

Svensk förening för Postoperativ Vård (SPOV)

Delförening i Svensk Förening för Anestesi och Intensivvård (SFAI)



Enhanced Recovery Care

- a paradigm shift in perioperative medicine and surgical care?

SFAI-veckan 2016

**”From study to success
(in 3 months)
- a win-win implementation”**

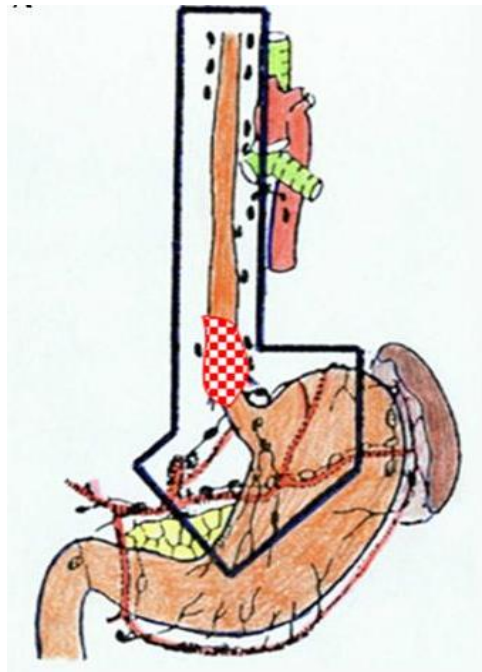
Magnus Iversen

**President of the Swedish Society of Postoperative Care Medicine
Consultant & Head of Pre/Postoperative Care, Huddinge
Div. of Perioperative Medicine & Intensive Care
Karolinska University Hospital
Sweden**

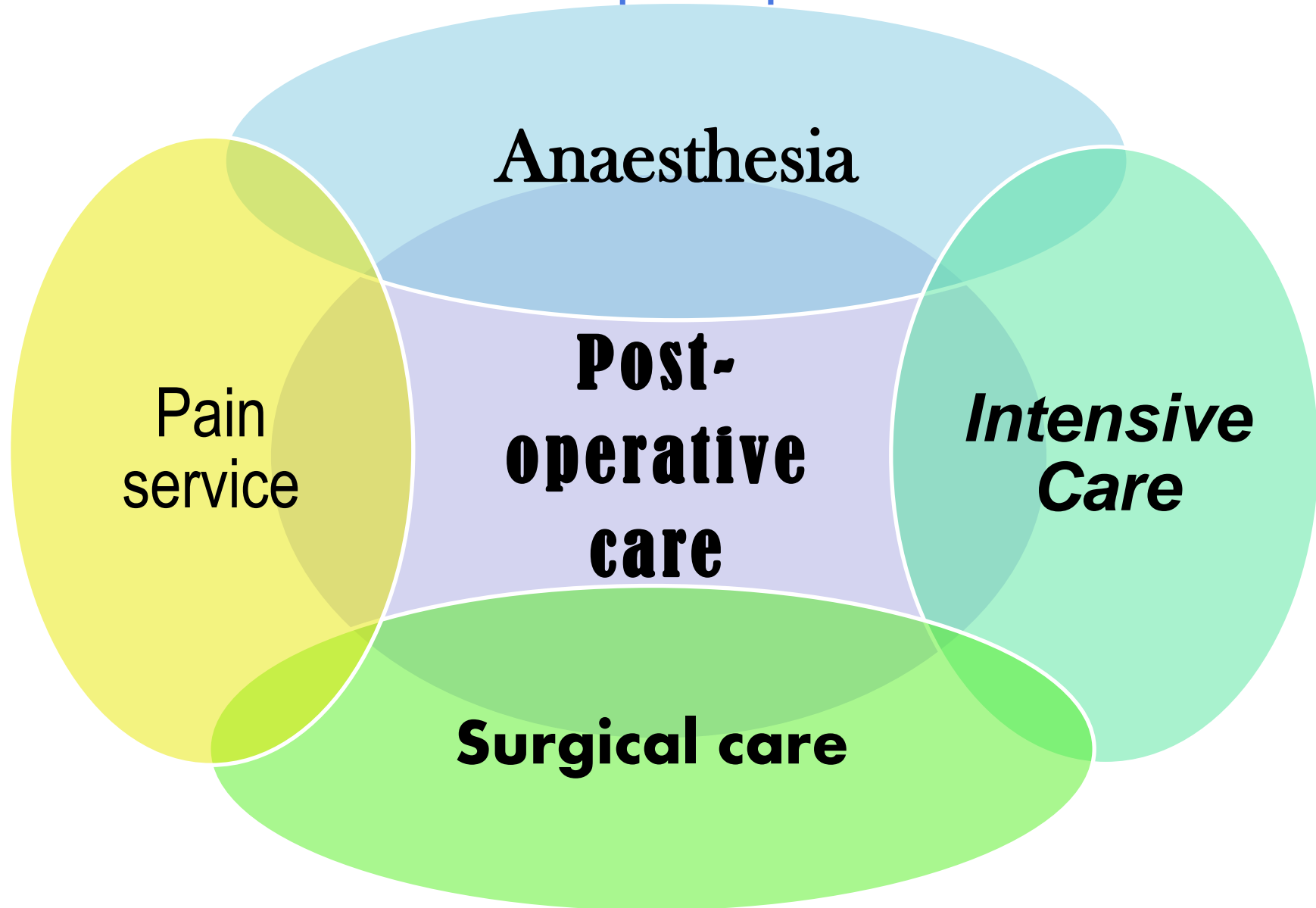
An enhanced Recovery Programme (ERP) for Oesophagectomy

A rewarding journey and paradigm shift in clinical praxis at the Karolinska University Hospital Huddinge

An experience from a high volume centre for a thoracoabdominal high risk procedure in high risk patients



The context of postoperative care



Postoperative challenges

Pain problems Immobilisation Inflammation Edema
Athelectasies Orthostatism PONV Hyperglycemia
Fatigue Anxiety Muscle katabol.
Hypothermia Iatrogenic compl.
Bleeding Sepsis Ahythmias
GI atonia & reflux Hypotension
Aspiration Electrolyte disorders
Fluid losses Crise reactions Delirium
Secret stagnation Myocardial infarction Fever
Airway obstruction Sedation Renal failure Hypoxia
Thrombosis Heart failure Side effects from drugs
Respiratory failure Anastomosis leakage Death



The health care system challenges:

Possibilities & Expectations

Quality & Variation

Competence & Resources

Complexity

Coordination

Volumes

Costs & Priorities



Important steps for improvement:

- Minimize the variation in care and results
- Analyse & describe what we actually are doing and what we should do

- Oil the chain of care



- Collaborate!



- Involve the patient

“The immediate challenge to improving the quality of surgical care is not discovering new knowledge, but rather to intergrate what we already know into practice”

Urbach DR, Baxter NN. BMJ 2005

Impact of a multidisciplinary standardized clinical pathway on perioperative outcomes in patients with oesophageal cancer

S. R. Preston¹, S. R. Markar², C. R. Baker¹, Y. Soon¹, S. Singh¹ and D. E. Low²

¹Oesophago-Gastric Unit, Royal Surrey County Hospital, Guildford, UK and ²Department of Thoracic Surgery, Virginia Mason Medical Center, Seattle, Washington, USA

Correspondence to: Dr D. E. Low, Department of Thoracic Surgery, Virginia Mason Medical Center, 1100 Ninth Avenue, Seattle, Washington 98111, USA (e-mail: Donald.low@vmmc.org)

Background: Defined clinical pathways can contribute to improved outcomes in patients undergoing oesophageal cancer surgery. A standardized oesophagectomy clinical pathway (SOCP) established at the Virginia Mason Medical Center (VMMC) in Seattle, Washington, USA was introduced into the Royal Surrey County Hospital (RSCH), Guildford, UK in 2011. The aim of this study was to see whether transfer and implementation of an oesophagectomy care pathway could change postoperative outcomes significantly.

Methods: Three consecutively accrued study groups were examined at the RSCH: patients operated on immediately before the introduction of the SOCP (group 1), patients operated on after the introduction of the SOCP but not included in the pathway (group 2), and patients managed according to the SOCP (group 3). Outcomes were compared with those of patients who had surgery at the VMMC between 2009 and 2011 using the SOCP (group 4).

Results: There were 12 patients in each of the first three groups and 74 in group 4. All groups were similar with respect to body mass index, medical co-morbidities and clinical stage. The median age of patients in group 3 was significantly lower than that in group 1, and median American Society of Anesthesiologists score was significantly better in group 3 compared with group 4. Following initiation of the SOCP there was an increase in immediate extubation (8 of 12 in group 1 *versus* 12 of 12 in group 3) and first-day mobilization (1 of 12 *versus* 12 of 12 respectively), and a reduction in complications (9 of 12 *versus* 4 of 12), length of critical care stay (4 (range 2–20) days in group 1 *versus* 3 (1–5) days in group 3) and length of hospital stay (17 (12–30) to 7 (6–37) days respectively). Patients not on the pathway but who had surgery during the same interval experienced small but non-significant improvements in length of critical care and hospital stay, and in first-day mobilization.

Conclusion: The study demonstrated improvement in short-term outcomes after oesophagectomy following the adoption of an established multidisciplinary standardized postoperative pathway.

Presented to the Annual Meeting of the Digestive Disorders Federation, Liverpool, UK, June 2012

Paper accepted 13 September 2012

Published online in Wiley Online Library (www.bjs.co.uk). DOI: 10.1002/bjs.8974

Magnus Iversen, SFAI 2016

It all begun with a presentation
of a study with very interesting results

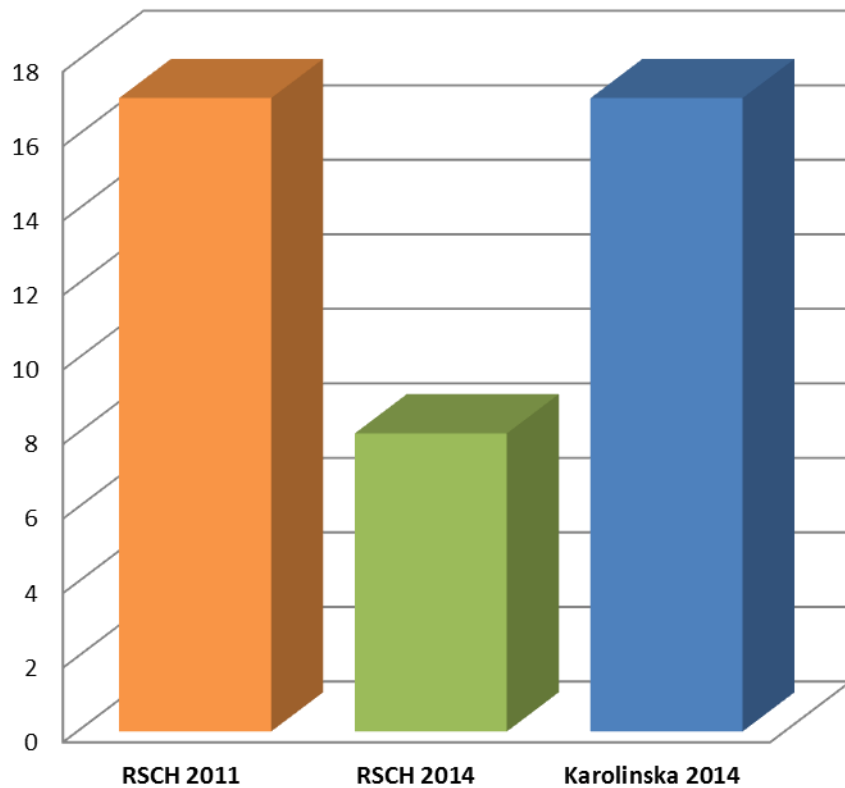


An Enhanced Recovery Programme for Oesophagectomy

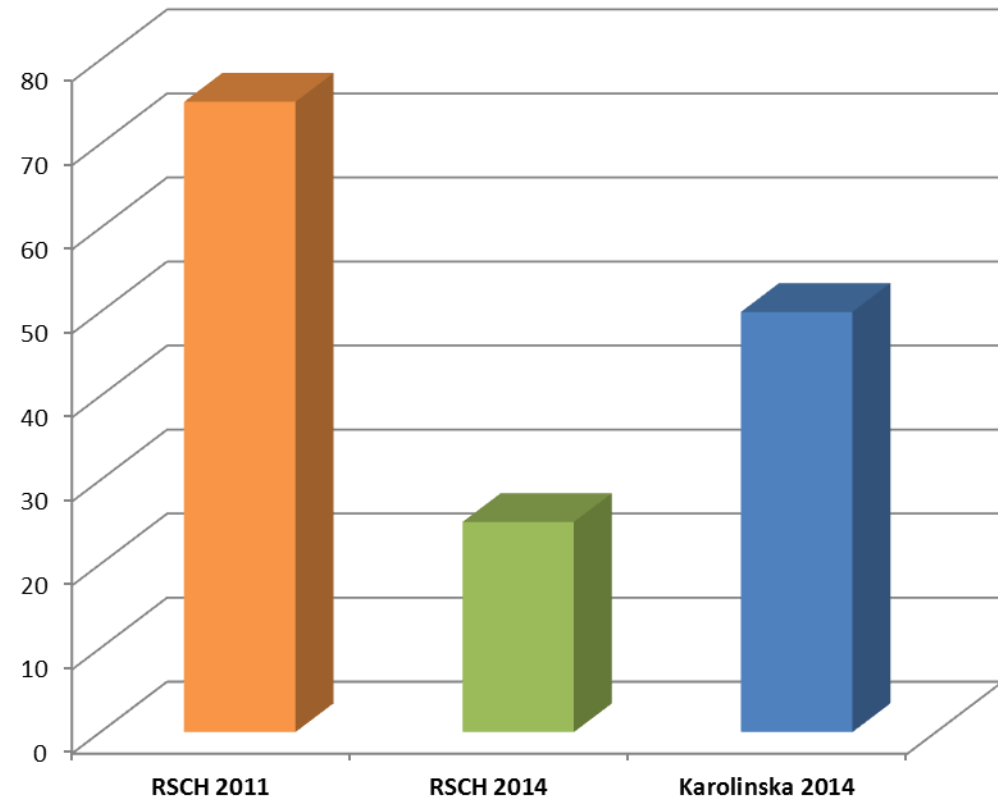
LOS ↓↓ & Complications ↓↓ in Guildford, UK

Could these astonishing results also be achieved at the Karolinska ??

Vård dagar



Komplikationer (%)



A thorough literature review

Diseases of the Esophagus (2014) **, ***
DOI: 10.1111/dote.12214

**DISEASES OF THE
ESOPHAGUS**

Original article

Enhanced recovery pathways lead to an improvement in postoperative outcomes following esophagectomy: systematic review and pooled analysis

S. R. Markar,¹ A. K.

**ANNALS OF
SURGERY**

**Enhanced Recovery for Esophagectomy
A Systematic Review and Evidence-Based Guidelines**

John M. Findlay, BMedSci, BMBS (Hons), MRCS,* Richard S. Gillies, MD, FRCS,*
Julian Millo, BSc, MRCP, FRCA, DICM, FFICM,† Bruno Sgromo, MD,* Robert E. K. Marshall, MS, FRCS,*
and Nicholas D. Maynard, MS, FRCS*

Anaesthesia, surgery, and challenges in postoperative recovery

ORIGINAL ARTICLE

A comparison in five European Centres of case mix, clinical management and outcomes following either conventional or fast-track perioperative care in colorectal surgery

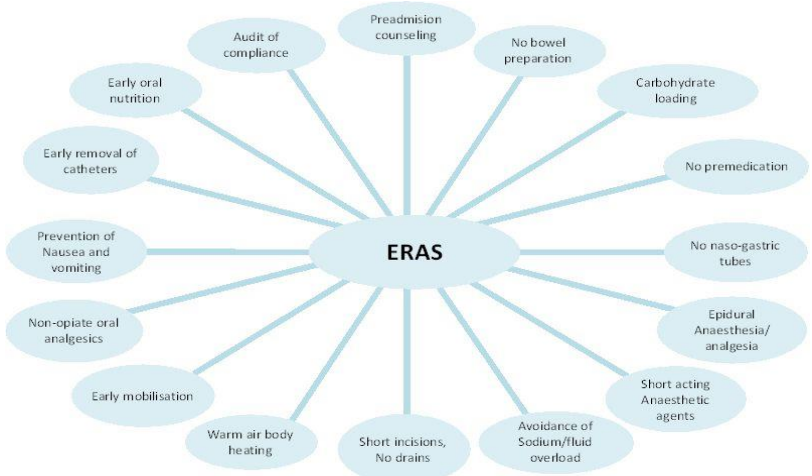
Jonas Nygren*, Jonatan Hausel*, Henrik Kehlet*, Arthur Revhaug*, Kristoffer Lassen*, Cornelius Dejgaard*, Jens Andersen*, Maarten van Meeyenfeldt*, Olle Ljungqvist*, Kenneth Christopher Fearon**

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Received 26 January 2005; accepted 8 February 2005

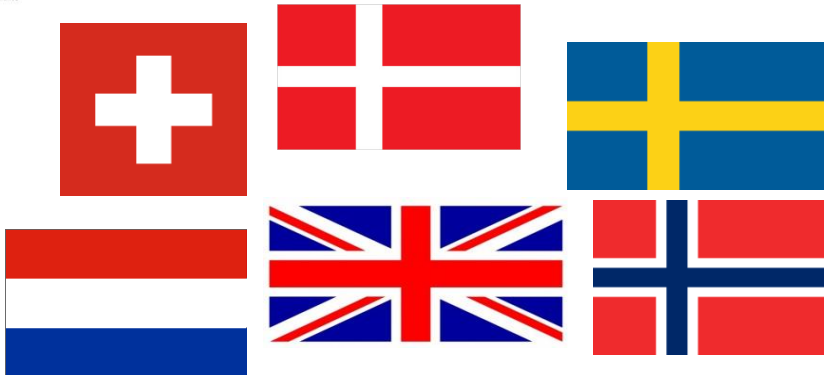
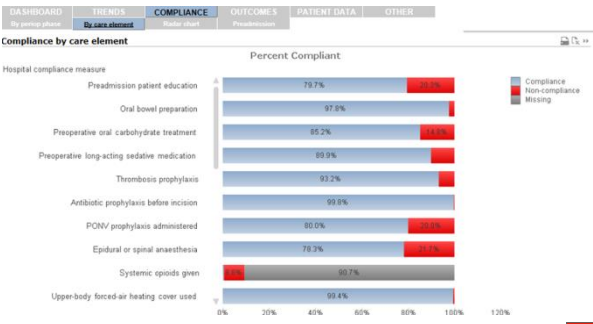
KEYWORDS
 ERAS;
 Colorectal surgery;
 Fast-track programme

Summary
 Background & aims: This study reviewed the case mix, clinical management, and clinical outcomes of patients undergoing colorectal resection in five European centres performing different forms of conventional or 'fast-track' perioperative care.
 Methods: The perioperative care programme and surgical practice in each centre was defined. Patient data were collected by electronic means on an internet-based audit system. Case mix was determined using ASA classification and the POSSUM scoring system.
 Results: A total of 453 consecutive patients from units practicing either conventional (Sweden, n = 100/156, n = 82/162, n = 78/166, n = 11/1) or fast-track surgery (Denmark, n = 118), were studied between 1998 and 2001. Elements of perioperative practice varied widely both between units practicing 'traditional' care and the reference 'fast-track' unit (Denmark). Based on the POSSUM scores,



ERAS – ERP

A MULTIDISCIPLINARY CONCEPT FOR INTEGRATION OF BEST PRACTICES AND STANDARDIZATION



Study visit at Royal Surrey County Hospital Guildford, England







Magnus Iversen, SFAI 2016

Oesophagectomy Standardised Pathway

Name _____

Date _____

Intensive Care Stay - Immediately Post Operative: Day 0

- The patient comes round on a Hill-Rom bed
- The patient is brought round as a Level 2, self-ventilating patient
- Goal directed fluid therapy with Lidco Rapid for 6 hours to maximise patient's fluid status
- First-line analgesia is with an epidural and additional IV analgesia. The patient is advised pre-op that they will experience some discomfort after the operation, and to expect some discomfort
- CXR and bloods taken and reviewed
- Non-slip socks to be worn by patient ready for when they begin mobilising
- When the patient is awake and stable, they are to be in a full sitting position in the Hill-Rom bed for up to 4 hours on the first post-operative evening
- If when they do this they feel dizzy, or the blood pressure drops, lie the patient back down, and repeat again when symptoms abate

When in bed, the patient's head is to be at 30° when lying on their side, and 45° when lying on their back

- SCD's (Flotrons) to be worn all the time whilst in ICU. They are only to be turned off when the patient is walking, then restarted as soon as they are stationary

- Naso-gastric tube on free drainage, with 4-hourly aspirations
- 2 post-op doses of IV antibiotics
- Run sterile water at 30 ml/hr through jejunostomy tube
- Monitor chest drains
- Encourage deep breathing and coughing every hour when awake
- Commence IV Omeprazole 40 mg od
- Encourage completion of patient diaries when available

Variations

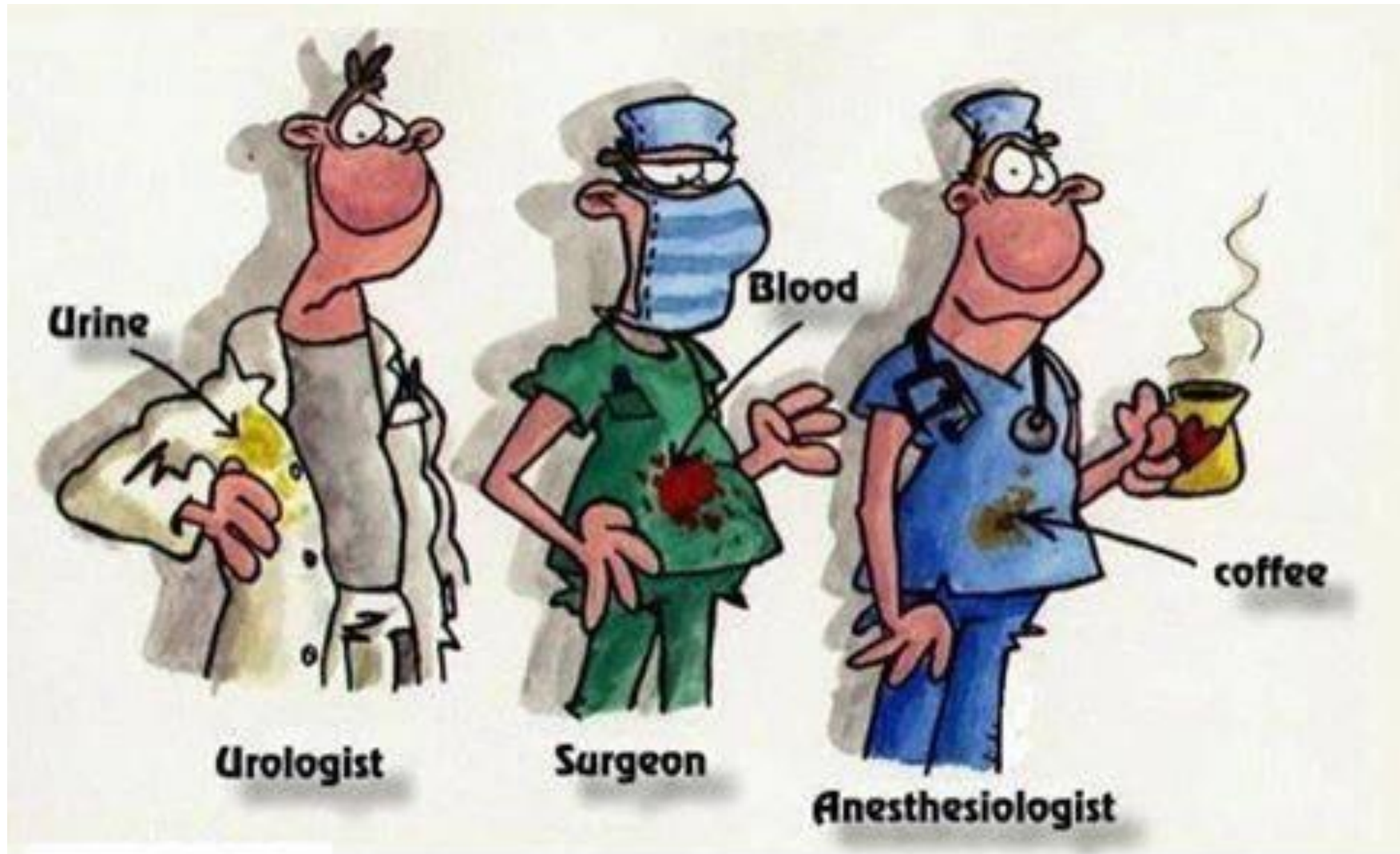
Contact Shaun Preston if there are any queries or concerns with his patient

© Weston & BSU v 1.1 November 2011

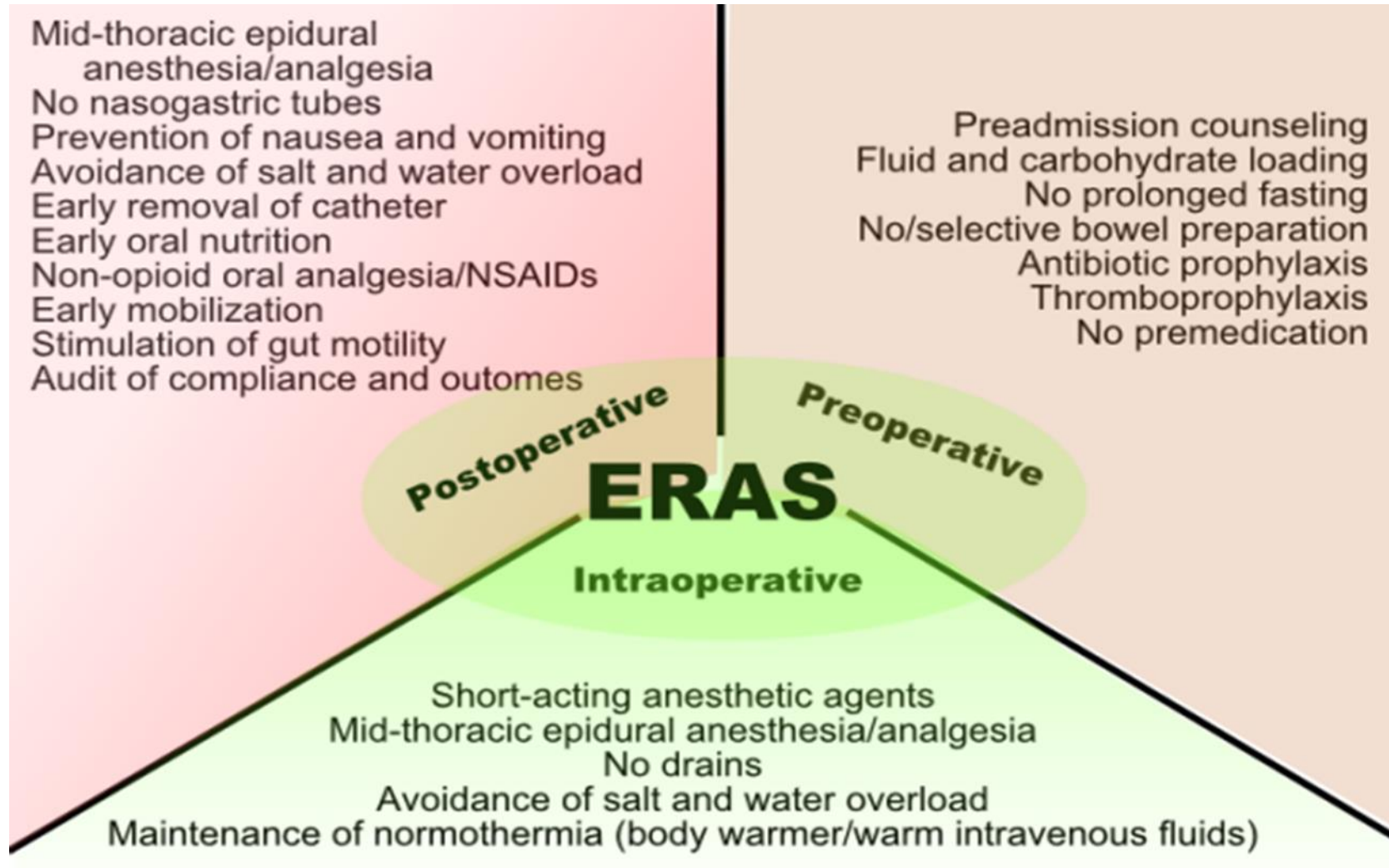
Seeing is believing !!!!!



What's in it for an anaesthesiologist?



...most of the interventions!!!



Optimization → Early mobilization → Autonomy

A strict pathway → Reveals deviations early!



Tidig mobilisering

Dag 0: Sittande 90° i 4 timmar

Dag 1: Gå 2 x 50m

Dag 2: Gå 3 x 50-100m

Dag 3: Gå 4 x 100m

Dag 4: Gå 5 x minst 100m

Dag 5: Gå 6 x minst 100m

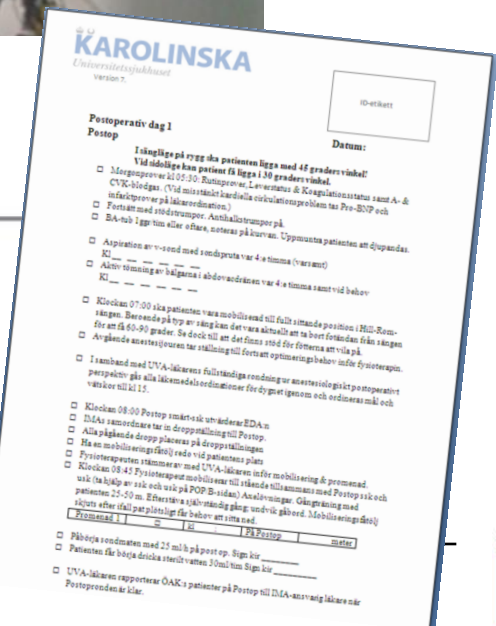
Dag 6: Gå i trappor

Dag 8: Hem

Patientchecklista



ERP esofagus



Implementation...



Set a start date

Engage all Staff

Inform the Management

Design the Karolinska model

Form the Project groups

Guildford visit

Staff check list

KAROLINSKA
Universitetssjukhuset
Version 7.

ID-etikett

Datum: _____

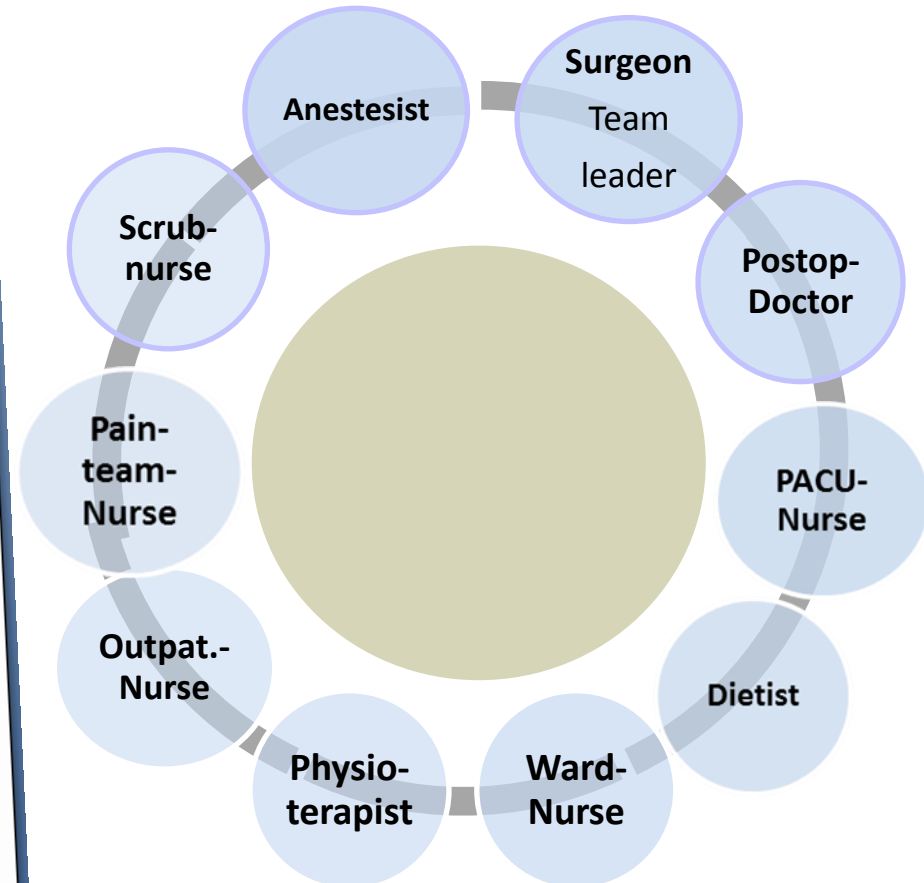
Postoperativ dag 1
Postop

**Isängläge på rygg ska patienten ligga med 45 graders vinkel!
Vid sidoläge kan patient få ligga i 30 graders vinkel!**

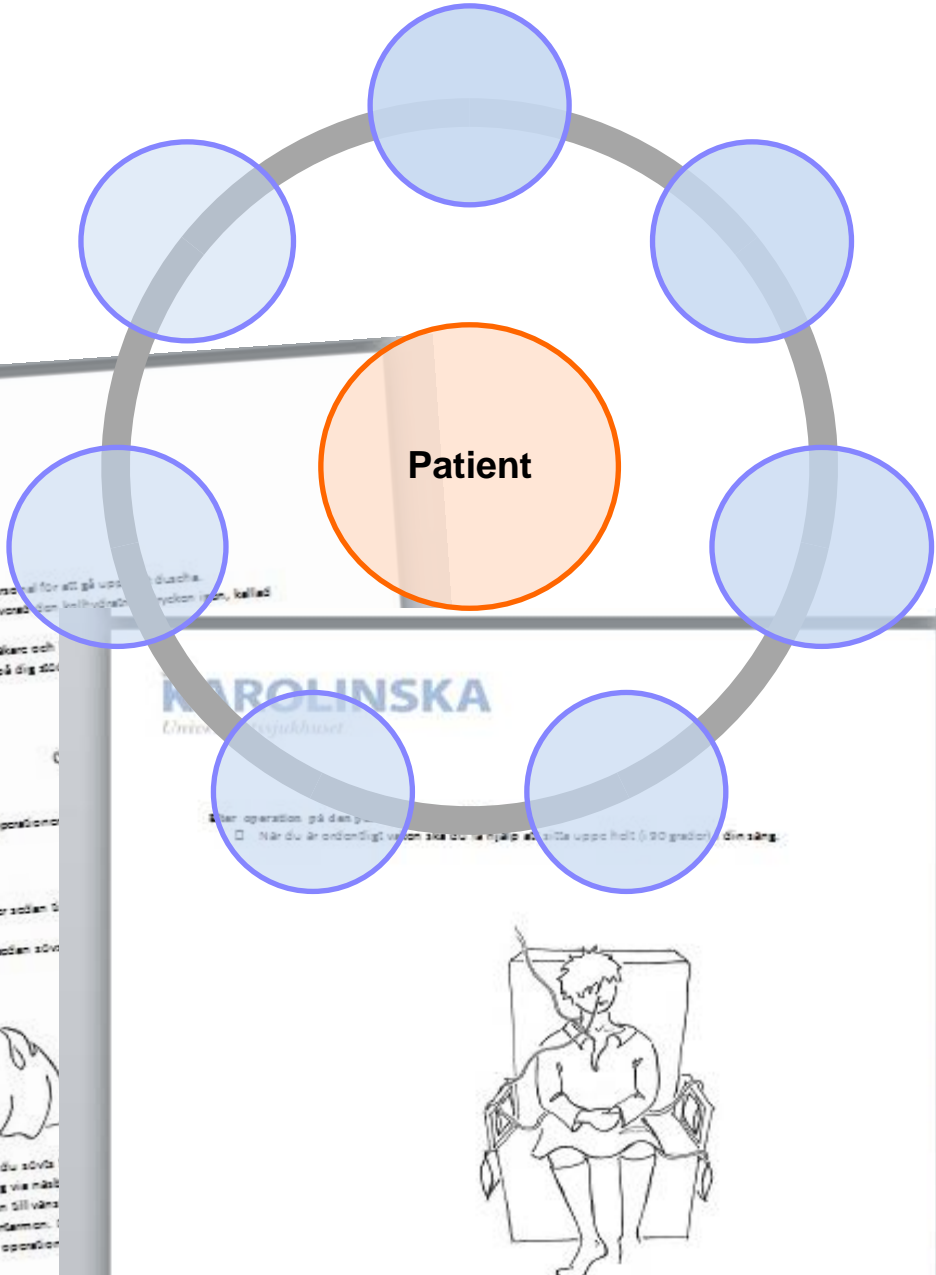
- Morgonprover kl 05:30: Rutinprover, Leverstatus & Koagulationsstatus samt A- & CVK-blodgas. (Vid misstänkt kardiella cirkulationsproblem tas Pro-BNP och infarktprover på läkarordination.)
- Fortsätt med stödstrumpor. Antihalkstrumpor på.
- BA-tub ligger i tim eller oftare, noteras på kurvan. Uppmuntra patienten att djupandas.
- Aspiration av v-sond med sondspruta var 4:e timma (varsamt)
Kl _____
- Aktiv tömning av blågarna i abdoavdränen var 4:e timma samt vid behov
Kl _____
- Klockan 07:00 ska patienten vara mobiliserad till fullt sittande position i Hill-Rom-sängen. Beroende på typ av säng kan det vara aktuellt att ta bort fotändan från sängen för att få 60-90 grader. Se dock till att det finns stöd för fötterna att vila på.
- Avgående anestesijouren tar ställning till fortsatt optimeringsbehov inför fysioterapin.
- I samband med UVA-läkarens fullständiga rondning ur anestesilogiskt postoperativt perspektiv går alla läkemedels ordinationer för dygnet igenom och ordineras mål och vätskor till kl 15.
- Klockan 08:00 Postop smärt-ssk utvärderar EDA:n
- IMAs samordnare tar in droppställning till Postop.
- Alla pågående dropp placeras på droppställningen
- Ha en mobiliseringsfåtölj redo vid patientens plats
- Fysioterapeuten stämmer av med UVA-läkaren inför mobilisering & promenad.
- Klockan 08:45 Fysioterapeut mobiliserar till stående tillsammans med Postop ssk och usk (ta hjälp av ssk och usk på POP/B-sidan) Axelövningar. Gångträning med patienten 25-30 m. Efterståva självständig gång; undvik gåbord. Mobiliseringsfåtölj skjuts efter ifall pat plötsligt får behov att sitta ned.

Promenad 1	<input type="checkbox"/>	Kl _____	På Postop	meter
------------	--------------------------	----------	-----------	-------

- Påbörja sondmaten med 25 ml/h på post op. Sign kir _____
- Patienten får börja dricka sterilt vatten 30ml/tim Sign kir _____
- UVA-läkaren rapporterar ÖAK:s patienter på Postop till IMA-ansvarig läkare när Postopronden är klar.




Patient check list!




KAROLINSKA
Universitetssjukhuset

Dagen innan operationen

- Blodprov, blodtryck och puls mätas för att kontrollera
- Personal mäter upp stötdåstrumpor till dig som du kommer använda



- På kvällen kommer du att få dricka en kallhydratisk dryck, kall
- Innan du går och lägger dig ska du duscha med varligt schampo



- Du får inte äta någon fast föda efter klockan 24 mån därmed svart kaffe, te, salt, äppeljuice och vissa näringsdrycker fram

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Universitetssjukhuset

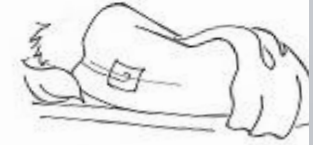
Operationsdagen

Innan operation:

- Du blir väckt cirka 06:45 på morgonen av personal för att gå till duscha.
- Tidigt på morgonen kommer du även bli svarad av en sjuksköterska, sjuksköterskan är kalle
- Du får ta eventuella mediciner som narkosläkare och
- Innan du lämnar till operation ska du sätta på dig stötdå

Innan på operations salen

- Kirurgen kommer att hälsa på dig innan operationen
- Du nuddas in liggande i din säng, man byter sedan till operations salen.
- Här får du först din ryggbövning och sedan sö




- I samband med operationen, efter att du sövts höger på halsen, en tunn dränegång via bröstet till höger och en till vänster multianskaktator på buken in till tunntarmen. och under de närmaste dagerna efter operation

KAROLINSKA
Universitetssjukhuset

Efter operation på den y

- När du är ordentligt väckt ska du vara uppe att sitta upp helt i 90 grader i din säng.



För att andningstjänarna kommer du att blåsa i en så kallad BA-QUB minsta gång i timmen

Andningsstumpor tas av, på kvällen.

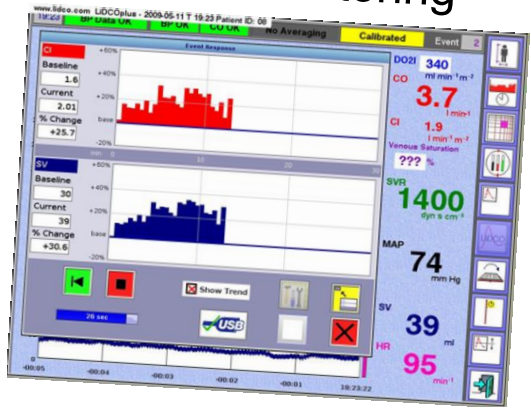
Anti-slip socks for mobilization



Preparing the team
'Micro-meeting' in theatre at 07:10



LiDCO monitoring



Perioperative
Physiotherapy



Metabolic preoptimization

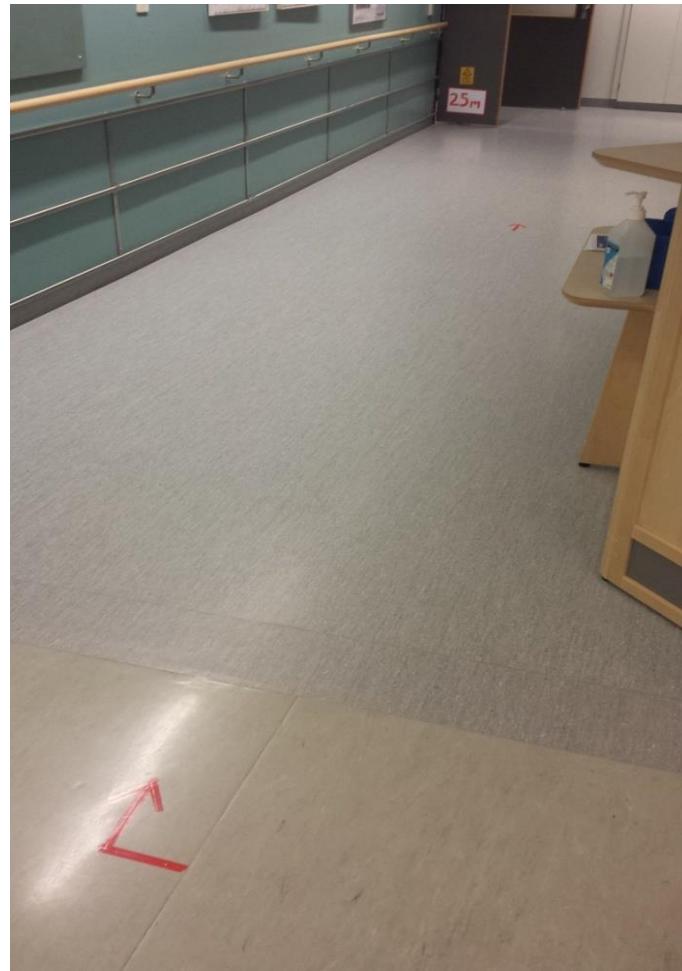
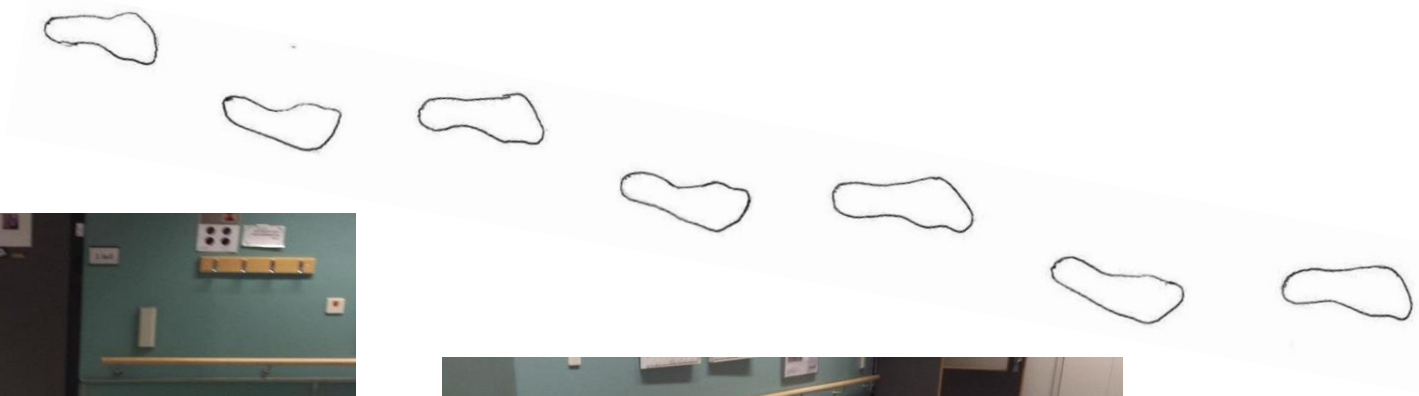


Evening before surgery

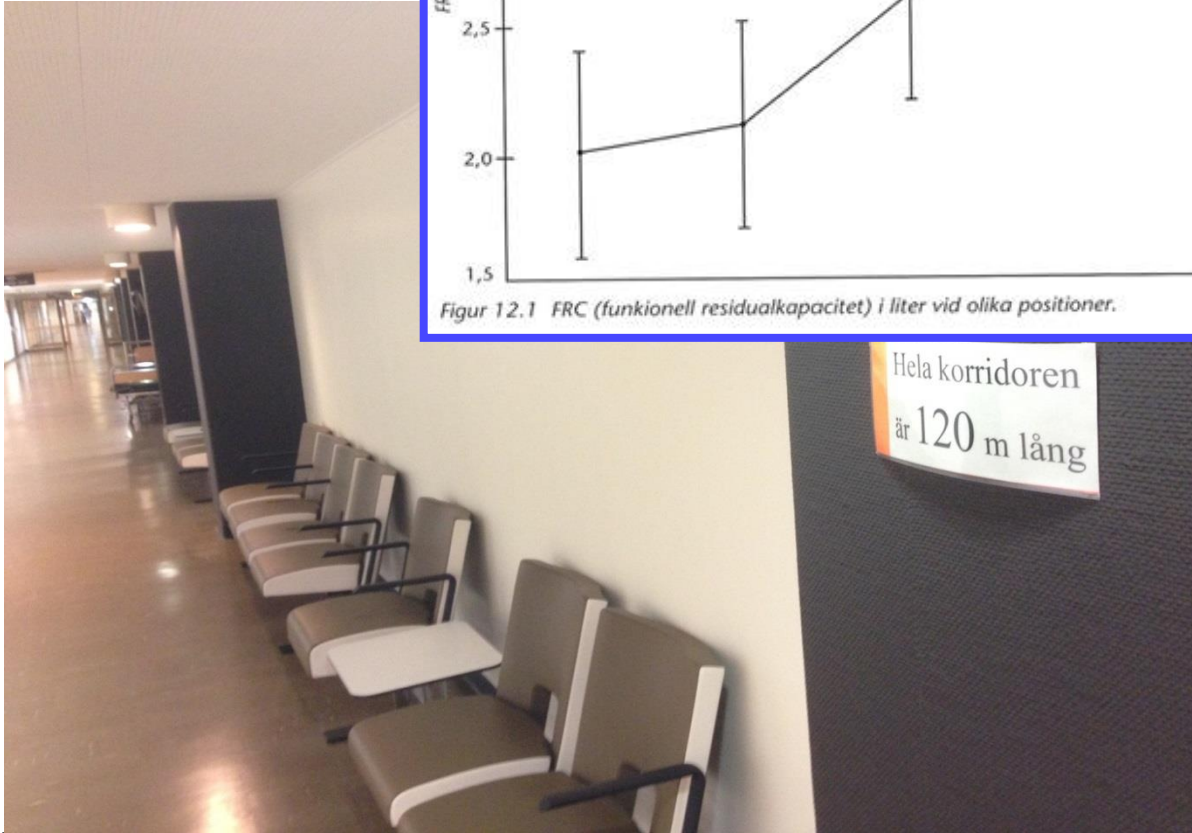
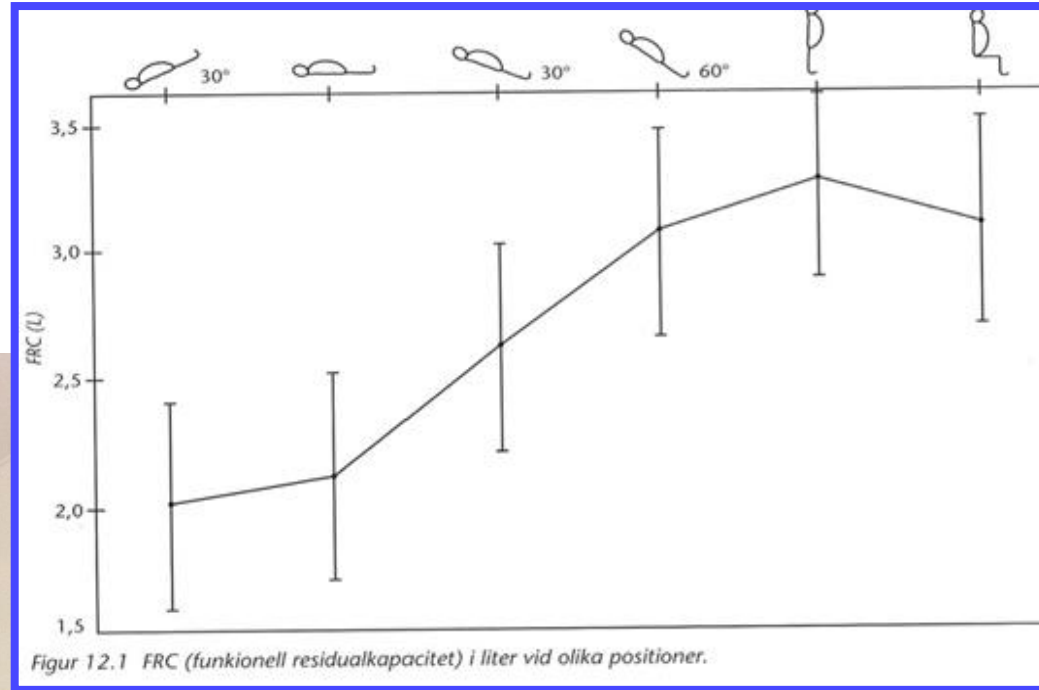
- 400 ml water
- 2 bags of Preload

Morning before surgery

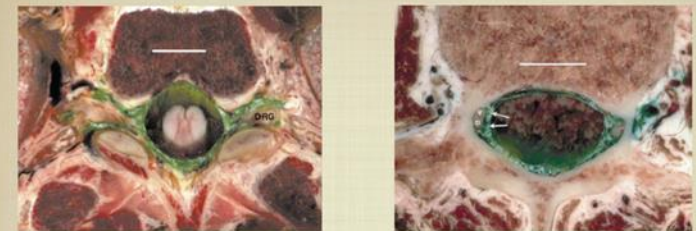
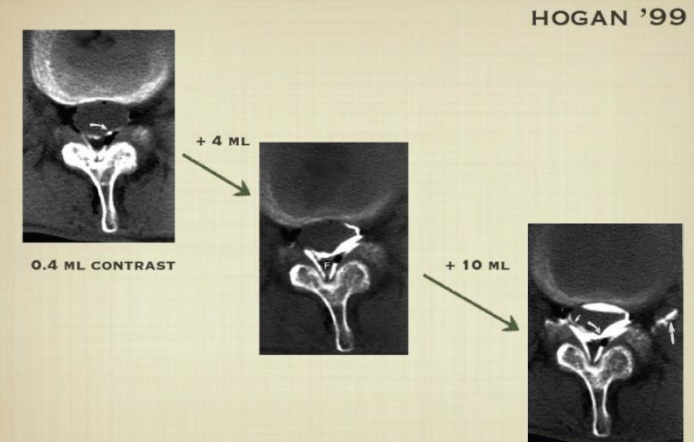
- 400 ml water
- 1 bag of Preload



Mobilization as a goal, a result and a prerequisite...



A meticulous driven pain management



HOGAN '02

- ◆ CRYOMICROTOME STUDY / CADAVERS
- ◆ INK SPREAD IN TISSUES PLANES
- ◆ ? ↑ VOL + ↑ INJECTION PRESSURE BETTER

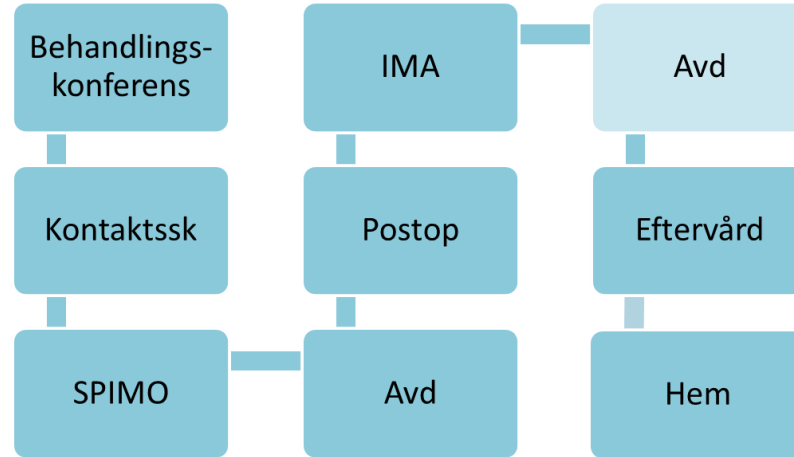
Adequate circulation - Moderate fluid therapy

”Good enough”



Teamwork all the way!

Multiprofessionally & multidisciplinary



The first patient 22nd April 2014

After
4 hours postop



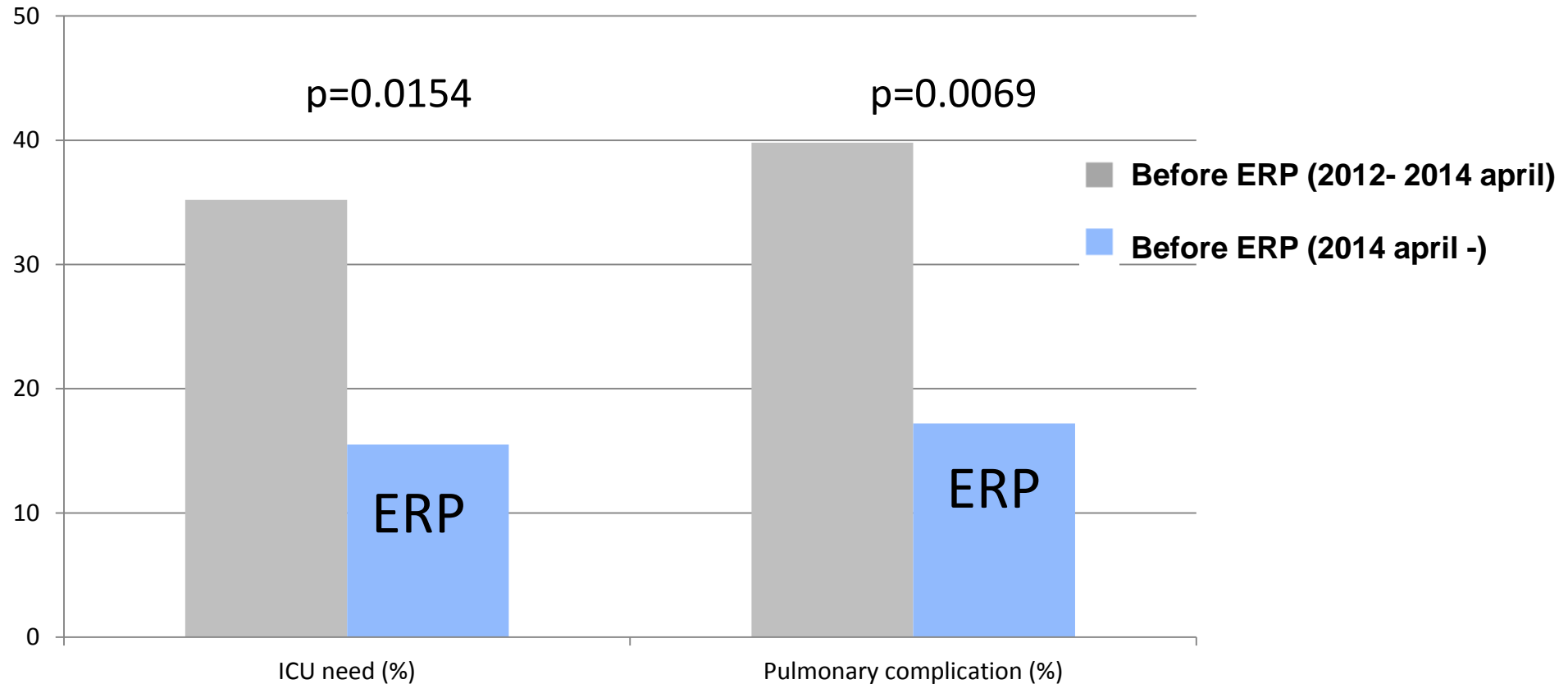
Postop day 1



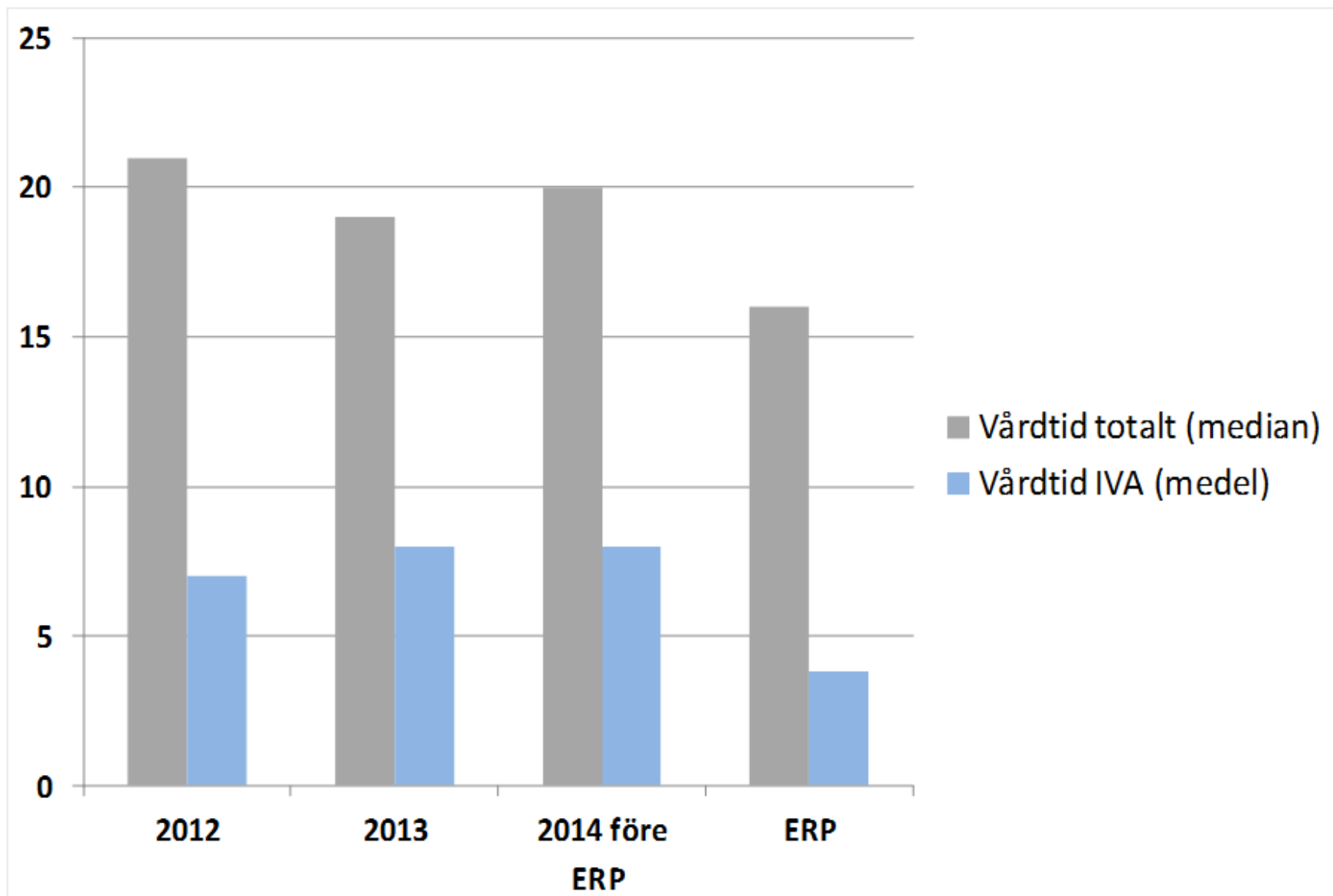
A multimodal standardized bundle care
based on best applicable evidence
A multidisciplinary and multiprofessional
teamwork – together with the patient
Frequently outcome/compliance audits
Continuous education and reevaluation

**95 % patient compliance to
the protocol**

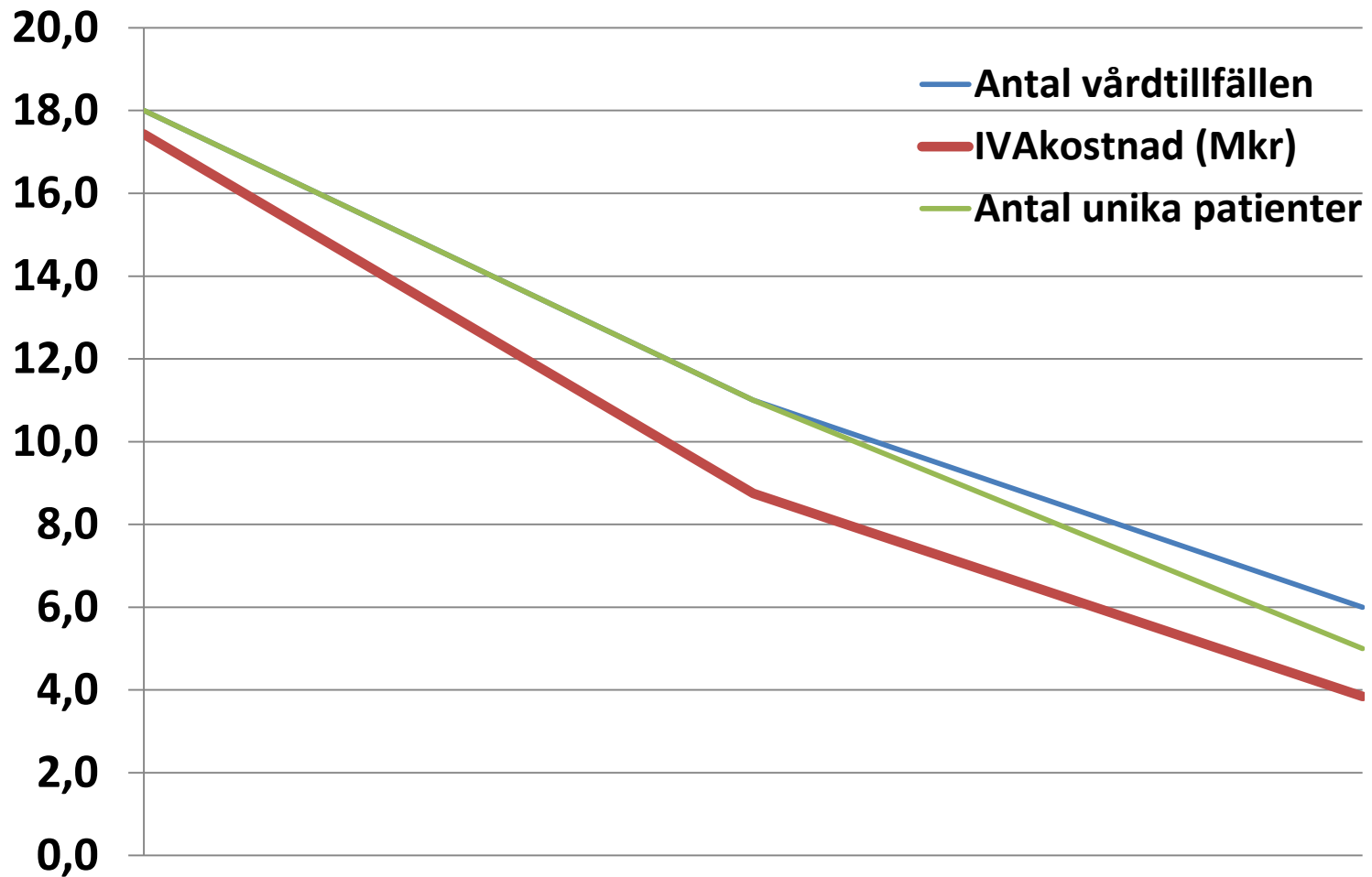
An immediate effect on Need of ICU (%) Pulmonary complications (%)



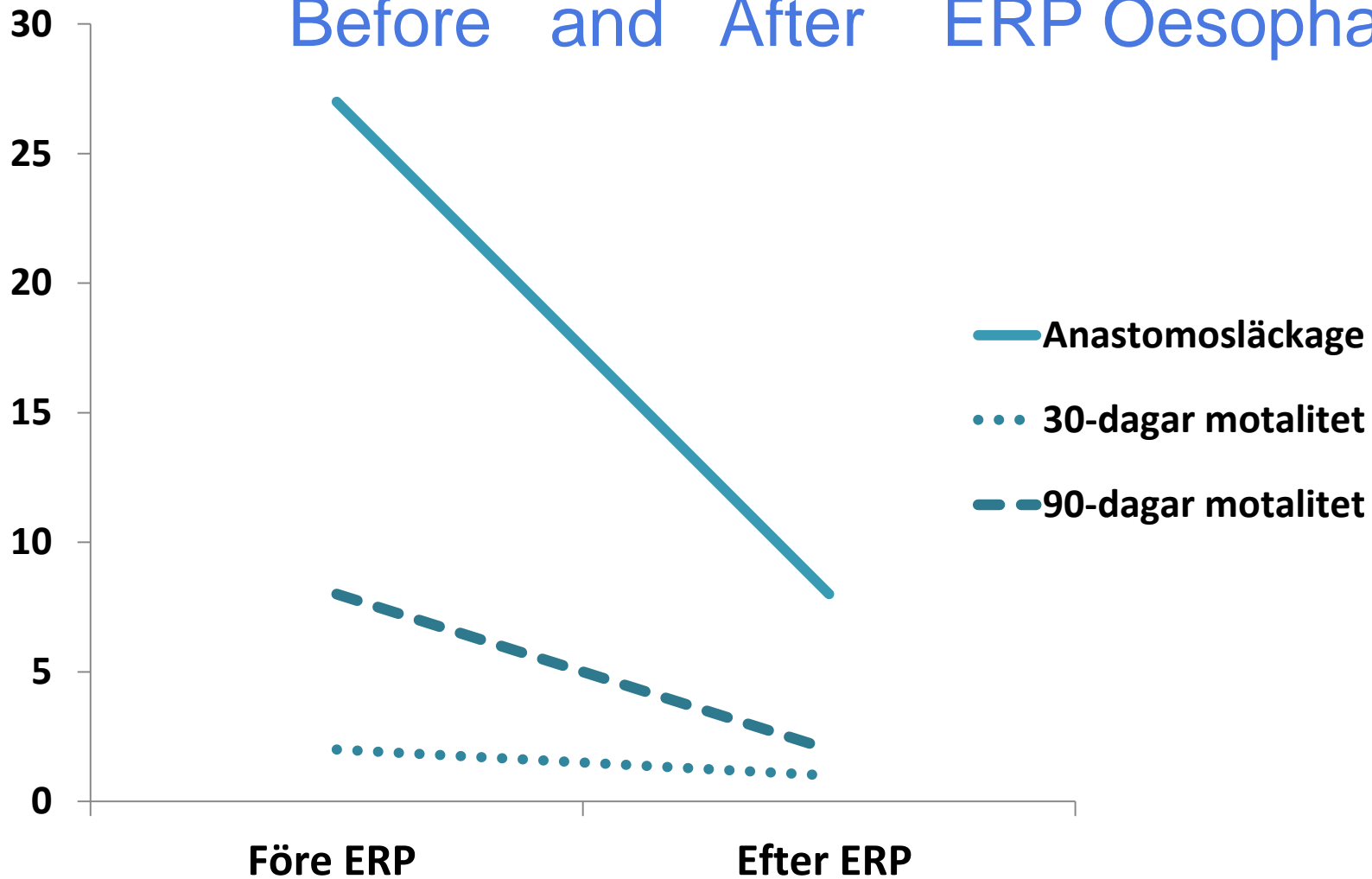
1st year results in LOS (d) and unplanned ICU (d)



ICU – patients (n) & costs (MSEK)



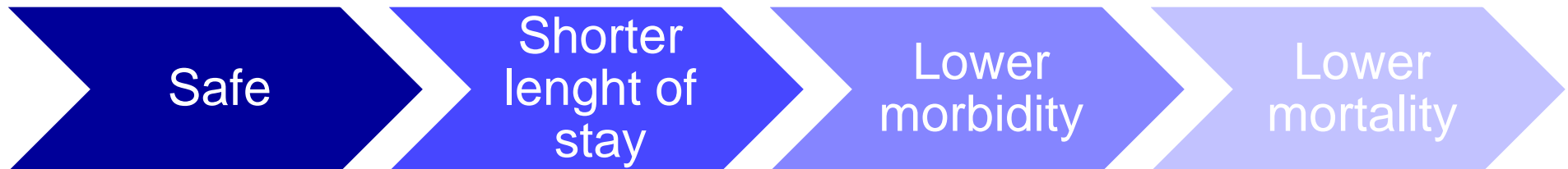
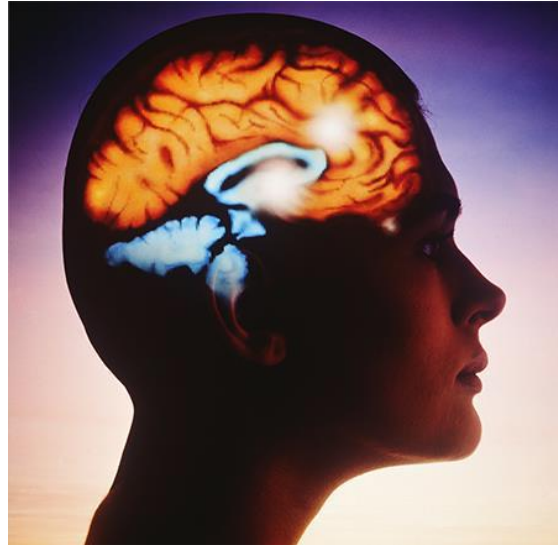
Anastomosis leakage, 30d mortality & 90d mortality Before and After ERP Oesophagectomy



Audit & communicate compliance & outcome,
discuss with the team, adjust the protocol,
ease compliance, educate, implement...



A rewarding cultural change!



The Patient!



Key success factors

1. Management support
2. The team approach
3. Early patient involvement
4. Early team start → Early end → Continuity & early...
5. Active postop optimization → Early mobilisation
6. Multidisciplinary team care and a step down unit
7. Checklist = standardisation
8. Measure – feed back – adjust



Acknowledgements



From a traditional care



to a protocol driven care



Find & follow the best Study and adapt





Audit

Educate !

<http://erassociety.org>

Introduction in pathophysiology and ERAS in GI surgery

- Acta Anaesth Scand 59 (2015) 1212-1231
- Acta Anaesth Scand 60 (2016) 289-334

REVIEW ARTICLE

Enhanced Recovery After Surgery (ERAS) for gastrointestinal surgery, part 1: pathophysiological considerations

M. J. Scott¹, G. Baldini², K. C. H. Fearon³, A. Feldheiser⁴, L. S. Feldman⁵, T. J. Gan⁶, O. Ljungqvist⁷, D. N. Lobo⁸, T. A. Rockall¹, T. Schricker⁹ and F. Carli²

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1212

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AN INTERNATIONAL JOURNAL OF ANAESTHESIOLOGY AND INTENSIVE CARE, PAIN AND EMERGENCY MEDICINE



REVIEW ARTICLE

Enhanced Recovery After Surgery (ERAS) for gastrointestinal surgery, part 2: consensus statement for anaesthesia practice

A. Feldheiser¹, O. Aziz², G. Baldini³, B. P. B. W. Cox⁴, K. C. H. Fearon⁵, L. S. Feldman⁶, T. J. Gan⁷, R. H. Kennedy⁸, O. Ljungqvist⁹, D. N. Lobo¹⁰, T. Miller⁷, F. F. Radtke¹, T. Ruiz Garces¹¹, T. Schricker¹², M. J. Scott¹³, J. K. Thacker¹⁴, L. M. Ytrebø¹⁵ and F. Carli³

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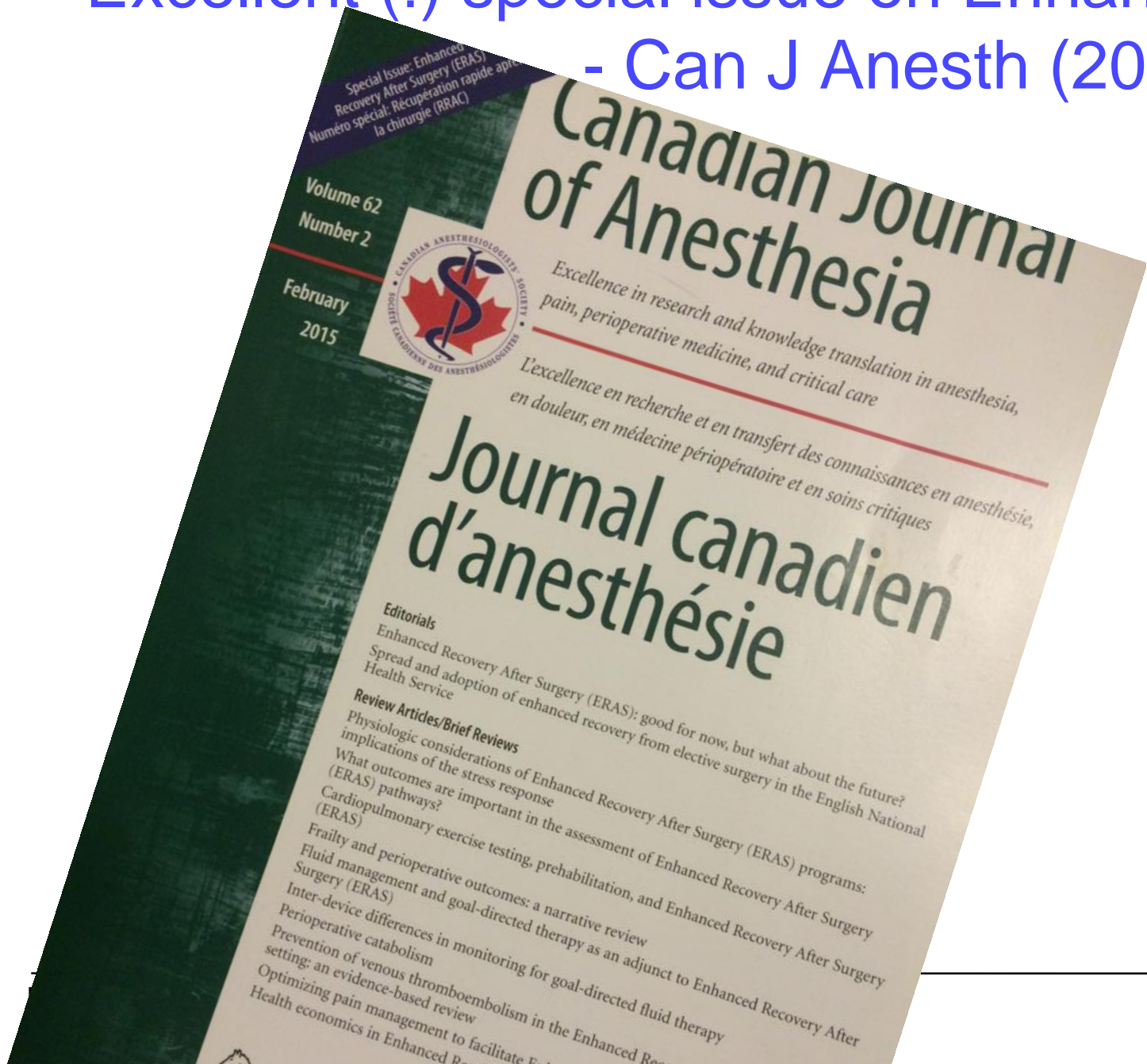
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Excellent (!) special issue on Enhanced Recovery:
- Can J Anesth (2015) vol 62 no 2



Thank You for Your attention!



Magnus Iversen, SFAI 2016