo 200ml/5 min
2. simpatikomimetik (Efedrin 0.5 % 2ml i.v.)
3. Suprarenin 1 amp razredči s fiziološko raztopino na 100 ml in titriraj i.v.
4. ob močnem padcu tlaka (pod 80 mm Hg) kliči reanimacijo

3. EPILEPTIČNI NAPAD
1. kisik 8 l/min preko obrazne maske, ob zastoju dihanja ventilacija z ambujem
2. benzodiazepin (Apaurin 5-10 mg i.v., Dormicum titriraj i. v. po 2.5 mg do učinka)
3. kliči reanimacijo

II. HUDI ZAPLETI

(če je potrebno, se posvetuj z anesteziologom na MT 511)

1. NEVROLOŠKI ZAPLETI
- močna bolečina ob injiciranju po epiduralnem katetru
- oslabelost v spodnjih okončinah
- mravljinčenje v spodnjih okončinah

1. kliči anesteziologa MT 511

2. BRONHOSPAZEM
(bolnika duši)
1. kisik 8 l/min preko obrazne maske
2. bronhodilatator (Ventolin v pršilu 1 vdih/min - 3 krat)

3. SEDACIJA
(bolnika težko predramimo)
1. razredči 1amp naloksona (Narcanti 0.4mg) z 10 ml fiziološke raztopine in dodajaj po 1ml i. v. do učinka

III. OSTALI ZAPLETI

1. SLABOST IN BRUHANJE
antiemetik (Torecan, Onilat, Zofran) 1 amp i.v.

2. SRBEŽ
1. Synopen 20 mg i.v.
2. razredči 1 amp naloksona (Narcanti 0.4 mg) z 10 ml fiziološke raztopine in dodajaj i.v. do učinka

3. ZASTOJ URINA
(bolnik ima poln mehur, a ga ne more izprazniti)
1. Doril 1 amp i.v./i.m.
2. urinski kateter

4. IZPAD EPIDURALNEGA KATETRA
1. kliči oddelčnega zdravnika
2. nadaljuj z venskim zdravljenjem pooperativne bolečine

IV. TEHNIČNA NAPAKA/PORABLJENO ZDRAVILO

Kliči sestro (MT 775)!

Information flyer for patients

1998

The first pain nurse

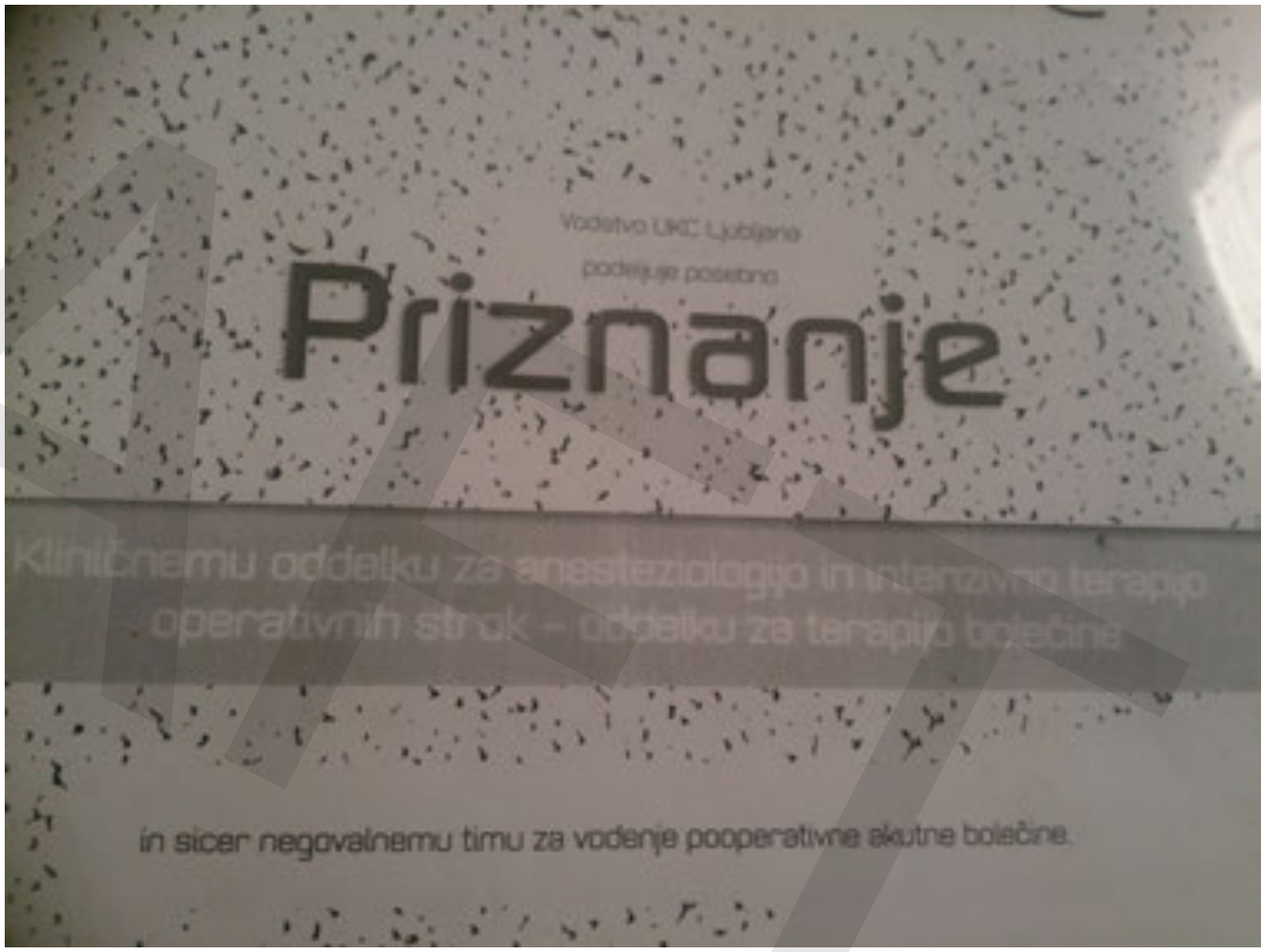
Bed side surgical ward nurse education

Postoperative pain treatment is started in the operating room,

continued in the recovery room

SVAKI POČETAK JE TEŽAK

FIRST AWARDS IN 2011



PAIN NURSE

- DAILY VISITS OF PATIENTS WITH PCA PUMPS (recording VAS scores, calculating analgesic consumption, adjusting PCA pumps programme to patient‘s needs, recording side effects)
- DAILY VISITS OF PATIENTS WITH CATHETERS (catheter nursing, recording complications, safe epidural catheter removal)
- EDUCATION OF WARD NURSES: REGULAR EDUCATION PROGRAMS
- STATISTICAL ANALYSIS, ANNUAL REPORTS

APS ANESTHESIOLOGIST

- ON CALL FOR ANALGESIC PROTOCOL ADJUSTMENTS
- SOLVING PROBLEMS AND COMPLICATIONS
- PALLIATIVE CARE AND PAIN TREATMENT OF CHRONIC PAIN PATIENTS AT ALL DEPARTMENTS OF UMC
- RECORDING DAILY VISITS
- COMMUNICATION WITH TEAM ANAESTHESIOLOGISTS
- RESPONSIBLE FOR STANDARDS AND PROTOCOLS
- COMMUNICATION WITH HOSPITAL PHARMACY
- ANNUAL MEETINGS WITH SURGEONS

ACUTE PAIN SERVICE IN LJUBLJANA TODAY

- DAILY 1 anaesthesiologist on call (phone 7200)
- DAILY 2 -4 pain nurses (phone 8623, 7243)
- 100 PCA pumps in use daily
- Per 1 year: ≥ 5000 patients with

  IV PCA, PCEA, peripheral catheters
- Each patient PCA for 3 days: ≥ 15000 visits per year

APS : not only acute pain…

- **Perioperative pain**
- **Non surgical pain:** untraceable pain of different aetiologies (neurological causes, infections, vascular / ishemic pain…)
- **Paliative care**

PROTOCOL FOR TREATMENT OF SIDE EFFECTS AND COMPLICATIONS OF POSTOPERATIVE ANALGESIA TECHNIQUES

SLABOST IN BRUHANJE

1. antiemetik i.v.
2. če čez 30 min ni izboljšanja, pretok analgetikov zmanjšaj ali ustavi za 2 uri

HIPOTENZIJA

Padec KT za več kot 25% od izhodiščnega
1. i.v. infuzija kristaloidov 200 ml/5 min
2. simpatikomimetik efedrinijev klorid 10 mg i.v.
3. ob padcu KT za več kot 50% od izhodiščnega kliči reanimacijo

SRBEŽ

1. antihistaminik i.v.
2. epiduralne analgezije ne ustavimo, nadaljujemo z analgetsko mešanico brez morfina

SEDACIJA

1. stopnja 2 - izražena: pacient zaspan, zenice zožene na 2-3 mm - zmanjšaj analgezijo za 50%; ponovna ocena čez 15 min
2. stopnja 3 - pacient spi, ga težko predramimo, zenice so maksimalno zožene - ukrepi kot pri depresiji dihanja

DEPRESIJA DIHANJA

Frekvenca dihanja < kot 8/min, plitvo dihanje/apnoične pavze, SpO_2 < kot 90%
1. analgezijo ustavi - stalen nadzor
2. aplikacija O_2 6L/min prek obrazne maske
3. sprostitev dihalne poti oz. predihavanje z masko in ročnim dihalnim balonom
4. nalokson 1 amp (0,4 mg) razredči do 10 ml, nato daj po 1 ml do učinka
5. kliči reanimacijo

UKREPI PRI ZDRAVLJENJU NEŽELENIH UČINKOV IN ZAPLETOV POOPERATIVNE ANALGEZIJE

NEVROLOŠKI ZAPLETI

SENZORIČNE MOTNJE / MOTORIČNA BLOKADA / NEOBČUTLJIVOST OD TH4 NAVZGOR

1. ustavi epiduralno analgezijo
2. ponovna ocena motorike čez 2 uri
3. kliči SLAPB oz. nadzornega anesteziologa
4. zmanjšaj odmerek/pretok po PCEA

Oslabelost v spodnjih okončinah narašča
Močna bolečina v hrbtu narašča

Kliči anesteziologa na dect 7200,
v času dežurstva 8842 ali MT 511

SLUŽBA ZA LAJŠANJE AKUTNE POOPERATIVNE BOLEČINE (SLAPB)
anesteziolog **dect 7200**
medicinske sestre **dect 8623, 7243, MT 775**
popoldne/dežurstvo:
nadzorni anesteziolog **dect 8842**
nadzorna anestezijska medicinska sestra **8202**

SISTEMSKA TOKSIČNOST LOKALNIH ANESTETIKOV

Nevrotoksičnost:
metalni okus, otrpel jezik,
zvenenje v ušesih,
motnje vida, tonično klonični krči,
izguba zavesti

Kardiotoksičnost:
hipertenzija, hipotenzija, tahikradija,
bradikardija, motnje ritma, srčni zastoj

1. prekini dovajanje lokalnega anestetika
2. kliči reanimacijo
3. dodaj 100% O_2, sprostitev dihalne poti oz. predihavanje z obrazno masko in ročnim dihalnim balonom
4. zdravi krče: midazolam, propofol
5. zdravi motnje srčnega ritma, srčnega zastoja
6. intralipid 20% 1,5 ml / kg v bolusu, ponovi bolus čez 5 min, nato infuzija 0,25 – 0,5 ml / kg / min ob hipotenziji

univerzitetni klinični center ljubljana
Klinični oddelek za anesteziologijo in intenzivno terapijo operativnih strok

MAKING PAIN VISIBLE

Ward nurses record VAS pain scores :

in intensive care units 1x / hr

on surgical wards: 1x / 3 hrs

SEEPAIN
CAMPAIGN

SHEET OF ANALGESIA AND COMPLICATIONS „YELLOW PAPER“

- WRITTEN BY ANAESTHESIOLOGIST IN OPERATING ROOM
- RECOVERY ROOM: VAS SCORES
- SURGICAL WARD: PAIN NURSE RECORDING DURING DAILY VISITS
- EPIDURAL CATHETER REMOVAL / IV PCA REMOVAL: 1 COPY IN PATIENT’S DOCUMENTATION, 1 COPY FOR APS DATA ANALYSIS

RECORDINGS ON „YELLOW PAPER“

- PAIN SCORES
- ADDITIONAL ANALGESIC REQUIREMENTS
- NUMBER OF DAILY BOLI of PCA
- SIDE EFFECTS
- COMPLICATIONS
- CATHETER REMOVAL

MONTHLY STATISTICAL ANALYSIS
QUALITY ASSESSMENT REPORTS 1 X PER YEAR

- NUMBERS OF DIFFERENT TECHNIQUES
- NUMBERS OF DAILY VAS ASSESSMENTS
- AVERAGE DAILY VAS SCORES
- NUMBERS OF SIDE EFFECTS AND COMPLICATIONS

ALL TOGETHER AND SEPARATELY FOR EACH SURGICAL DEPARTMENT

ANNUAL REPORTS

- REPORTS PRESENTED ANNUALLY AT QUALITY ASSESSMENT MEETINGS OF CLINICAL DEPARTMENT FOR ANAESTHESIA AND INTENSIVE CARE
- ANALYSIS OF EFFECTIVENESS AND SAFETY
- IMPROVEMENT SUGGESTIONS

ANNUAL MEETINGS WITH SURGICAL DEPARTMENTS

PRESENTED BY

APS ANAESTHESIOLOGIST, PAIN NURSE, TEAM ANAESTHESIOLOGISTS

- PRESENTATION OF RESULTS
- DISCUSSION WITH SURGEONS AND WARD NURSES
- IMPROVEMENT SUGGESTIONS

SAFETY

STANDARDISED ANALGESIC MIXTURES FOR REGIONAL ANALGESIA PREPARED BY UMC PHARMACY

Substance	Analgesic mixture A	Analgesic mixture M	Analgesic mixture G	Analgesic mixture C
Levobupivakainijev klorid 0,125% (1,25 mg/ml)	200 ml	200 ml	200 ml	200 ml
Levobupivakainijev klorid 0,75% (7,5 mg/ml)	-	20 ml	40 ml	20 ml
Morfinijev klorid	4 mg	4 mg	-	-
Klonidinijev klorid	75 mcg	-	-	-
Total volume	200 ml	220 ml	240 ml	220 ml

NUMBER OF PATIENTS WITH DIFFERENT TYPES OF ANALGESIA:

changed with development of new techniques of analgesia and new surgical techniques

YEAR	i.v. opioid PCA analgesia	epidural PCEA analgesia	Peripheral catheter analgesia	Single shot PB	Wound catheter analgesia	Paliative care analgesia – elastomeric pumps
2009	3061	774	9	?	75	-
2012	2803	622	12	?	62	-
2014	3764	559	32	?	83	-
2016	4023	426	202	343	175	50
2017	3586	409	503	458	144	73

EFFECTIVE POSTOPERATIVE PAIN RELIEF IN UMC LJUBLJANA in 2017

Type of analgesia	VAS/NRS 0 - 3	VAS /NRS 4 - 7	VAS/NRS 8 -10
IV PCA	93,7%	6,2%	0,3%
Epidural PCEA	92,5%	7,2%	0,3%
Wound catheter analgesia	95,5%	4,5%	0,0%
Continuous peripheral blocks	87,7%	11,7%,	0,4%
Single shot peripheral blocks	84,8%	14,6%	0,6%

FEW COMPLICATIONS OF EPIDURAL PCA (PCEA 409) in 2017

Complication	Number	%
Sensoric blockade	23	5,7
Motor blockade	21	5,1
Pain in the injection site	1	0,4
Tachnical problems: catheter fell out, not functioning..	25	6,2

FEW COMPLICATIONS OF IV PCA (3586)
PCA PIRITRAMID 0,5 MG / ML

Complication	number	%
nausea	150	4,2
vomiting	161	4,5
Sedation level 2-3	150	4,2

ACHIEVEMENTS OF 20 YRS ACUTE PAIN SERVICE IN UMC LJUBLJANA

- **Pain is REGULARLY assessed and recorded as 5th vital sign on all surgical wards**
- **Effective postoperative pain relief in all recovery rooms and surgical wards: VAS ≤ 3**
- **There are few side effects and no serious complications: about 5%**
- **Regular monthly education programs for ward nurses : obligatory attended, positive results**
- **High patient satisfaction with quality of postoperative pain relief: results of regular inquiries**

4,9 points (of 5 possible)

APS PLANS FOR THE FUTURE

- REGULAR APS ANAESTHESIOLOGISTS AND PAIN NURSES
- APS NURSES TILL 8pm AND ON WEEKENDS
- MORE ANALGESIC MIXTURES PREPARED IN ADVANCE BY HOSPITAL PHARMACY
- IMPROVEMENT OF PALLIATIVE CARE
- EDUCATION PROGRAM FOR PATIENTS
- COMPUTERISED DATA COLLECTION AND ANALYSIS

SVAKOG DANA U SVAKOM POGLEDU
SVE VIŠE NAPREDUJEM!

Lecture 5.2

Role of the Clinical Department of Anesthesiology and Surgical Intensive Therapy in implementation of the acute pain management service at University Medical Center Ljubljana

assoc. prof. Neli Vintar, MD, PhD

Office of Acute Pain Management, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

FOR APS ORGANISATION:

MAJOR ROLE OF CLINICAL DEPARTMENT

- HUMAN RESOURCES
- PROTOCOLS
- EQUIPMENT
- EDUCATION

APS: LOW COST MODEL

nurse-based anaesthesiologist supervised

NO EXTRA MONEY FOR APS

for National insurance: NO COST MODEL

MAJOR ROLE OF CLINICAL DEPARTMENT

HUMAN RESOURCE MANAGEMENT: RECRUITMENT

A NEW POSITION ON EVERYDAY PROGRAMME:

1 ANAESTHESIOLOGIST AND 3-4 PAIN NURSES

WRITTEN PROTOCOLS

- GENERAL PROTOCOLS: IV AND REGIONAL ANALGESIA
- INSTRUCTIONS FOR SIDE EFFECTS MANAGEMENT
- INSTRUCTIONS FOR CATHETER NURSING

EQUIPMENT

- PERIOPERATIVE:

  US machines for peripheral nerve blocks

  catheters and needles

- POSTOPERATIVE:

  PCA pumps, elastomeric pumps

COLLABORATION WITH HOSPITAL PHARMACY

STANDARDIZED ANALGESIC MIXTURES:

- PREPARED IN STERILE ENVIRONMENT
- PREPARED IN ADVANCE (NOT ON SURGICAL WARDS!)
- LABELLED: AVOIDING ERRORS

EDUCATION

- SURGEONS: annual meetings
- SURGICAL WARD NURSES: regular education
- PATIENTS: instructions

STATISTICAL ANALYSIS AND QUALITY ASSESSMENT

- DAILY VISITS: VAS scores, side effects, technical problems,

All data noted by pain nurses and then written in computer programme for analysis

- MONTHLY statistical analysis

- ANNUAL reports and AUDITS

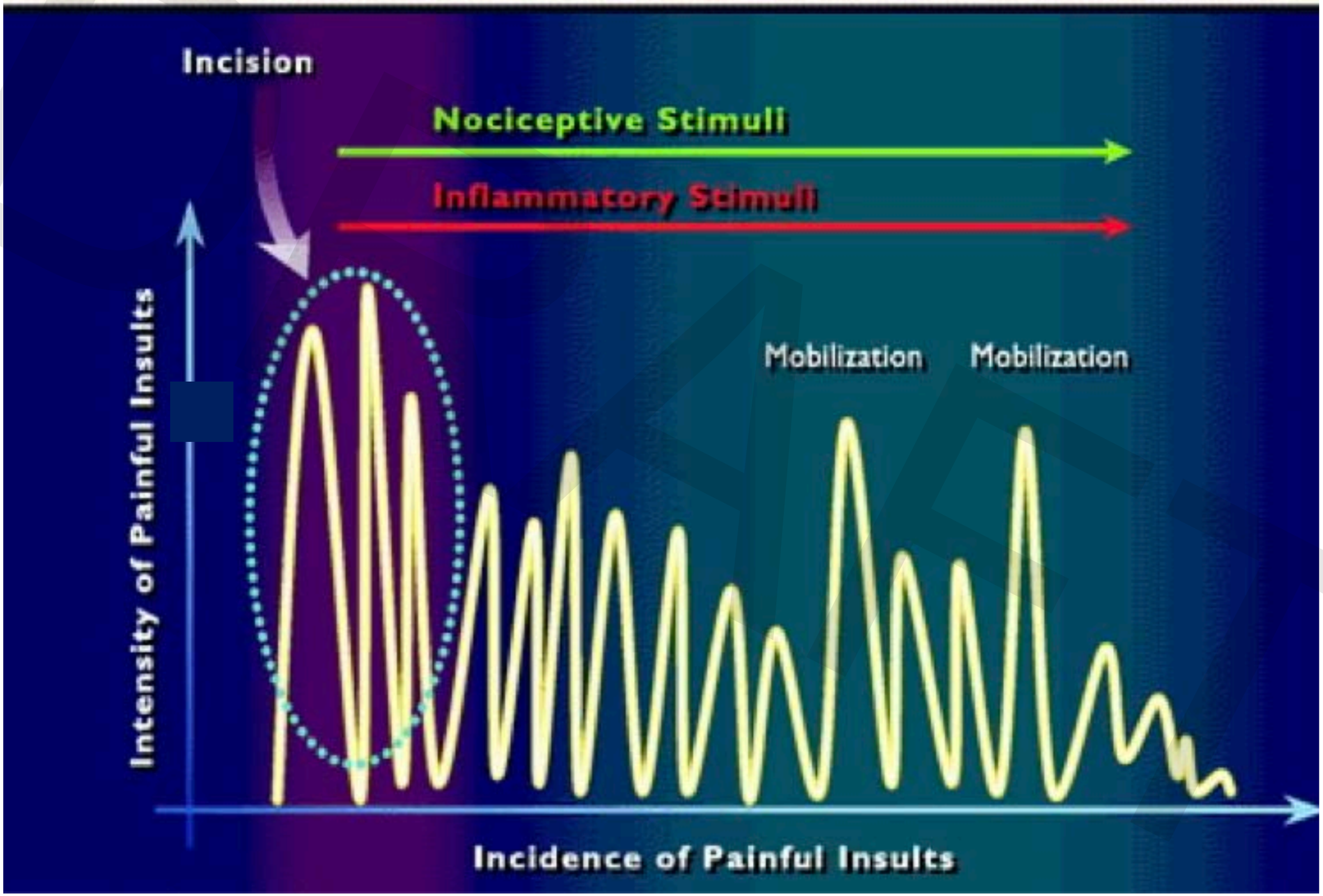
Lecture 5.3

Implementation of protocols for acute pain management in clinical practice

assoc. prof. Neli Vintar, MD, PhD

Office of Acute Pain Management, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

POSTOPERATIVE PAIN: acute pain model



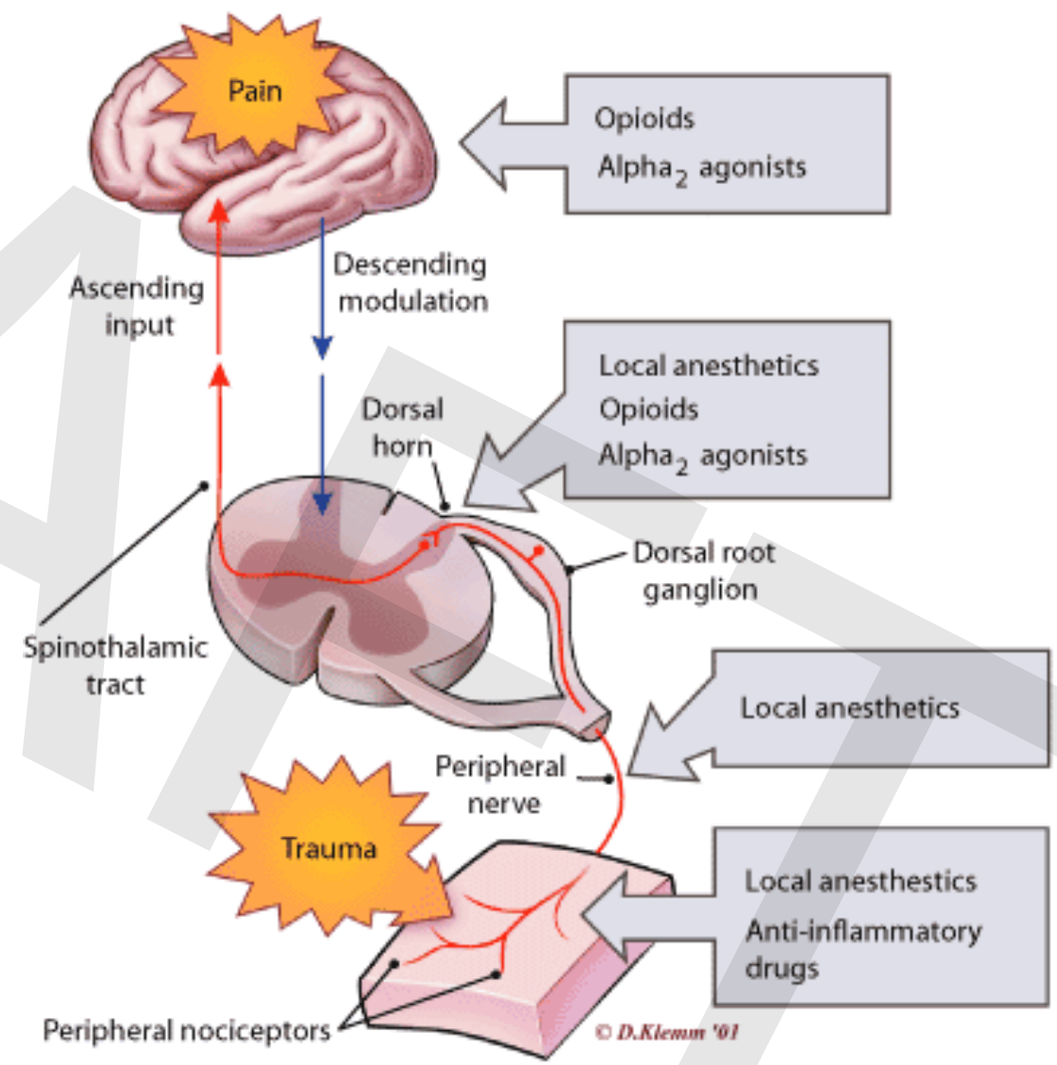
POSTOPERATIVE PAIN MANAGEMENT

SYSTEMIC TECHNIQUES

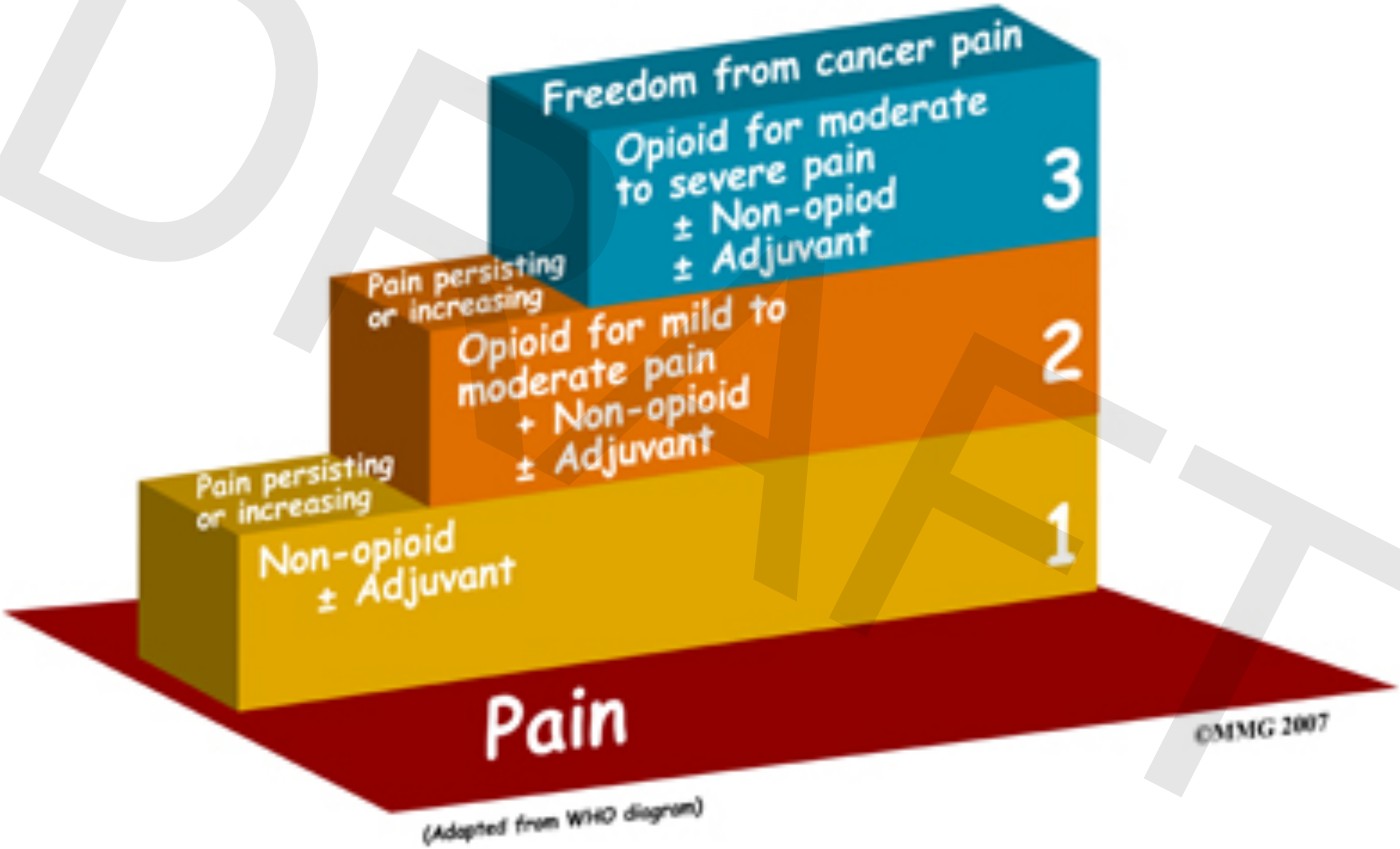
- IV analgesia
- Oral analgesia

REGIONAL TECHNIQUES

- Continuous epidural blockade
- Peripheral nerve blocks
- Wound catheter analgesia



WHO Three-Step Analgesic Ladder



Blaga bolečina	Srednje močna bolečina	Močna bolečina
VAS ≤4	VAS 5-7	VAS 7-10
-hernioplastika	-operacija kolka	-torakotomija
-laparoskopije	-odstranitev žolčnika	-serijske frakture reber
-varice	-nevrokirurške operacije	-totalna endoproteza kolena
-manjša travma		-večje abdominalne operacije
-artroskopije	šibki opioidi IV NSAR , paracetamol	Epiduralna analgezija (PCEA), blokada živčnega pleteža, močni opioidi IV (PCA)

Paracetamol
+ infiltracija rane z LA
NSAR

Blokada perifernega živca (enkratno ali preko katetra)

ESRA.Postoperative Pain Management

NONOPIOIDS FOR POSTOPERATIVE PAIN

Paracetamol

Metamizol

Nonsteroidal antiinflammatory drugs (NSAIDs) - sometimes controversial - (wound healing? Intestinal oxygen supply?)

WEAK AND STRONG OPIOIDS

- **WEAK:** tramadol **IV and oral, longacting and shortacting**

- **STRONG:** **IV:** piritramid, morphin, oxycodone

  oral longacting tapentadol, oxycodone, morphin, hydromorphon;

  oral shortacting tapentadol, morphin, fentanil

  transcutaneous: fentanil, buprenorphin

RECOMMENDED ANALGESIC COMBINATIONS

- OPIOIDS ARE COMBINED WITH PARACETAMOL, METAMIZOL AND NSAIDs
- OPIOIDS ARE NEVER PRESCRIBED AS MONOTHERAPY
- DO NOT COMBINE DIFFERENT NSAIDs : decide for one and use it up to max. dose
- DO NOT COMBINE DIFFERENT OPIOIDS
- USE LONGACTING ORAL OPIOIDS FOR PREDICTABLE PAIN,
- SHORTACTING OPIOIDS FOR TITRATION AND BREAKTHROUGH PAIN

STANDARDIZED ANALGESIC PROTOCOLS

- STANDARDIZED OPERATING PROCEDURES (SOP) ALSO FOR POSTOPERATIVE ANALGESIA
- WRITTEN BY TEAM ANAESTHESIOLOGISTS
- SPECIFICALLY FOR EACH SURGICAL SPECIALITY

ANALGESIA PROTOCOL :
WRITTEN BY ANAESTHESIOLOGIST IN THE OR ON THE „YELLOW PAPER“

640

LIST ANALGEZIJE IN ZAPLETOV

Analgezija po katetru

univerzitetni kliinični center Ljubljana

Pacient (ime in priimek):	Datum:
Datum rojstva:	Diagnoza:
ASA:	Oddelek: Blok:

VRSTA ANALGEZIJE	ANESTEZIOLOG (ime in priimek)	Parafa
EPIDURALNA	ANALGETIČNA MEŠANICA	
INTRAVENSKA	◯ 0,125% Chirocain 200 ml + 0,75% Chirocain 20 ml = 0,18% Chirocain 220 ml	
KATETER OB ŽIVEC/ V OPERATIVNO RANO	◯ 0,125% Chirocain	

ODMERJANJE:	ZAČETNI PREDPIS
trajna infuzija (ml/h)	
enkratni odmerek (ml)	
Izključitev (min)	
skupni odmerek (ml)	

Ob nezadostni analgeziji (VAS > 3) dodaj:	DODATNA ZDRAVILA REDNO!
1. Dipidolor mg i.v. /4h	1. Neodolpasse 250 ml/12h i.v.
2.	2. Paracetamol 1g/6h i.v.
3. Pri nedelujočem katetru: Dipidolor mg + Analgin 1,25 g	3.
4. v FR 100 ml/6h → 50 ml/h	4.

OCENJEVANJE BOLEČINE NA KO

VAS v mirovanju pred/po terapiji – če ocenjujemo VAS pri aktivnosti (kašelj, gibanje) VAS označimo z A (7A/5A)

Op.												
1.dan												
2.dan												
3.dan												
4.dan												
5.dan												
Ura	6 7	8 9	10 11	12 13	14 15	16 17	18 19	20 21	22 23	24 1	2 3	4 5

PROTOCOLS FOR SYSTEMIC ANALGESIA

FIRST POSTOPERATIVE DAY : **INTRAVENOUS ANALGESIA**

MODERATE PAIN: TRAMADOL / METAMIZOL / METOCLOPRAMIDE cont. IV infusion, combined with Paracetamol 1gr/ 8 – 6 hrs, when appropriate Neodolpasse (diclofenac + orphenadrine)/ 12 hrs

SEVERE PAIN: IV PIRITRAMIDE PCA (45 mg piritramide + physiol. sol up to 90 ml= 0,5mg/ml), 3-5 ml/hr contin.inf. , bolus 3- 5 ml per 30 min, plus REGULAR treatment Paracetamol 1g/ 8-6 hr, Metamizol 2,5 gr/ 12hrs, when appropriate Neodolpasse (diclofenac + orphenadrine)/ 12 hrs

2ND/ 3RD POSTOPERATIVE DAY (PATIENT CAN CONSUME FLUIDS OR FOOD): ORAL ANALGESICS:

MODERATE PAIN: TRAMADOL / PARACETAMIL / METAMIZOL / NSAIDs

SEVERE PAIN: TAPENTADOL OR OXYCODONE PLUS METAMIZOL, PARACETAMOL, NSAIDS

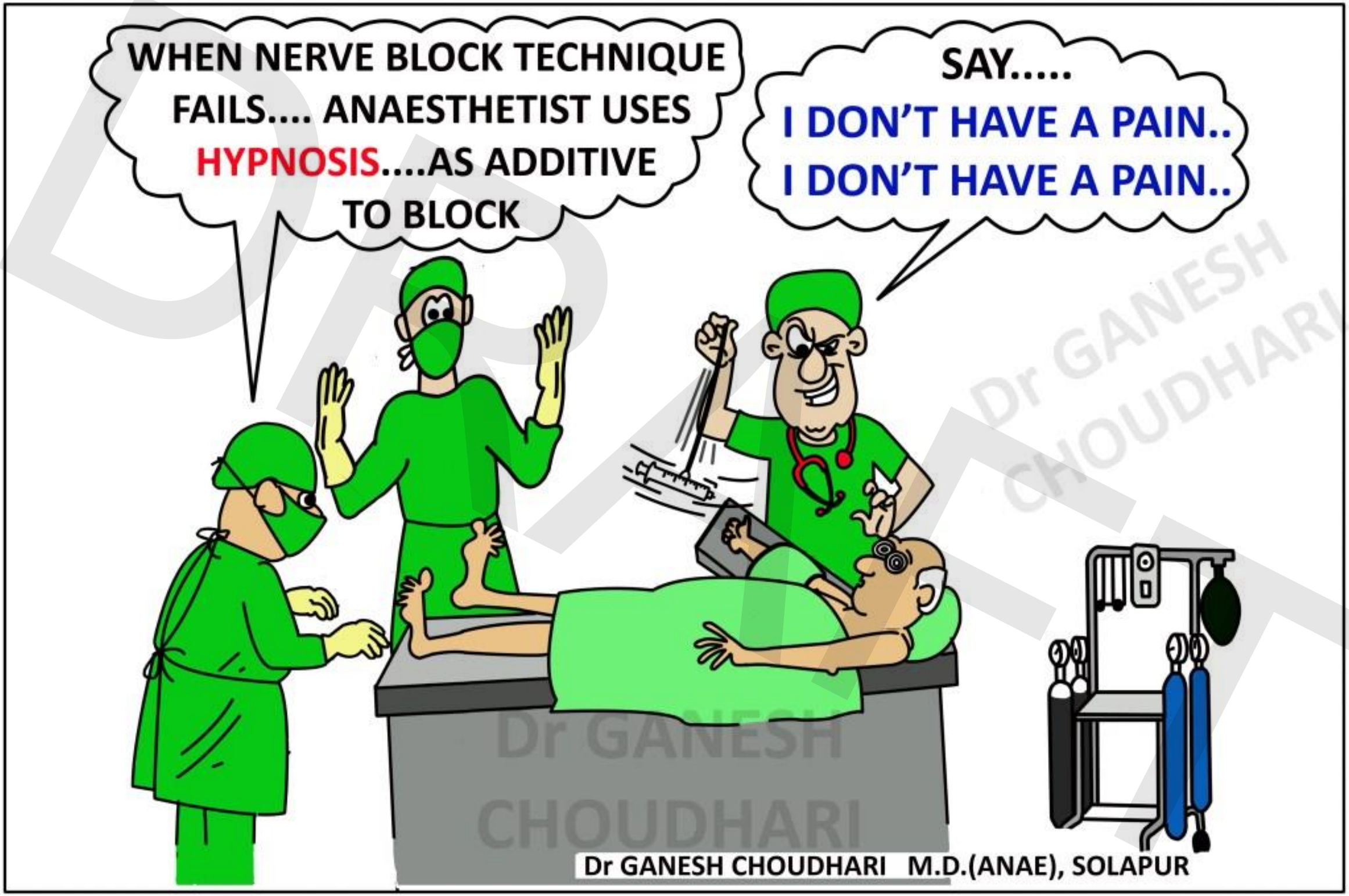
PROTOCOLS FOR REGIONAL ANALGESIA

- **EPIDURAL ANALGESIA: PCEA** , ANALGESIC MIXTURE A or M 3-6 ML/HR, + BOLUS 3-6 ML / 30 MIN (3 – 5 days, max 3 weeks)
- **CONTINUOUS PERIPHERAL NERVE BLOCKS: PCA** LA MIXTURE G or C 2- 6 ML/HR + 6-9ML BOLUS/ HR (3 – 7 days, max 3 weeks)
- **SINGLE SHOT PERIPHERAL NERVE BLOCK**: postoperatively Piritramide 5mg / metamizol 1,25gr in 100 ml physiol.sol / **6 hrs REGULARLY!**
- **WOUND CATHETER ANALGESIA: ELASTOMERIC PUMPS** LA 2-5 ml/hr, usually 48 hrs
- **WOUND INFILTRATION: single shot – orthopedics: large volume infiltration (LIA)**
- LOCAL ANESTHETIC: LEVOBUPIVACAINE, ROPIVACAINE

STANDARDISED LOCAL ANAESTHETIC MIXTURES PREPARED BY UMC PHARMACY

Substance	Analgesic mixture A	Analgesic mixture M	Analgesic mixture G	Analgesic mixture C
Levobupivakainijev klorid 0,125% (1,25 mg/ml)	200 ml	200 ml	200 ml	200 ml
Levobupivakainijev klorid 0,75% (7,5 mg/ml)	-	20 ml	40 ml	20 ml
Morfinijev klorid	4 mg	4 mg	-	-
Klonidinijev klorid	75 mcg	-	-	-
Total volume	200 ml	220 ml	240 ml	220 ml

- **NUMBER OF CONTINUOUS PERIPHERAL NERVE BLOCKS IS INCREASING**
- **FOR CPNB: LA MIXTURE G AND C**


WHEN NERVE BLOCK TECHNIQUE FAILS.... ANAESTHETIST USES HYPNOSIS....AS ADDITIVE TO BLOCK
SAY.....
I DON'T HAVE A PAIN..
I DON'T HAVE A PAIN..
Dr GANESH CHOUDHARI M.D.(ANAE), SOLAPUR

MULTIMODAL ANALGESIA
combination of different techniques and different drugs

REGIONAL TECHNIQUE

(WOUND INFILTRATION, large volume infiltration)

PLUS

SYSTEMIC ANALGESIA

paracetamol / metamizol / NSAID / opioid

AIM: IMPROVE EFFECTIVENESS, MINIMIZE OPIOID REQUIREMENTS

ADVANTAGES OF REGIONAL ANALGESIA TECHNIQUES

- regional analgesia with LA **avoids opioid side effect**s: sedation, dizziness, PONV
- **enables early mobilisation:** effective analgesia for physiotherapy

PATIENT CONTROLLED ANALGESIA (PCA) PUMPS

- PCA pumps are very accurate and safe, for multiple use
- Patient is actively involved
- Independent from staff members
- Continuous analgesic infusion / no continuous infusion plus boli within programmed safe limits
- Record given boli and attempted boli
- Daily analgesic consumption is calculated

ELASTOMERIC PUMPS

- DISPOSABLE
- CONTINUOUS FLOW 2ml/h OR 5 ml/h
- FOR PALIATIVE CARE
- FOR WOUND CATHETER ANALGESIA

MONITORING OF PATIENTS WITH PCA / ELASTOMERIC PUMPS

WARD NURSES:

- SEDATION MONITORING EVERY 3 HRS
- PAIN ASSESSMENT AND RECORDING EVERY 3 HRS
- RECOGNISING SIDE EFFECTS AND POSSIBLE COMPLICATIONS
- CHANGING BATTERIES OF PCA PUMPS WHEN NEEDED

PAIN NURSES TAKE CARE OF ALL PCA PUMPS

- DAILY VISITS OF ALL PATIENTS WITH PCA PUMPS AND CATHETERS
- DAILY CALCULATIONS OF ANALGESIC CONSUMPTIONS, RECORDING ON THE „YELLOW PAPER“
- DAILY ADJUSTMENTS OF PCA PUMPS PROGRAMS - ACCORDING TO EACH PATIENT’S NEEDS
- AFTER DISCONNECTION OF PCA PUMP, PAIN NURSE COLLECTS ALL PUMPS AND CLEANS THEM
- TAKES CARE OF REPAIR WHEN NECESSARY

EXAMPLE OF
AN ANNUAL MEETING ON SURGICAL DEPARTMENT
WITH SURGEONS AND WARD NURSES

- PRESENTING THE ACHIEVEMENTS
- SUGGESTING SOME IMPROVEMENTS ACCORDING TO QUALITY ASSESSMENT STANDARDS

Effectiveness of postoperative pain management After major urologic procedures in 2016

Year 2016	Epidural analgesia	IV PCA analgesia
Number of patients	39	452
VAS pain scores < 3	92,6%	93,8%

Postoperative analgesia after urological procedures: Side effects analysis

2016	Side effects of epidural PCEA	Side effects of IV PCA
PONV	/	17/ 3,7%
hypotension	1/ 2,6%	1/ 0,2%
pruritus	1/ 2,6 %	
Sedation st. 2	1 / 2,6 %	13/ 2,8%

Side effects / complications of epidural analgesia after urological procedures

Sensoric block	4 pts/ 10,2 %
Motor block	2 pts/ 5,1 %
Bleeding at the puncture site of EK	1 pt/ 2,6 %
Technical problems	2 pts/ 5,1%

PAIN ASSESSMENT ON SURGICAL WARDS in 2016

Recommendation:
1x / 3hrs = 8x / day

Clinical department	Average number of assessments /per pt/ day I.V. PCA	Average number of assessments per pt/ day PCEA
Urology	3,4x = 42,5%	4x = 50%
Abdominal surgery	5,6x = 70%	6 x = 75%
Thoracic surgery	8x = 100%	10 x = 120%

Lecture 5.4

Education of healthcare providers on acute postoperative pain management at University Medical Center Ljubljana

assoc. prof. Neli Vintar, MD, PhD

Office of Acute Pain Management, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

Vesna Svilenković, RN

Head nurse, Acute pain management service, Clinical Department of Anesthesiology and Surgical Intensive Therapy, University Medical Center Ljubljana

APS
PAIN NURSE ROLE IN EDUCATION

- Preparing nursing and monitoring standards and protocols
- Education programmes for surgical ward nurses, midwives
- Education programs for newly employed in anaesthesia department
- Preparing Quality assessment protocols

POSTOPERATIVE PAIN MANAGEMENT : EDUCATION PROGRAMS

- Standards for regular education programs for postoperative pain management
- Standards for postoperative pain management in adults
- Standards for postoperative pain management in children
- Bed-side education on surgical wards
- Clinical practice for students of health care

STANDARDS FOR EDUCATION PROGRAMS FOR POSTOPERATIVE PAIN MANAGEMENT

- Education programs were confirmed by the Board of head nurses of all surgical departments in UMC
- All surgical departments are included (obligatory)
- Program: 8hrs of theory and practice for health care providers who take care of surgical patients and treat postoperative pain

PROGRAMME FOR HEALTH CARE PROVIDERS

7.00 - 7.15 Registration
7.15 – 7.40 **Pathophysiology of pain** prim.Gorazd Požlep, MD
7.45 - 8.15 **Pharmacology of analgesics for postoperative pain management.** doc.dr. Neli Vintar, MD
8.15 – 9.00 **Regional techniques for acute pain management.** Goran Jeglič, MD
9.00 – 9.10 **APS organization.** Vesna Svilenković, DN
9.10 – 9.30 **Acute pain assessment.** Vesna Svilenković, DN

9.30 – 10.00 **Break**

10.00 – 10.20 **Monitoring of patient with EA.** Mojca Jensterle, DN
10.20 – 10.40 **Monitoring of patient with wound catheter analgesia.** Sonja Trobec, DN
10.40 – 10.50 **Analgesic mixtures for elastomeric pumps.** Sonja Trobec, DN
10.50 – 11.10 **Monitoring of patients with IV opioid analgesia.** Jožica Marolt, DN
11.10 – 11.30 **Monitoring of patients with peripheral nerve catheters.** Vera Medar,DN
11.30 – 11.50 **Ethical aspects of acute pain management.** Karmen Zupančič, DN

11.50 – 12.15 **Break**

12.15 – 14.30 **Workshops:**

1. **Mismatch between subjective pain assessment and physiological signs of pain**
2. **Monitoring of patients with IV opioid analgesia**
3. **Monitoring of patients with epidural analgesia**
4. **Handling with PCA pumps**

14.30 – 15.00 TEST (written)

GOALS OF EDUCATION

- To inform about ethical principles of acute pain management
- To inform about organisation of APS
- To understand physiology and pathophysiology of pain
- To learn the pharmacology of pain killers
- To practice monitoring and assessment of acute pain – different scoring systems
- To get theoretical and practical knowledge of different pain management techniques
- To learn how to monitor patients with different analgesic techniques
- To learn about recognising and treatment of possible side effects and complications

STANDARDISED EDUCATION PROGRAMMES FOR ACUTE PAIN MANAGEMENT

- Started in 2009
- Organised 6x - 10x / year
- Participants get licence credit points
- Heath care providers come from 10 different clinical departments.
- 87.7% of participants successfully passed final exam
- Education program got Excellent grade assessment (5) from 85.8% participants.

INTERNAL PAIN PROGRAMME FOR ANAESTHESIA AND INTENSIVE CARE HEATH CARE PROVIDERS

- Pain management and APS organisation
- Education programme about pain and APS for the newcomers
- (Chronic) wound pain management

INFORMATIVE EDUCATION PROGRAM FOR NONSURGICAL HEALTH CARE PROVIDERS

- ORGANISED REGULARLY 6X PER YEAR
- SHORT PROGRAMME : 2 HRS

Physiology of acute and chronic pain

Presentation of analgesics and analgesic techniques

Pain assessment

Patient monitoring

Recognising of side effects and complications - and their treatment

INTERNAL PERIODIC PAIN MEETINGS FOR ANAESTHESIOLOGISTS AND ANAESTHESIA NURSES (ALSO INTENSIVE CARE)

- New pain management techniques
- New PCA pumps
- New pain scores
- Whenever needed: acute problem….

Operational pain group, on behalf of Slovenian health care provider association for anaesthesiology, intensive therapy and transfusiology

GUIDELINES AND GOALS:

- Pain as 5th vital sign is a standard sine qua non
- Pain acknowledgement as important limitation for QOL
- Information about pain management for patients and their relatives
- Education
- Communication with other societies abroad about pain management practice
- Research about quality of pain management, patient satisfaction…

FUTURE PLANS

- EDUCATION PROGRAMMES FOR PATIENTS

Rawal N. Current issues in postoperative pain management

Eur J Anaesthesiol 2016; 33:160-171

- Irrespective of the APS model, teaching programmes to upgrade the role of ward nurses, standardised protocols and regular audits are necessary to address the problem

- This model is a resource for education and training and promotion of good clinical practice.

CONCLUSIONS

Education improves the quality of postoperative pain management

APS plays an important role in education of health care providers involved in postoperative pain management

Lecture 6.1

Pain Management at the Institute of Oncology

Office of Outpatient Pain Management

Ana Pekle Golež, MD

Head, Department of Oncological Anesthesiology and Intensive Care, Institute of Oncology Ljubljana

Institute of Oncology

300 beds

3 main clinical departments:

- Surgery
  - Department of anaesthesiology
- Internal medicine
- Radio-therapy

Department of anaesthesiology

- Anaesthesiology
- ICU
- Pain management
- Department for CVC

Pain management clinic

5 days/week, 8 hours/day

Acute pain service

- hospitalised patients after surgery
- Pain nurses

Chronic pain management

- Outpatient cancer/non-cancer Pain program
- Inpatient Cancer Pain program

Cancer Pain Management Team

multidisciplinary work

- Anaesthesiologist
  - pain medicine/ interventional pain management
  - acupuncture
- Pain nurse
- Oncologist
- Physiotherapist
- Psycologist
- Clinical pharmacologist
- Paliative medicine specialist
  - Social worker

Pain medicine:

multimodal approach

Pharmacological treatment

Regional anaesthesia/analgesia treatment, US confirmation

- Peripheral nerves/ peripheral plexus blocks/ catheters
- Paravertebral nerves blocks
- PECS I and PECS II blocks

Interventional pain management

- Central nerve blocks/ catheters(tunnelled)
  - Epidural catheters(epidurography)
  - Subarachnoidal catheters
  - Neurolytic blocks

- Elastomeric pump s.c. / i.v
- Palliative sedation

Pain nurse role

Acute pain service

- At the ward: support, supervision, education
- Physician's support

Patient's and caregiver's support

- Advises how to help theirselves
- methods of pain management

Chronic pain service

- Assistance at interventional procedures
- psycho-social support
- administrative

Oncologist

- Deciding about the stage and prognosis of the cancer illness
- Use of chemo Th, radio Th , surgery as supportive/symptomatic pain therapy
- Admittance of patients in pain to the ward

Physiotherapist

- Rehabilitation after surgery
- Prevention of pain behaviour
- Laser, magnet, US, TENS- pain revealing Th
- Management of patient‘s surrounding

Psychologist
Psycho-oncology

group supportive therapy

- Cognitive-behavioural therapy
- Attention-diversion strategies: relaxation

individual therapy

- Psychotherapy

Pain management

Pain assessment: making pain visible

- VAS score
- questionnaires

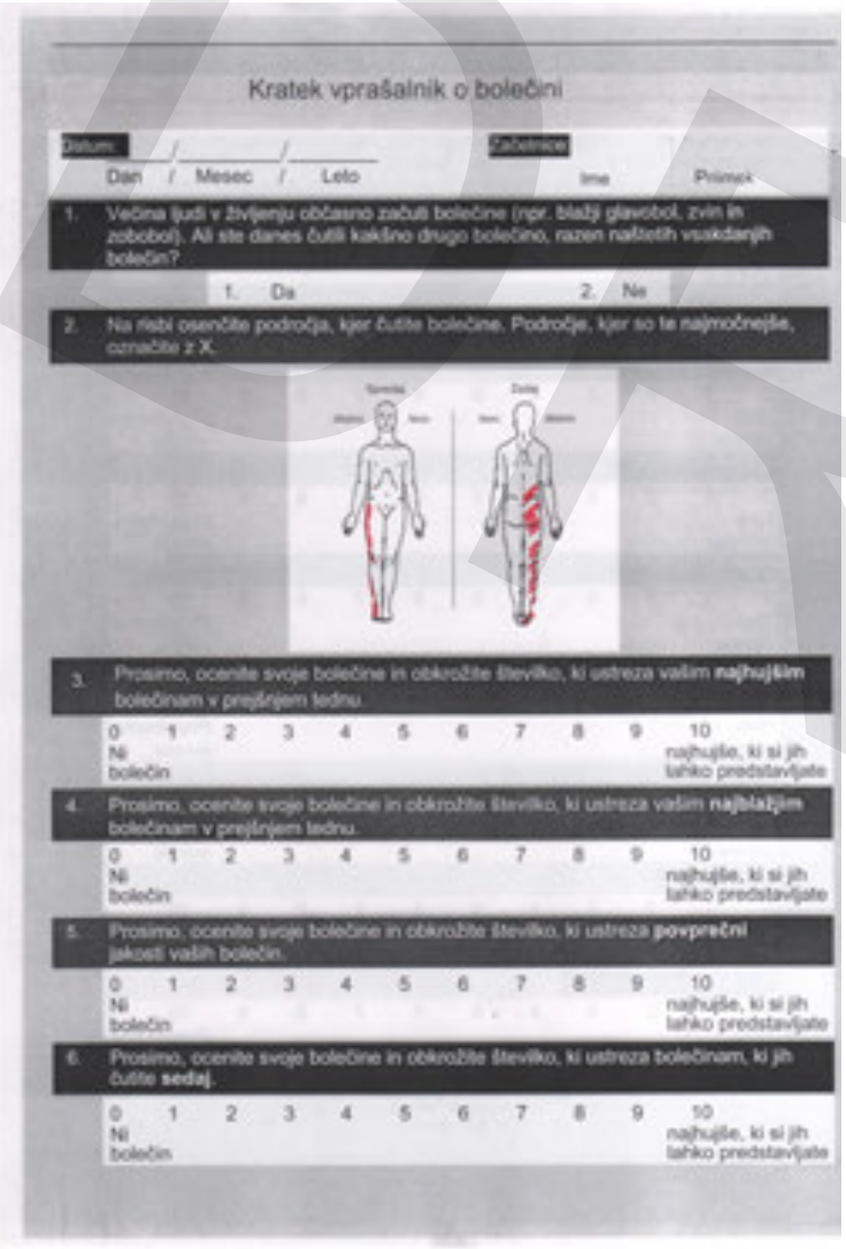
Multimodal approach

- mechanism-based strategies
- pharmacological and non-pharmacological
- regional analgesia
- interventional

Multidisciplinary team work, bio-psycho-social model

Complementary medicine support

- acupuncture
- cannabinoids


Kratek vprašalnik o bolečini

Datum: ___/___/___ Dan / Mesec / Leto

Začetnice: Ime Priimek

1. Večina ljudi v življenju občasno začuti bolečine (npr. blažji glavobol, zvin ali zobobol). Ali ste danes čutili kakšno drugo bolečino, razen naštetih vsakdanjih bolečin?

1. Da 2. Ne

2. Na risbi osenčite področja, kjer čutite bolečine. Področje, kjer so te najmočnejše, označite z X.

3. Prosimo, ocenite svoje bolečine in obkrožite številko, ki ustreza vašim **najhujšim** bolečinam v prejšnjem tednu.

0 1 2 3 4 5 6 7 8 9 10
Ni bolečin — najhujše, ki si jih lahko predstavljate

4. Prosimo, ocenite svoje bolečine in obkrožite številko, ki ustreza vašim **najblažjim** bolečinam v prejšnjem tednu.

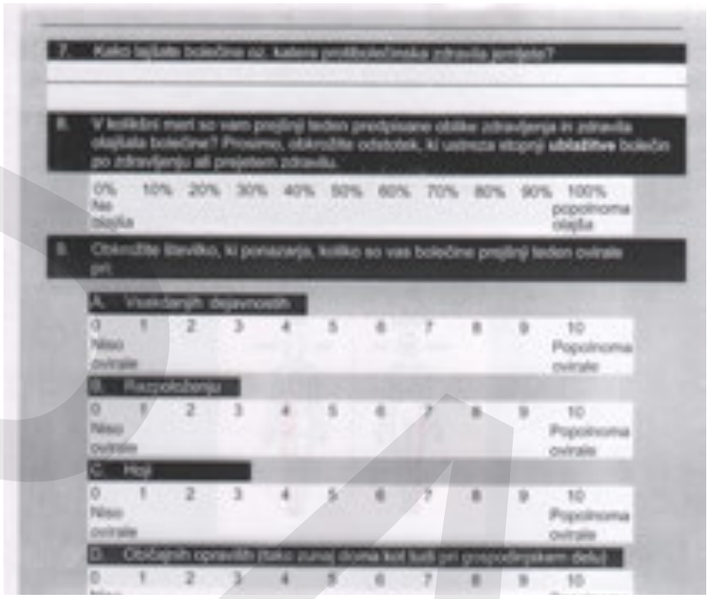
0 1 2 3 4 5 6 7 8 9 10
Ni bolečin — najhujše, ki si jih lahko predstavljate

5. Prosimo, ocenite svoje bolečine in obkrožite številko, ki ustreza **povprečni** jakosti vaših bolečin.

0 1 2 3 4 5 6 7 8 9 10
Ni bolečin — najhujše, ki si jih lahko predstavljate

6. Prosimo, ocenite svoje bolečine in obkrožite številko, ki ustreza bolečinam, ki jih čutite **sedaj**.

0 1 2 3 4 5 6 7 8 9 10
Ni bolečin — najhujše, ki si jih lahko predstavljate


7. Kako lajšate bolečine oz. katera protibolečinska zdravila jemljete?

8. V kolikšni meri so vam prejšnji teden predpisane oblike zdravljenja in zdravila olajšala bolečine? Prosimo, obkrožite odstotek, ki ustreza stopnji **ublažitve** bolečin po zdravljenju ali prejetem zdravilu.

0% Ne olajša — 10% 20% 30% 40% 50% 60% 70% 80% 90% — 100% popolnoma olajša

9. Obkrožite številko, ki ponazarja, kolikšno so vas bolečine prejšnji teden ovirale pri:

A. Vsakdanjih dejavnostih

0 1 2 3 4 5 6 7 8 9 10
Nisem ovirale — Popolnoma ovirale

B. Razpoloženju

0 1 2 3 4 5 6 7 8 9 10
Nisem ovirale — Popolnoma ovirale

C. Hoji

0 1 2 3 4 5 6 7 8 9 10
Nisem ovirale — Popolnoma ovirale

D. Običajnih opravilih (tako zunaj doma kot tudi pri gospodinjskem delu)

0 1 2 3 4 5 6 7 8 9 10


POGOVOR Z BOLNIKOM

1. vprašanje:

1 – **pekoče**	❒	❒
2 – **mravelja**	❒	❒
3 – **stresa kot elektrika**	❒	❒

2. vprašanje:

4 – **mravljinčenje**	❒	❒
5 – **zbadanje**	❒	❒
6 – **zaspanost**	❒	❒
7 – **utrujenost**	❒	❒

PREGLED BOLNIKA

3. vprašanje:

1 – **zmanjšana občutljivost za dotik**	❒	❒

Questionnaires for making pain objective

DN 4 – for neuropathic pain

Palliative care levels at the Institute of Oncology

Basic level

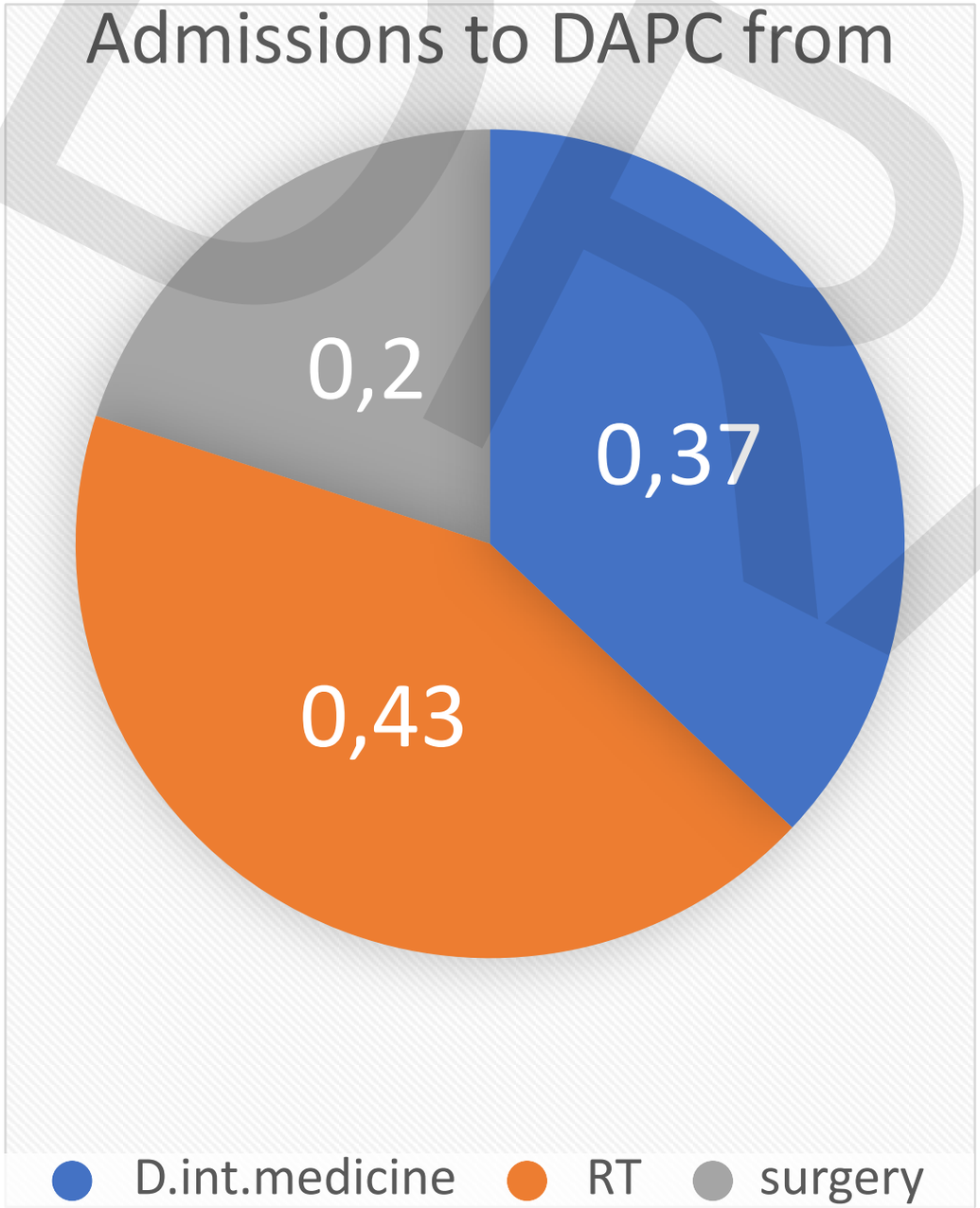
- All clinical departments

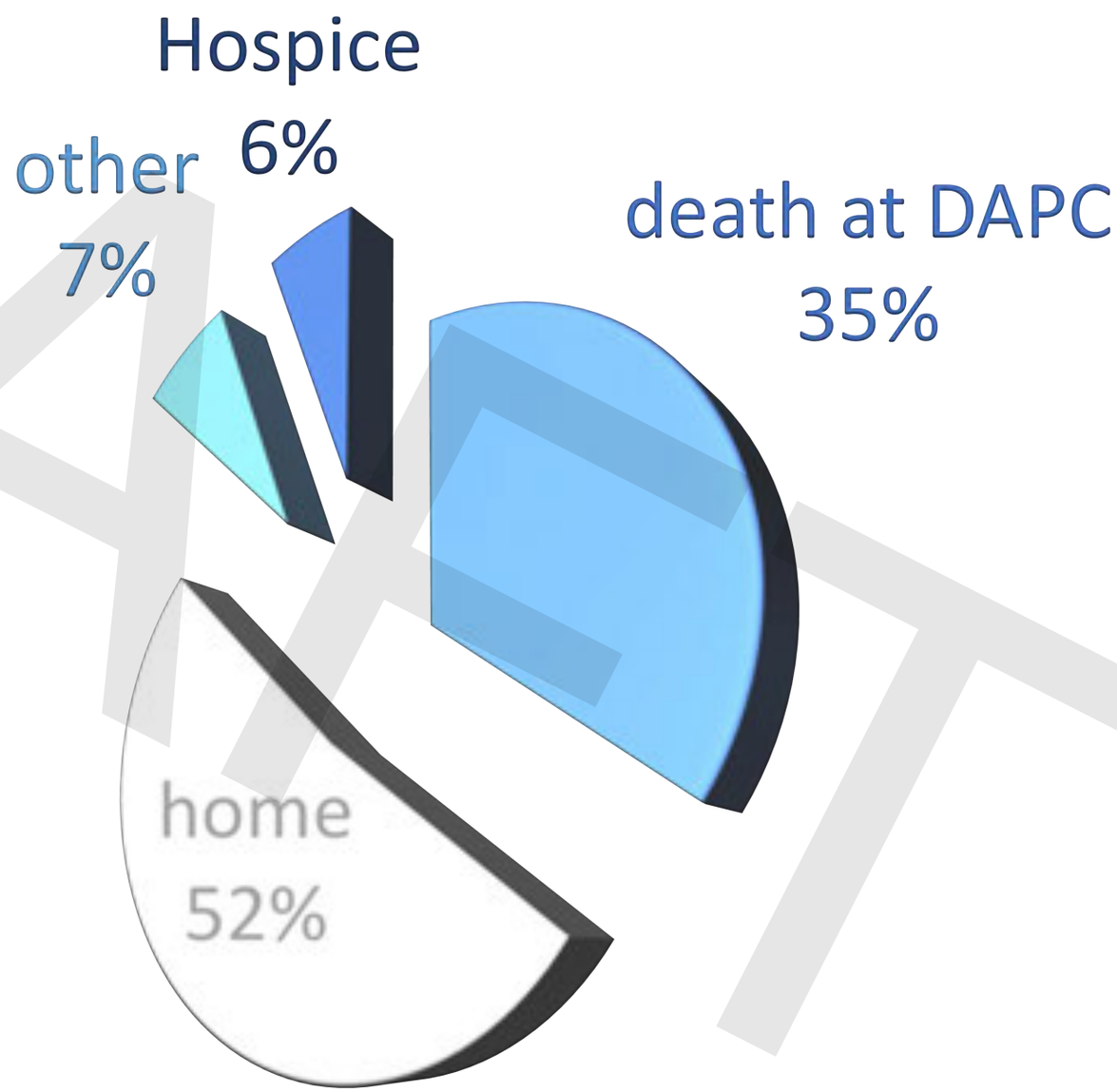
Specialist level

- Department for Acute Palliative care (6 beds)
- Early Palliative Care Office (outpatient)

DAPC

- 300 admissions/ year
- LOS 7 days





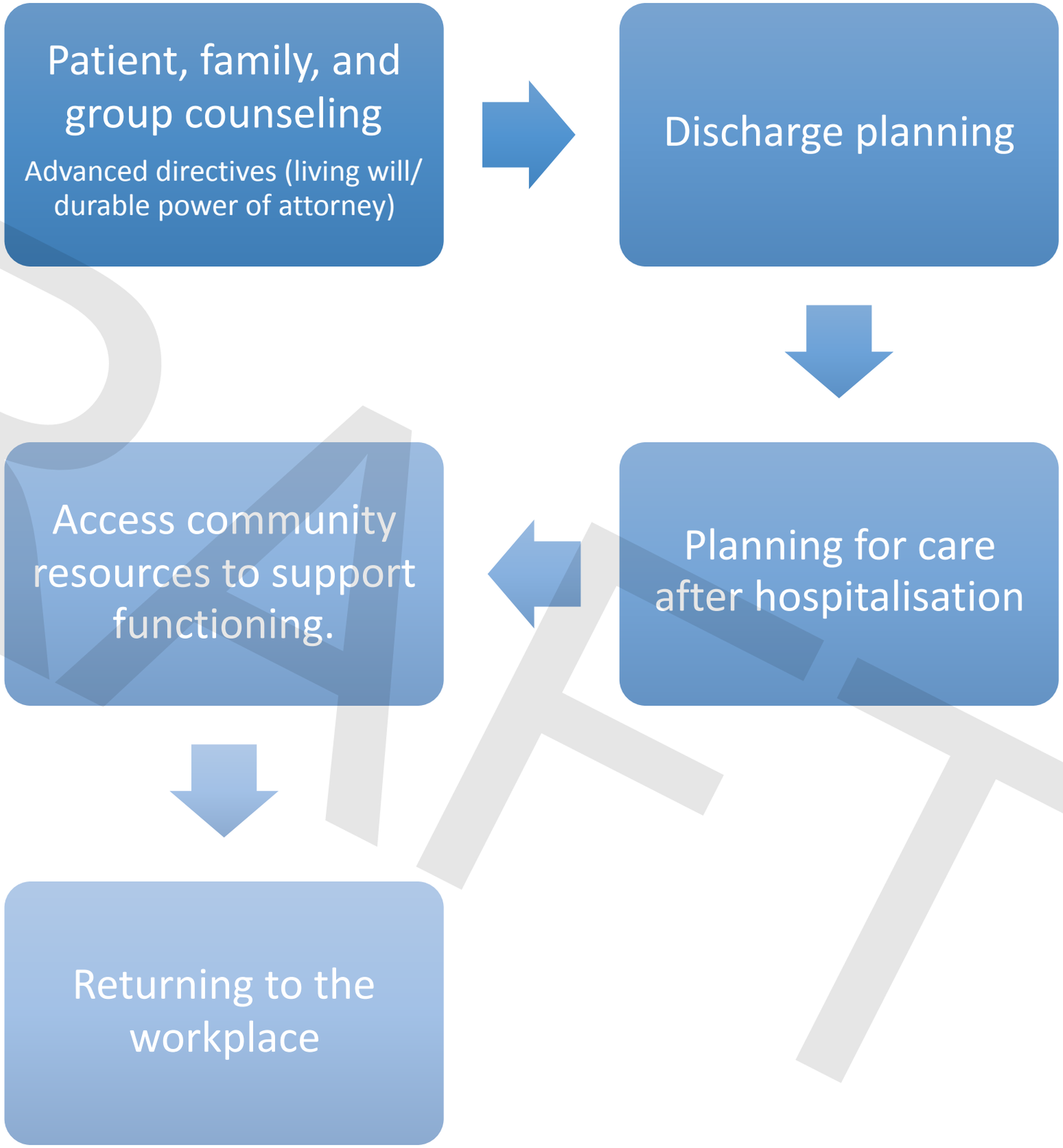
Palliative medicine specialist - team

- Symptom management
- Family support
- Psychosocial care
- Spiritual care

Acute Palliative Care Department

- Inpatients
- Outpatients
- Family meetings
- Support at home
- Education of patients and caregivers

Social worker



- Pain management workshops
  - oncologists, surgeons, residents, nurses, physiotherapists, students
- Education for residents
  - anaesthesiology,
  - emergency medicine
  - GP
  - Oncology
- Education for students
- Education for patients, care-givers

System of internal education

Meeting Report

Training of Existing Teaching Staff from Partner Countries at Programme Countries

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President, Slovenian Society of Anesthesiology and Intensive Care

Introduction

University of Ljubljana, Slovenia, organised the meeting as a part of the Erasmus+ programme "Higher Education Pain Medicine Project" (HEPMP). Faculty of Medicine Ljubljana (FML) and University Medical Centre Ljubljana (UMCL) were recognised as partners in this project, able to offer knowledge, quality experience and suggestions for improvement of pain medicine in partner countries from the Western Balkan region, especially in undergraduate education as well as in perioperative and obstetric pain management.

The HEPMP Ljubljana programme consisted of both lectures and physical visits to several sites at UMCL and FML. Clinical departments visited were the Office of outpatient pain management and Clinical department of Obstetrics at UMCL.

As modern medical education methods involve work in simulation centres, visits to two simulation centres (UMCL, FML) were organised during the course of HEPMP. On site, participants further discussed the possibilities of establishing or adapting their own respective education programs for pain management.

Curriculum

The **first day** of the meeting was dedicated to the introduction of undergraduate and postgraduate education at FML and to the introduction of the curriculum of the anaesthesiology, reanimatology and intensive care medicine residency in Slovenia.

In the discussion, participants agreed that there is still space to improve education on pain medicine, especially in their respective undergraduate programmes. A plan was made to implement pain medicine as an obligatory and an additional optional subject at partners' universities.

On the **second day**, participants visited the Office of Outpatient Pain Management (OOPM), which is a part of the Clinical Department of Anaesthesiology and Surgical Intensive Therapy at UMCL. OOPM has been established as an interdisciplinary outpatient management clinic, with cooperation from anaesthesiologists, neurologists, orthopaedists and psychiatrists. It is also the leading institution in the education of specialists from other medical fields who are involved in pain management, such as family medicine practitioners, paediatricians, non-orthopaedic surgeons and others.

In the discussion, everyone agreed that the possibilities for the exchange of experts' opinions will improve with the introduction of a "platform for pain medicine".

The **third day** focused on obstetric pain management, which at UMCL was fully introduced into everyday clinical practice only a few years ago. With a well-planned education and development of protocols for pain management, a steady progress was achieved. The learned experience and advice on how to improve clinical practice for obstetric pain management was presented by a team of two obstetric anaesthesiologists and an obstetrician.

In the discussion session, participants from partners' universities debated the current practice in their own respective countries.

Lectures on the **fourth day** of the meeting were dedicated to the overview of the development of the Acute Pain Management Service (APMS) at UMCL. In contrast to obstetric pain management, acute pain service treatment (mainly pain after surgery) has a long-standing tradition in Ljubljana. The APMS was established 20 years ago as the part of the Clinical Department of Anaesthesiology and Surgical Intensive Therapy. The main task of APMS was and still is to develop programs and protocols for postoperative pain management. For this purpose, special fill-out forms and protocols for the evaluation of management of postoperative pain were introduced. Also, education of hospital staff who is included in postoperative patient care was established, and is continuously being carried out by a group of experts in acute pain management.

At the day's discussion session, a plan for the development of partners' countries acute pain management service was established. It consists of: 1) organisation of courses in partners' countries for the education of surgical staff and 2) an adoption of programme countries' protocols for postoperative pain management by partners' countries healthcare systems.

Participants came to the conclusion that a lot has been done in partners' countries already, however postoperative pain management still is not routinely a part of postoperative treatment of surgical patients. To routinely assess the intensity of pain postoperatively and record it as the "fifth vital sign" is the first step that should be taken in partners' countries.

All participants decided to organise courses to train teachers who would be able to continue the education and establish acute pain management services as a part of their respective anaesthesiology departments. Experts from programme countries are willing to cooperate and transfer their experience.

To conclude: protocols and education programs will be adopted by partners' countries, modified if necessary and introduced into everyday clinical practice.

The **last day** started out with an overview of the Office of Outpatient Pain Management at the Institute of Oncology Ljubljana, but was mainly dedicated to discussions about research and publication on pain management.

In the discussion, all participants agreed that research and publication are also subjects which are important to improve pain management on all levels of healthcare.

Conclusions

HEPMP Ljubljana conclusions as agreed by participating members:

1. to organise a "teach the teachers" course for postoperative pain management
2. to introduce pain assessment into every day clinical practice as the fifth vital sign
3. to introduce a subject dedicated specifically to pain medicine into undergraduate education programmes at universities
4. to improve obstetric pain management

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HEPMP
Higher Education Pain Medicine Project

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