XXVI IFSO WORLD CONGRESS

ISPCOP Session

ANESTHESIA FOR BARIATRIC SURGERY, ROBOTS, ERABS AND ALL YOU NEED TO KNOW TO UPDATE YOUR PRACTISE IN 2023

Congress Centre:
Mostra d'Oltremare
Viale Kennedy, 54 | Naples, Italy

Session Chair
Anupama N Wadhwa
Moderators
Giuseppe Marinari
Giuseppe Servillo

What Can We Still Improve From The New ERABS Guidelines?

based on A Large Survey From Bariatric Surgeons And Anesthesiologists?

16:00. - 16:15

Prof Dr Jan P. Mulier (chair of dep)
Departement of Anesthesiology
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Affiliated with KULeuven;
Affiliated with UGhent

Jan P Mulier MD PhD. Potential conflicts of interest 2023

I have been giving lectures for, received research support or support for organizing meetings from following companies in the last two years:

- General Electric
- Medtronic
- Johnson & Johnson
- MDoloris
- Merck (MSD)
- Pfizer
- Baxter

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New ERAbS guidelines:

table 1: Pre admission care

Something to add?

Weight reduction

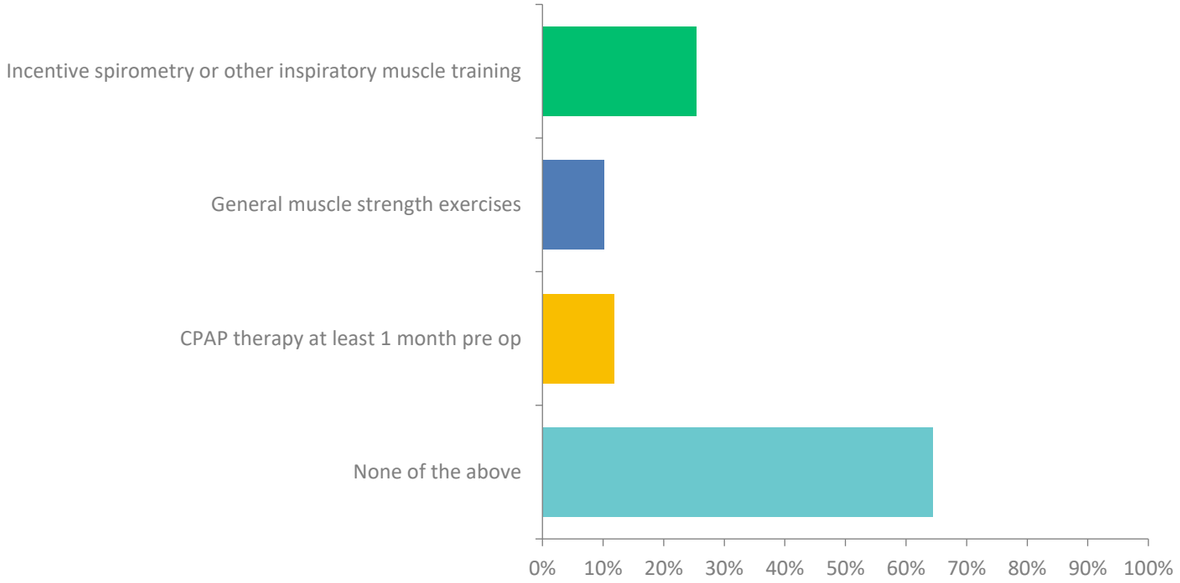
Exercise pre op

Table 1 ERAS recommendations for preadmission care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
1. Information, education and counselling	*Preoperative information and education, adapted to the individual requirements, should be given to all patients*	Low	Strong
2. Indications and contraindications for surgery	*Indications for bariatric surgery should follow updated global and national guidelines*	Moderate	Strong
3a. Smoking and alcohol cessation	*All patients should be screened for alcohol and tobacco use. Tobacco smoking should be stopped at least 4 weeks before surgery. For patients with alcohol abuse, abstinence should be strictly adhered to for 1–2 years. Moreover, the risk for relapse after bariatric surgery should be acknowledged*	Smoking: Moderate Alcohol: Low	Strong Strong
3b. Preoperative weight loss	*Preoperative weight loss using very low or low-calorie diet prior to bariatric surgery should be recommended*	Postoperative complications: Moderate	Strong
	While feasible, patients with diabetes and treatment with glucose-lowering drugs should closely monitor treatment effects, and be aware of the risk for hypoglycaemia. Very low calorie diet improves insulin sensitivity in patients with diabetes	Postoperative weight loss: Low Diabetes: Low	Strong Strong
4. Prehabilitation and exercise	*Although prehabilitation may improve general fitness and respiratory capacity, there is insufficient data to recommend prehabilitation before bariatric surgery*	Low	Weak

Q8: What preparation do you request pre operatively?

Answered: 59 Skipped: 0

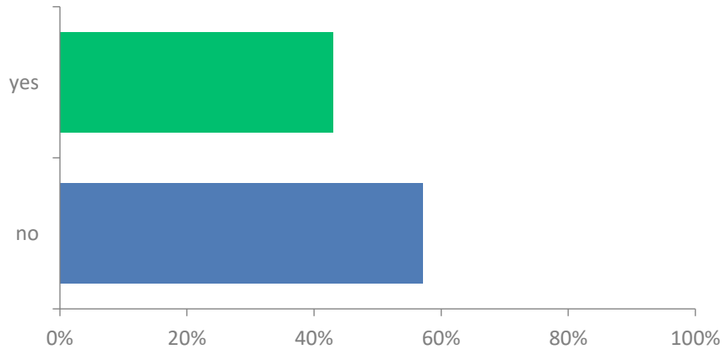


Q8: most do not request any of these what is correct as none is proven to have effect. Except general muscle training might be effective but not good standardized or described: only 10 % do it.

Compared to surgeons Q. 25 strange that surgeons give 40 % of pre-operative exercise programs to be used? Do anesthesiologist talk to surgeons or are aware what each request for pre op ??

Q25: Pre-operative exercise program

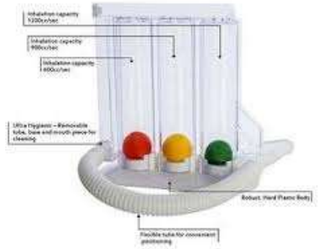
Answered: 205 Skipped: 0

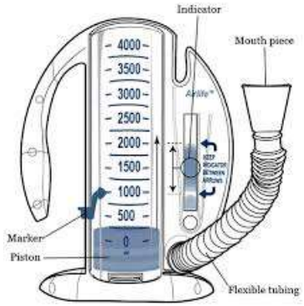


Preoperative use of incentive spirometry does not affect postoperative lung function in bariatric surgery

DAVIDE CATTANO*, ALFONSO ALTAMIRANO, ANDREA VANNUCCI, VLADIMIR MELNIKOV, CHELSEA CONE, and CARIN A. HAGBERG

HOUSTON, TEX AND ST. LOUIS, MO

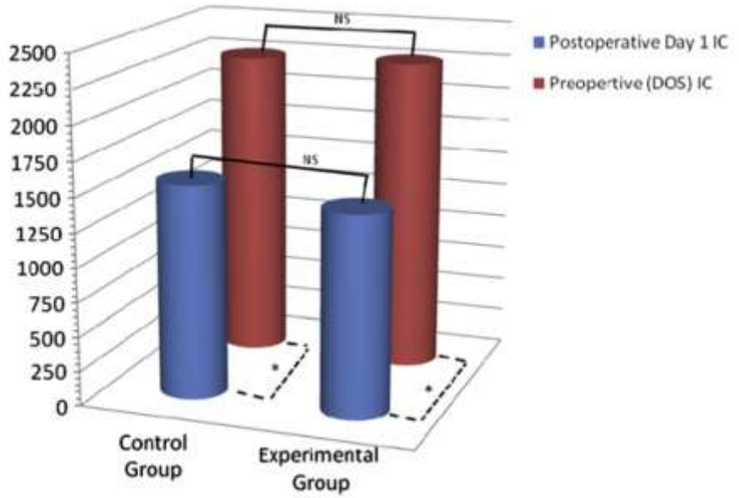




Morbidly obese patients undergoing general anesthesia for laparoscopic bariatric surgery are considered at increased risk of a postoperative decrease in lung function. The purpose of this study was to determine whether a systematic use of incentive spirometry (IS) prior to surgery could help patients to preserve their respiratory function better in the postoperative period. Forty-one morbidly obese (body mass index (BMI) > 40 kg/m^2) candidates for laparoscopic bariatric surgery were consented in the study. All patients were taught how to use an incentive spirometer but then were randomized blindly into 2 groups. The control group was instructed to use the incentive spirometer for 3 breaths, once per day. The treatment group was requested to use the incentive spirometer for 10 breaths, 5 times per day. Twenty experimental (mean BMI of 48.9 ± 5.67 kg/m^2) and 21 control patients (mean BMI of 48.3 ± 6.96 kg/m^2) were studied. The initial mean inspiratory capacity (IC) was 2155 ± 650.08 (SD) cc and 2171 ± 762.98 cc in the experimental and control groups, respectively. On the day of surgery, the mean IC was 2275 ± 777.56 cc versus 2254.76 ± 808.84 cc, respectively. On postoperative day 1, both groups experienced a significant drop of their IC, with volumes of 1458 ± 613.87 cc (*t* test $P < 0.001$) and 1557.89 ± 814.67 cc (*t* test $P < 0.010$), respectively. Our results suggest that preoperative use of the IS does not lead to significant improvements of inspiratory capacity and that it is a not a useful resource to prevent postoperative decrease in lung function. (Translational Research 2010;156:265–272)

Abbreviations: ABG = arterial blood gases; BiPAP = bilevel positive airway pressure; BMI = body mass index; CPAP = continuous positive airway pressure; FEV1 = forced expiratory volume in 1 s; FiO_2 = fraction of inspired oxygen; FRC = functional residual capacity; IC = inspiratory capacity; IS = incentive spirometry; OHS = obesity hypoventilation syndrome; PACU = postanesthesia care unit; PEEP = positive end-expiratory pressure

No value of incentive spirometry



DOS= Day of Surgery

(*) = Statistically significant using unpaired two tailed t-test between the day of surgery and postoperative day 1 ; Control Group (p<0.010); Experimental Group (p<0.001)

Fig 1. IC volumes measured preoperatively (day of surgery) and postoperatively in patients separated by their assigned group. Both the experimental and the control groups showed a significant difference in IC lung volume as shown by the (*). The percentage loss for the control group was 31%, and for the experimental group, it was 36%. No significant differences were found between the control and the experimental groups when comparing day of surgery and postoperative day 1 IC volumes as shown by the 2 solid connecting bars. (Color version

Pre-operative physiotherapy & postoperative CPAP reduces PPC

Perioperative Medicine

SPECIAL ARTICLE

Perioperative Lung Protection: General Mechanisms and Protective Approaches

Lorenzo Ball, MD, PhD,*† Chiara Almondo, MD,* and Paolo Pelosi, MD, FERS*†

See Article, p 1663

Postoperative pulmonary complications (PPCs) are one of the most import
operative morbidity and mortality in patients undergoing noncardiothoracic
increased hospital length of stay and mortality rate. The principal purpose
provide an overview of the perioperative lung protection strategies in patient
tive noncardiothoracic surgery, informing clinicians on evidence-based perio
ways. We also conducted a systematic review and meta-analysis of randomiz
in noncardiothoracic surgery focusing on the following aspects: preoperat
intraoperative protective mechanical ventilation, postoperative prophylactic c
airway pressure (CPAP) or high-flow nasal cannula (HFNC), and postoperat
Both preoperative physiotherapy (relative risk [RR], 0.49, 95% confidence
0.69, $P < .01$) and postoperative CPAP (RR, 0.53, 95% CI, 0.30-0.94, $P =$
incidence of PPCs. Intraoperative protective mechanical ventilation had ur
0.90, 95% CI, 0.77-1.06, $P = .22$). No benefits were observed for HFNC (RR, 0
1.11, $P = .30$) and physiotherapy regimens administered in the postoperativ
0.89, 95% CI, 0.69-1.16, $P = .40$). Lung-protective strategies should be cons
the entire perioperative period. The prophylactic use of strategies initiated in
period only, such as physiotherapy, CPAP, or HFNC, offers limited benefits.
patient training should be started early in the preoperative phase, and intrao
mechanical ventilation should be titrated on an individual basis taking into ac
able evidence. (Anesth Analg 2020;131:1789–98)

Reason for no effect of intraoperative measures?

- Patients received opioids intra-operatively
- No verification of full reversal in each case
- Extubation without CPAP and recruitment

Intervention	Trials	Intervention (Events/N)	Control (Events/N)	Risk Ratio (95% CI)	p	I^2 (%)	Weight (%)
Pre-operative physiotherapy	14	140/977	286/1003	0.49 (0.35 to 0.69)	<0.01	65	100
Continued in the postoperative period	4	31/441	122/471	0.29 (0.20 to 0.42)	<0.01	0	30.3
Inspiratory muscle training	4	59/173	62/180	0.89 (0.58 to 1.38)	0.61	27	27.4
Comprehensive physiotherapy	5	23/145	44/138	0.49 (0.32 to 0.69)	<0.01	0	31.1
Single physiotherapy session	1	27/218	58/214	0.46 (0.30 to 0.69)	<0.01	NA	11
Intraoperative protective mechanical ventilation	11	804/2635	833/2633	0.90 (0.77 to 1.06)	0.22	57	100
PEEP increase + TV reduction + ARM	3	50/259	90/259	0.61 (0.39 to 0.94)	0.02	32	17.4
TV reduction only	3	249/678	254/661	0.90 (0.62 to 1.32)	0.59	40	27.3
PEEP increase + ARM	5	505/1698	489/1713	1.03 (0.93 to 1.15)	0.51	0	55.3
Post-operative physiotherapy	7	128/760	140/771	0.89 (0.69 to 1.16)	0.40	21	100
Chest physiotherapy	3	37/108	39/100	0.89 (0.64 to 1.23)	0.47	0	40.6
Incentive spirometry	4	91/652	101/671	0.86 (0.51 to 1.47)	0.58	57	59.4
Post-operative CPAP	6	118/520	149/508	0.53 (0.30 to 0.94)	0.03	44	100
Prophylactic	5	116/415	139/404	0.70 (0.47 to 1.07)	0.10	19	89.1
Early therapeutic/prophylactic	1	2/105	10/104	0.20 (0.04 to 0.88)	0.03	NA	10.9
Post-operative HFNC	1	58/108	68/112	0.88 (0.70 to 1.11)	0.30	NA	100

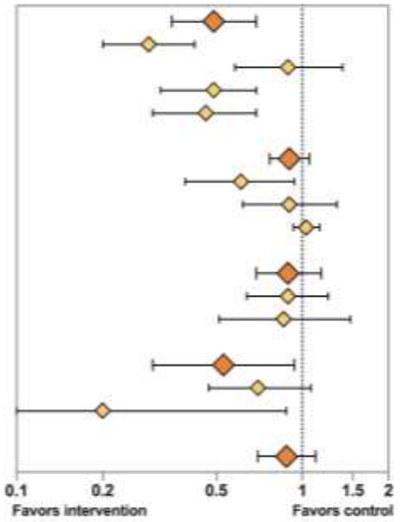
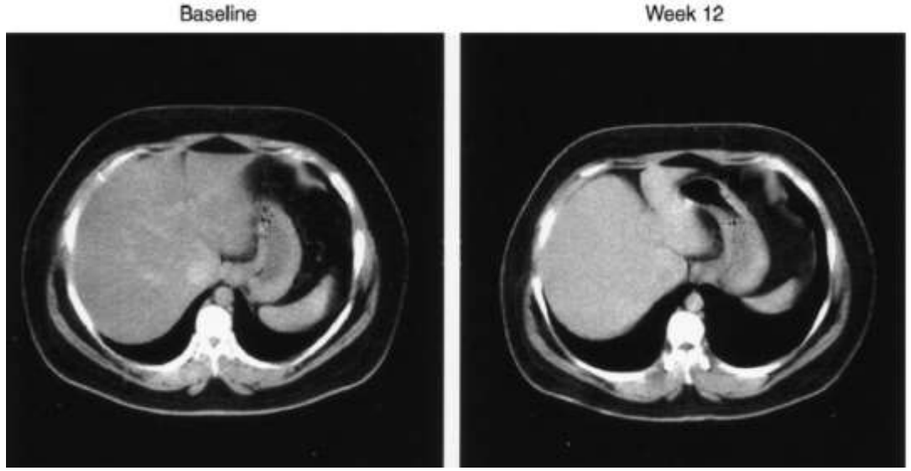


Figure. Summary of findings of the meta-analysis. ARM indicates alveolar recruitment maneuvers; CI, confidence interval; CPAP, continuous positive airway pressure; HFNC, high-flow nasal cannula; NA, not applicable; PEEP, positive end-expiratory pressure; TV, tidal volume.

CPAP, continuous positive airway pressure; PPC, postoperative pulmonary complications.
Ball L, et al. *Anesth Analg*. 2020;131(6):1789-1798.

Preoperative weight loss with a very-low-energy diet: quantitation of changes in liver and abdominal fat by serial imaging[1–3]

Susan L Colles, John B Dixon, Paul Marks, Boyd J Strauss, and Paul E O'Brien Am J Clin Nutr 2006;84:304 –11.



Liver size reduction occurs in the first 2 weeks.

Reduction in visceral adipose tissue (VAT) is faster than body weight, both occurs over 12 weeks.

Massive hepatomegaly patients lose more liver volume.

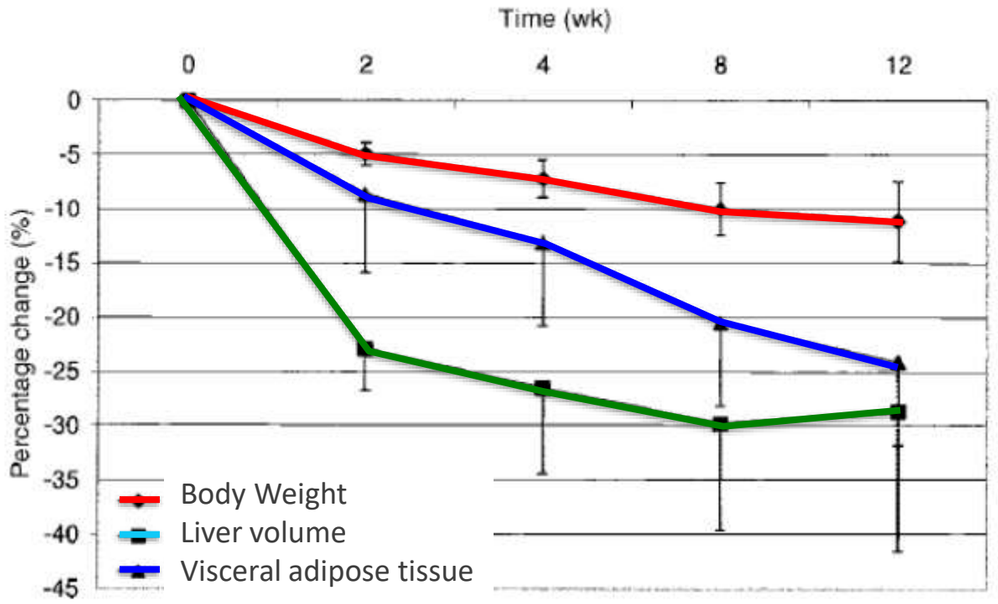


FIGURE 2. Relative change in liver volume, visceral adipose tissue (VAT) area, and body weight during a 12-wk very-low-energy diet as measured by serial magnetic resonance imaging ($n = 9$). An immediate reduction in liver volume occurred in the first 2 wk ($P < 0.001$) and between baseline and all other time points ($P < 0.001$ for all). The decreases in body weight and VAT showed a more uniform change. Significant decreases in weight ($P < 0.001$) and VAT ($P = 0.001$) occurred between baseline and week 12. The statistical analysis was conducted by using ANOVA; Tukey's post hoc analysis was used for normally distributed data and paired-samples t test.

BJA

British Journal of Anaesthesia, 131 (2): 338–347 (2023)

doi: 10.1016/j.bja.2023.04.031
Advance Access Publication Date: 20 June 2023
Neuroscience and Neuroanaesthesia

Metabolic syndrome and the risk of postoperative delirium and postoperative cognitive dysfunction: a multi-centre cohort study

Insa Feinkohl[1,2,*], Jürgen Janke[2,3], Arjen J. C. Slooter[4,5,6], Georg Winterer[7], Claudia Spies[7], Tobias Pischon[2,3,7,8], the BioCog Consortium

Older surgical patients with metabolic syndrome were at increased risk of POD.

Prehab as a part of ERAmbS protocols to avoid Postoperative Neurocognitive Disorders (PND)

Gilles C et al. BJA 2022

Peri operative protection of the brain to avoid postoperative neurocognitive disorders (PND)

1. Suspected:
   - Age, frailty, history of PND, medical diseases (metabolic syndrome) with inflammatory aspects,…
2. Preop & Postop:
   - Pre habilitation, mobilization & physiotherapy, orientation help, cognitive stimulation,…
3. Avoid or reduce:
   - Benzodiazepines, anxiolytics, neostigmine, H_2- blockers, scopolamine, opioids?, sevoflurane (cancer)
5. Anesthetics to choose:
   - LRA, dexmedetomidine, lidocaine iv , ketamine,…
6. Surgeon:
   - Minimal invasive surgery with less inflammatory stress:
7. Attention to:
   - Avoid hypotension, deep hypnosis, fluid mismanagement, insufficient sympathetic block, insufficient perioperative analgesia

New ERAbS guidelines:

table 1: Pre admission care

what we should discuss

1. Pre operative weight loss is very important to give laparoscopic workspace and facilitate ventilation in the male with central obesity or in the young females without children or getting their first laparoscopy.

2. Prehabilitation helps only if it is intensive general muscle training or strong respiratory muscle training.

3. Prehabilitation might help to reduce brain dysfunction.

Table 1 ERAS recommendations for preadmission care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
1. Information, education and counselling	*Preoperative information and education, adapted to the individual requirements, should be given to all patients*	Low	Strong
2. Indications and contraindications for surgery	*Indications for bariatric surgery should follow updated global and national guidelines*	Moderate	Strong
3a. Smoking and alcohol cessation	*All patients should be screened for alcohol and tobacco use. Tobacco smoking should be stopped at least 4 weeks before surgery. For patients with alcohol abuse, abstinence should be strictly adhered to for 1–2 years. Moreover, the risk for relapse after bariatric surgery should be acknowledged*	Smoking: Moderate Alcohol: Low	Strong Strong
3b. Preoperative weight loss	*Preoperative weight loss using very low or low-calorie diet prior to bariatric surgery should be recommended*	Postoperative complications: Moderate	Strong
	While feasible, patients with diabetes and treatment with glucose-lowering drugs should closely monitor treatment effects, and be aware of the risk for hypoglycaemia. Very low calorie diet improves insulin sensitivity in patients with diabetes	Postoperative weight loss: Low Diabetes: Low	Strong Strong
4. Prehabilitation and exercise	*Although prehabilitation may improve general fitness and respiratory capacity, there is insufficient data to recommend prehabilitation before bariatric surgery*	Low	Weak

Stenberg World J Surg (2022) 46:729–751

New ERAbS guidelines:

table 2: pre operative care

Something to add?

Reducing inflammatory reactions

Table 2 ERAS recommendations for preoperative care in bariatric surgery

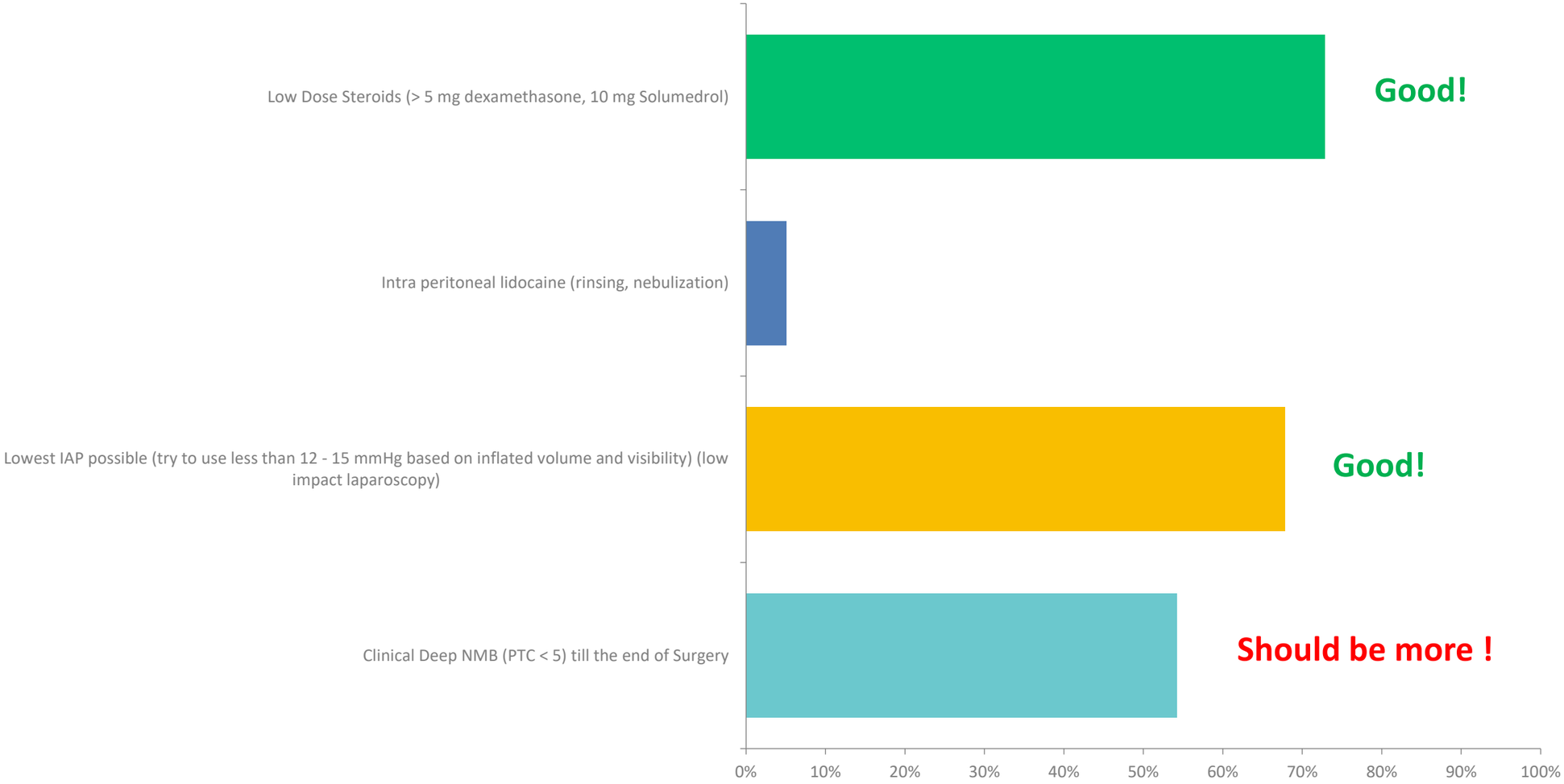
Element	Recommendation	Level of evidence	Recommendation grade
5. Supportive pharmacological intervention	*8 mg intravenous dexamethasone should be administered preferably 90 min prior to induction of anaesthesia for reduction of PONV as well as inflammatory response*	Glucocorticoids: Low	Weak
	There is insufficient evidence to support perioperative statins for statin-naive patients in bariatric surgery. Patients on statins can safely continue the treatment during the perioperative phase	Statins: Very low	Weak
	Beta-adrenergic blockade does not influence the risk for adverse outcomes in bariatric surgery, but can be safely continued during the perioperative phase for patients at high risk of cardiovascular events	Beta-adrenergic blockade: Low	Weak
6. Preoperative fasting	*Solids until 6 h before induction and clear liquids until 2 h before induction for elective bariatric surgery assuming no contraindications (e.g., gastroparesis, bowel obstruction)*	Low	Strong
	Patients with diabetes should follow these recommendations, but further studies are needed for patients with additional risk factors such as gastroparesis	Low	Strong
7. Carbohydrate loading	*There is insufficient evidence to make a recommendation about preoperative carbohydrate loading in bariatric surgery*	Low	Weak
8. PONV	*A multimodal approach to PONV prophylaxis should be adopted in all patients*	High	Strong

PONV Postoperative nausea and vomiting

Stenberg World J Surg (2022) 46:729–751

Q21: What peritoneal protection (anti inflammatory response) do you request during laparoscopy (Please mark more than one if applicable)

Answered: 59 Skipped: 0



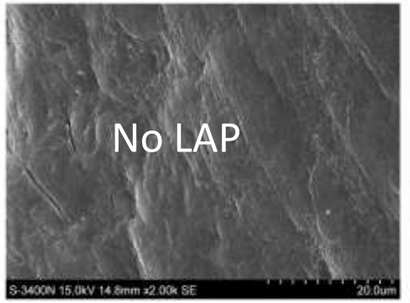


Fig. 4 In the control group, the peritoneum is covered by a sheet of flat mesothelial cells densely covered with microvilli. No intercellular clefts and no exposed basal lamina can be detected (magnification ×3,000)

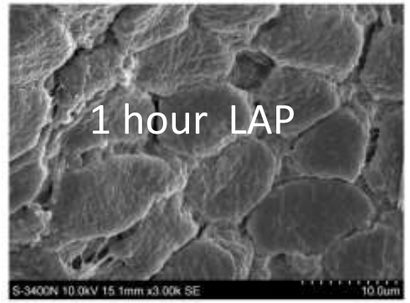


Fig. 5 In group C1h, the mesothelial cells retract and bulge up; in addition, intercellular clefts and basal lamina are evident (magnification ×3,000)

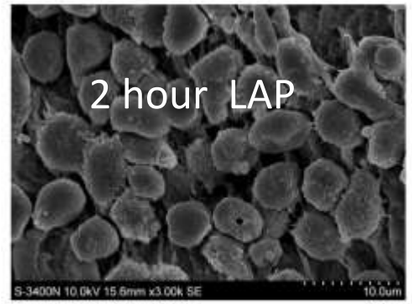


Fig. 6 In group C2h, partial mesothelial cells are desquamated and basal lamina is more extensively exposed than in group C1h. Additionally, residual mesothelial cells bulge up and exhibit typical cobblestone morphology (magnification ×3,000)

Randomized clinical trial

8 mg dexamethasone preoperative:

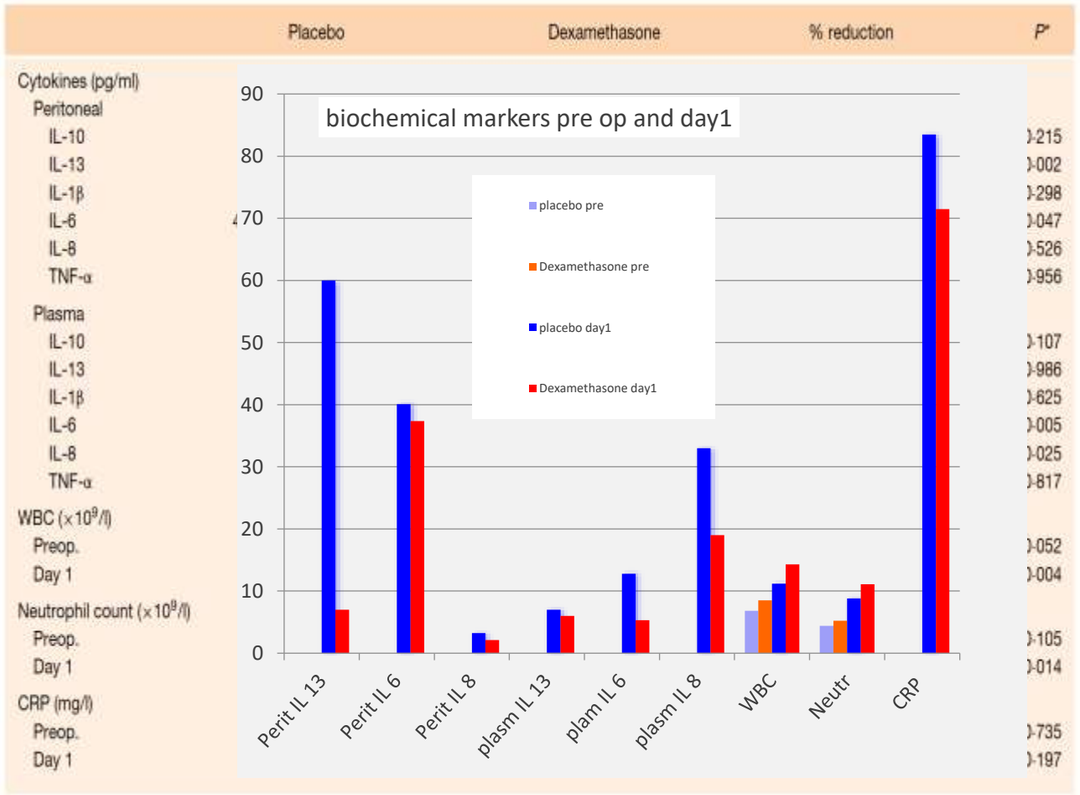
Randomized clinical trial of the effect of glucocorticoids on peritoneal inflammation and postoperative recovery after colectomy

K. Zargar-Shoshtari[1], T. Sammour[1], A. Kahokehr[1], A. B. Conn

[1]Department of Surgery, South Auckland Clinical School, Faculty of Medical and Health Scienc
Middlemore Hospital, Auckland, New Zealand
Correspondence to: Professor A. G. Hill, South Auckland Clinical School, Private Bag 93311, Midd
(e-mail: ahill@middlemore.co.nz)

- moderate reduction in postoperative fatigue
- more patients reached discharge criteria by day 3

This decrease in postoperative fatigue and improvement in functional recovery occurred in addition to decreases in postoperative fatigue demonstrated previously following implementation of an ERAS programme



IL, interleukin; TNF, tissue necrosis factor; WBC, white blood cell count; CRP, C-reactive protein; NA, not applicable. *Mann–Whitney *U* test.

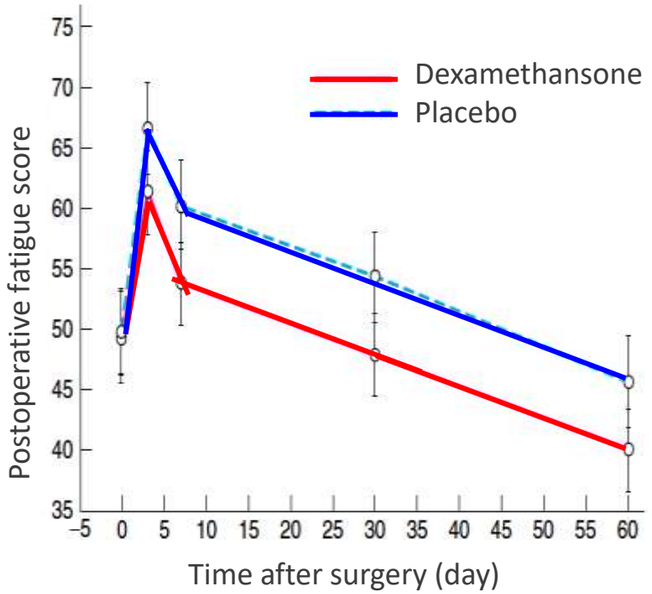


Fig. 2 Postoperative fatigue scores in 29 patients receiving dexamethasone and in 31 receiving placebo before elective, open colonic resection

- Better sleep scores at day 1 2
- Less nausea, vomiting at day 1 2 3
- Less pain at rest/coughing at day 3
- Flatus 1 day earlier
- Discharge 1 day earlier

Table 4 Complications

	Placebo	Dexamethasone	*P**
Wound infection	6	0	0·038
Chest infection	3	3	0·931
Urinary infection	1	3	0·557
Ileus	3	1	0·654
Anastomotic leak	1	3	0·557
Cardiac complications	2	3	0·938
Urinary retention	5	2	0·447
Other surgical complications	0	2	0·443
Other non-surgical complications	1	3	0·557
Total	22	20	0·866

Journal of Clinical Anesthesia and Pain Medicine

Scient Open Access

Research Article

A Prospective Randomized Controlled Trial Comparing a Multitarget Opioid Free Anaesthesia (OFA) and a 3-Liter Volume Calculated Airseal Carbon Dioxide Insufflator with a Balanced Anaesthesia Using Sufentanil-Sevoflurane and a Standard 15 mmHg Carbon Dioxide Pressure Pneumoperitoneum Insufflator in a 2x2 Factorial Design

Jan P. Mulier[1*] and Bruno Dillemans[2]

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2Department of General Surgery, AZ Sint Jan Brugge-Oostende, B-8000 Brugge, Belgium

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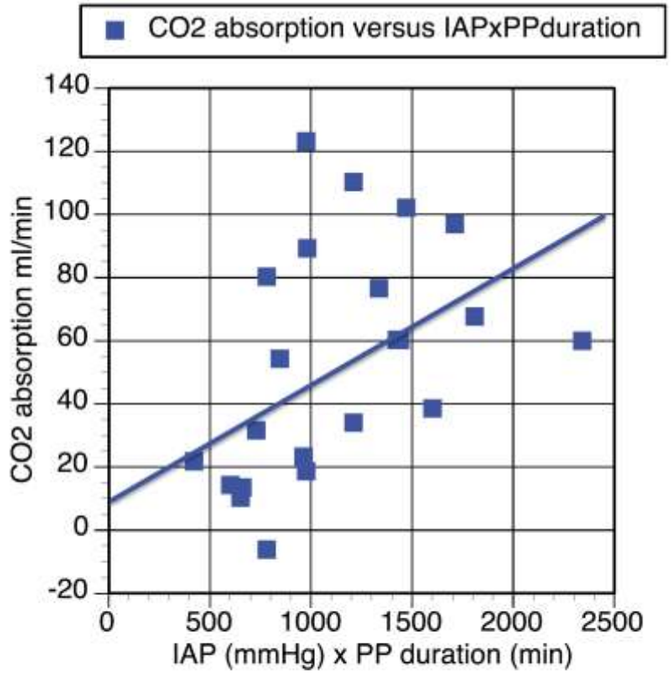
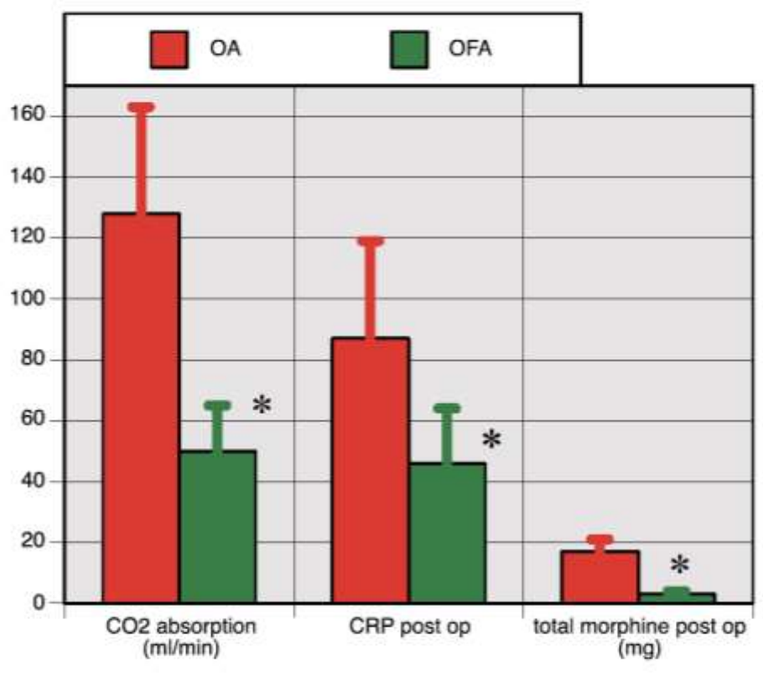


Graph 3: End laparoscopic CO2 absorption versus IAP x PPduration for groups treated with a variable IAP.
Pearson correlation p=0.037
Multi regression for CO2 absorption found that IAP x PP duration was significant (p = 0.045) in this subgroup.

Lower IAP & shorter PP
anti inflammatory anesthetics (OFA)
reduce CO2 absorption



Graph 4: End laparoscopy CO2 absorption, CRP levels next day and total morphine consumption post operative in the opioid anesthesia versus the opioid free anesthesia group

New ERAbS guidelines:

table 2: pre operative care

what we should discuss

1. 8 mg dexamethasone 90 min before induction?

- Any glucocorticoid will work but is not investigated.
- 90 min pre induction is difficult for most centers and uncomfortable when given as bolus

2. Although it has anti PONV effects is primary use is to prevent peritoneal inflammation and subsequent shoulder pain and later adhesions

Table 2 ERAS recommendations for preoperative care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
5. Supportive pharmacological intervention	*8 mg intravenous dexamethasone should be administered preferably 90 min prior to induction of anaesthesia for reduction of PONV as well as inflammatory response*	Glucocorticoids: Low	Weak
	There is insufficient evidence to support perioperative statins for statin-naive patients in bariatric surgery. Patients on statins can safely continue the treatment during the perioperative phase	Statins: Very low	Weak
	Beta-adrenergic blockade does not influence the risk for adverse outcomes in bariatric surgery, but can be safely continued during the perioperative phase for patients at high risk of cardiovascular events	Beta-adrenergic blockade: Low	Weak
6. Preoperative fasting	*Solids until 6 h before induction and clear liquids until 2 h before induction for elective bariatric surgery assuming no contraindications (e.g., gastroparesis, bowel obstruction)*	Low	Strong
	Patients with diabetes should follow these recommendations, but further studies are needed for patients with additional risk factors such as gastroparesis	Low	Strong
7. Carbohydrate loading	*There is insufficient evidence to make a recommendation about preoperative carbohydrate loading in bariatric surgery*	Low	Weak
8. PONV	*A multimodal approach to PONV prophylaxis should be adopted in all patients*	High	Strong

PONV Postoperative nausea and vomiting

Stenberg World J Surg (2022) 46:729–751

New ERAbS guidelines:

table 3: intra operative care

Something to add for anesthesia ?

Opioids

BIS Monitoring

LPV

Stenberg World J Surg (2022) 46:729–751

2023 Mulier

Table 3 ERAS recommendations for intraoperative care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
8. Perioperative fluid management	*The goal of perioperative fluid management is to maintain normovolemia and optimize tissue perfusion and oxygenation. Individual goal-directed fluid therapy is the most effective strategy, avoiding both restrictive or liberal strategies*	Moderate	Strong
	Colloid fluids do not improve intra- and postoperative tissue oxygen tension compared with crystalloid fluids and do not reduce postoperative complications	Low	Weak
9. Standardized anaesthetic protocol	*The current evidence does not allow recommendation of specific anaesthetic agents or techniques*	Low	Weak
	Opioid-sparing anaesthesia using a multimodal approach, including local anaesthetics, should be used in order to improve postoperative recovery	High	Strong
	Whenever possible, regional anaesthetic techniques should be performed to reduce opioid requirements. Thoracic epidural analgesia should be considered in laparotomy	Low	Weak
	BIS monitoring of anaesthetic depth should be considered where ETAG monitoring is not employed	Low	Strong
10 Airway management	*Anaesthetists should recognize and be prepared to handle the specific challenges in airways in patients with obesity*	Moderate	Strong
	Endotracheal intubation remains the main technique for intraoperative airway management	Moderate	Strong
11. Ventilation strategies	*Lung protective ventilation should be adopted for all patients undergoing elective bariatric surgery with avoidance of high PEEP values*	Moderate	Strong
	Increases in driving pressure resulting from adjustments in PEEP should ideally be avoided	Low	Strong
	PCV or VCV can be used for patients with obesity with inverse respiratory ratio (1.5:1)	Low	Strong
	Positioning in a reverse Trendelenburg, flexed hips, reverse- or beach chair positioning, particularly in the presence of pneumoperitoneum, improves pulmonary mechanics and gas exchange	Low	Weak
12. Neuromuscular blockade	*Deep neuromuscular blockade improves surgical performance*	Low	Strong
	Ensuring full reversal of neuromuscular blockade improves patient recovery	Moderate	Strong
	Objective qualitative monitoring of neuromuscular blockade improves patient recovery	Moderate	Strong
14. Surgical technique, volume and training	*Laparoscopic approach whenever possible*	High	Strong
	During the learning curve phase, all operations should be supervised by a senior surgeon with significant experience in bariatric surgery	Training: Low	Strong
	There is a strong association between hospital volume and surgical outcomes at least up to a threshold value	Hospital volume: Low	Strong
15. Abdominal drainage and nasogastric decompression	*Nasogastric tubes and abdominal drains should not be used routinely in bariatric surgery*	Weak	Strong

PONV Postoperative nausea and vomiting; *PEEP* Positive end-expiratory pressure; *PCV* pressure-controlled ventilation; *VCV* volume-controlled ventilation; *BIS* bispectral index; *ETAG* end-tidal anaesthetic gas

From opioid sparing to opioid free: Why avoiding opioids ?

The more opioids you give the more opioids you need for analgesia.

- due to Tolerance, Hyperalgesia

Too much respiratory side effects post operative with no tolerance.

- In OSAS patients
- In morbid obese patients
- In patients with reduced respiratory function (COPD)

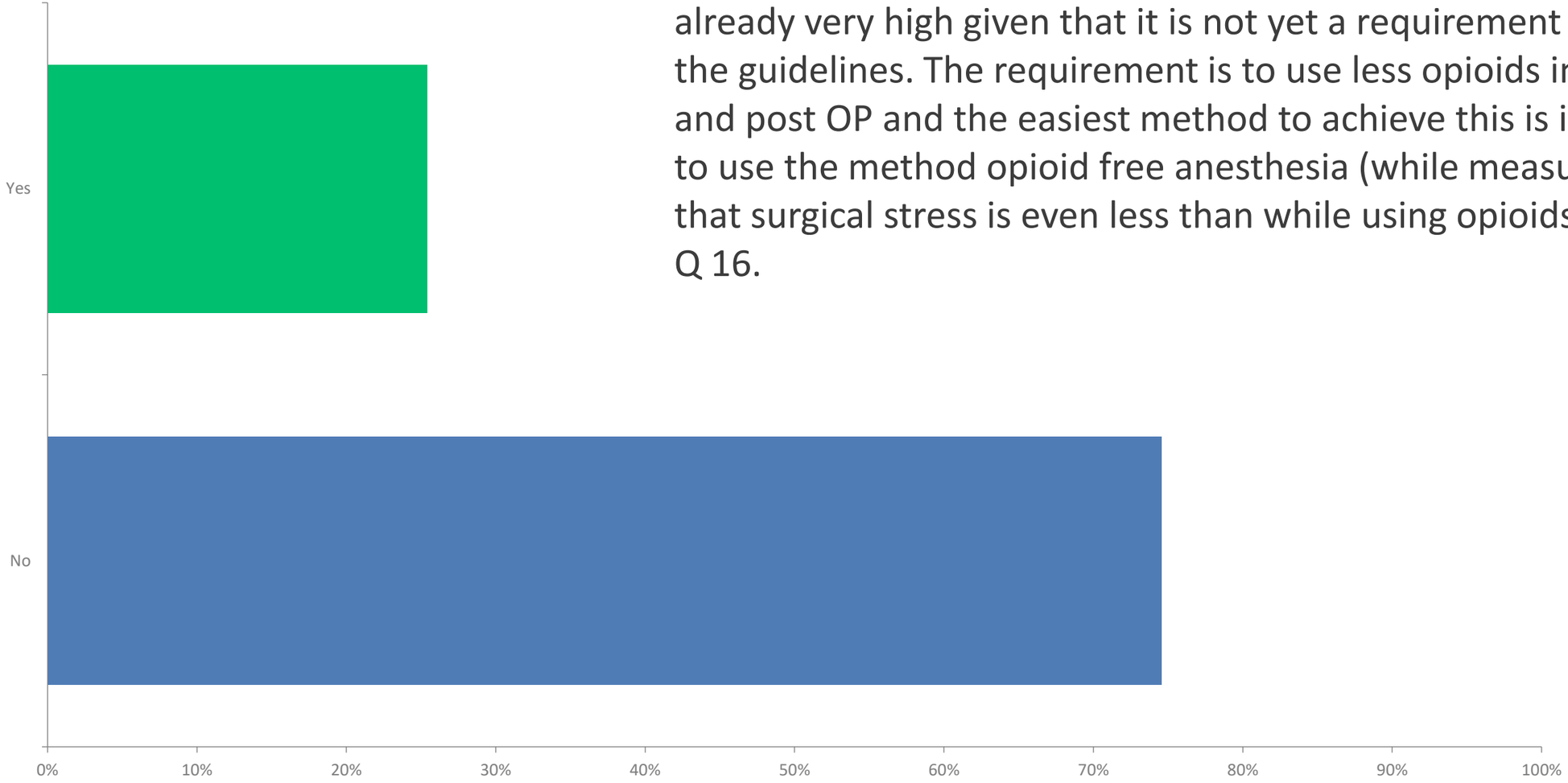
Many other side effects, most with less tolerance than for analgesia.

- Muscle rigidity, dizziness, sedation, pruritus, shivering, urine retention, opioid induced bowel dysfunction including constipation, ileus creating obstruction and abdominal pain, headache, delayed gastric emptying, **nausea, vomiting**, gastro-esophageal reflux.

Physical dependence with risk for overdose and death.

Q15: Do you use opioid free Anesthesia (= zero opioids intraoperatively) most of the time for bariatric surgery?

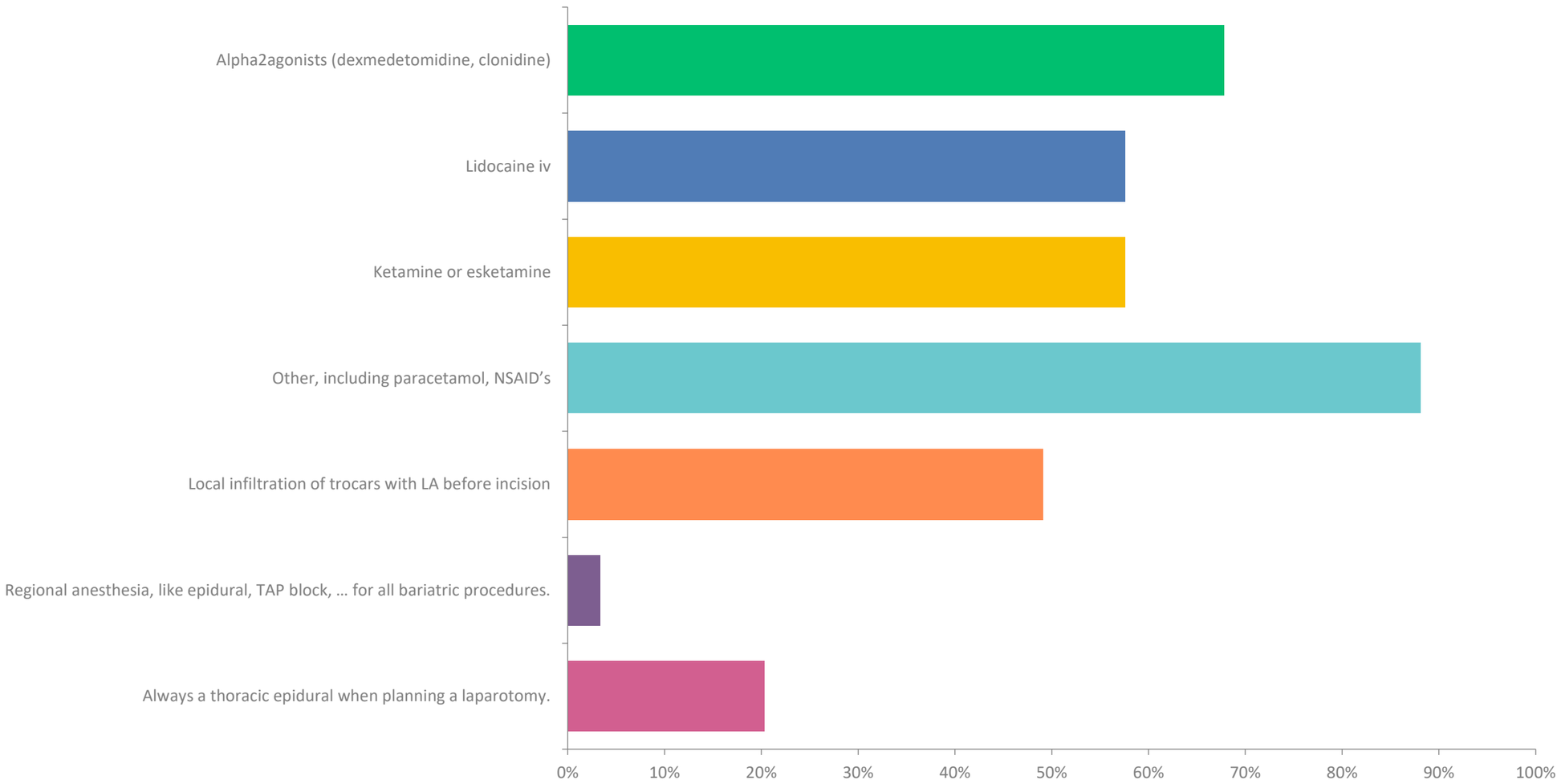
Answered: 59 Skipped: 0



Q 15: Opioid free anesthesia is used by 25 % . this number is already very high given that it is not yet a requirement from the guidelines. The requirement is to use less opioids intra and post OP and the easiest method to achieve this is indeed to use the method opioid free anesthesia (while measuring that surgical stress is even less than while using opioids) see Q 16.

Q16: What drugs/techniques do you use to reduce/avoid opioids in the intra operative phase? (mark more than one)

Answered: 59 Skipped: 0



Q 16: interesting answers: drugs/methods to reduce opioids: Almost everyone (up to 90 % for non opioid analgesics and some real OFA users do not need any non opioid analgesic means 100%) as found already in anesthesia Q 13 (75%) are using a method to reduce opioids. The drugs used for OFA 25 % (lido, alpha2agonist, ketamine) have already a 50 % penetration what means that many are moving in reducing opioids intra operative.
To compare with reality on the field. Local infiltration, being part also of OFA is still only 50 % and can be much higher. Compared to surgeon Q 41 of exact 50 % also.

Obesity Surgery
https://doi.org/10.1007/s11695-019-03763-1

ORIGINAL CONTRIBUTIONS

Check for updates

Anaesthetic Factors Affecting Outcome After Bariatric Surgery, a Retrospective Levelled Regression Analysis

Jan P. Mulier[1,2,3] & Bruno Dillemans

Abstract

Background Deep neuromuscular block (
operative opioid consumption, but its im
plications and healthcare resource utiliza
Methods We included all 9246 patients
February 2017. Continuous clinical deep
1 mg/kg IBW for each hour or sugamm
continuous clinical deep NMB and OFA
classification (grades II–V) and healthca
dependency care unit admissions, and re
siologist, patient age, sex, body mass i
apnoea syndrome, diabetes, hypertension
Results OFA, continuous deep NMB, su
with fewer complications. OFA was asso
younger age, surgical team experience, a
Conclusion Continuous deep NMB and

Keywords Deep neuromuscular block

Background

Bariatric surgery outcomes have improved
quality and high volume allowed for su

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Published online: 16 March 2019

- 9000 Patients bariatric surgery
- OFA reduces complications & improves outcome

Table 6 Levelled logistic regression analysis using anaesthesia experience as level 1 for Clavien-Dindo graded complications, reoperation, high-dependency care admission, readmission, and hospital length of stay

Factor	Complications		Reoperation		High-dependency care unit admission		Readmission		Hospital length of stay	
	B coef	*P*	*B* coef	*P*	*B* coef	*P*	*B* coef	*P*	*B* coef	*P*
Anaesthesia experience	− 0.25	< 0.001	− 0.56	0.318	− 0.748	< 0.001	− 0.16	0.275	− 0.162	0.311
Surgical team experience	− 0.604	< 0.001	− 0.431	0.048	− 0.559	< 0.001	0.209	0.143	− 0.049	0.002
Age	0.034	< 0.001	0.007	0.755	0.034	0.023	0.024	0.093	0.021	< 0.001
OFA	− 0.075	< 0.001	− 0.034	0.001	− 0.043	< 0.001	− 0.024	0.005	− 0.005	0.002
Sex	− 0.060	0.792	− 0.356	0.570	0.702	0.076	0.085	0.829	− 0.049	0.203
Hypertension	− 0.017	0.929	− 0.537	0.371	0.176	0.615	0.008	0.982	0.054	0.191
Conversion	0.624	0.003	− 0.208	0.753	0.557	0.164	0.373	0.297	0.448	< 0.001
ASA physical status	0.061	0.639	− 0.347	0.279	0.129	0.636	− 0.391	0.059	0.268	< 0.001
OSAS	0.295	0.215	0.926	0.161	0.832	0.063	0.225	0.587	0.242	< 0.001
ContDeep NMB	− 0.608	0.020	− 1.027	0.192	− 0.922	0.096	0.122	0.713	− 0.061	0.125
Neostigmine	0.1	0.591	1.054	0.026	0.422	0.206	− 0.031	0.0924	− 0.196	< 0.001

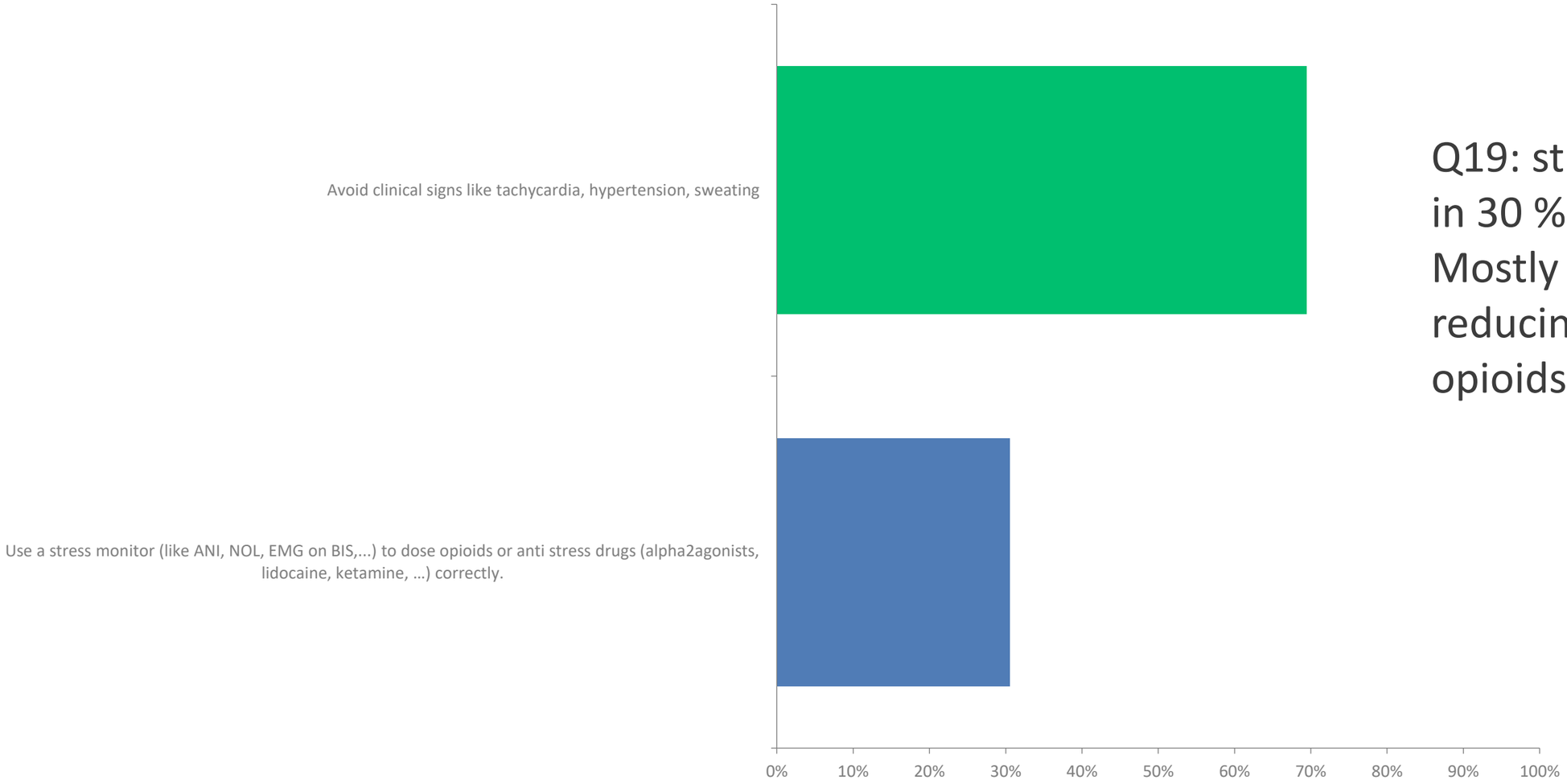
$p < 0.05$

Levelled logistic regression

ASA, American Society of Anesthesiologists; coef, coefficient; ContDeep NMB, continuous deep neuromuscular blockade; OFA, opioid-free anaesthesia; OSAS, obstructive sleep apnoea syndrome

Q19: How do you Evaluate/ Manage intra operative stress?

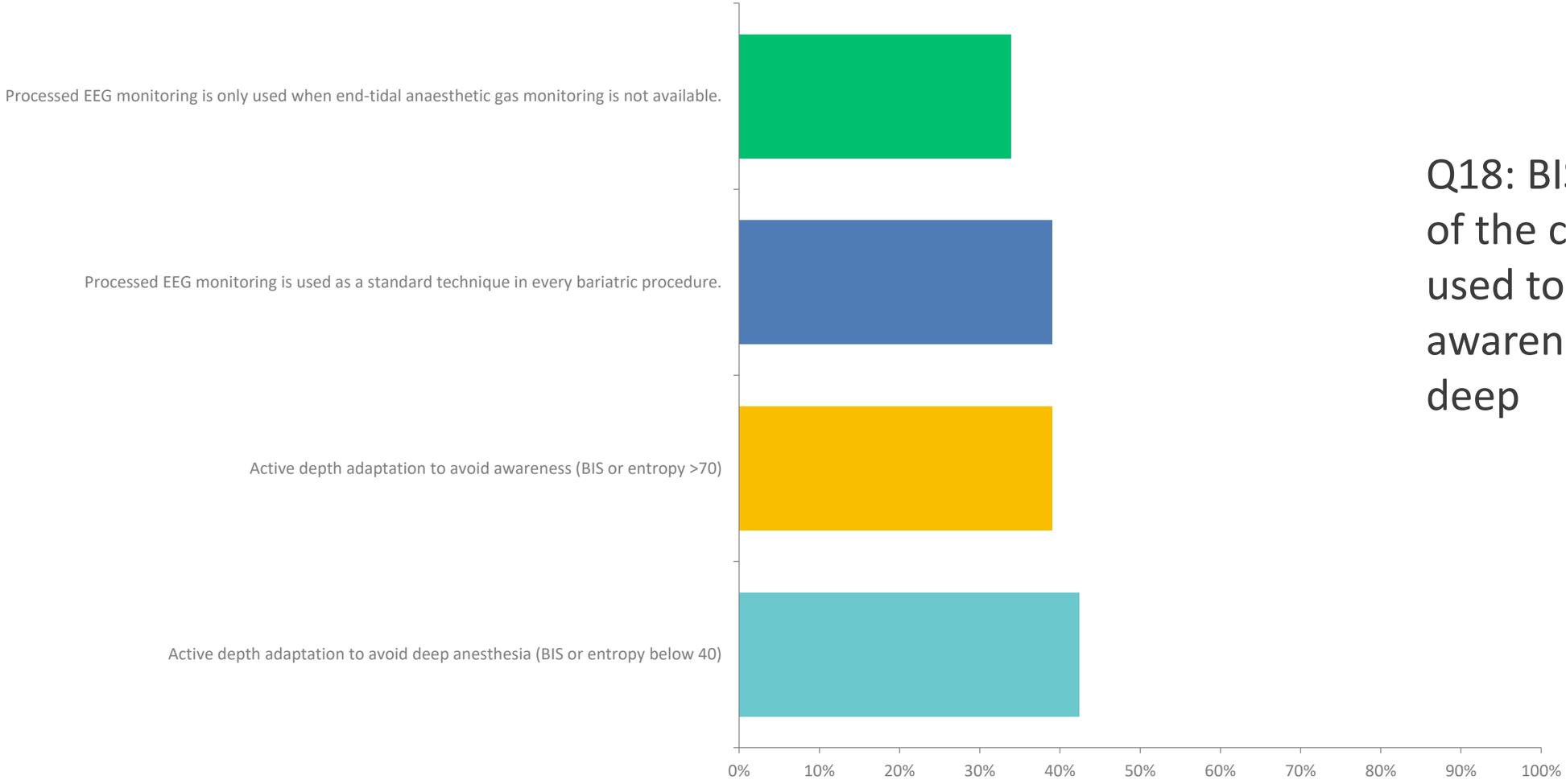
Answered: 59 Skipped: 0



Q19: stress monitoring in 30 %
Mostly by those reducing/avoiding opioids

Q18: What is your BIS Awareness Strategy / management?
(mark more than one)

Answered: 59 Skipped: 0



Q18: BIS is used in 40 % of the cases and when used to prevent awareness or going too deep

The essential LPV (Lung Protective ventilation) guidelines for every adult patient.

Induction of anesthesia

1.Always **beach chair (30°) during induction**; (avoid flat supine position during induction in every patient).

2.Use always CPAP prior to the loss of spontaneous ventilation.

3.Monitor during induction for an obstructive breathing pattern and use a combination of appropriate techniques.

Maintenance of anesthesia

4.After induction start with **FiO_2 ≤ 0.4**. Thereafter, use the lowest possible FiO2 to achieve SpO2 ≥94%.

5.The ventilator should be set to deliver **V_T ≤ 6-8 mL/kg IBW** with PEEP minimal 5 cmH2O. **Higher PEEP** may be required in **obese** patients, during **pneumoperitoneum**, and during prone or **Trendelenburg** positioning.

6.Dynamic **compliance**, driving pressure (P_{Plat}-PEEP), and P_{Plat} should be monitored in every patient. **Decreasing compliance should be treated** with **recruitment** combined with sufficient PEEP. RMs should be performed using the **lowest effective P_{Plat}** (30-40 cmH2O in non-obese, 40-50 cmH2O in obese) and **shortest effective time** or fewest number of breaths. The bag-squeezing RM should be avoided in favor of a **ventilator-driven RM**

2023 Mulier

Emergence from anesthesia

7. **Avoid ETT suctioning** immediately prior to tracheal extubation.
8. **Reverse TOF > 90% to avoid PORC, opioids, sedatives, low FiO_2 (<0.4) during emergence** from general anesthesia. When opioids are used peri operative, when high FiO2 (>0.8) is used during emergence, the use of low $Fi0_2$ (<0.3) CPAP immediately following tracheal extubation may reduce the risk of atelectasis.
9. Always **extubate in beach chair under CPAP,** never disconnect ETT, never allow spontaneous breathing without CPAP before extubation, never have patient laying flat.

Postoperative care

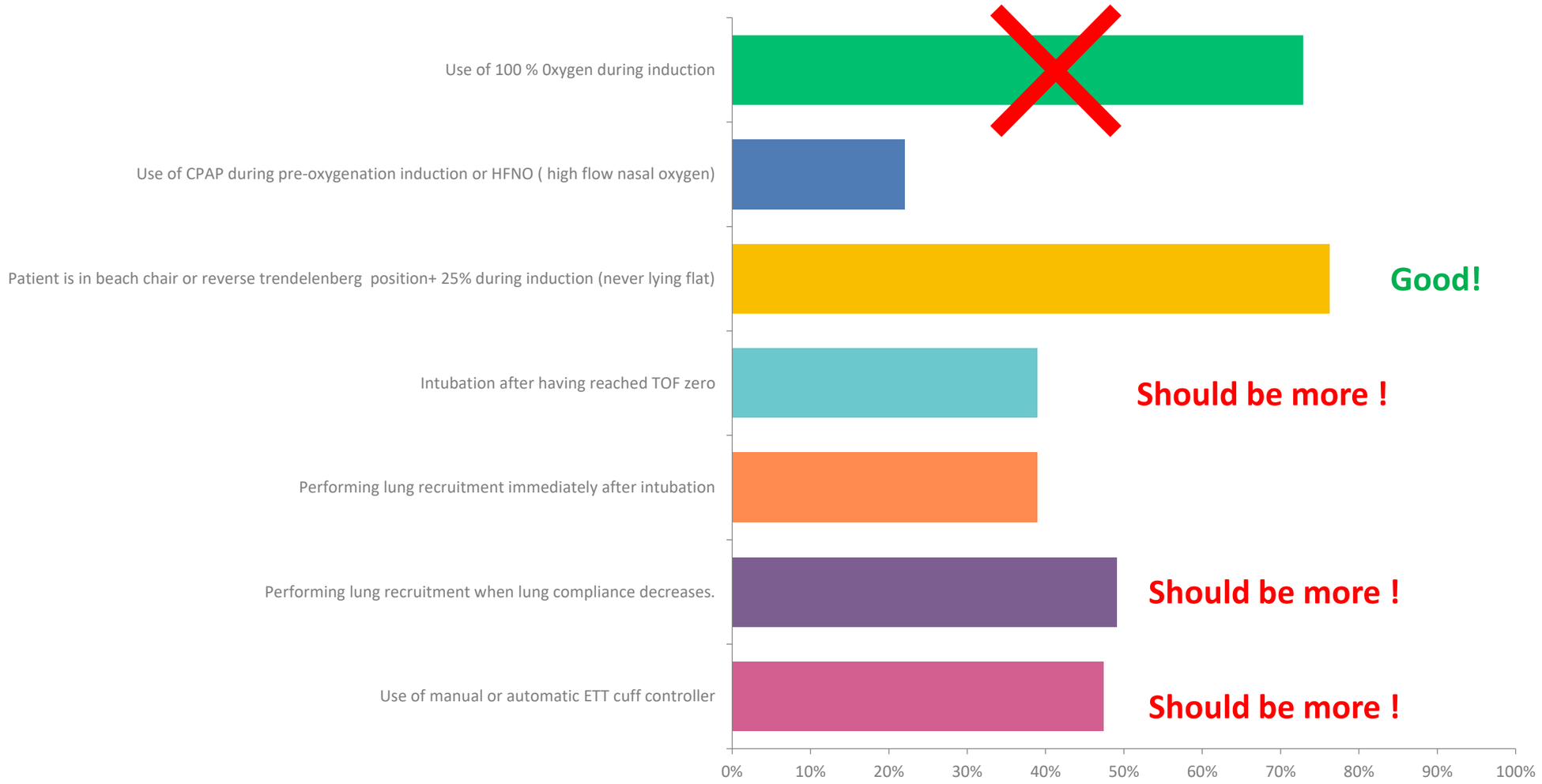
10. **Avoid routine application of supplemental oxygen** without investigating and treating the underlying cause. Postoperative oxygen is recommended when room air $Sp0_2$ falls **below 94%.**

2020 Mulier

Young C, Mulier J. BJA 2019:123: 898-913

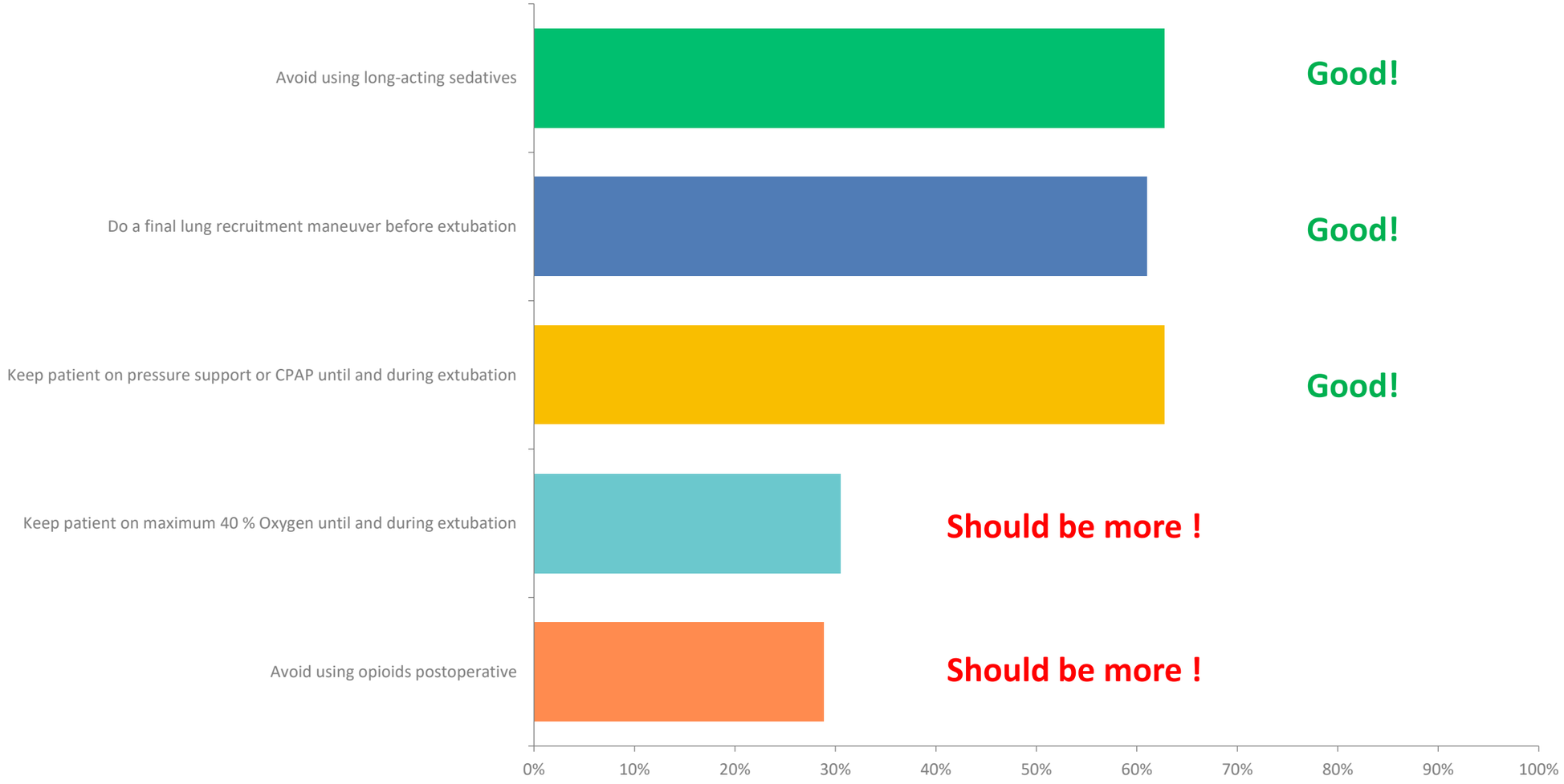
Q20: What is your induction method? (mark more than one)

Answered: 59 Skipped: 0



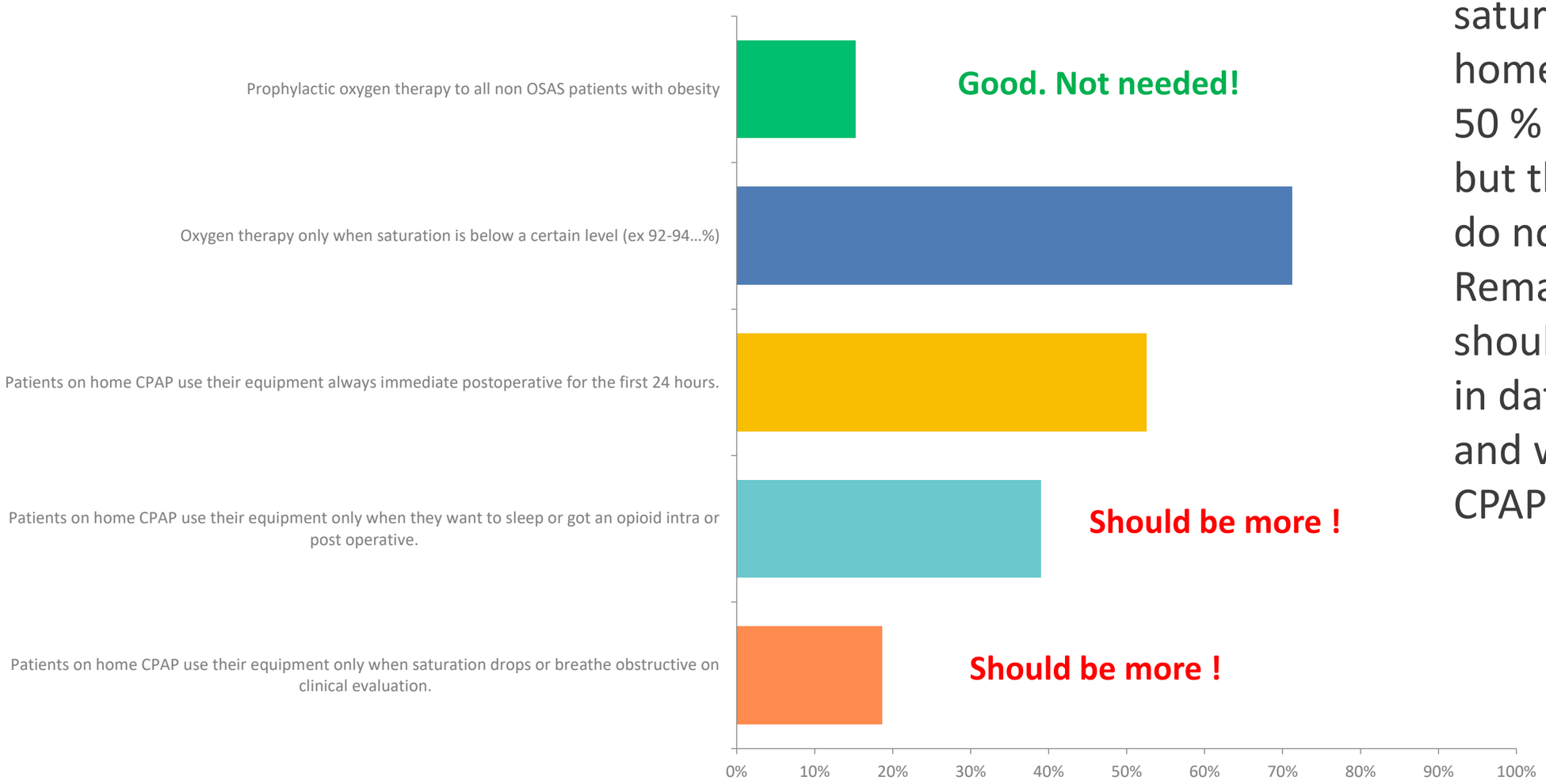
Q25: What is your emergence method from anesthesia to prevent postoperative atelectasis? (mark more than one)

Answered: 59 Skipped: 0



Q33: What is your postoperative therapy for the first 24 h? (home CPAP is used at home only at night) (mark more than one)

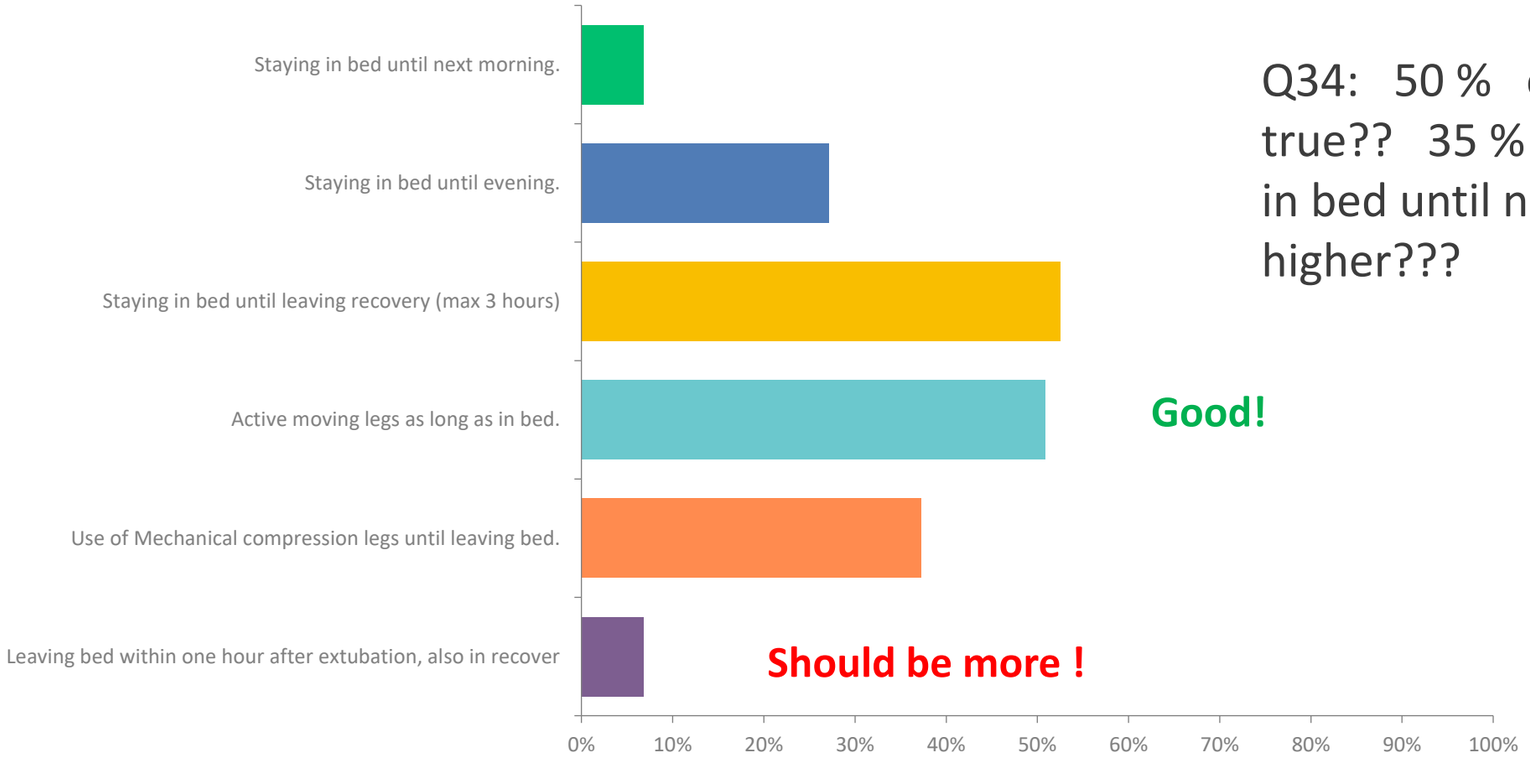
Answered: 59 Skipped: 0



Q 33: O2 only when saturation drops 70 % home CPAP proceeded in 50 % might be too low but those on OFA (25%) do not need either. Remains 25 % who should use it. To verify in dataset who uses OFA and who uses home CPAP to verify…

Q34: What is your approach to early mobilization? (Please mark more than one if applicable)

Answered: 59 Skipped: 0



Good!

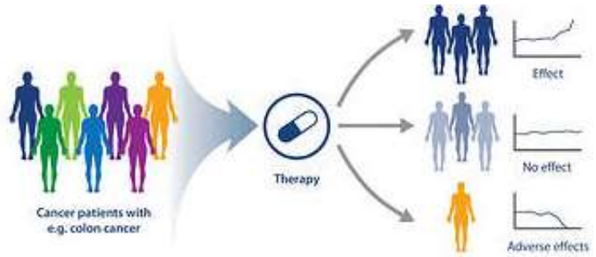
Should be more !

Q34: 50 % out of bed within 3 hours should be great. Is it true?? 35 % using compression legs until leaving.. staying in bed until next morning is only 5 %. But probably much higher???

Personalised or precision anesthesia to “achieve optimal individual care” by monitoring and dose adapting.

Current medicine

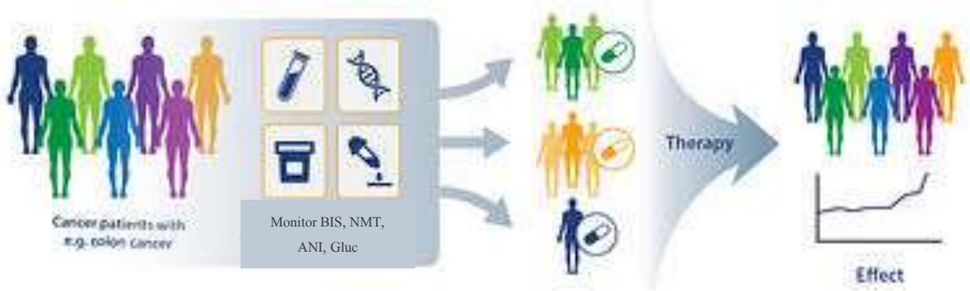
- One dose fits all



Future medicine

- Personalised prediction model
  Based on Age, weight, sex, genetics

- Measure each person

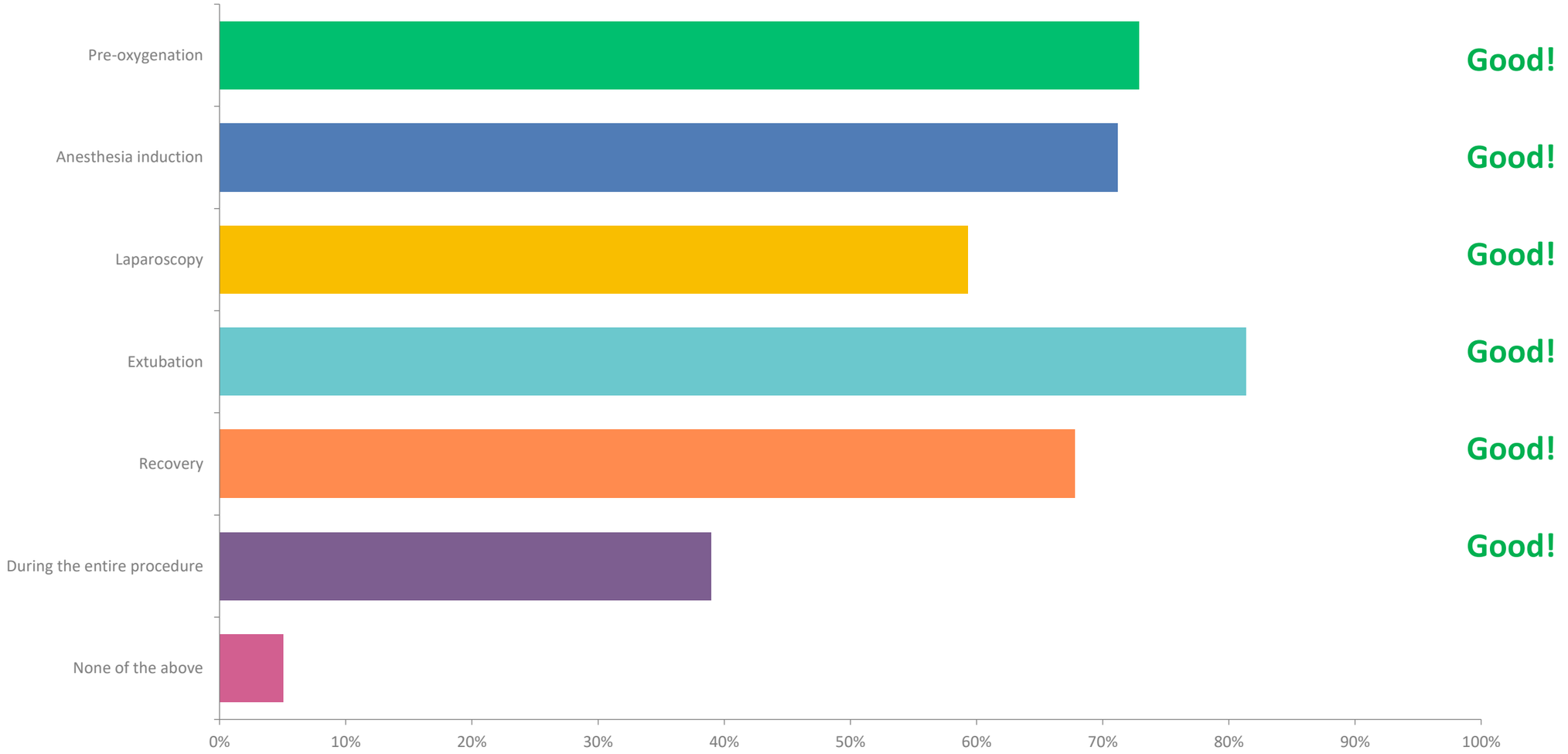


Time for one-person treatment

- Monitor each person beat to beat
  - Depth of hypnosis
  - Depth of muscle relaxation
  - Depth of sympatic depression
  - Depth of metabolic suppression

Q22: Do you use beach chair position during the following operative phases? (mark more than one)

Answered: 59 Skipped: 0



Obesity Surgery, **13**, 4-9

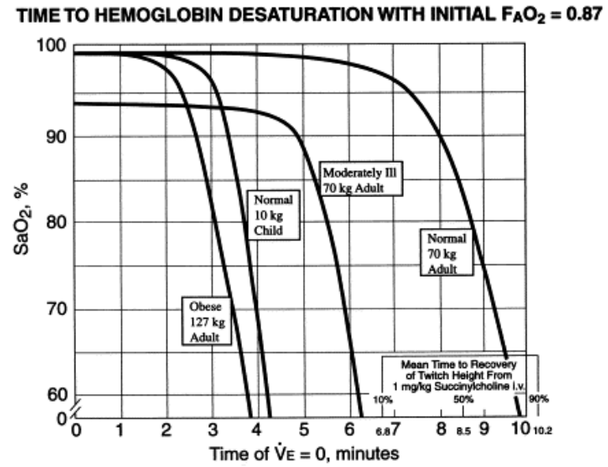
A Preliminary Study of the Optimal Anesthesia Positioning for the Morbidly Obese Patient

Obes Surg 2003; 13:4-9

James Ronald Boyce, MD, FRCPC[1]; Timothy Ness, MD, PhD[1]; Pablo Castroman, MD[1*]; John J. Gleysteen, MD[2]

[1]Department of Anesthesiology and [2]Department of Surgery, University of Alabama, Birmingham, USA

**Currently at Department of Anesthesiology and Pathophysiology, University of Montevideo, Uruguay*



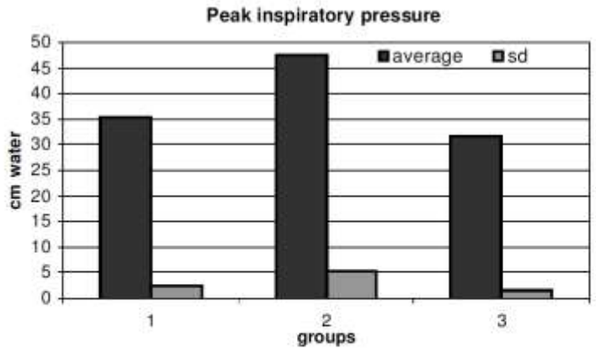


Figure 3. Average peak inspiratory pressures (PIP) recorded 5 minutes after induction for each of the three groups. Higher PIP's for group 2 suggests decreased compliance when compared to groups 1 and 3.

Effect of position on safe apnea time

Intubation within 3 min if no mask ventilation is given

Table 2. Desaturation and Recovery times of groups

Safe Apnea Period (seconds)	178±55 (1 vs 3:p<0.05)	123±24	153±63
Recovery Time (seconds)	80±30 (2 vs 1:*P*<0.001)	206±64	97±41 (2 vs 3: *P*<0.001)
Lowest SaO_2(%)	83±4	82±5	83±4

Data is Mean±Standard Deviation.

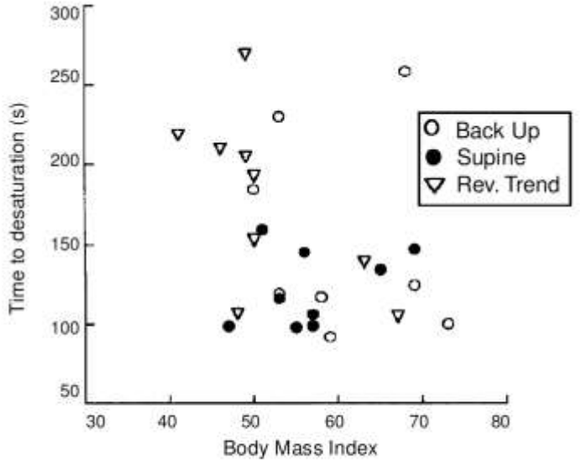


Figure 4. Scatter-gram shows that with increasing BMI, time to desaturate (or SAP) is decreased.

Anesthesiology 2007; 107:725–32

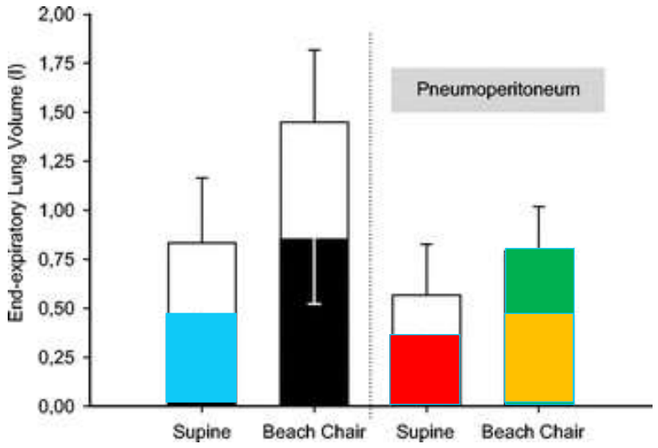
Effects of the Beach Chair Position, Positive End-expiratory Pressure, and Pneumoperitoneum on Respiratory Function in Morbidly Obese Patients during Anesthesia and Paralysis

Franco Valenza, M.D., Federica Vagginelli, M.D.,† Alberto Tiby, M.D.,† Silvia Francesconi, M.D.,† Giulio Ronzoni, M.D.,† Massimiliano Guglielmi, M.D.,† Marco Zappa, M.D.,‡ Ezio Lattuada, M.D.,‡ Luciano Gattinoni, M.D., F.R.C.P.§*

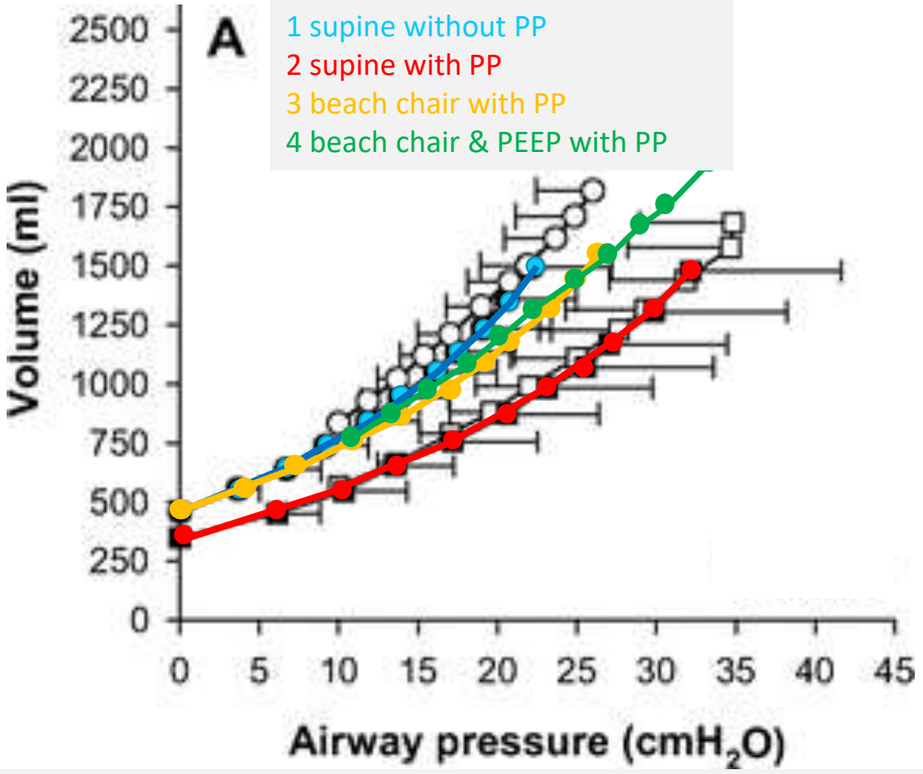
Background: **The authors studied the effects of the beach chair (BC) position, 10 cm H_2O positive end-expiratory pressure (PEEP), and pneumoperitoneum on respiratory function in morbidly obese patients undergoing laparoscopic gastric banding.**

Several strategies have been tested to improve oxygenation. Positive end-expiratory pressure (PEEP) has been shown to improve respiratory function[9–18]; however, it may cause relative hypotension.[15,18–20] Large tidal volumes

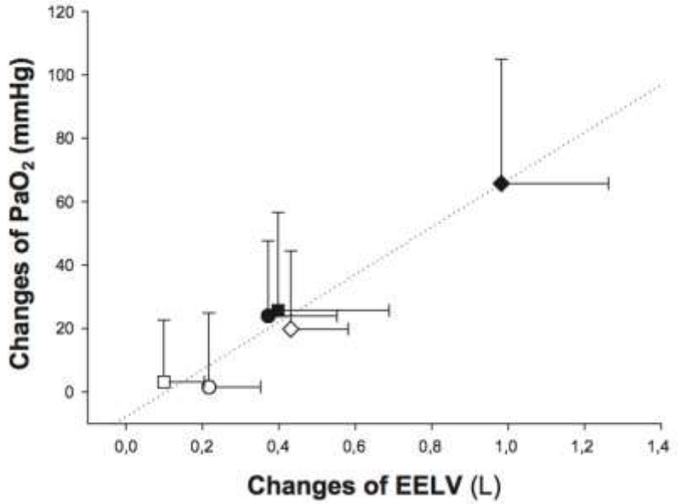
Beach chair facilitates ventilation during laparocopy



Valenza F. Anesthesiology 2007; 107:725–32



1 supine without PP
2 supine with PP
3 beach chair with PP
4 beach chair & PEEP with PP



Expiratory volume returns to normal but compliance remains lower
(diff blue – green)

The Beach-Chair position and PEEP counteracted the major derangements of respiratory function produced by pneumoperitoneum, anesthesia & paralysis

Surg Endosc (2010) 24:1398–1402
DOI 10.1007/s00464-009-0785-8

Impact of the patient's body position on the intraabdominal workspace during laparoscopic surgery

Jan Paul J. Mulier · Bruno Dillemans · Sebastiaan Van Cauwenberge

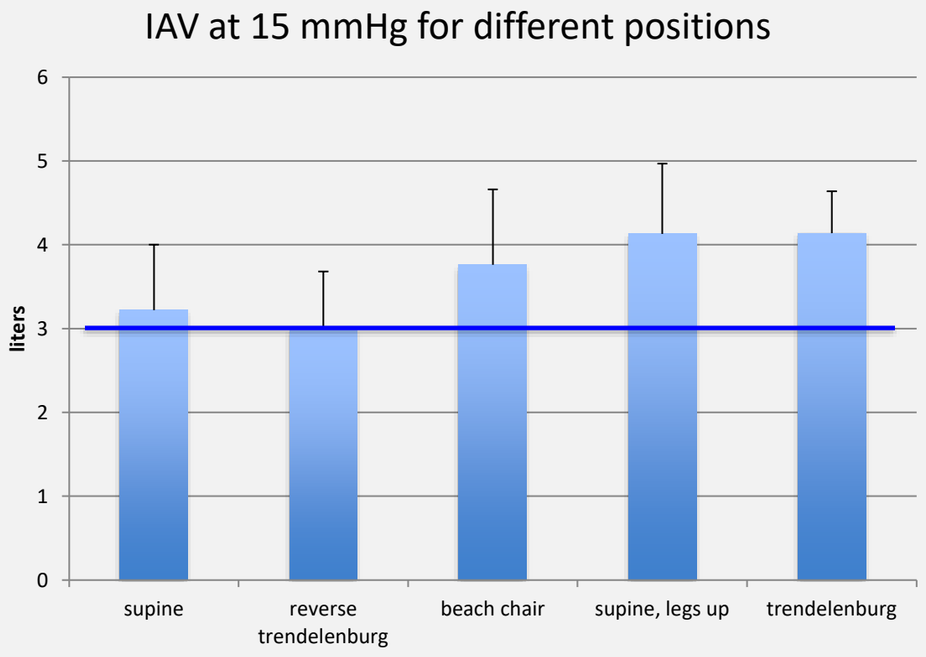
Mulier J Obes Surg 2009

Table 1 Inflated volume and pressure for different body positions

	A Supine	B Reverse trendelenburg	C Beach chair	D Horizontal, legs up	E Trendelenburg
IAP (mmHg)	14.0 ± 0.3	13.9 ± 0.5	14.0 ± 0.3	13.9 ± 0.2	14.1 ± 0.5
IAV (l)	3.22 ± 0.78	2.99 ± 0.69	3.76 ± 0.90	4.13 ± 0.84	4.14 ± 0.60
Minimum IAV (l)	2.00	1.99	2.39	3.05	3.33
Maximum IAV (l)	4.41	4.00	5.00	5.43	5.11
Patients with IAV < 3 l: *n* (%)	8 (40.0)	10 (50.0)	4 (20.0)	0 (0)	0 (0)

IAP intraabdominal pressure, *IAV* intraabdominal volume

Positions: A (supine: table horizontal with the legs flat), B (reverse Trendelenburg: table in 20° reverse Trendelenburg with the legs flat), C (beach chair: table in 20° reverse Trendelenburg with the legs elevated at 45°, D (horizontal, legs up: table horizontal with the legs elevated at 45°, E (Trendelenburg: table in 20° Trendelenburg with the legs flat)



Leg flexion increases workspace

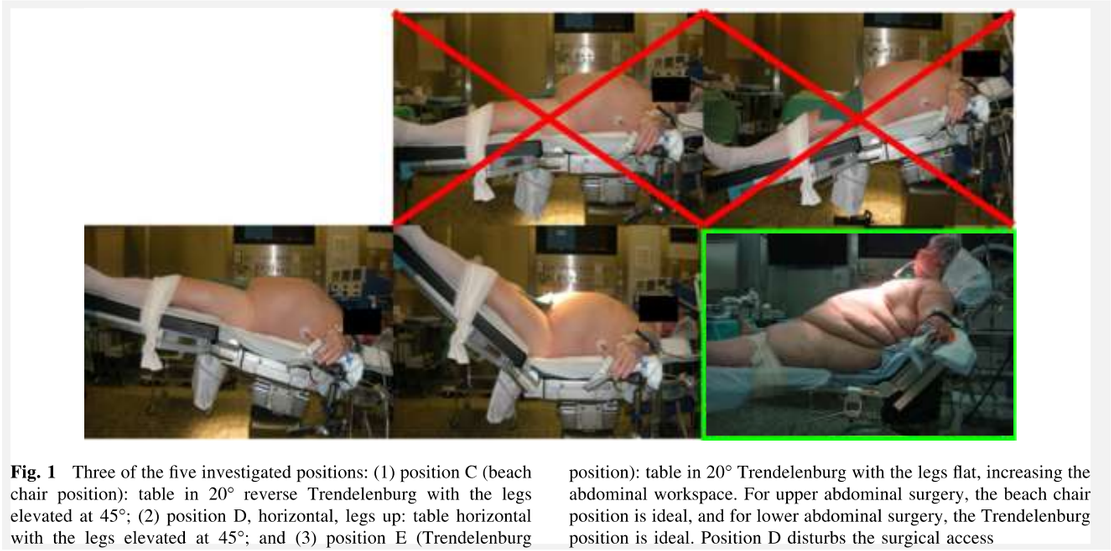
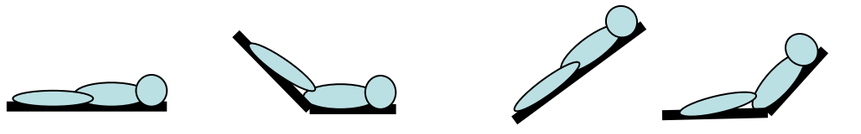
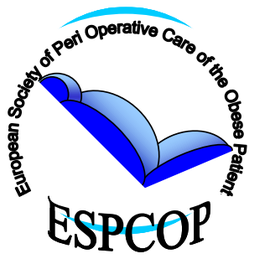


Fig. 1 Three of the five investigated positions: (1) position C (beach chair position): table in 20° reverse Trendelenburg with the legs elevated at 45°; (2) position D, horizontal, legs up: table horizontal with the legs elevated at 45°; and (3) position E (Trendelenburg position): table in 20° Trendelenburg with the legs flat, increasing the abdominal workspace. For upper abdominal surgery, the beach chair position is ideal, and for lower abdominal surgery, the Trendelenburg position is ideal. Position D disturbs the surgical access



PV0	**4,32**	=	4,761	**5,03**	=	**4,91**
E	**3,46**	>	2,66	**3,36**	>	2,57



New ERAbS guidelines:

table 3: intra operative care

what we should discuss for anesthesia

1. Reduction of opioids as much as possible

- OFA is the ideal approach to reduce opioids maximal

2. LPV requires a little more info: induction, intra op and extubation most important moment as you loose all in one minute

- Induction: Max 80 % O2, CPAP -> PS during mask support
- Intra: Small TV, allow hypercapnia, LRM when C drops, sufficient PEEP, I/E 1/1, VCC > PCV?
- Extubation: no sedatives, max 40 % O2, last LRM before switching from VCV to PSV to CPAP, no disconnection during extubation, exceptional O2 mask needed if LPV + OFA.

3. Beach chair requires a little more info: pre, intra and post.

4. Monitoring as much as possible:

- NMT
- depth of hypnosis
- Stress level
  - both allow to titrate each patient.

Stenberg World J Surg (2022) 46:729–751

2023 Mulier

Table 3 ERAS recommendations for intraoperative care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
8. Perioperative fluid management	*The goal of perioperative fluid management is to maintain normovolemia and optimize tissue perfusion and oxygenation. Individual goal-directed fluid therapy is the most effective strategy, avoiding both restrictive or liberal strategies*	Moderate	Strong
	Colloid fluids do not improve intra- and postoperative tissue oxygen tension compared with crystalloid fluids and do not reduce postoperative complications	Low	Weak
9. Standardized anaesthetic protocol	*The current evidence does not allow recommendation of specific anaesthetic agents or techniques*	Low	Weak
	Opioid-sparing anaesthesia using a multimodal approach, including local anaesthetics, should be used in order to improve postoperative recovery	High	Strong
	Whenever possible, regional anaesthetic techniques should be performed to reduce opioid requirements. Thoracic epidural analgesia should be considered in laparotomy	Low	Weak
	BIS monitoring of anaesthetic depth should be considered where ETAG monitoring is not employed	Low	Strong
10 Airway management	*Anaesthetists should recognize and be prepared to handle the specific challenges in airways in patients with obesity*	Moderate	Strong
	Endotracheal intubation remains the main technique for intraoperative airway management	Moderate	Strong
11. Ventilation strategies	*Lung protective ventilation should be adopted for all patients undergoing elective bariatric surgery with avoidance of high PEEP values*	Moderate	Strong
	Increases in driving pressure resulting from adjustments in PEEP should ideally be avoided	Low	Strong
	PCV or VCV can be used for patients with obesity with inverse respiratory ratio (1.5:1)	Low	Strong
	Positioning in a reverse Trendelenburg, flexed hips, reverse- or beach chair positioning, particularly in the presence of pneumoperitoneum, improves pulmonary mechanics and gas exchange	Low	Weak
12. Neuromuscular blockade	*Deep neuromuscular blockade improves surgical performance*	Low	Strong
	Ensuring full reversal of neuromuscular blockade improves patient recovery	Moderate	Strong
	Objective qualitative monitoring of neuromuscular blockade improves patient recovery	Moderate	Strong
14. Surgical technique, volume and training	*Laparoscopic approach whenever possible*	High	Strong
	During the learning curve phase, all operations should be supervised by a senior surgeon with significant experience in bariatric surgery	Training: Low	Strong
	There is a strong association between hospital volume and surgical outcomes at least up to a threshold value	Hospital volume: Low	Strong
15. Abdominal drainage and nasogastric decompression	*Nasogastric tubes and abdominal drains should not be used routinely in bariatric surgery*	Weak	Strong

PONV Postoperative nausea and vomiting; *PEEP* Positive end-expiratory pressure; *PCV* pressure-controlled ventilation; *VCV* volume-controlled ventilation; *BIS* bispectral index; *ETAG* end-tidal anaesthetic gas

New ERAbS guidelines:

table 3: intra operative care

Something to add for surgery?

A few aspects not mentioned

NMB

Stapling method

Stenberg World J Surg (2022) 46:729–751

2023 Mulier

Table 3 ERAS recommendations for intraoperative care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
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	Colloid fluids do not improve intra- and postoperative tissue oxygen tension compared with crystalloid fluids and do not reduce postoperative complications	Low	Weak
9. Standardized anaesthetic protocol	*The current evidence does not allow recommendation of specific anaesthetic agents or techniques*	Low	Weak
	Opioid-sparing anaesthesia using a multimodal approach, including local anaesthetics, should be used in order to improve postoperative recovery	High	Strong
	Whenever possible, regional anaesthetic techniques should be performed to reduce opioid requirements. Thoracic epidural analgesia should be considered in laparotomy	Low	Weak
	BIS monitoring of anaesthetic depth should be considered where ETAG monitoring is not employed	Low	Strong
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11. Ventilation strategies	*Lung protective ventilation should be adopted for all patients undergoing elective bariatric surgery with avoidance of high PEEP values*	Moderate	Strong
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	PCV or VCV can be used for patients with obesity with inverse respiratory ratio (1.5:1)	Low	Strong
	Positioning in a reverse Trendelenburg, flexed hips, reverse- or beach chair positioning, particularly in the presence of pneumoperitoneum, improves pulmonary mechanics and gas exchange	Low	Weak
12. Neuromuscular blockade	*Deep neuromuscular blockade improves surgical performance*	Low	Strong
	Ensuring full reversal of neuromuscular blockade improves patient recovery	Moderate	Strong
	Objective qualitative monitoring of neuromuscular blockade improves patient recovery	Moderate	Strong
14. Surgical technique, volume and training	*Laparoscopic approach whenever possible*	High	Strong
	During the learning curve phase, all operations should be supervised by a senior surgeon with significant experience in bariatric surgery	Training: Low	Strong
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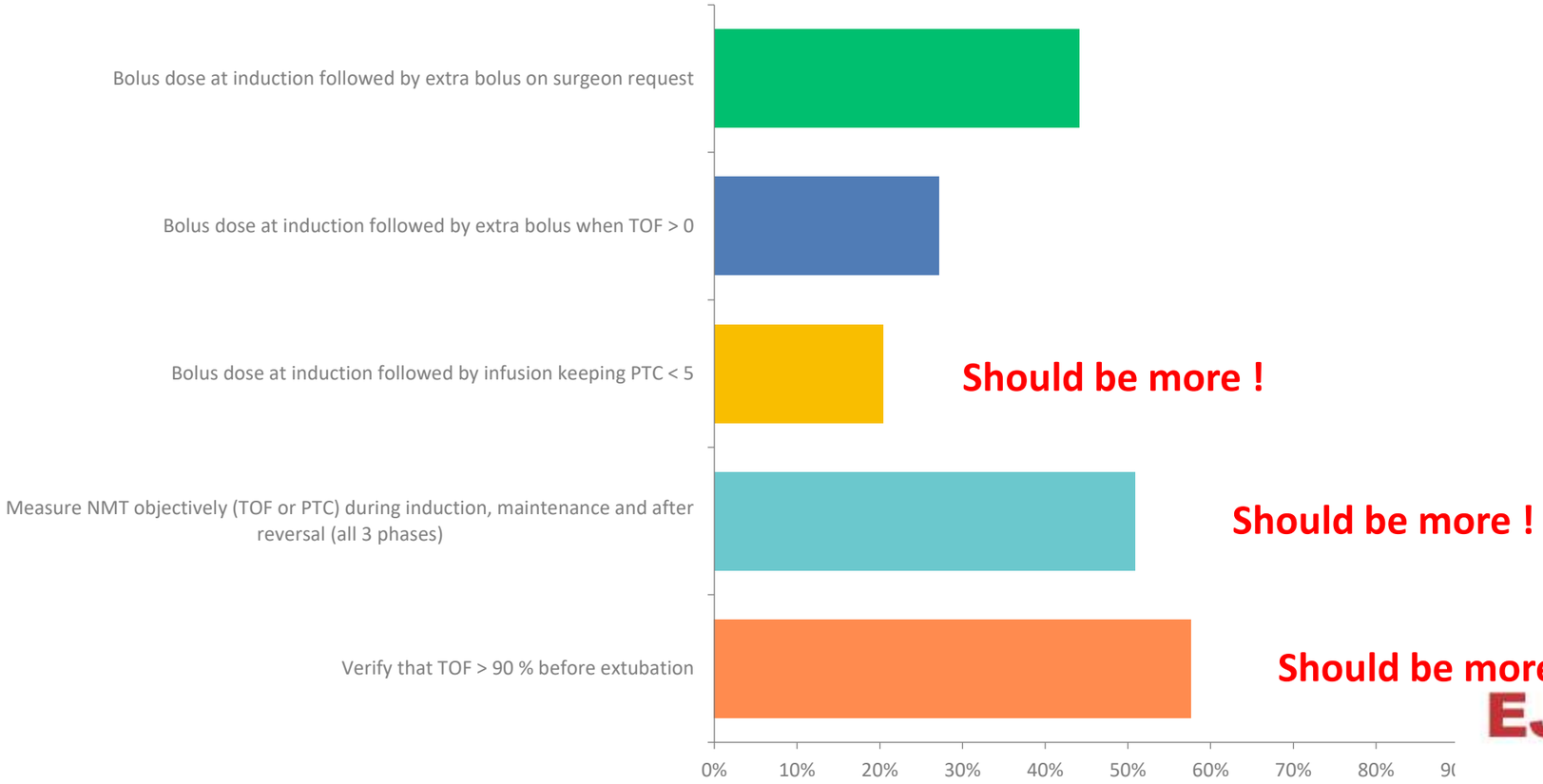
15. Abdominal drainage and nasogastric decompression	*Nasogastric tubes and abdominal drains should not be used routinely in bariatric surgery*	Weak	Strong

PONV Postoperative nausea and vomiting; *PEEP* Positive end-expiratory pressure; *PCV* pressure-controlled ventilation; *VCV* volume-controlled ventilation; *BIS* bispectral index; *ETAG* end-tidal anaesthetic gas

Q17: What is your NMB management? (mark more than one)

Answered: 59 Skipped: 0



Should be more !

Should be more !

Should be more !

Fuchs-Buder T, et al. Eur J Anaesthesiol 2022

Powered by SurveyMonkey

Q17: NMB management:
deep NMB during anesthesia (PTC <5) is only used by 20 % what is relatively low assuming that most pneumoperitoneum are done at pressures too high.
Only 50 % measures NMT objectively during all 3 phases.
Still 40 % wait till surgeon complains of having insufficient space what is too high!
A lot to do on training to apply international accepted guidelines NMB.

EJA

Eur J Anaesthesiol 2023; **40**:82–94

GUIDELINES

Peri-operative management of neuromuscular blockade

A guideline from the European Society of Anaesthesiology and Intensive Care

Thomas Fuchs-Buder, Carolina S. Romero, Heidrun Lewald, Massimo Lamperti, Arash Afshari, Ana-Marjia Hristovska, Denis Schmartz, Jochen Hinkelbein, Dan Longrois, Maria Popp, Hans D. de Boer, Massimiliano Sorbello, Radmilo Jankovic and Peter Kranke

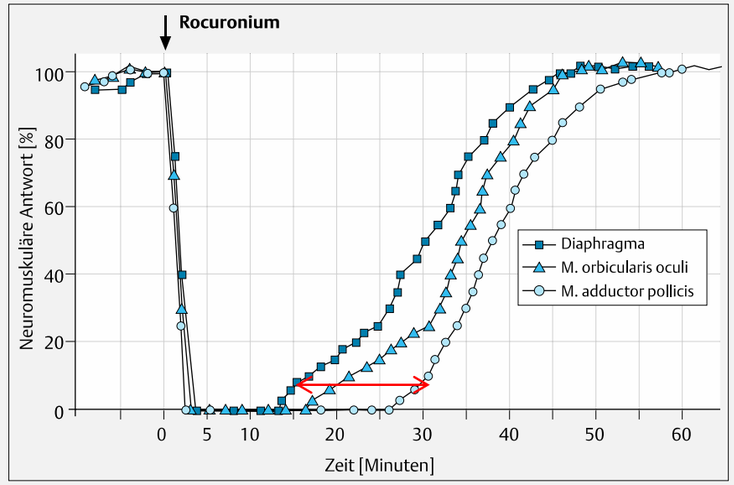
O. Moerer[1]
J. Bittner[1]
J. Hinz[1]
M. Sydow[2]

Neuromuskuläre Wirkzeiten von Rocuronium am Diaphragma, Musculus adductor pollicis und orbicularis oculi in zwei Altersgruppen

Effect of Rocuronium on the Diaphragm, Musculus adductor pollicis and Orbicularis oculi in two Groups of Different Age

Originalie

Moerer et al. Neuromusculare Wirkzeiten von Rocuronium…
Anaesthesiol Intensivmed Notfallmed Schmerzther 2005; 40:217-224



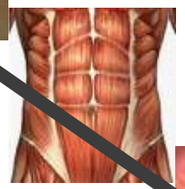
Recovery is faster in central muscle:
Surgeon sees recovery 10 min earlier

Central muscles are more resistant

Tongue, throat muscles

Peripheral mucles, adductor pollicis

Orbicularis oculi
Corrugator supercilii



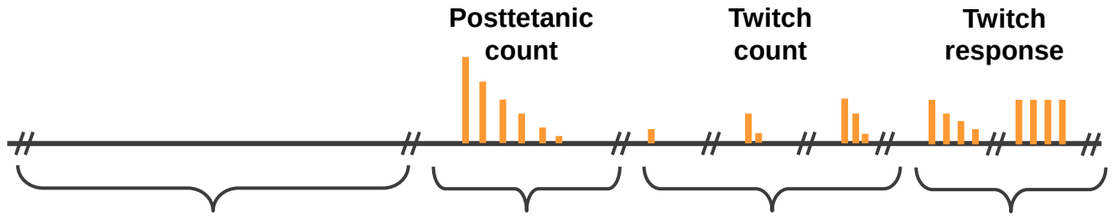
Abdominal mucles,

Vocal cords

Diaphragm

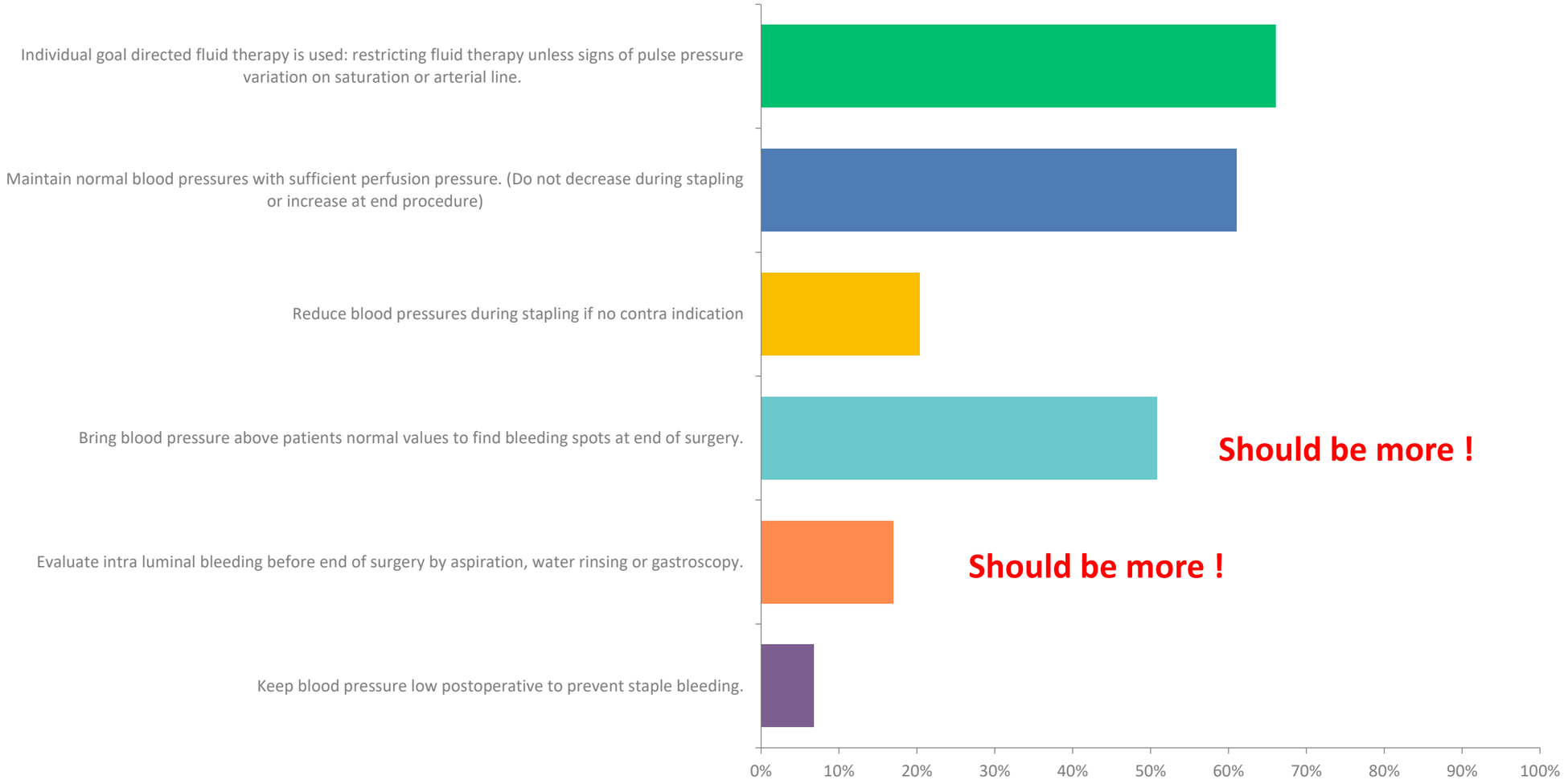
Clinical definition of deep block:
TOF = 0 and PTC < 5

To relax abdomen you need clin deep NMB at thumb.
Always monitor NMB to give continuous deep NMB by infusing Rocuronium. (no bolus)

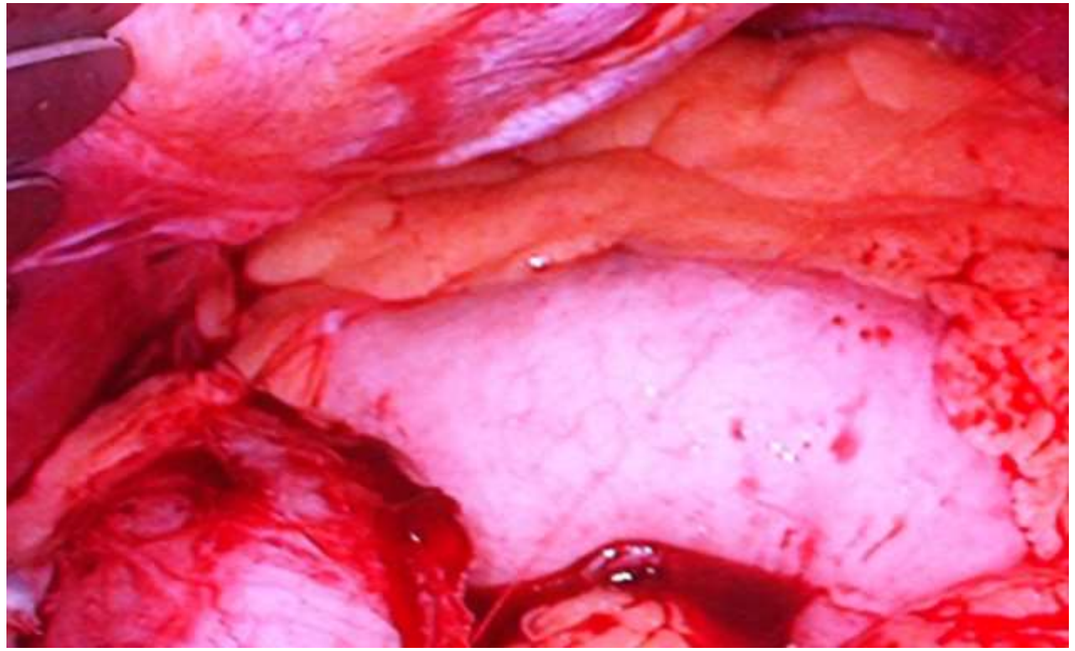


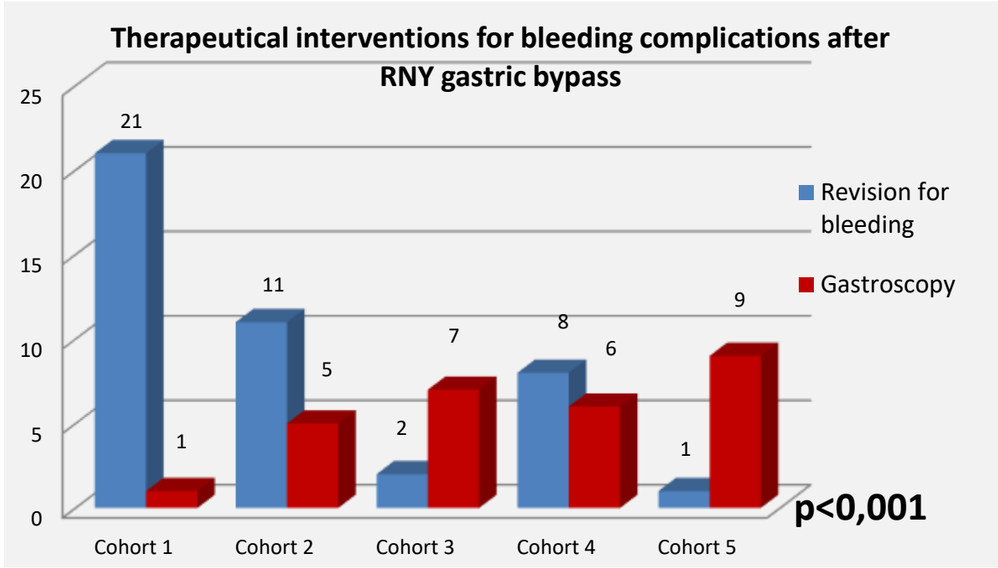
Q24: What is your fluid & blood pressure management during stapling and at the end of bariatric surgery? (mark more than one)

Answered: 59 Skipped: 0



Keep blood pressure low during stapling
Increase blood pressure at end to find bleeding spots

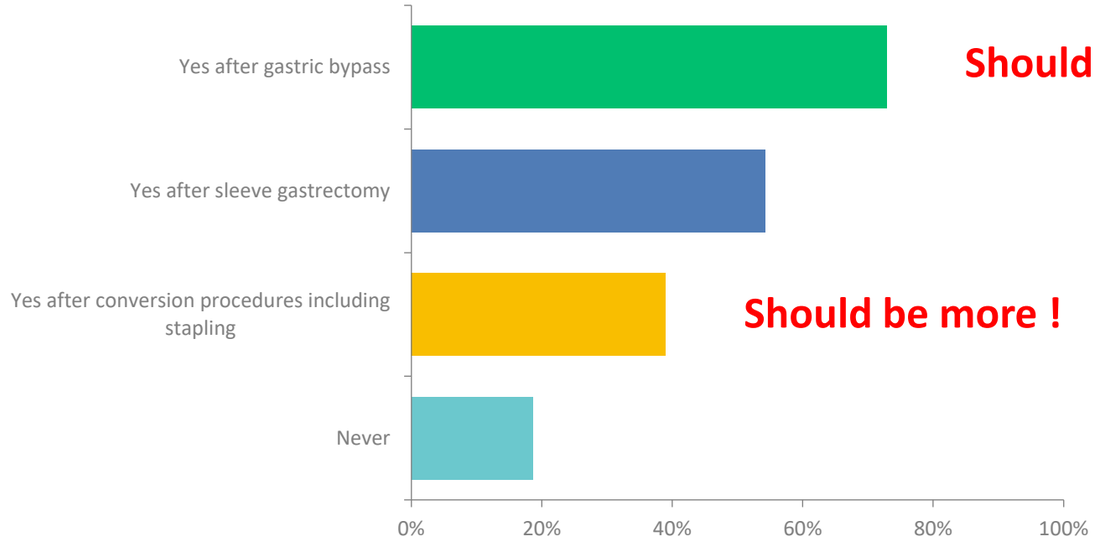




Mulier JP Obes Surg 2007, 17: 1051

Q32: Section 5: Postoperative Inpatient CareDo you perform or request a leak test intraoperatively or post-operatively? (ANES / SURG) (mark more than one)

Answered: 59 Skipped: 0



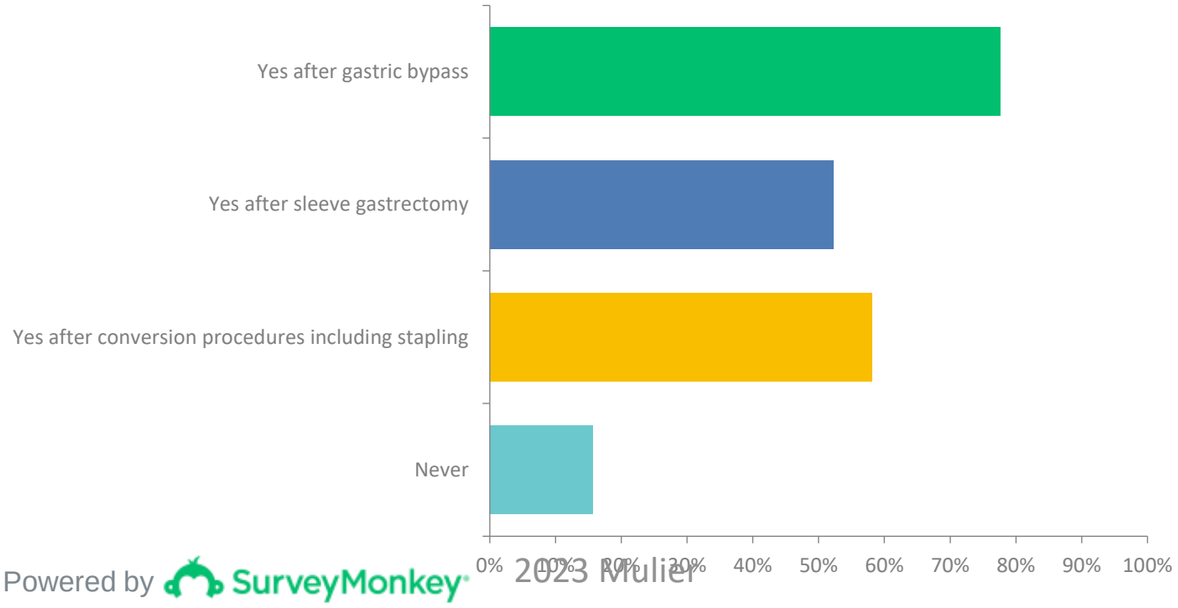
Should be more !

Should be more !

Q 32: leak test is done in 70 % after RNY 50 % after sleeve and 40 % after conversion

comparable with Q 43 of the surgeons who do only more after conversions.. (55%)

Q43: Do you perform or request a leak test intraoperatively or post-operatively?(mark more than one)



New ERAbS guidelines:

table 3: intra operative care

what we should discuss for surgery

1. Correct stapling
- Remover air from stomach
- Choose the right stapler color for each segment and individual patient
- Wait 10 sec for compression before firing
- Verify no tube or food inside staple line
- Verify not stapling a double stomach layer, only for conversion
- Keep patient dry (no fluid overload) and lower blood pressure till end of stapling.
- Always stapling nice in line avoiding spikes, certainly for SG
- Never last staple to close to the esophagus for gastric bypss (GB) and SG
- Never staple to close to the guiding tube, certainly in sleeve gastrectomy (SG)
- Never first staple to close to the pylorus, only for SG
- Never staple to close to the incisura angularis, only for SG
- Always stapling without torsion, certainly for SG

2. Blood pressure increase at end to find bleeding spots

3. Perfusion verification in most conversions after blood pressure increase

4. Leak test in all RNY gastric bypass and most conversions

Stenberg World J Surg (2022) 46:729–751

2023 Mulier

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New ERAbS guidelines:

table 4: post operative care

Something to add?

Oygen CPAP

Beach chair, Mobilisation

Table 4 ERAS recommendations for postoperative care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
16. Postoperative oxygenation	*Patients without OSA or with uncomplicated OSA should be supplemented with oxygen prophylactically in a head-elevated or semi-sitting position. Both groups can be safely monitored in a surgical ward after the initial PACU stay. A low threshold for non-invasive positive pressure ventilation should be maintained in the presence of signs of respiratory distress*	Oxygen supplementation: Low Position in the postoperative period: High	Strong
	Patients with OSA on home CPAP therapy should use their equipment in the immediate postoperative period	Moderate	Strong
	Patients with obesity hypoventilation syndrome (OHS) are at higher risk of respiratory adverse events. Postoperative BiPAP/NIV should be considered liberally during the immediate postoperative period, in particular in the presence of hypoxemia	Low	Strong
17. Thromboprophylaxis	*Thromboprophylaxis should involve mechanical and pharmacological measures. Doses and duration of treatment should be individualized*	High	Strong
18. Early postoperative nutritional care	*A clear liquid meal regimen can usually be initiated several hours after surgery*	Moderate	Strong
	All patients should have access to a comprehensive nutrition and dietetic assessment with counselling on the macronutrient and micronutrient content of the diet based on the surgical procedure and the patient's nutritional status	Moderate	Strong
	Patients and healthcare professionals should be aware of the risks of thiamine deficiency, especially in the early postoperative periods	Low	Strong
19. Supplementation of vitamins and minerals	*A regimen of life-long vitamin and mineral supplementation and nutritional biochemical monitoring is necessary*	High	Strong
20a. PPI prophylaxis	*PPI prophylaxis should be considered for at least 30 days after Roux-en-Y gastric bypass surgery*	RYGB: Moderate	Strong
	There is not enough evidence to provide a recommendation of PPI prophylaxis for sleeve gastrectomy, but given the high numbers of patients with gastroesophageal reflux after this procedure, it may be considered for at least 30 days after surgery	SG: Very Low	Weak
20b. Gallstone prevention	*Ursodeoxycholic acid should be considered for 6 months after bariatric surgery for patients without gallstones at the time of surgery*	Moderate	Strong

OSA Obstructive sleep apnoea; *PACU* post-anaesthesia care unit; *CPAP* continuous positive airway pressure; *OHS* obesity hypoventilation syndrome; *BiPAP* bilevel positive airway pressure; *NIV* non-invasive ventilation; *LMWH* Low molecular weight heparin; *PPI* Proton pump inhibitor; *RYGB* Roux-en-Y gastric bypass; *SG* sleeve gastrectomy

Stenberg World J Surg (2022) 46:729–751

New ERAbS guidelines:

table 4: post operative care

what we should discuss

1. Avoid using oxygen post operative
   - Informs you earlier of insufficient breathing using saturation
   - Monitor expired CO2 or better breathing volume non invasive
2. No CPAP needed as long as patient is awake and doesn(t get any opioid.
3. Repeat importance of beach chair adding Mobilisation as fast as possible, making ambulatory care possible IF
   - Several conditions are met
4. Prevent and treat most small problems that frequent related with anesthesia and surgery, including Pain & PONV.

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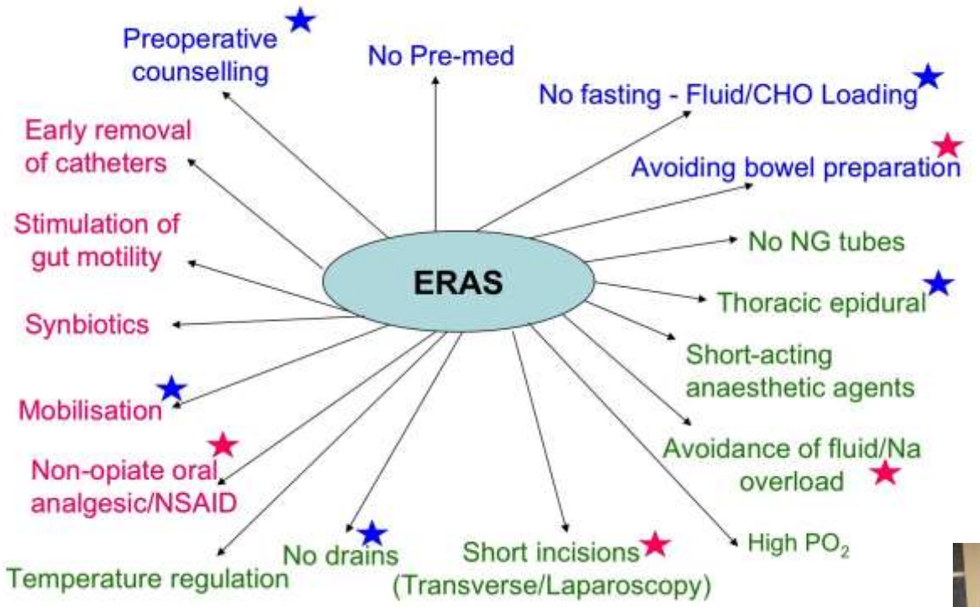
Improving the quality of care by ERAbS combined with surgical aspects, LPV, OFA, PP and AM

A Stimulus to improve your quality of care

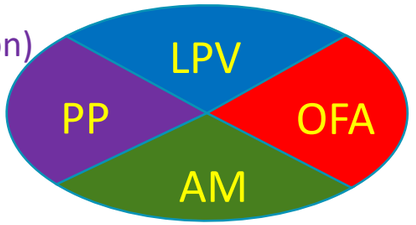


LPV (Lung Protective Ventilation)

- Low TV, VCV with I/E ½, PEEP,
- LRM, low O_2, CPAP during extubation

PP (Peritoneal Protection)

- Steroids
- Low IAP
- Lidocaine, N20, O2



OFA (Opioid Free Anaesthesia)

- Alpha2agonists
- Lidocaine
- Ketamine Magnesium
- Loco regional

AM (Anaesthesia Monitoring)

- Deep NMB by TOF PTC
- Correct depth of hypnosis by BIS
- Suppress sympathetic tone by monitoring NOL, ANI,…

World J Surg 2016; 40:2065–2083
Obesity Surgery 2019; 29:1841–1850
British Journal of Anaesthesia 2019; 123: 898-913
Journal of Ovarian Research 2013; 6:90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More info:
www.ESPCOP.EU
www.best-bariatric-surgery.com
SAVE the DATE
1. Live registered cases demonstrating
Revisional Bariatric Surgery
Under Opioid Free Anaesthesia
both recorded & discussed by surgical & anaesthesia experts
(two parallel sessions)
2. Lectures on Key points in anaesthesia
3. Hands on Workshops on lung ventilation
4. Live bariatric cases under OFA at AZ Sint Jan Bruges.
(Limited places to stay 2 days longer Dec 13–14th)