measured spirometrically as reduced FVC and FEV1, and clinically as reduced deep breathing and coughing. Drummond points out that deep breathing, coughing, and spirometric lung function testing are all influenced by factors ranging from surgical pain to diaphragmatic dysfunction to patients’ personality. He concludes that ‘Any effect on lung mechanics caused by mechanical ventilation will pale into insignificance’. But if this were true, why should we use low tidal volumes in our surgical patients with healthy lungs for intraoperative ventilation?

Intraoperative oxygenation is worse with lower tidal volumes. Lower tidal volumes increase atelectasis and it remains unclear how much PEEP is necessary to counterbalance this effect. In contrast to Drummond’s suggestion, there is no clear evidence for less inflammation with lower tidal volumes in healthy lungs, especially not when low and high tidal volumes are compared using the same level of PEEP. Specifically, the study by Hong and colleagues, cited by Drummond as evidence that small tidal volumes are associated with less inflammation, demonstrates that there is no difference in cytokines when low and high tidal volumes are used with the same low level of PEEP in healthy lungs. What that study does show is less histological lung injury with high tidal volumes and low PEEP than with low tidal volumes and low PEEP.

Spirometric lung function testing does not measure subtle pulmonary damage. But we were not especially interested in subtle pulmonary damage. ‘We tested the hypothesis that intraoperative ventilation with low tidal volume improves postoperative time-weighted average FVC and FEV1 in patients undergoing upper abdominal surgery’—a clinically relevant and important outcome. The results of our trial indicate that the potential effects on lung mechanics, if any, caused by mechanical ventilation ‘have paled into insignificance’. Low tidal volumes during upper-abdominal surgery did not improve postoperative lung function. That is the clinically important outcome.

Declaration of interest
None declared.

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Decision support system combined with automated reminders for postoperative nausea and vomiting prophylaxis

Editor—We read the study of Kooij and colleagues1 regarding automated reminders which decreased postoperative nausea and vomiting (PONV) with great interest. We have conducted several studies to test drugs and other interventions to prevent PONV; some of them have been published and some have been recently submitted. In the result of our most recent study, the incidence of PONV was 34% for high-risk patients, even with palonosetron added to total i.v. anaesthesia (TIVA) for the first 24 postoperative hours.

We are planning to formulate some guidelines which would be suitable for use in anaesthesiology of Korean patients. First of all, it is remarkable that there exist an anaesthesia information management system (AIMS) and decision support system (DSS) for PONV prophylaxis in the author’s institution. Unfortunately, doctors in our institution usually do not estimate preoperative PONV risk. Patients receive universal PONV prophylaxis via a single drug, for example, ondansetron or ramosetron, if they are undergoing patient-controlled analgesia (PCA) devices containing opioids after surgery. On the other hand, little prophylaxis is provided for patients who will not use PCA even when they harbour three risk factors of PONV. We think that these phenomena partially arise from a shortage of manpower in addition to an excess of cases. If we develop a DSS for PONV suitable for our circumstances and apply it in combination with automated reminders, the work of anaesthesiologists will be easier, and unnecessary prescriptions can be avoided.

In our experience, it seems somewhat impracticable to consider patients to be at low risk when an opioid-containing PCA is prescribed, even if only one risk factor is present. We need more detailed guidelines according to both number and combination of risk factors. Also, the guideline of Kooij and colleagues consists of dexamethasone and granisetron, but we are considering a combination therapy of dexamethasone, any 5-HT3 antagonist, and TIVA for high-risk patients.2

Declaration of interest
None declared.

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Reply from the authors

Editor—We read the letter by Dr Park and we were very pleased by his friendly words. We are also pleasantly surprised by a postoperative nausea and vomiting (PONV) incidence of 36% in high-risk patients. It would be interesting to know more about the definition of a ‘high-risk patient’ in that study. Dr Park describes a situation in which postoperative opioid patient-controlled analgesia (PCA) is used as the only risk factor triggering PONV prophylaxis. Since postoperative opioid use is indeed an important risk factor for PONV, it correctly triggers prophylaxis. There is, however, room for improvement in estimating PONV risk based on the other known risk factors or even better: using a risk score. According to Dr Park’s description, there is currently no guideline for PONV prophylaxis in Korea, so a possible reason for this insufficient risk estimation might be that some of our Korean colleagues are not aware that there are PONV risk factors other than postoperative opioid use. Workload and lack of manpower, as mentioned by Dr Park, are also well-known reasons for non-adherence to guidelines. If a guideline for PONV management would be implemented in Korea, adherence to this guideline could possibly be improved using a decision support system (DSS). When designing a DSS, however, one should carefully consider the properties required to facilitate success. These were well described in a review and include (among others) automatic appearance of reminders, specific advice, and integration in an electronic medical record.1

The guideline described in our article was the departmental guideline as it was at the time of data collection.2 This evidence-based guideline was based on research with regard to optimal risk estimation, and also optimal medication prophylaxis.3 4 Other possible interventions, such as total i.v. anaesthesia, locoregional anaesthesia if possible, and metoclopramide, were not mentioned in the article but were incorporated in the guideline. This guideline was implemented after a consensus process and we feel that it is a practical and applicable one. There are other options as well though. For example, in another hospital, we agreed to add one prophylactic intervention for each positive risk factor. We feel that it is important to weigh all known risk factors and prophylactic options and decide which ones to use in which preferential order using a consensus process. As a guide for that process, comprehensive guidelines of PONV management are available. The most extensive being the SAMBA guideline.5

In summary, we think that it is an excellent initiative to develop a Korean guideline for the management of PONV and wish Dr Park wisdom and success in doing so. Once the guideline has been developed and implemented, it is even better to use automated reminders in supporting it.

Goal-directed therapy: each therapeutic regimen needs its indication

Editor—We read with great interest the article by Brandstrup and colleagues1 providing interesting data on a multi-centre study on goal-directed fluid therapy (GDT) vs a zero-balance regimen in patients undergoing colorectal surgery. During the last decades, numerous single-centre studies, the majority performed with oesophageal Doppler-guided treatment strategies, demonstrated a positive effect of GDT on length of hospital stay, patient morbidity, and mortality.2-5 In contrast to these studies, Brandstrup and colleagues found no significant difference in length of hospital stay or patient outcome. However, when looking in detail on the design of the study, these results are not very surprising, owing to two aspects: although patients with a preoperative risk score of up to ASA III were eligible for this study, 79% of patients were classified ASA I or II in the zero-balance group, and even 89% in the Doppler group. By definition, ASA I and II

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