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**Welcome** to our review of the 2019 Australian and New Zealand College of Anaesthetists (ANZCA) Annual Scientific Meeting.

The theme of the meeting, “New Worlds. Come Explore”, encouraged delegates to explore the new worlds/frontiers faced by anaesthetists and specialist pain medicine physicians. Selection and review of the research has been carried out independently by Professor Thomas Ledowski from the University of Western Australia.

Kind Regards,

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**Can anaesthetic-analgesic technique during cancer surgery influence recurrence or metastasis?**

**Author:** Buggy D

**Summary:** Retrospective analyses in cancer patients undergoing surgery have suggested an association between certain anaesthetic techniques and more favourable oncological outcomes. The clinical data are conflicting, but in vitro and in vivo data suggest that amide local anaesthetics and propofol may provide oncological benefits compared to inhalation anaesthesia. Professor Buggy’s presentation summarised the relevant evidence for this hypothesis and concluded that only prospective, randomised clinical trials can definitively answer this question, of which results are eagerly anticipated.

**Comment:** In 2006 Prof. Donal Buggy surprised many of us when he reported that the anaesthetic technique, namely anaesthesia with morphine versus a paravertebral block for breast cancer surgery, had a significant influence on cancer recurrence. His initial data came from a retrospective data analysis. He later reported results of a prospective investigation which showed that propofol/paravertebral block versus sevoflurane/morphine had an inhibitory effect on breast tumour proliferation (LM 2009). At this ASM, the speaker re-visited the issue and reported that, though the data for the effects of opioids was conflicting, a clearer cancer-inhibitory effect has been described for both propofol as well as amide local anaesthetics. However, many of such results stem from smaller, and partially from animal trials and have so far stopped short of convincing most anaesthetists that total intravenous anaesthesia may be substantially advantageous. Prof. Buggy now announced that the results of a multi-centre trial he has driven for several years were imminent. Though the actual results are under embargo, he hinted that these could well lead to a change in practice. Watch this space!

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**Safe endoscopy**

**Author:** Skinner M

**Summary:** Upper gastrointestinal endoscopy is mostly done under sedation, but a significant proportion are performed under general anaesthesia. Yet, monitoring in endoscopy differs from main operating suites in patients undergoing the same level of general anaesthesia. In a group of Australian hospitals where endoscopy sedation was managed by anaesthetists, there was a high incidence of unplanned intraoperative events and 30-day mortality. This may be explained by the fact that nowadays there are more difficult interventional upper gastrointestinal endoscopic procedures and deeper levels of sedation may be required to achieve patient tolerability, which could lead to additional respiratory compromise. Another explanation is that changing population demographics bring an increased prevalence of multi-comorbidities such as obesity, which add to the difficulty of managing airways safely, particularly in deeply sedated spontaneously breathing patients. There is a need to investigate better ways to protect the airway and optimally manage complications in patients undergoing upper gastrointestinal endoscopy and to offer the same standard of care that would be expected in the operating theatre.

**Comment:** The speaker started his talk by quoting several patient information leaflets and statements related to the safety of endoscopic procedures. As it turns out, the frequently quoted “extreme” safety of upper gastrointestinal endoscopic procedures may at times be rather the opposite…in fact almost as unsafe as base jumping, which carries a mortality of 1:50! Though there are differences between lower versus upper gastrointestinal endoscopy and also between diagnostic versus therapeutic procedures, it appears clear that endoscopies may at times be far from safe. Frequently, the perception of safety tricks anaesthetists into applying less stringent safety standards as used for patients undergoing other operative procedures. This appears to be a clear misperception and we may be well advised to re-think current procedural standards for endoscopic sedation/anaesthesia in our individual hospitals.

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Anaesthetists’ attitudes to random alcohol and drug testing in the anaesthesia workplace

Author: Riley R

Summary: This study surveyed attitudes to random drug and alcohol testing (RDT) in the anaesthesia workplace by email invitation to consultants and trainees in Western Australia. The on-line questionnaire contained 18 questions and one box for written comments. 156 responses were received. There was a majority support for such programs in hospitals; 62% of respondents believed that RDT did not invade on employees’ rights, and wanted the testing extended to others who work alongside. Fifty-two percent thought that RDT would improve patient safety but only 44% thought that it would improve staff safety. Respondents differed in their preferred frequency of testing if it was introduced (26% twice a year, 27% unsure, 9% monthly). There was high support for police testing of road users (96%) and uncertainty about the current systems for drug security.

Comment: Prof. Riley presented a bit of a left field survey asking Western Australian anaesthetists about their views and support of RDT for anaesthetists and allied staff. It is interesting to note that though more than ninety percent of us expressed support for RDTs of motorists, only a bit more than sixty percent supported such tests in anaesthetists, surgeons and nursing staff. There was also a relatively low opinion about the influence of RDTs on patient safety. I must admit that I do not see why RDTs could not be introduced and why such measures would not be somewhat likely to improve patient safety. I also feel that introducing RDTs may in fact help health personnel struggling with any related addiction as it could enforce seeking treatment once a problem has been identified. In this context we have to keep in mind that over the last decade we have lost several colleagues and nursing staff to accidental or suicidal drug overdose in WA alone. Maybe it is time for a change.

Methadone provides a preventive analgesic effect in patients undergoing cardiac surgery

Authors: Murphy G, Szokol J

Summary: This study evaluated whether the analgesic benefits of methadone, which has the longest elimination half-life of the clinically-used opioids, persisted beyond hospital discharge. Patients undergoing cardiac surgery (n=156) were randomised to receive methadone or fentanyl prior to cardiopulmonary bypass. During the first 72 hours, pain scores and analgesic requirements were reduced in both groups. At 1 month, chest pain at rest, coughing, and movement was significantly lower in the methadone group (P=0.004). The weekly frequency of pain was lower in the methadone group compared to the fentanyl group (P<0.0001), but was lower thereafter (0.0 to 0.5) in both groups and not significantly different. There was no significant between-group difference in the number of patients requiring postoperative opioid analgesics.

Comment: Since listening to a talk “Methadone – say hello to an old friend” by Prof. Evan Kharasch from Washington University in St. Louis, I introduced methadone into my opioid repertoire, especially for joint replacement and larger abdominal surgery. The opioid as well as NMDA effects of the drug appear to have desirable synergistic effects, and the extreme speed of onset makes this drug (as a single-dose intravenous administration) very suitable for intraoperative use. This presentation from Chicago Prof. Glenn Murphy has now even found beneficial effects many months beyond the actual operation. Whether the NMDA effects of methadone have some preventative effect on the development of persistent pain, or whether the possibly superior postoperative analgesia needs to be further explored. A word of caution though: methadone is a drug one has to become familiar with prior to using it intraoperatively! Its extremely long half time and its sedative effects do not invite use by inexperienced anaesthetists. However, carefully utilized in the right patients it can be a very safe and beneficial choice.

Anaesthetic technique and cancer outcomes: A meta-analysis of total intravenous vs volatile anaesthesia

Authors: Yap A, et al.

Summary: This meta-analysis and systematic review analysed the effects of propofol-based total intravenous anaesthesia (TIVA) and inhalational volatile anaesthesia on outcomes in cancer patients. Eight retrospective observational studies were included in the final analysis (almost 19,000 patients). In four studies that evaluated the effect of anaesthetic agent type on recurrence-free survival in breast, oesophageal and non-small cell lung cancer, TIVA use was associated with improved recurrence-free survival (pooled HR 0.70; 95% CI 0.58-0.84; P<0.01). Six studies explored the effect of anaesthetic agent type on overall survival in breast, colorectal, gastric, oesophageal, and non-small cell lung cancer, and mixed cancer types and found that TIVA use was associated with improved overall survival (pooled HR 0.72; 95% CI 0.59-0.88; P<0.01).

Comment: This interesting meta-analysis by the team of Prof. Riedel at the Peter McCallum Cancer Centre in Melbourne very nicely supports the views expressed in Donal Buggy’s talk (see my comments earlier). The resulting data, spanning around 19,000 cancer patients, clearly support these days frequently claimed positive effects of total intravenous anaesthesia. It is reassuring to see that such effects not just for breast cancer as found in several of Prof. Buggy’s studies, but also colorectal, gastric, oesophageal, and non-small cell lung cancer, as well as mixed cancer types. Though one might wonder why we still even consider using volatile agents for these patients we have to keep in mind that there is yet to be a definite, large RCT to actually confirm the results of the many smaller investigations.

A pharmacokinetic model for optimal prophylactic cefazolin dosing in elective bariatric surgery patients

Authors: Ryan R, et al.

Summary: Australian guidelines recommend prophylactic cefazolin 2g for patients undergoing bariatric surgery, regardless of body size, while American guidelines recommend 3g for patients with a total body weight > 120kg. This study aimed to develop a pharmacokinetic model to describe cefazolin concentrations in patients undergoing bariatric surgery and to develop guidelines for optimal dosing. Fourteen patients were enrolled (mean bodyweight 148kg). Thirteen patients received cefazolin 2g and one patient received 2g followed by 1g at 3 hours. Results showed that cefazolin penetration into the interstitial fluid was low and variable using standard dosing. The optimal prophylactic cefazolin dose in bariatric surgery patients weighing > 100kg is 4g, 0-30 mins prior to surgery.

Comment: I have always wondered what actual evidence prophylactic cefazoline doses were based on. Some of the surgeons I work with are happy with just 1g, the majority with 2g, but some others demand 3g to be given prior to surgery. Some like this to be repeated after some time during surgery... and some don’t. The confusion only grows in bariatric patients as it is often unclear based on what weight (i.e. actual vs ideal) cefazoline should be dosed. Dr. Rochelle Ryan has attempted to approach this matter scientifically by using a pharmacodynamic model as well as interstitial measurement of the drug via microdialysis. The result is that, in bariatric patients, 4g is needed to result in sufficient tissue penetration with acceptable likelihood. Though more data is needed to test the safety of such a dose and to identify time and dose of repeat administration during longer surgery, the study is a great approach to evidence-based antibiotic prophylaxis.

Independent commentary by Professor Thomas Ledowski

Professor Thomas Ledowski completed his M.D. at the Hanover Medical School, Germany, and his training in anaesthesia and intensive care medicine as well as his PhD at the Christian-Albrechts University Kiel, Germany. To escape the cold, and because of new research opportunities, he migrated to Australia in 2004. He currently works as consultant anaesthetist at the Royal Perth Hospital and as Professor of Anaesthesiology at the University of Western Australia. His special interests are the monitoring of nociception as well as muscle relaxants and their reversal.

Conflict of interest: Professor Ledowski has received speaker honoraria as well as travel grants from MSD. However, neither MSD nor any other party had any influence on the comments made in this article.

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Bullying, discrimination and sexual harassment in anaesthesia providers: A tale of 3 cities

Authors: Riley R

Summary: This study surveyed anaesthetists in the US, Australia and Malaysia, regarding their personal experiences of workplace bullying, discrimination and sexual harassment (BDSH). 472 anaesthetists responded (35% response rate). BDSH was reported as a substantial problem and was not confined to trainees. Most respondents who had experienced BDSH reported mild or moderate distress. Bullying was experienced by 77% (US), 49% (Australia) and 69% (Malaysia) of respondents. Workplace discrimination rates were 51%, 32% and 66%, respectively. Sexual harassment was experienced by 44% (US), 18% (Australia) and 10% (Malaysia) of respondents, with females reporting significantly greater rates. Written complaints were made by only 8% to 22% of respondents with the most common reasons for not making a complaint being concerned about consequences or dealing with the issue themselves.

Comment: Did you know – the US is close to Malaysia – in this context unfortunately for the wrong reasons. In a survey about workplace bullying of anaesthetists in three cities in the US, Malaysia and Australia, Richard Riley found that the frequency of workplace discrimination is staggeringly high: approximately 70% in the US and Malaysia, and still about 50% of survey respondents reported episodes of bullying. Although workplace harassment was not only observed by trainees, but also specialist staff, trainees seem to be a specifically vulnerable group as making complaints is frequently perceived as having potentially negative effects on the complainant’s career. For Australian anaesthetists it may be reassuring to know that workplace harassment is found to have an overall lower incidence when compared to the US or Malaysia. However, Prof. Riley’s data is still very alarming and should prompt all of us to be more vigilant and to show no tolerance for such behaviour.

What’s new in diabetes perioperative management?

Author: Ekinci E

Summary: In a recent study exploring the association of diabetes with postoperative outcomes in 7565 in patients, 30% had diabetes and 37% had pre-diabetes. Diabetes was associated with increased 6-month mortality, major complications, intensive care admission, mechanical ventilation, and hospital length of stay. However, perioperative diabetes guidelines offer limited randomised controlled trial data on interventions aimed to improve perioperative outcomes in diabetes. There are now a number of novel and beneficial classes of glucose lowering medications for the management of type 2 diabetes. However, some come with risks. For example, in the inpatient setting, sodium-glucose co-transporter inhibitor (SGLT2i) users are more likely to develop diabetic ketoacidosis compared to non-SGLT2i users. These agents should be stopped during the peri-operative period.

Comment: Prof. Ekinci elaborated on a problem many of us are facing in daily practice: many hospitals and many anaesthetic departments may lack evidence-based guidelines dealing with diabetic patients. It appears that this may not be some form of unwillingness to provide such guidelines, but simply the lack of appropriate studies providing the required basic information. Though I am in the lucky position that at the main place of my clinical work, the Royal Perth Hospital, we have recently adopted modernized and thorough guidelines for the perioperative treatment of diabetes, some other hospitals I sometimes work at certainly struggle to provide the same level of guidance. Especially, patients on SGLT2is appear to pose significant problems. The guidelines issued by ANZCA are certainly erring on the side of caution, but this comes sometimes for the sacrifice of feasibility. More data is needed to provide more certainty about when and how long these drugs need to be stopped prior to (what specific) surgery.

Chewing gum use in patients fasting preoperatively

Authors: Blackford D, et al.

Summary: This open-label randomised controlled trial evaluated the effect of chewing gum on gastric volume in 237 patients undergoing elective upper gastrointestinal endoscopy. The primary endpoint was the rate of patients with residual gastric volume above 50 mL. The chewing gum group chewed gum while fasting from other food and fluids while the control group followed routine fasting instructions. Patients in the chewing gum group were younger than controls (median age 60.6 years vs 67.2 years; P=0.006). There was no significant between-group difference in the rate of residual gastric fluid volume > 50 mL (7.7% in the chewing gum vs 5.0% in the control group; P=0.43). There were also no significant between-group differences in the secondary outcomes of variability in the overall gastric volume and pH distributions.

Comment: When John B. Curtis sold the first commercial chewing gum in the US state of Maine in 1848, he did so just 2 years after the first demonstration of successful ether anaesthesia by T.G. Morton. Little did he know that his invention would lead to the cancellation or at least postponement of thousands (if not millions) of surgical procedures by concerned anaesthetists. It appears that these actions may have been unwarranted as the current study by Blackford et al. clearly shows that gastric volumes are not increased after chewing gum use. Together with the previously reported fact that gum has no effect on gastric pH or emptying it may be time to finally adjust fasting guidelines.

An audit of preoperative fasting in elective and emergency patients

Author: Cummerford C

Summary: Current guidelines recommend fasting from food for 6 hours and fasting from clear fluids for 2 hours in adult elective surgery patients. This study reported a single centre, retrospective, cross-sectional audit undertaken on 126 patients who had operations over one week. Elective surgery patients had fast time of 14.5 hours for food and 6.2 hours for liquids. Insufficient fasting or fasting for twice the recommended duration occurred in 91.2% of patients. Even though 56.6% of emergency patients had documented instructions to fast from midnight, they had even longer fasting times than elective patients; 17.0 hours for food and 10.8 hours for liquids.

Comment: Fasting is the topic of this interesting audit by Christopher Cummerford. Reviewing the records of 126 patients he found that over-fasting was extremely likely and fasting guidelines did obviously little to change this scenario. This reflects my own experience in several hospitals I clinically practice at: more often than not patients are over-fasting. When investigating this matter in my own environment, I feel that a lack of allied staff education (i.e. many patients are still instructed to fluid-fast for 6 hours) as well as patient concerns and instructions provided on previous admissions (often long ago) are contributing factors. Even my habit to specifically instruct patients to drink some water about 2-3 hours prior to surgery has so far failed to have overwhelming success. Old habits are obviously hard to break. In this context, Christopher proposed some ideas (i.e. a “fasting clock”) to overcome this.