ANESTHESIOLOGY

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Association between driving pressure and development of postoperative pulmonary complications in patients undergoing mechanical ventilation for general anaesthesia: A meta-analysis of individual patient data. Lancet Respir Med 2016 Mar 3. [Epub ahead of print].

Protective mechanical ventilation strategies using low tidal volume or high levels of positive end-expiratory pressure (PEEP) improve outcomes for patients who are undergoing surgery. However, the role of the driving pressure (difference between the plateau pressure and the level of PEEP) is not known. This meta-analysis recorded data from 17 randomized controlled trials (2,250 patients) on protective ventilation during general anesthesia for surgery published prior to July 30, 2015. The primary outcome was the development of postoperative pulmonary complications (postoperative lung injury, pulmonary infection, or barotrauma). Driving pressure, but neither tidal volume nor PEEP level *per se*, was associated with the development of postoperative pulmonary complications (odds ratio for one unit increase of driving pressure, 1.16; 95% CI, 1.13 to 1.19; $P < 0.0001$). *(Summary: J. Mantz. Photo: J. P. Rathmell.)*

Take home message: In patients undergoing mechanical ventilation for anesthesia and surgery, the driving pressure, rather than the tidal volume or the PEEP level *per se*, is associated with an increased rate of postoperative pulmonary complications.

Association between rotating night shift work and risk of coronary heart disease among women. JAMA 2016; 315:1726–34.

Prospective studies linking shift work to coronary heart disease (CHD) have been inconsistent and limited by the short duration of follow-up. The aim of this prospective cohort study of 189,158 initially healthy women who worked as registered nurses and were followed up over 24 yr in the Nurses' Health Studies was to determine whether rotating night shift work is associated with CHD risk. Longer duration of rotating night shift work was associated with a small but statistically significant increase in CHD risk. The association between duration of shift work and CHD was stronger in the first half of follow-up than in the second half, suggesting waning risk after cessation of shift work. *(Summary: J. Mantz. Photo: ©Thinkstock.)*

Take home message: This large prospective cohort study including more than 180,000 working nurses showed an association between the duration of night shift work and a small but significant increase in risk of CHD.

Laminectomy plus fusion *versus* laminectomy alone for lumbar spondylolisthesis. N Engl J Med 2016; 374:1424–34. A randomized, controlled trial of fusion surgery for lumbar spinal stenosis. N Engl J Med 2016; 374:1413–23. *Accompanying editorial:* Fusion for lumbar spinal stenosis—safeguard or superfluous surgical implant? N Engl J Med 374; 15:1478–9.

Lumbar spinal stenosis is caused by degenerative facet-joint arthrosis and leads to irritation and compression of spinal nerves, resulting in leg pain and difficulty with walking in the elderly. The use of lumbar decompression alone to treat spinal stenosis slightly declined during the years 2002 to 2007 while the use of a combined decompression-fusion procedure increased by a factor of 15 during the same period. Evidence showing benefit of adding fusion to decompression surgery is lacking. The *New England Journal of Medicine* published two randomized controlled trials in which standard bony decompression was compared with decompression plus instrumented fusion among patients who had stenosis limited to a maximum of two lumbar levels and did not involve spinal instability (the most common form of spinal stenosis). In the U.S. trial, 66 patients with spondylolisthesis were enrolled. The primary outcome was the physical-component summary score of the Medical Outcomes Study 36-Item Short-Form Health Survey (range, 0 to 100, with higher scores indicating better quality of life) 2 yr postprocedure. In the Swedish trial, 247 patients were included. Primary outcome was Oswestry Disability Index (range, 0 to 100, with higher scores indicating more severe disability) 2 yr after surgery, which was a secondary outcome in the other trial. In the U.S. trial, minimal but clinically meaningful improvement of quality of life was found when fusion was performed in addition to decompression surgery, while no difference in primary outcome was found in the Swedish trial. The rate of reoperation was 34% in the U.S. trial *versus* 21% in the Swedish trial, which likely reflects differences in practice between the two countries. Together, both trials strongly support the use of decompression alone in most patients with spinal stenosis secondary to spondylolisthesis, when no overt instability is present. *(Summary: J. Mantz. Image: Lucien Monfils [own work] [GFDL (http://www.gnu.org/copyleft/fdl.html) or CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0)],* via *Wikimedia Commons [open access].)*

Take home message: For most patients with symptomatic spinal stenosis associated with spondylolisthesis undergoing surgery, fusion does not add any significant benefit to decompression alone.

Effect of dexmedetomidine added to standard care on ventilator-free time in patients with agitated delirium: A randomized clinical trial. JAMA 2016; 315:1460–8.

Agitated delirium is common among mechanically ventilated patients in the intensive care unit. The aim of this randomized, multicenter, placebo-controlled trial was to determine the effectiveness of dexmedetomidine, a sedative/anesthetic agent selectively acting on α2-adrenoceptors, when added to standard care in patients with agitated delirium receiving mechanical ventilation. The primary outcome was the number of ventilator-free hours in the 7 days after randomization. Seventy-four patients were included. Primary outcome was (median) 144.8 h *versus* 127.5 h, in the intervention group *versus* the placebo group, respectively; median difference between groups, 17.0 h [95% CI, 4.0 to 33.2 h]; $P = 0.01$). Dexmedetomidine was also associated with earlier extubation (secondary outcome). These findings suggest small but significant beneficial effects of dexmedetomidine in agitated delirious mechanically ventilated patients. *(Summary: J. Mantz. Photo: J. P. Rathmell.)*

Take home message: In this randomized, placebo-controlled trial performed in delirious agitated mechanically ventilated patients in the intensive care unit, addition of dexmedetomidine to standard therapy slightly, but significantly, increased the number of delirium-free hours in the 7 days after randomization *versus* standard therapy.

Early administration of epinephrine (adrenaline) in patients with cardiac arrest with initial shockable rhythm in hospital: Propensity score matched analysis. BMJ 2016; 353:i1577. *Accompanying editorial:* Improving outcomes from in-hospital cardiac arrest. BMJ 2016; 353: i1858.

Little is known about the effectiveness of epinephrine use in hospitalized patients who experience cardiac arrest with a shockable rhythm, particularly early during the arrest. The American Heart Association recommends administration of epinephrine after the second defibrillation while the European Resuscitation Council recommends epinephrine after the third shock. In this prospective observational cohort study, data from the Get with the Guidelines Resuscitation registry were analyzed with respect to the timing of epinephrine administration (epinephrine given within 2 min after the first defibrillation, contrary to the guidelines, *versus* later than 2 min). A propensity score was calculated for the receipt of epinephrine within 2 min after the first defibrillation and 2,978 patients were matched for this criterion. The primary outcome measure was in-hospital survival. It was found that early administration of epinephrine after the first defibrillation was common (more than half of the patients), and resulted in a decreased chance of good outcome including decreased survival to discharge (odds ratio, 0.70; 95% CI, 0.59 to 0.82; $P < 0.001$). *(Summary: J. Mantz. Photo: J. P. Rathmell.)*

Take home message: Early administration of epinephrine after the first defibrillation (contrary to the guidelines) resulted in a worsened outcome in hospitalized patients who experienced cardiac arrest with a shockable rhythm.

Opioid dose and risk of suicide. Pain 2016; 157:1079–84.

Recent evidence has established a clear link between chronic pain and the risk of suicide. Multiple risk factors have been proposed and explored including pain intensity, pain duration, and comorbid psychological conditions. The contributions of treatments such as opioids to the risk of suicide are poorly understood, however. In their retrospective review of more than 120,000 patient records including 2,601 suicides, Ilgen *et al.* identified opioid dose as a significant contributing factor. Those receiving greater than 100 mg/day morphine equivalent were more than twice as likely to die by suicide as those receiving 1 to less than 20 mg/day despite controlling for several demographic and clinical characteristics. While important limitations apply to this type of retrospective analysis, these results suggest that caution be used in prescribing opioids, particularly at high doses, to chronic pain patients in the current absence of convincing outcome data demonstrating long-term utility. *(Summary: J. D. Clark. Image: J. P. Rathmell.)*

Take home message: In patients with chronic pain, opioid dose has been identified as a new risk factor for suicide.

Twelve tips for early career medical educators. Med Teach 2016; 38: 358–63.

Early career medical educators (ECMEs) comprise a large number of MD and PhD faculty in the first 10 yr since completion of their postgraduate education. Honing clinical skills, establishing a scholarly identity, and participating in professional citizenship projects are all vital roles that new faculty members aspire to and must establish for successful academic advancement. Coupled with these activities is the educator role. More universities than ever before require evidence that new faculty are effective teachers. Cristancho and Varpio have collated existing information and data and assembled 12 tips for ECMEs to assist them as they develop into effective teachers: (1) articulate your area(s) of interest; (2) define what success is for you; (3) create your 5-yr strategic plan; (4) develop strong communication skills; (5) cultivate relationships with mentors; (6) be a good mentee; (7) build a network of peers; (8) craft multiple elevator pitches; (9) be a team player; (10) build resilience as your armor; (11) understand that medical education is a field, not a discipline; and (12) embrace your identity as part of the medical education field. Read this article, grasp its concepts, and pursue its references. *(Summary: A. J. Schwartz. Photo: ©Thinkstock.)*

Take home message: A list of 12 tips assembled from existing information and data is presented in this article that aims to assist ECMEs as they develop into admired and effective teachers.