Vikten av ERAS “audit”

Hur driver man ERAS program över tid?

Fredrik Hjern
Kirurg
Kolorektalsektionen
Kirurg och Urologkliniken
Danderyds sjukhus

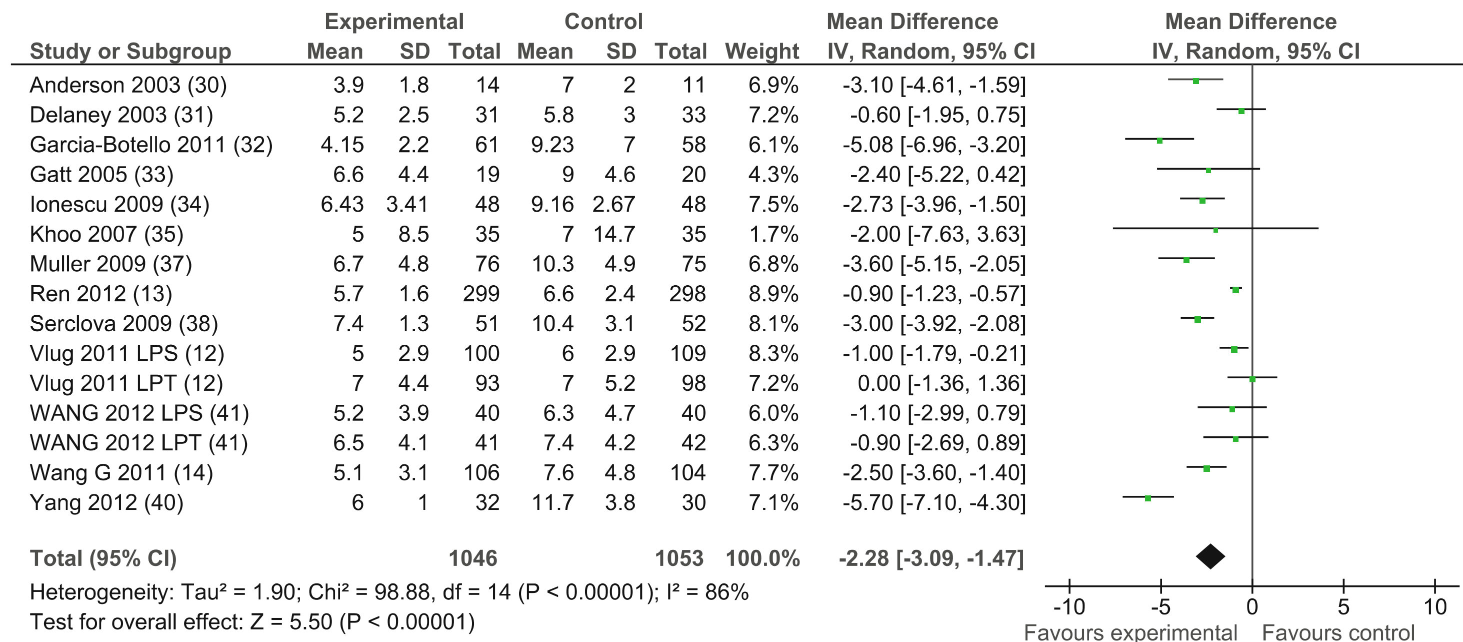
Audit = *granska, revidera*

ERAS fungerar: -Reducerar vårdtid efter större kolorektal kirurgi

Meta analysis 2014

Shorter LOS by 2.3 days

World J Surg (2014) 38:1531–1541 1537



Study or Subgroup	Experimental Mean	Experimental SD	Experimental Total	Control Mean	Control SD	Control Total	Weight	Mean Difference IV, Random, 95% CI
Anderson 2003 (30)	3.9	1.8	14	7	2	11	6.9%	-3.10 [-4.61, -1.59]
Delaney 2003 (31)	5.2	2.5	31	5.8	3	33	7.2%	-0.60 [-1.95, 0.75]
Garcia-Botello 2011 (32)	4.15	2.2	61	9.23	7	58	6.1%	-5.08 [-6.96, -3.20]
Gatt 2005 (33)	6.6	4.4	19	9	4.6	20	4.3%	-2.40 [-5.22, 0.42]
Ionescu 2009 (34)	6.43	3.41	48	9.16	2.67	48	7.5%	-2.73 [-3.96, -1.50]
Khoo 2007 (35)	5	8.5	35	7	14.7	35	1.7%	-2.00 [-7.63, 3.63]
Muller 2009 (37)	6.7	4.8	76	10.3	4.9	75	6.8%	-3.60 [-5.15, -2.05]
Ren 2012 (13)	5.7	1.6	299	6.6	2.4	298	8.9%	-0.90 [-1.23, -0.57]
Serclova 2009 (38)	7.4	1.3	51	10.4	3.1	52	8.1%	-3.00 [-3.92, -2.08]
Vlug 2011 LPS (12)	5	2.9	100	6	2.9	109	8.3%	-1.00 [-1.79, -0.21]
Vlug 2011 LPT (12)	7	4.4	93	7	5.2	98	7.2%	0.00 [-1.36, 1.36]
WANG 2012 LPS (41)	5.2	3.9	40	6.3	4.7	40	6.0%	-1.10 [-2.99, 0.79]
WANG 2012 LPT (41)	6.5	4.1	41	7.4	4.2	42	6.3%	-0.90 [-2.69, 0.89]
Wang G 2011 (14)	5.1	3.1	106	7.6	4.8	104	7.7%	-2.50 [-3.60, -1.40]
Yang 2012 (40)	6	1	32	11.7	3.8	30	7.1%	-5.70 [-7.10, -4.30]
Total (95% CI)			**1046**			**1053**	**100.0%**	**-2.28 [-3.09, -1.47]**

Heterogeneity: $Tau^2 = 1.90$; $Chi^2 = 98.88$, df = 14 ($P < 0.00001$); $I^2 = 86\%$

Test for overall effect: Z = 5.50 ($P < 0.00001$)

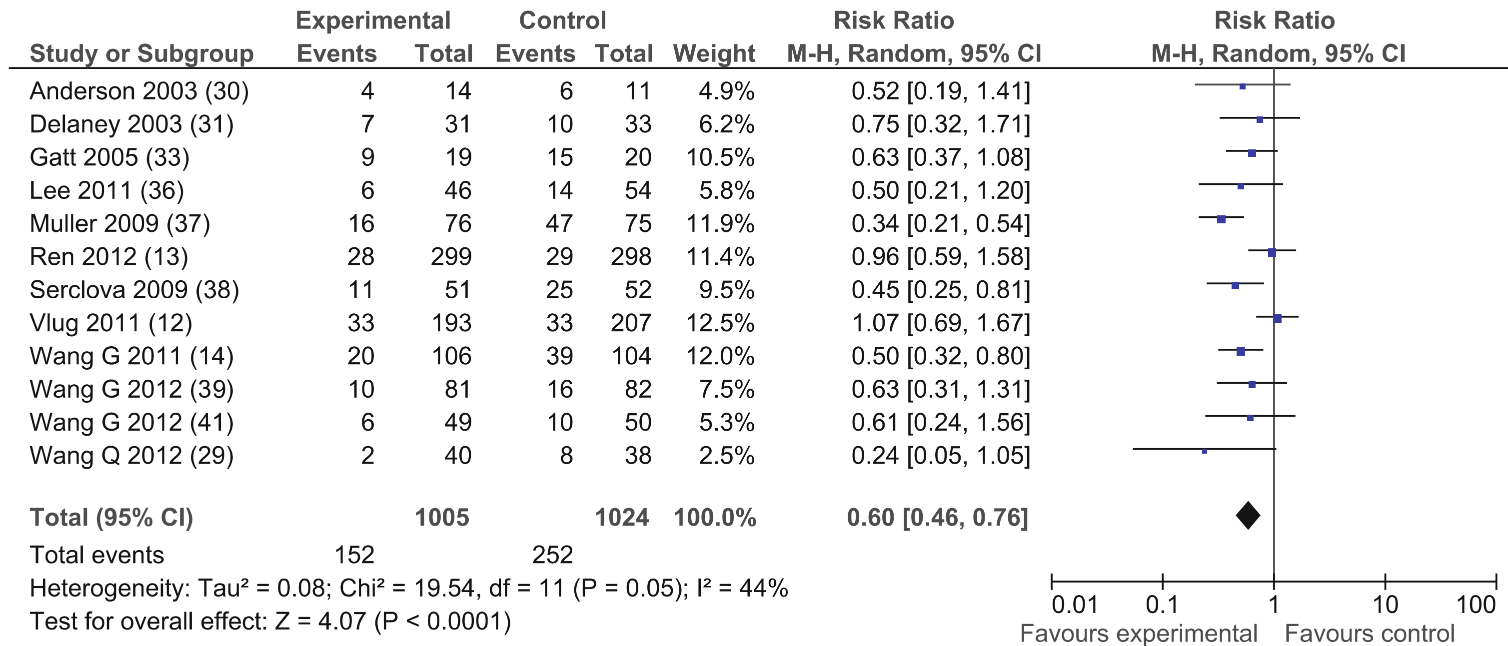
Fig. 6 Pooled estimates of length of hospital stay comparing enhanced recovery after surgery versus standard care. *CI* confidence interval, *df* degrees of freedom, *RR* risk ratio

Greco,WJS,2014

ERAS fungerar: -Reducerar komplikationer efter större kolorektal kirurgi

Meta analysis 2014

Reduce morbidity by **40%**



Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
Anderson 2003 (30)	4	14	6	11	4.9%	0.52 [0.19, 1.41]
Delaney 2003 (31)	7	31	10	33	6.2%	0.75 [0.32, 1.71]
Gatt 2005 (33)	9	19	15	20	10.5%	0.63 [0.37, 1.08]
Lee 2011 (36)	6	46	14	54	5.8%	0.50 [0.21, 1.20]
Muller 2009 (37)	16	76	47	75	11.9%	0.34 [0.21, 0.54]
Ren 2012 (13)	28	299	29	298	11.4%	0.96 [0.59, 1.58]
Serclova 2009 (38)	11	51	25	52	9.5%	0.45 [0.25, 0.81]
Vlug 2011 (12)	33	193	33	207	12.5%	1.07 [0.69, 1.67]
Wang G 2011 (14)	20	106	39	104	12.0%	0.50 [0.32, 0.80]
Wang G 2012 (39)	10	81	16	82	7.5%	0.63 [0.31, 1.31]
Wang G 2012 (41)	6	49	10	50	5.3%	0.61 [0.24, 1.56]
Wang Q 2012 (29)	2	40	8	38	2.5%	0.24 [0.05, 1.05]
Total (95% CI)		**1005**		**1024**	**100.0%**	**0.60 [0.46, 0.76]**
Total events	152		252			

Heterogeneity: $Tau^2 = 0.08$; $Chi^2 = 19.54$, df = 11 ($P = 0.05$); $I^2 = 44\%$

Test for overall effect: $Z = 4.07$ ($P < 0.0001$)

Fig. 1 Pooled estimates of overall morbidity comparing enhanced recovery after surgery versus standard care. *CI* confidence interval, *df* degrees of freedom, *RR* risk ratio

Greco,WJS 2014

ERAS fungerar: kostnadseffektivt

- **Comparison 100 consecutive colorectal surgery patients**
  - **50 (last) pts standard care vs. 50 (first) pts ERAS care.**
    - Hospital stay **10** days to **7** days (median)
    - No difference in overall morbidity
    - Severe complications **20**% to **12**%

Mean saving per patient after introduction of ERAS:

€ 1651 (6%)

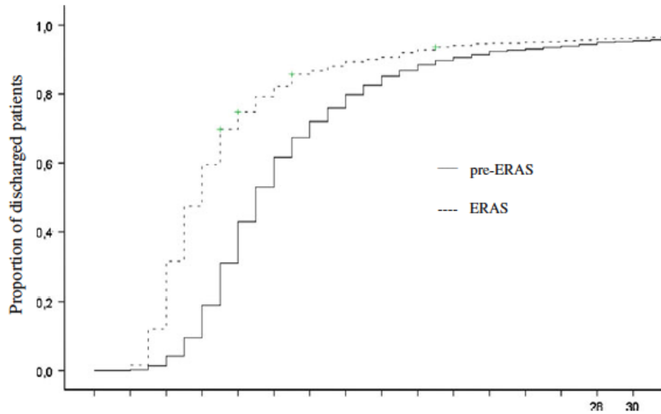
BJS 2013

Cost-effectiveness of the implementation of an enhanced recovery protocol for colorectal surgery

D. Roulin[1], A. Donadini[1], S. Gander[2], A.-C. Griesser[3], C. Blanc[2], M. Hübner[1], M. Schäfer[1] and N. Demartines[1]

Departments of [1]Visceral Surgery and [2]Anaesthesiology, and [3]Medical Direction, University Hospital of Lausanne, Lausanne, Switzerland
Correspondence to: Professor N. Demartines, Department of Visceral Surgery, Centre Hospitalier Universitaire Vaudois, CH-1011 Lausanne, Switzerland (e-mail: demartines@chuv.ch)

Experiences from ERAS implementation in Holland



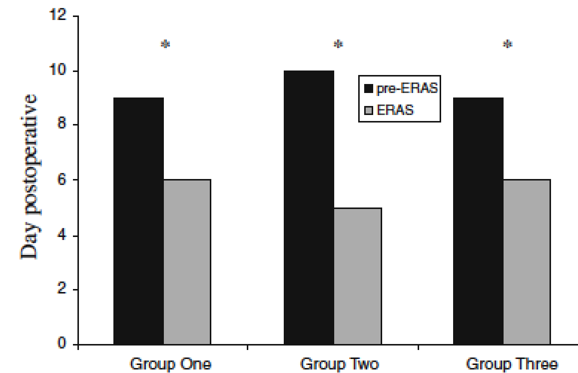
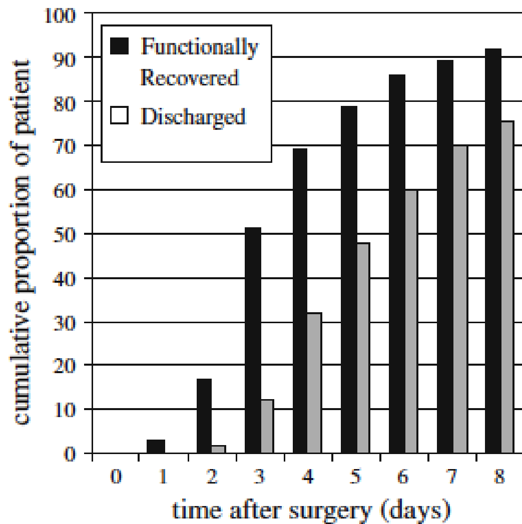


Fig. 3 Reduction in median LOS per hospitals group. $*p < 0.001$ (in all three groups)

	Pre-ERAS ($n = 1{,}451$)	ERAS ($n = 1{,}034$)
No bowel preparation	582 (44) [0–100]	904 (96) [78–100] $p < 0.001$
Oral carbohydrate treatment	NA	839 (81) [17–100]
During surgery		
Active warming by upper body with an air-warming device	NA	987 (98) [93–100]
Epidural anesthesia	864 (62) [0–100]	920 (90) [50–100] $p < 0.001$
Nasogastric drainage removed at the end of surgery	224 (16) [2–85]	957 (94) [70–100] $p < 0.001$
Postoperative factors		
Day 0		
Mobilization of >15 min	NA	652 (65) [20–100]
Oral fluids intake >500 ml	NA	555 (56) [11–100]
Day 1 after surgery		
IV fluid infusion stopped	NA	343 (34) [3–87]
Mobilization of >3h	NA	779 (77) [56–100]
Solid food given	NA	676 (66) [16–100]
Oral nutritional supplements	NA	667 (69) [0–98]
Oral laxatives (MgO)	NA	737 (71) [4–100]
	44 [2–84]	75 [64–93]



Experiences from ERAS implementation in Holland

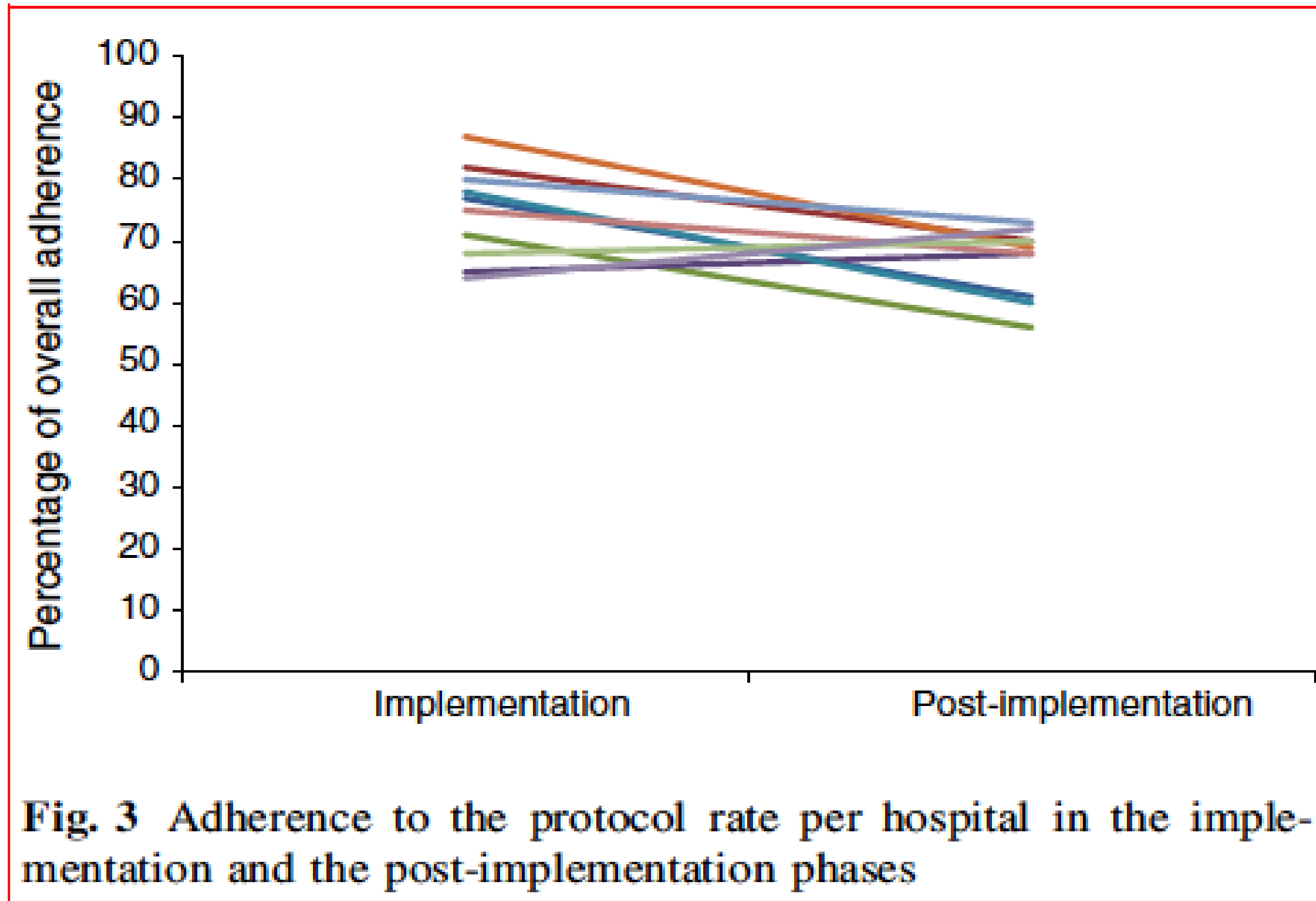


Fig. 3 Adherence to the protocol rate per hospital in the implementation and the post-implementation phases

Gillissen World J Surg (2015) 39:526–533

Experiences from ERAS implementation in Holland

LOS in days

14
12
10
8
6
4
2
0

Pre-implementation | Implementation | Post-implementation

Gillissen World J Surg (2015) 39:526–533

Sustainability of the programme over time

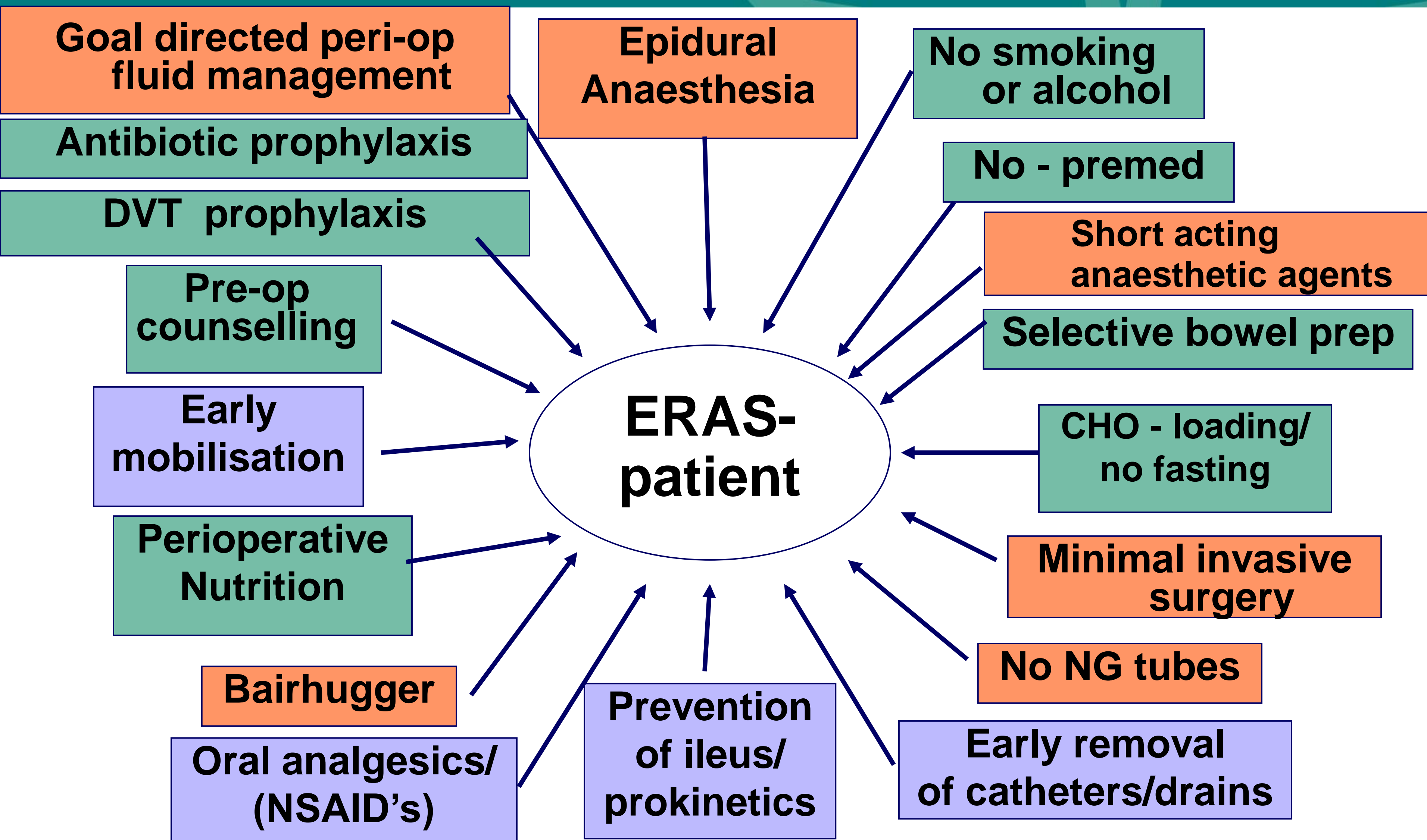
World J Surg (2015) 39:526–533 531

Table 3 Protocol adherence in the implementation and post-implementation phases[a]

Perioperative care elements	Implementation $n = 523$	Post-implementation $n = 297$	p Value
Before surgery			
Pre-admission counseling	78 (SD 20.5 R 33–100)	87 (SD 22.5 R 22–100)	< 0.01
No bowel preparation	98 (SD 3.5 R 88–100)	87 (SD 19.8 R 40–100)	< 0.01
Oral carbohydrate treatment	88 (SD 11.4 R 58–98)	86 (SD 22.8 R 22–100)	< 0.01
Preoperative adherence	90 (SD 8.2 R 76–99)	87 (SD 10.6 R 68–99)	< 0.01
During surgery			
Active warming by upper body air-warming device	100 (SD 0.6 R 98–100)	99 (SD 2.3 R 93–100)	0.17
Epidural anesthesia	90 (SD 11.9 R 59–100)	81 (SD 23.7 R 29–97)	< 0.01
Nasogastric drainage removed at end of surgery	93 (SD 8.4 R 71–100)	97 (SD 3.3 R 93–100)	0.02
Perioperative adherence	95 (SD 5.3 R 85–100)	92 (SD 9.1 R 74–99)	< 0.01
Postoperative factors, day 0			
Mobilization >15 min	69 (SD 22.8 R 20–100)	50 (SD 19.6 R 9–87)	< 0.01
Oral fluids intake >500 ml	67 (SD 24.9 R 0–93)	65 (SD 17.5 R 20–80)	< 0.01
Day 1 after surgery			
IV fluid infusion stopped	36 (SD 25.6 R 3–87)	9 (SD 6.0 R 0–17)	< 0.01
Mobilization >3 h	90 (SD 21.8 R 83–100)	38 (SD 14.7 R 17–66)	< 0.01
Oral nutritional supplements	63 (SD 36.1 R 0–98)	70 (SD 28.6 R 3–100)	< 0.01
Oral laxatives (MgO)	78 (SD 6.3 R 77–100)	94 (SD 7.4 R 78–100)	< 0.01
Day 2 after surgery			
Epidural removed	72 (SD 21.9 R 15–98)	79 (SD 16.0 R 50–93)	< 0.01
Postoperative adherence	70 (SD 15.2 R 47–94)	58 (SD 7.2 R 44–71)	< 0.01
Overall compliance rate	75 % (SD 7.6 R 64–87)	67 % (SD 6.3 R 56–73)	< 0.01

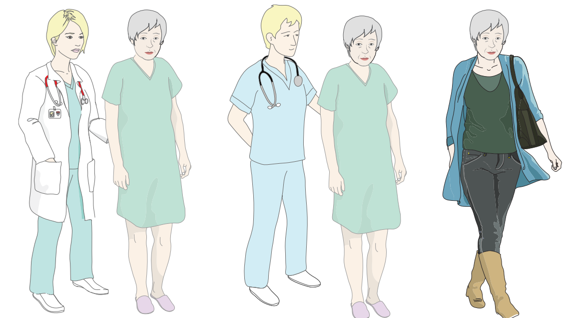
[a] Presented are the percentages (standard deviation SD and the range between hospitals R) of patients managed according to the care elements of the ERAS program, overall and for the preoperative, perioperative, and postoperative elements separately

Mycket som ska funka under patientens resa



För patienten: -Patientcentrerad vård i praktiken

- **Standardiserad muntlig och skriftlig information i förväg**
  - Engagerad patient blir mer delaktig
- **Miljön på vårdavdelning viktig**
- **“Tarmslingan”**
- **Tidig uppföljning efter utskrivning**



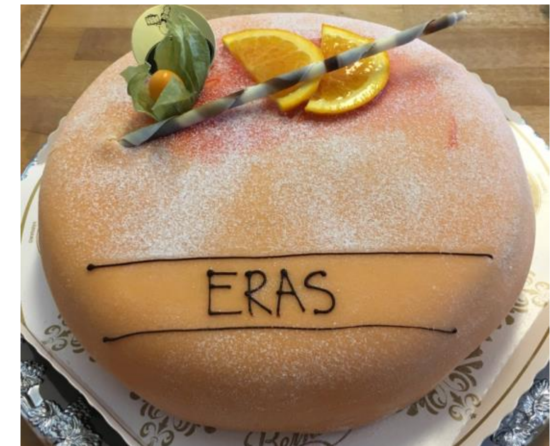
Denna broschyr är utformad för att du ska vara så bra förberedd som möjligt inför din operation. Vi rekommenderar att du läser igenom broschyren tillsammans med en sjuksköterska och någon anhörig. Vänligen ta med broschyren och använd den aktivt under sjukhusvistelsen.

ERAS® Society

Underlättar för personalen

- **ERAS Vårdprogram gör vården enklare**
  - Strukturerade dokumentationsmallar i journal
  - Avvikande vårdförlopp uppmärksammas tidigt
  - Ordinationsmallar läkemedel
- **ERAS enhet inom avdelning 61 sedan januari 2017**
  - leds av specialistsjuksköterska
  - Synliggör ERAS vården
- **Kontinuerlig utbildning/fortbildning**

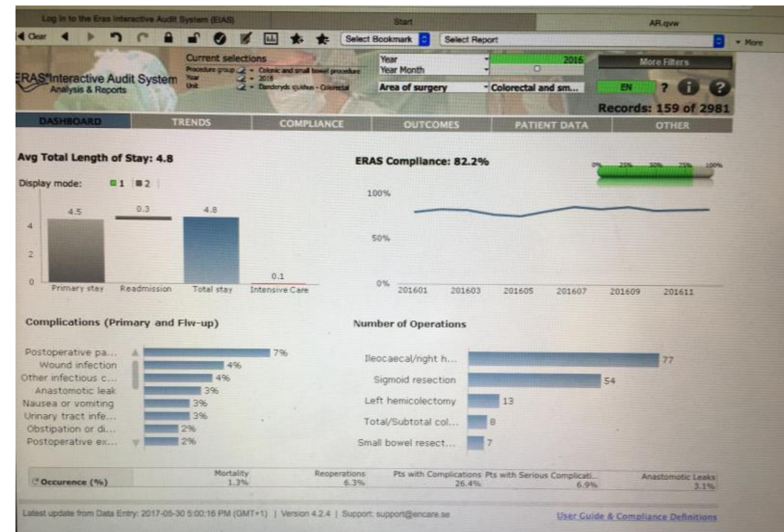
Uthållighet: -Små justeringar riktar fokus mot ERAS



Audit, audit and audit

- **Doing ERAS fully means a higher level of engagement than just knowing about the principles and believing that they are practiced in you unit**
- **Working with the team as the core of ERAS**
- **Regular interactive audit sessions to work with true data and feedback to the units where problems may arise.**

Ljungqvist O, JPEN 2014



Audit –ERAS guidelines

- ”Summary and recommendation:
  - A systematic audit is essential to determine clinical outcome and measure compliance to establish suc-cessful implementation of the care protocol.
  - The system should also report patient experience and functional recovery, but validated tools are required for this aspect. ”

Evidence level:
Systematic audit: *Moderate*
(extrapolation, study quality)
Recommendation grade: *Strong*

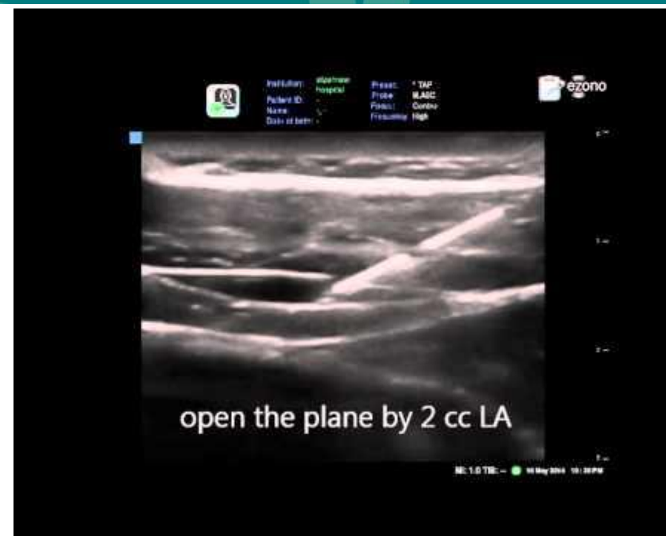
Gustafsson UO WJS 2012

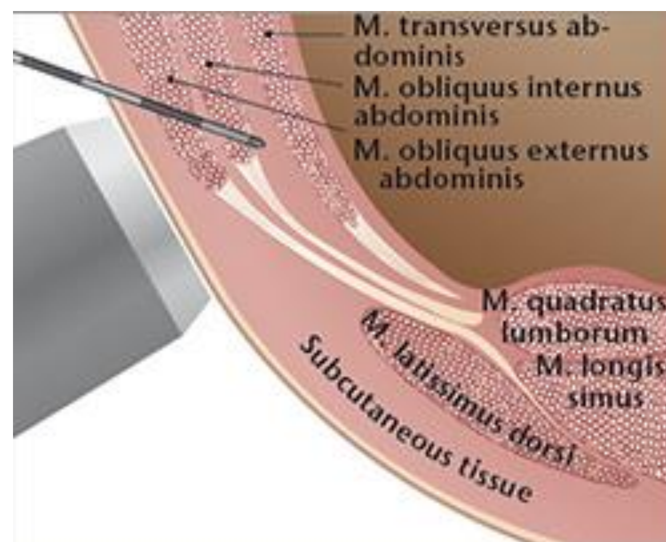
ERAS programmet förändras hela tiden

The improvements we make today must not hinder the development of tomorrow.

ERAS över tid:
-förändringar i vårdprogrammet

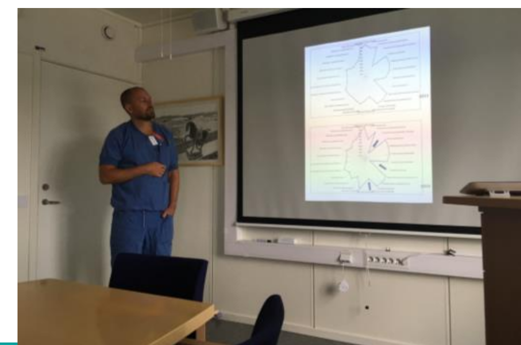
- **Even so, it is important for the further development of ERAS to recognize that continuous reevaluation of the evidence and the guidelines will be necessary.**
  - **Example:**
    - *Introduction of laparoscopic surgery will change practice of thoracic epidurals*



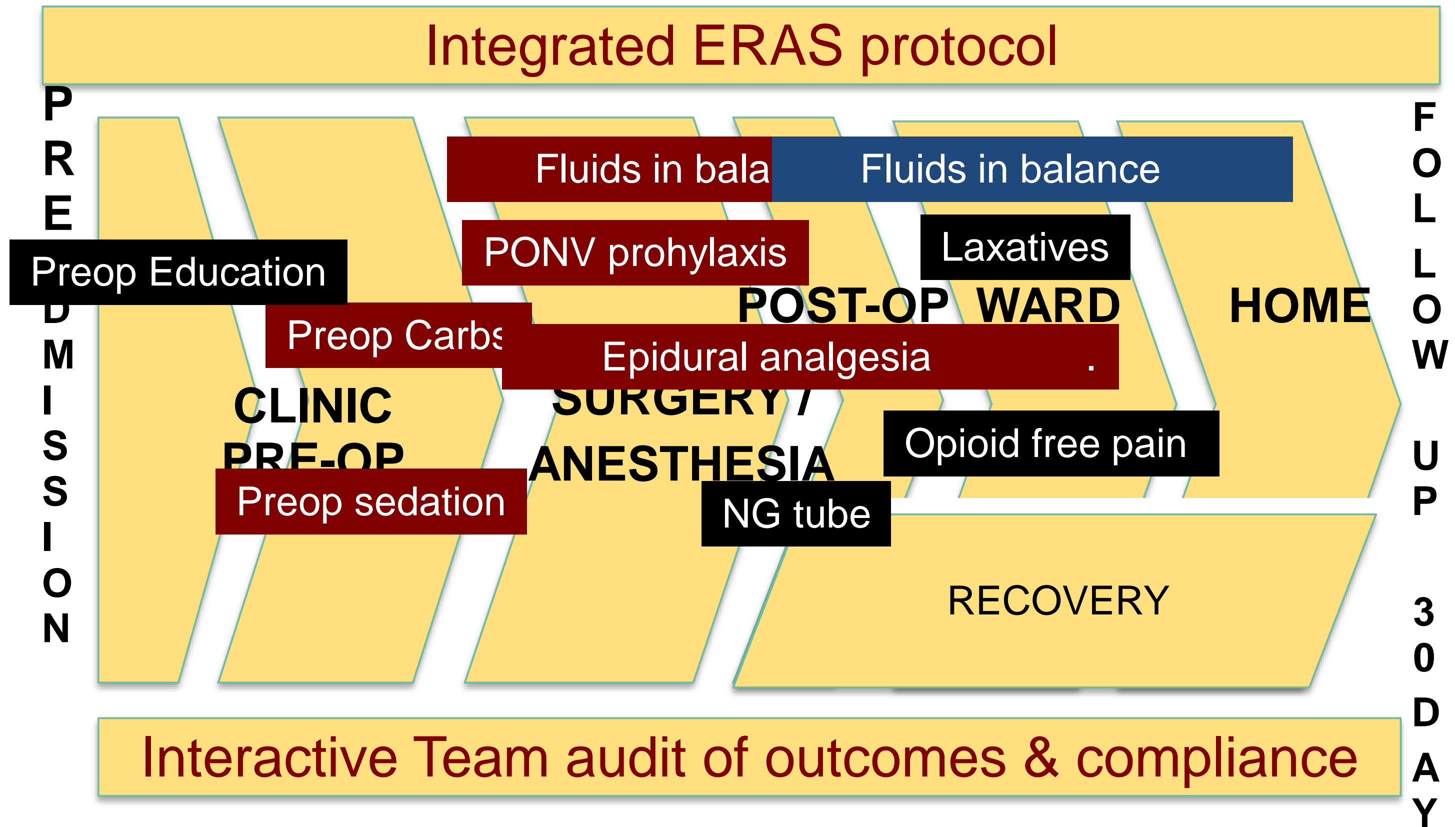


Dynamiken i ERAS teamet

- **Formen för ERAS teamet, hur arbetar ni?**
  - Hur ofta träffas teamet? *för sällan/för ofta?*
  - Vilka är kallade? *når man ut till alla?*
  - Agenda?
  - Tidsåtgång?
  - Protokoll? *Finns rutiner för uppdatering*
  - Utåtriktad verksamhet? *presentation för klinik, sjukhusledning?*
  - Data från EIAS?
  - Återkoppling från patienter?
  - Är teamet multidisciplinärt/multiprofessionellt?

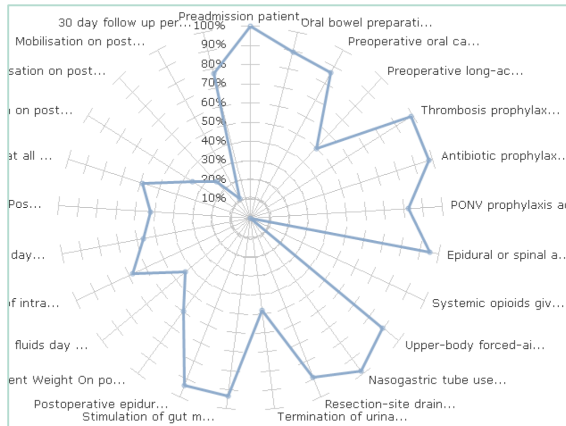


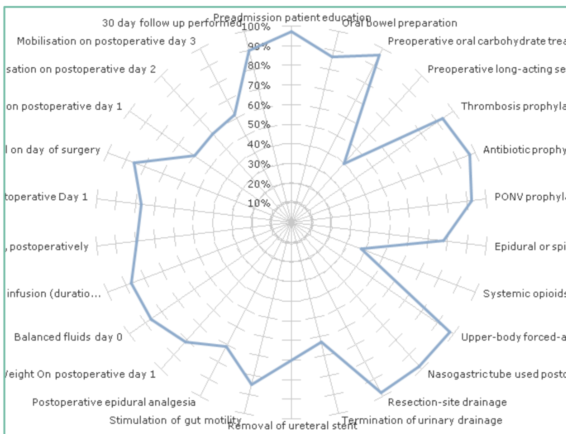
Vem gör vad?



Ljungqvist JPEN 2014

Dynamiken i ERAS teamet



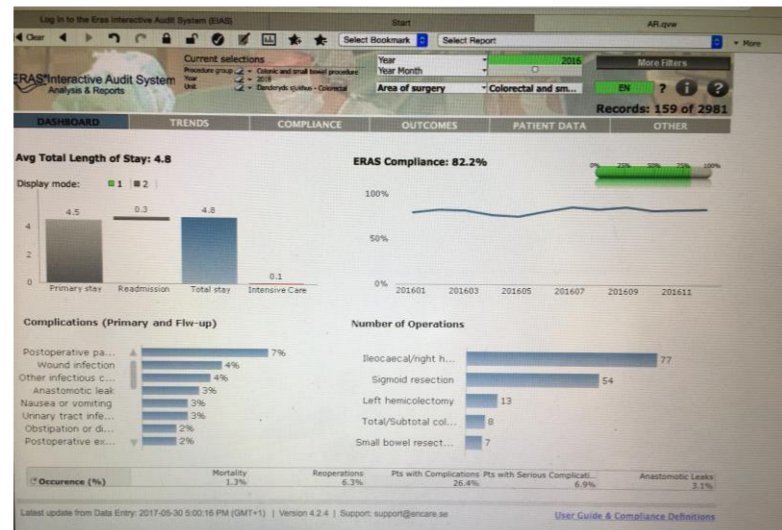


- Vem registrerar i EIAS och hur mycket tid är avsatt?
- Vem analyserar data i A&R?
- Hur presenteras data från EIAS, hur ofta och till vem?

ERAS teamet
-så jobbar vi

- **Möte varje månad**
  - **fast agenda**

- **ERAS sjuksköterska tis, tors**
  - **Utbildning, inskrivning,**
  - **Återkoppling resultat EIAS**
  - **Ambassadör inom sjukhuset**
- **Registrering i EIAS**
  - görs av undersköterskor
- **Alltid på tapeten**
  - **Anslagstavla**
  - **APT**
  - **delårsrapporter**
- **Stor kirurgi i början på veckan**



Ledningens stöd

- **Support från klinikledning**
  - **Ge kontinuerlig återkoppling till nyckelpersoner i din organisation**

Money talks
- Spar vi pengar på Danderyd?

- **Data från vår enhet:**
  - **Vårdtid reducerad**
    - 2 (5 till 3) dagar för kolonresektioner
    - 4 (8 till 4) dagar för rektumresektioner
  - **IVA plats 0.4 till 0.1 dagar i genomsnitt för rektumpatienter**
  - **150 kolon/50 rektumresektioner årligen**
- **Antagande:**
  - **Genomsnittlig dygnskostnad för en vårdplats: 4500 SEK**
  - **IVA plats: 40 000 SEK**

Total Length of Stay, trend

Vårdtid, dagar, median

	År 2011	År2012	År 2013	År 2014	År 2015	År 2016
Vårdtid kolon	4	5	5	4	4	3
Vårdtid rektum	8	7	7	7	5	4

Danderyds sjukhus kolorektalsektionen Källa: EIAS

Money talks

- **Besparingar:**
  - **Minskad vårdtid: 500 x 4500 — 225,0000 SEK**
  - **Reducerad vård IVA: 15 x 4000 — 60,0000 SEK**

2 850 000 SEK

- **Ökade kostnader för ERAS program:**
  - **Prenumeration EIAS: 82 000 SEK**
  - **Lön:**
    - ERAS koordinator ssk 1 dag/v: **100 000**
    - Registrering; usk: 5 tim/v: **70 000**

-252 000 SEK

Money talks

Årlig besparing:

2,6 milj SEK

13 000/patient

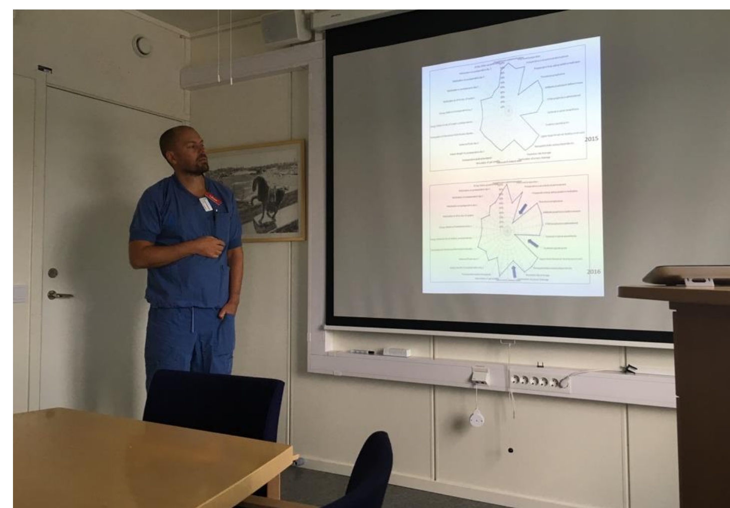
- och frigör vårdplatser i dessa tider

Take home message

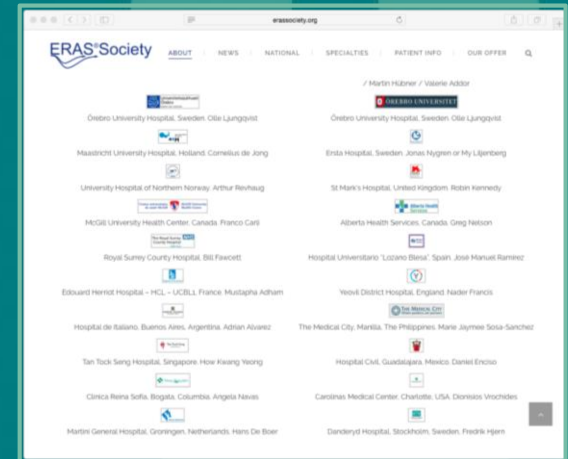
- Beslutsamhet
- Organisation
- Engagemang
- Uthållighet

- **Involvera personal på alla nivåer**

- **ERAS teamet är navet runt patienten**
- **ERAS sjuksköterskan har en nyckelroll**
- **Registering i EIAS**
  - **Möjliggör snabb, effektiv återkoppling**



Danderyds sjukhus
Kolorektalenheten
Centre of Excellence



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6th ERAS World Congress

ENHANCED RECOVERY AFTER SURGERY

23-25 May 2018

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THANK YOU

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