



ERABS has changed the bariatric practice
and is here to stay.

ERABS has **not** changed the bariatric practice **yet**
and **requires still a lot of training**



9:00 – 9:10

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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
- Medec int
- Baxter





Why are the ERAbS guidelines not yet applied everywhere?

1. Each surgeon and anaesthesiologist should read and learn the guidelines.
 1. This takes a generation and training of the new fellows before universal adapted
 2. ERAS guidelines are there for most procedures but differ slightly for each procedure requiring to read them all

Some additions should be made and will be shortly shown on each table as an example

New ERAbS guidelines:

table 1: Pre admission care

Something to add?

Information to general?

- Stop Bang
- WHt ratio
- Bicarbonate level

Weight reduction

- 10 kg in pat with central obesity
- To create more workspace

Exercise pre op

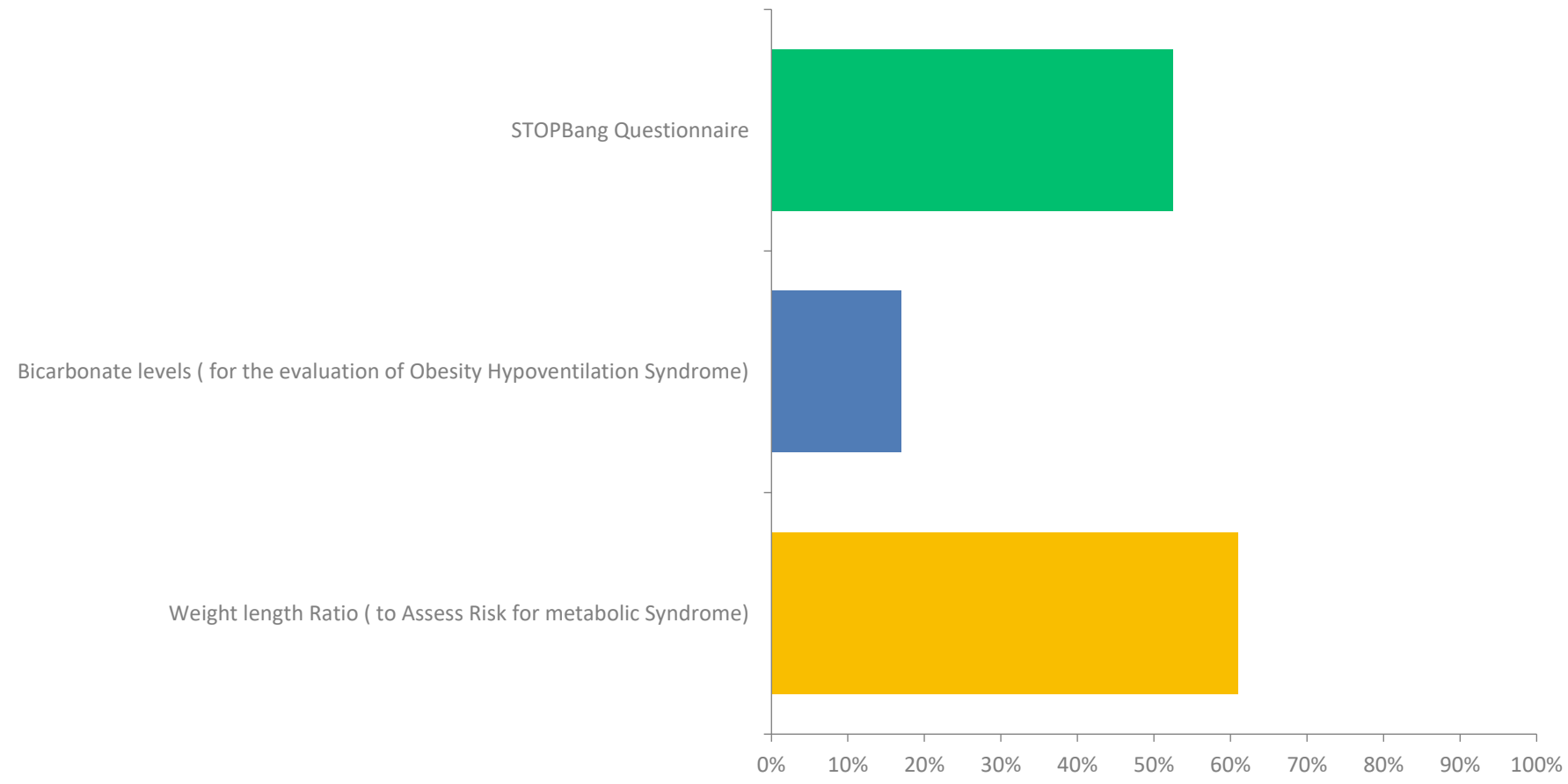
- Prehabilitation is more than exercise

Table 1 ERAS recommendations for preadmission care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
1. Information, education and counselling	<i>Preoperative information and education, adapted to the individual requirements, should be given to all patients</i>	Low	Strong
2. Indications and contraindications for surgery	<i>Indications for bariatric surgery should follow updated global and national guidelines</i>	Moderate	Strong
3a. Smoking and alcohol cessation	<i>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</i>	Smoking: Moderate Alcohol: Low	Strong Strong
3b. Preoperative weight loss	<i>Preoperative weight loss using very low or low-calorie diet prior to bariatric surgery should be recommended</i>	Postoperative complications: Moderate	Strong
	<i>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</i>	Postoperative weight loss: Low Diabetes: Low	Strong Strong
4. Prehabilitation and exercise	<i>Although prehabilitation may improve general fitness and respiratory capacity, there is insufficient data to recommend prehabilitation before bariatric surgery</i>	Low	Weak

Q7: Section 2: Preoperative Care. Do the following routinely form part of your pre-operative assessment

Answered: 59 Skipped: 0



Q7: stop bang is used in 50 % what is already high but could be better. WHtR is used more than 50 % what is probably too high but would be nice if it is real. Bicarbonate levels is too low (15%), nevertheless finding obesity hypoventilation is crucial and should get more attention as a simple screening tool...



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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.

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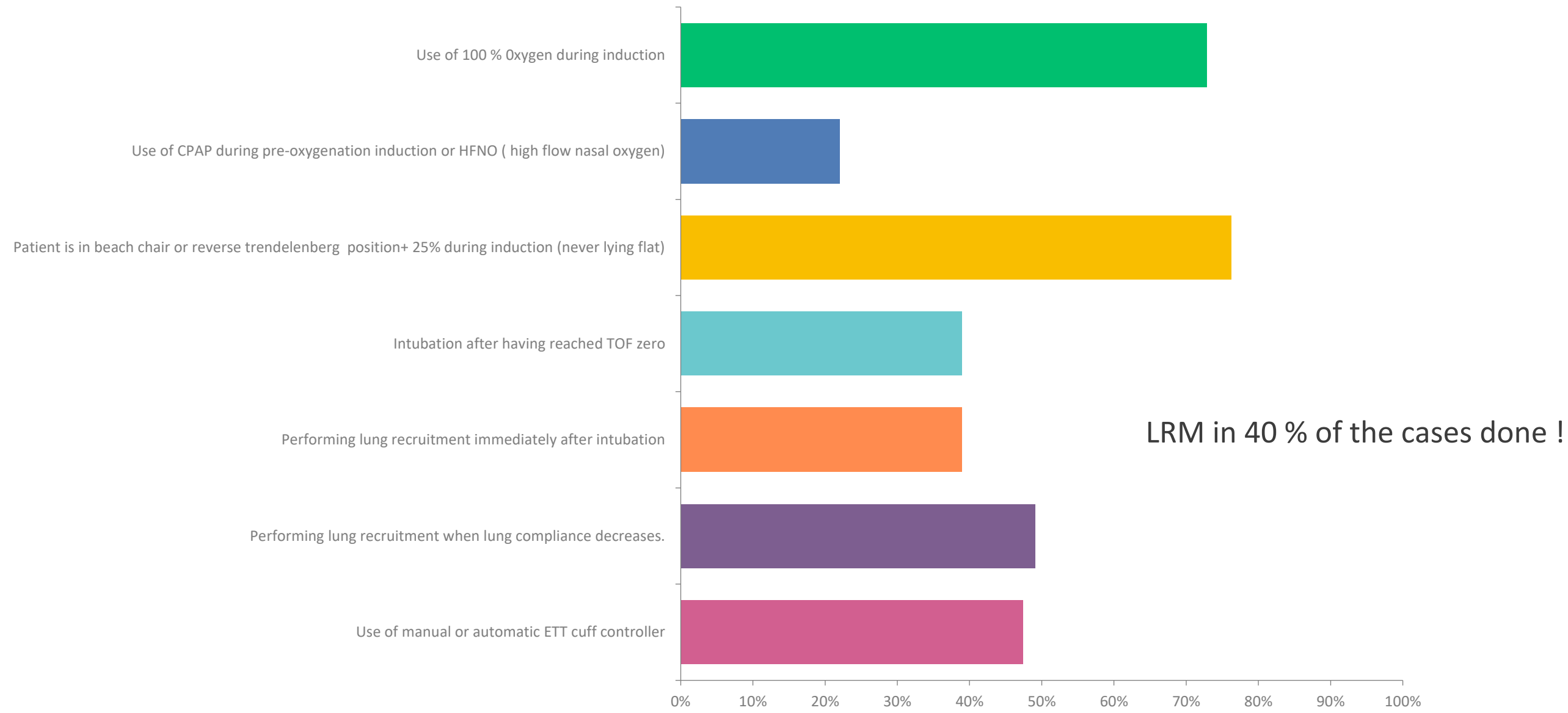
Table 3 ERAS recommendations for intraoperative care in bariatric surgery

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

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

Answered: 59 Skipped: 0



Using Carestation™ Insights demonstrates in-house lung protective ventilation performance, stimulating behavioural change.

ESAIC 2023: 964

J. Mulier, MD, PhD, FESAIC¹

1. AZ SintJan Brugge, Anesthesiology, Brugge, Belgium, UGent, Anesthesiology, Gent, Belgium, KULeuven, Cardiovasculaire wetenschappen, Leuven, Belgium.

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Background and Goal of Study:

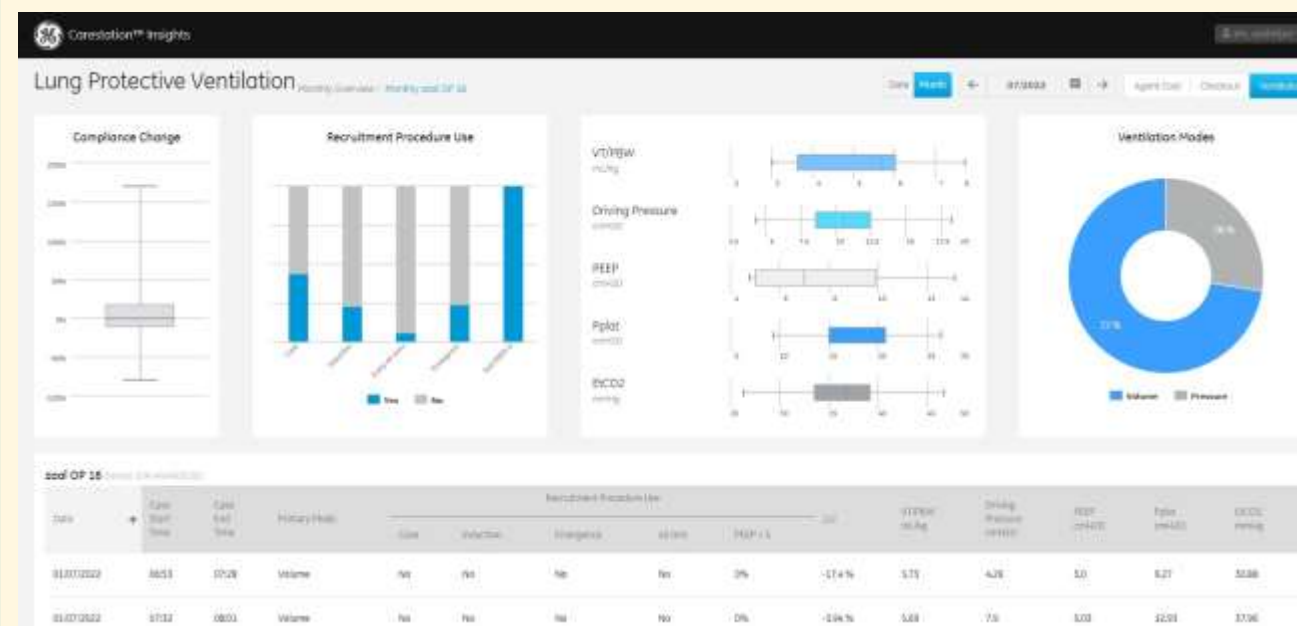
The LPV guidelines state that

- low tidal volume, low plateau and driving pressure, avoiding hypocarbia, sufficient PEEP and lung recruitment when respiratory compliance decreases is needed in most patients getting positive pressure ventilation (PPV).
- We all think that our own performance is good, and follow common recommendations until we are forced to see that, in reality, our own behaviour is far from ideal on every single occasion.

Materials and Methods:

- The Carestation Insights LPV application offers a way of automatically monitoring the C, mode of ventilation, PEEP level, and when LRM is performed during PPV.
- Carestation Insights LPV application shows these parameters for each connected operating room, both aggregated for the anaesthesia department and as a case-by-case view that can help to identify outliers.
- Mann-Whitney test analyses difference between using LRM or not.

Results and Discussion: When we started to use Carestation Insights LPV application, we discovered that our staff was not following all aspects of LPV to the same extent. We analysed the anonymous data from April till July 2022 in 1441 patients (53 missing data).



- Patients with a Crs < 40 at end of surgery got a LRM in 15 % of the cases.
- Patients with a Crs > 40 at end of surgery got a LRM in 20 % of the cases.
- Patients with a Crs after induction < 40 had no change in Crs when no LRM was done (Mann-Whitney p=0.126) (29+/-1.3 to 32+/-1.9 before extubation) and increased from 29+/-2.9 to 42+/-5.3 when at least one LRM was done. (Mann-Whitney p=0.001).
- Patients with a Crs after induction > 40 dropped their Crs from 62+/- 0.8 to 55+/-0.9 (Mann-Whitney p=0.029) when no LRM was done and didn't change when a LRM was done (59+/-1.9 to 57+/-2.7) (Mann-Whitney p=0.182).
- The patients with a starting Crs < 40 and getting a LRM had a lower TV (430+/-10 vs 395+/-10) (p=0.005), a higher et CO₂ (38+/-0.7 vs 35 +/-0.4) (p<0.001), a higher PEEP at the end (9.1+/-0.4 vs 5.3+/-0.1) (p<0.001) and a lower driving pressure (12.0+/-0.6 vs 12,8+/-0.3) (p=0.023) than those getting no LRM.

	mean	unit	SD
PEEP	6,133	cmH2O	0,193
driving pressure	10,474	cmH2O	0,302
P plat	16,613	cmH2O	0,361
etCO2	36,188	mmHg	0,386
TV/IBW	5,991	ml	0,118
LRM after induction	7,4%		
LRM before extubation	10,0%		
any LRM during surgery	16,5%		

Conclusion(s): The LPV dashboard acts as a reminder of how we are performing in terms of LPV in our daily practice and might help to improve following guidelines.

While PEEP settings of minimum 5 PEEP at the end of the procedure were quite well respected in 73 %, LRM was performed less often (16%).

References:

YOUNG CC et al. Br J Anaesth. 2019;123:898-913
LADHA KS, et al. Anesth Analg. 2018, 126: 503-512



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1. Each surgeon and anaesthesiologist should read and learn the guidelines.
2. Survey on your daily practice tell more of your knowledge than what you really do
3. Guidelines are for most physicians only suggestions to follow
 1. Are guidelines advisory or mandatory? In Belgium they are mandatory but most are not aware even the court.
 2. Do doctors who deviate from guidelines place themselves at increased risk of being found liable in negligence if patients suffer injury as a result?
 3. Could compliance with guidelines protect health care workers from liability in such circumstances?
 4. Guideline developers can be held liable for faulty guidelines,



Clinical guidelines and the law: advice, guidance or regulation?

Brian Hurwitz

First published: August 1995 | <https://doi.org/10.1111/j.1365-2753.1995.tb00007.x> | Citations: 19



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Pages 49-60



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New ERAbS guidelines:

table 2: pre operative care

Something to add?

Reducing inflammatory reactions 

Is proven already in laparoscopy, not bariatrics yet

Table 2 ERAS recommendations for preoperative care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
5. Supportive pharmacological intervention	<i>8 mg intravenous dexamethasone should be administered preferably 90 min prior to induction of anaesthesia for reduction of PONV as well as inflammatory response</i>	Glucocorticoids: Low	Weak
	<i>There is insufficient evidence to support perioperative statins for statin-naïve patients in bariatric surgery. Patients on statins can safely continue the treatment during the perioperative phase</i>	Statins: Very low	Weak
	<i>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</i>	Beta-adrenergic blockade: Low	Weak
6. Preoperative fasting	<i>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)</i>	Low	Strong
	<i>Patients with diabetes should follow these recommendations, but further studies are needed for patients with additional risk factors such as gastroparesis</i>	Low	Strong
7. Carbohydrate loading	<i>There is insufficient evidence to make a recommendation about preoperative carbohydrate loading in bariatric surgery</i>	Low	Weak
8. PONV	<i>A multimodal approach to PONV prophylaxis should be adopted in all patients</i>	High	Strong

PONV Postoperative nausea and vomiting

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

Answered: 59 Skipped: 0

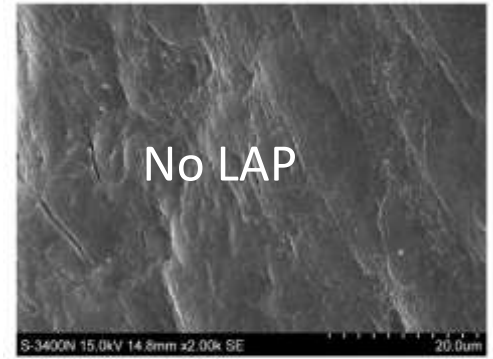
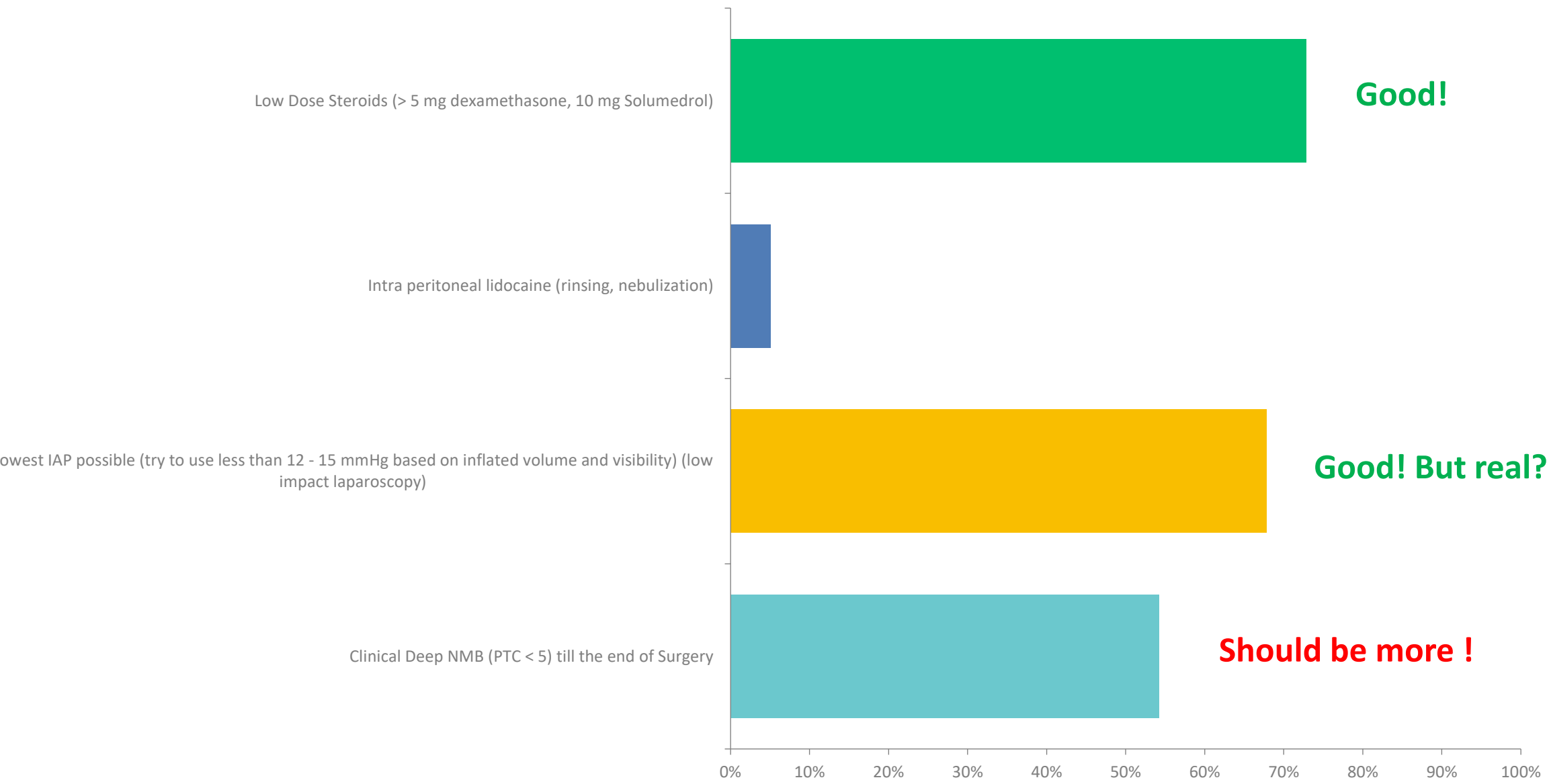


Fig. 4 In the control group, the peritoneum is covered by a sheet of flat mesothelial cells densely covered with microvilli. No intercellular clefts and no exposed basal lamina can be detected (magnification x3,000)

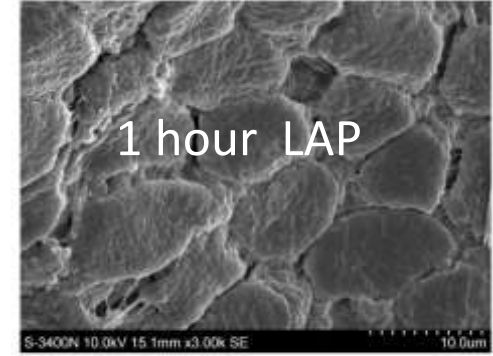


Fig. 5 In group C1h, the mesothelial cells retract and bulge up; in addition, intercellular clefts and basal lamina are evident (magnification x3,000)

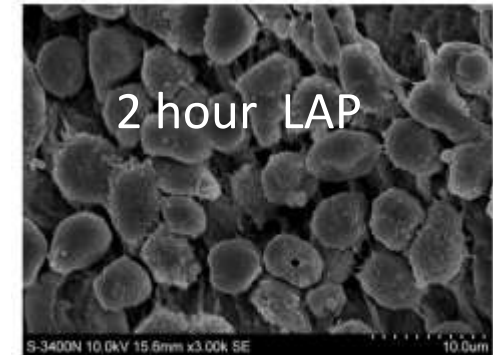


Fig. 6 In group C2h, partial mesothelial cells are desquamated and basal lamina is more extensively exposed than in group C1h. Additionally, residual mesothelial cells bulge up and exhibit typical cobblestone morphology (magnification x3,000)



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New ERAbS guidelines:

table 3: intra operative care

what we should discuss for surgery

1. Correct stapling

- Remove air from stomach direct after induction
- 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, (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 bypass (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

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Table 3 ERAS recommendations for intraoperative care in bariatric surgery

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

Table 4 ERAS recommendations for postoperative care in bariatric surgery

Element	Recommendation	Level of evidence	Recommendation grade
16. Postoperative oxygenation	<i>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</i>	Oxygen supplementation: Low Position in the postoperative period: High	Strong
	<i>Patients with OSA on home CPAP therapy should use their equipment in the immediate postoperative period</i>	Moderate	Strong
	<i>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</i>	Low	Strong
17. Thromboprophylaxis	<i>Thromboprophylaxis should involve mechanical and pharmacological measures. Doses and duration of treatment should be individualized</i>	High	Strong
18. Early postoperative nutritional care	<i>A clear liquid meal regimen can usually be initiated several hours after surgery</i>	Moderate	Strong
	<i>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</i>	Moderate	Strong
	<i>Patients and healthcare professionals should be aware of the risks of thiamine deficiency, especially in the early postoperative periods</i>	Low	Strong
19. Supplementation of vitamins and minerals	<i>A regimen of life-long vitamin and mineral supplementation and nutritional biochemical monitoring is necessary</i>	High	Strong
20a. PPI prophylaxis	<i>PPI prophylaxis should be considered for at least 30 days after Roux-en-Y gastric bypass surgery</i>	RYGB: Moderate	Strong
	<i>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</i>	SG: Very Low	Weak
20b. Gallstone prevention	<i>Ursodeoxycholic acid should be considered for 6 months after bariatric surgery for patients without gallstones at the time of surgery</i>	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





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 1. We all tend to answer what we should be doing
 2. We all overestimate our correct behaviour
3. Guidelines are for most physicians only suggestions to follow
 1. However in many countries guidelines are equal to a legal obligation or a written confirmation is needed to clarify in each patient why you deviate.
4. Many recommendations are written with a weak recommendation and a low level of evidence.
 1. Not needed to be followed yet?
 2. If not evidence based not valid.
 3. Some will never be able to be evaluated by RCT due to ethics, size or cost
5. Following the guidelines is just the beginning to be become a centre of excellence
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6. The ERAbS guidelines requires updates
 1. More detailed surgical guidelines on how performing sleeves or gastric bypasses should be included
 2. General terms like “consider, reduce, adapt, prefer” although correct does not initiate any action.



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JOINT ESPCOP – BEST (Anaesthesia & Surgery)

14th ESPCOP - 4th OFA

Opioid Free Anesthesia
OFA
Opioid free Analgesia

December 11-12th 2023

**Bariatric Surgeons invited with their Anaesthesiologists
BMCC, 8000 Bruges, Belgium**

More info:

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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)**

ERAmbS.

- Guidelines improve outcome
- And might shorten the hospital stay
- More important is the faster return to daily work
- Yes ambulatory RNY, SG. Is possible!

Opioid Free Anesthesia
OFA
Opioid free Analgesia

