trans-oesophageal echocardiography, showing a patent foramen ovale with major shunt and moderately dilated right ventricle. Inhaled NO was started. This immediately improved oxygenation \( (P_{aO_2}/F_{iO_2} \approx 78 \text{ mm Hg}) \) and the thermodilution curve (Fig. 1b) despite persistent and unchanged norepinephrine dose of \( 1 \mu g \text{ kg}^{-1}\text{min}^{-1} \) and same ventilatory settings. NO was titrated to 20 ppm. Twelve hours later norepinephrine was reduced to \( 0.3 \mu g \text{ kg}^{-1}\text{min}^{-1} \) and NO was reduced to 3 ppm as the double hump had completely disappeared (Fig. 1c). In the next 48 h norepinephrine and NO were discontinued and the trachea was successfully extubated 1 week later.

Norepinephrine can cause a significant increase in pulmonary artery pressures in ARDS and sepsis.\(^2\) In this case, pulmonary pressures apparently were sufficient to cause right-to-left intracardiac shunt through a patent foramen ovale. The shunt presented as profound hypoxia exacerbated by increasing norepinephrine and the double hump on the transpulmonary thermodilution curve, suggested a short pass of the indicator.

Besides reducing ventilation-perfusion mismatch,\(^3,4\) inhaled NO also can improve oxygenation by resolving intracardiac shunt.\(^5,6\) Here, the shunt was likely triggered by the high dose of norepinephrine as reduction allowed weaning from NO. This quick improvement was unlikely to be regression of ARDS.

In patients with ARDS and worsening hypoxemia receiving high dose norepinephrine, right-to-left shunt should be suspected. Visual analysis of the transpulmonary thermodilution curve may suggest the diagnosis. Therapy with NO should be considered. The effect can be assessed by the shape of the thermodilution curve.

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**Successful weaning from mechanical ventilation after abdominal lipectomy and omentectomy in an obese patient with multiple rib fractures**

Editor—Obesity\(^1\) and old age\(^2,3\) are major risk factors for pulmonary complications following trauma or general anaesthesia. We report our experience with a morbidly obese, elderly patient with multiple rib fractures, who was successfully weaned off the mechanical ventilation after abdominal lipectomy and omentectomy.

A 69-yr-old, morbidly obese female was admitted with severe shortness of breath following traumatic injury to her chest in a motor vehicle accident. She was 155 cm and 95 kg, with body mass index 39.5 kg m\(^{-2}\). Computed tomography scans taken a few hours after the injury showed multiple right rib fracture (3rd to 11th), pulmonary contusion with small amount of haemopneumothorax in the right chest, and significant fatty tissue in the thoracic and peritoneal cavities. The arterial blood pressure was 160/90 mm Hg and the heart rate (HR) 68 beats min\(^{-1}\). Her respiratory status deteriorated progressively over 12 h, the respiratory rate being increased up to 30 bpm. She was transferred to the intensive care unit and was given supplemental oxygen via facemask. She received i.v. patient-controlled analgesia, and diuretics to improve pulmonary compliance in a sitting position. A tube thoracostomy was placed in the right chest for drainage of associated haemopneumothorax. She was encouraged to cough vigorously and breathe deeply. Chest physiotherapy was carried out frequently to prevent retention of secretions and development of atelectasis. Her \( P_{aCO_2} \) increased progressively, although arterial oxygenation was maintained with supplemental oxygen. On day 8, she was intubated and lungs were mechanically ventilated, when her \( P_{aCO_2} \) increased to 13.2 kPa and \( P_{aO_2} \) decreased to 6.2 kPa. Chest symptoms subsided within 2 weeks after the injury. However, after 8 days of mechanical ventilation, attempts at weaning on three occasions over the following 2 weeks were unsuccessful. A surgical removal of abdominal fat was considered to reduce the intra-abdominal pressure and to improve respiratory mechanics. On day 21 of mechanical ventilation, she underwent abdominal lipectomy (2940 g) and omentectomy (1650 g) under general anesthesia. The surgery lasted 5.7 h and was uneventful. The tidal volume increased from preoperative value of 350–400 ml to 450–550 ml, and static compliance from 0.033 to 0.05 litre cm\(^{-1}\) H\(_2\)O\(^{-1}\) on the 1st postoperative day. From the 5th postoperative day, weaning trials were continuously made during the day time with
progressive decreases of pressure support. On the 14th post-operative day, the patient was successfully weaned off the ventilator.

Abdominal lipectomy is a safe and reliable measure for the removal of excess abdominal fat in obese subjects. In addition, weight reduction itself is among the most effective measures to treat pulmonary complications in the obese. The removal of excessive abdominal and omental fat may have reduced intra-abdominal pressure against the diaphragm, resulting in an enhanced respiratory mechanics and successful weaning away from mechanical ventilation.

The surgery involving the thorax and upper abdomen, however, is associated with an increased risk of pulmonary complications. Moreover, obese patients have a higher incidence of postoperative pulmonary complications. The lung function can also be influenced by the type of body fat distribution (central or peripheral), and the fat removal may be more useful in the central type of obesity as in our case. Clinicians should be aware of the risks and benefits of abdominal lipectomy in different clinical settings.

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Near misses with prefilled syringes

Editor—We would like to report a potential critical incident with a prefilled suxamethonium (succinylcholine) syringe.

A 23-yr-old female, ASA I, was to undergo an emergency appendicectomy. The plan for rapid sequence induction was fentanyl 100 μg, thiopental 500 mg and succinylcholine 100 mg. The fentanyl and thiopental were prepared and labelled by the anaesthetist and a prefilled succinylcholine syringe was to be used. The novice SHO performing the rapid sequence induction, under consultant supervision, accidentally picked up the succinylcholine prefilled syringe (Aurum Pharmaceuticals) instead of the fentanyl syringe but was stopped by the consultant. A potential critical incident was avoided. The label on the prefilled syringe was blue, the colour applied under the new system to opioids.

There is evidence that certain measures can reduce drug administration errors. These include the label on any drug ampoule or syringe being read carefully before a drug is drawn up or injected; the optimization of the legibility and contents of labels on ampoules and syringes according to agreed standards; the mandatory labelling of syringes; the formal organization of drug drawers and workspaces; and labels being checked by a second person before a drug is drawn up or given.

As part of the Department of Health’s drive to minimize drug administration errors in critical care areas, the Council of the Royal College of Anaesthetists, the Association of Anaesthetists of Great Britain and Ireland, the Faculty of Accident and Emergency Medicine and the Intensive Care Society have all agreed to recommend the adoption of a single standard for syringe labelling. They suggest all lettering be black, with the exception of the labels for succinylcholine and epinephrine, which should be printed against the background colour as bold reverse plate letters with a black bar running from edge to edge of the upper half of the label, the rest of which shall display the coloured background. This however has not yet been applied to prefilled syringes.

We suggest strongly that all prefilled syringes for any agent be made to the current colour scheme. Aurum Pharmaceuticals have been made aware of this potential problem.

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Editor—We write to you following a near miss drug administration error in our critical care unit recently. A 54-yr-old patient admitted to our unit with a diagnosis of pneumonia and cor pulmonale deteriorated despite noninvasive ventilation, and a decision to intubate and ventilate was made. Standard equipment and drugs were assembled from our crash trolley. This included a prefilled syringe of ephedrine for possible vasopressor support. Before the tracheal intubation was performed, all of the equipment and drugs were checked, whereupon it was discovered that the prefilled syringe was in fact amiodarone 300 mg. Further investigation has revealed the prefilled syringes, manufactured by Aurum Pharmaceuticals, are all contained in identical yellow plastic boxes with the name printed in black text on one face. A further classification system is used at the end of the box, employing a colour-coded label to further distinguish different compounds. Ephedrine is indicated by a pink label, whilst amiodarone employs a yellow label on a yellow box. To further confuse the issue, the same company supplies prefilled atropine syringes with a purple sticker, which are both used in many arrest trolleys across our trust.