GUIDELINE UPDATES

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- 1) Anaesthesia Team - July 2018
- 2) Safe Practice of TIVA - September 2018
- 3) Perioperative Care of people with dementia - Feb 2019
- 4) Day case surgery - April 2019
- 5) Suicide amongst anaesthetists - Nov 2019

Anaesthesia Team – the Short Version

- Anaesthesia team should be led by a consultant anaesthetist. All team members should be trained to nationally agreed standards
- Pre-op assessment is essential. No non-anaesthetist should promise a patient a specific anaesthetic technique (or any).
- Anaesthetists should have dedicated qualified assistance (an ODP or nurse with specific anaesthetic training) for induction, maintenance and emergence from anaesthesia regardless of location
- PACU/Recovery should have adequate staff all hours when anaesthesia may happen (i.e. if theatres are expected to run 24/7, so should PACU)
- All acute hospitals should have an acute pain team
- Issues concerning safety of care (kit, staff, etc.) should be addressed prior to anaesthesia in all but the direst of emergencies.

Safe Practice of TIVA

- General Considerations
  - Individuals should be trained in the use of TIVA
  - TCI infusions
  - Target concentration should depend on patient characteristics
  - Standardise concentrations of drugs within a department
  - Programme pumps after syringe has been inserted
  - Infusion sets should have anti-reflux valves and luer lock connectors
  - Processed EEG monitoring – anaesthetists should be familiar with & should use them when muscle relaxant is used
  - Same standards apply for TIVA outside of theatres.

Safe Practice of TIVA

- Contents
  - Achieving a desired drug concentration within the patient
  - Choosing a Desired Drug Concentration for a Patient
  - Practical Aspects
  - Preparation for TIVA
  - Conduct of TIVA

  - Monitoring
  - Special Circumstances

Achieving a Desired Drug Concentration within a Patient

- Manually titrating propofol infusions to achieve anaesthesia takes considerable expertise and often takes >20 minutes to achieve anaesthesia
- Most pharmacokinetic models were developed in young, healthy, non-obese adults.
- In the Obese: SOBA has guidelines – there is little evidence to support either total body weight or adjusted body weight in this group.
  - Marsh will not accept body weight >120kg
  - Schneider will not accept BMI >35.5
  - Recommendation: titrate to clinical effect and use pEEG monitoring

Choosing a Drug Concentration

- Depends on:
  - The patient
  - Any other drugs used
  - The Surgical Stimulus

	Remifentail effect-site concentration ($ng.ml^{-1}$)					
	0		2		4	
	ED_{50}	ED_{95}	ED_{50}	ED_{95}	ED_{50}	ED_{95}
Verbal stimulus	2.9	3.8	2.4	3.1	2.0	2.7
Eyelash reflex	2.8	3.4	1.8	2.6	1.7	2.5
Tetanic (electric) stimulus	4.1	6.6	1.8	3.8	1.3	3.3

Practicalities & Preparation

- Drug Concentrations, Models, Syringes
  - Standardise, standardise, standardise!
  - Don't mix drugs (propofol and remifentanil will layer if mixed together
  - Audible pump alarms
  - Charge and plug in pumps
  - Secure cannula, visible, ideally separate, definitely with anti-siphon valve
  - Draw up propofol aseptically and cap it off (prone to bacterial contamination)
  - Label carefully

Intra-op (or: what to do if your pump dies)

- Keep an eye on the rate of the pump (in ml/hr or mcg/kg.min). If the pump goes off, turn it back on and restart at a rate similar to what it says
- Be careful when converting from inhalational to IV anaesthesia (or vice versa) – NAP5 – several awareness cases were on transfer to ITU once
- Flush the lines at the end

Special Cases

- RSI – either start with high pump rate and reduce when desired bolus of propofot given, or use different drug for induction bolus.
- MRI – think about lines, where to put the pumps, having visual alarms (as it is noisy), check cannula between sequences
- ITU – TCI is very unlikely to accurately reflect plasma concentration in ICU patients. Titrate to effect and consider TIVA

- Kids – Kataria and Paedfusor for propofol (kids >5kg).
- Remi – Minto valid down to 12 years and 30 kg, below that use 0.2-0.5mcg/kg/hr, titrated to effect. <8 years, less sensitive to remi, may still breathe spontaneously
- PRIS is very uncommon, but use caution in children where mitochondrial disease is expected.

Perioperative Care of People with Dementia

- Definitions
- Statistics
- Management of Regular Medications
- Medicolegal Considerations
- Pre-op
- Intra-op
- Post-op
- A Suggested Care Checklist

Definitions

Mild Cognitive Impairment

measurable changes in cognition, greater than expected for age, which do not affect daily living. No signs of impaired judgement or reasoning. 20-70% progress to dementia, depending on study.

Dementia

– a syndrome characterised by progressive,irreversible worsening of memory, thinking, behaviour,personality and ability to perform daily activities, withoutimpairment of consciousness. These symptoms should havebeen present for at least 6 months before diagnosis

Post-operative Delirium

- fluctuatingdisturbance in attention and awareness that develops over a short period of time (hours to days) as a direct physiological consequence of a medical condition, .

Statistics

- 850,000 people in UK
- 45% of over 75s in hospital have dementia
- Dementia is present in
  - 20% of hip fracture
  - 8% chronically ischaemic limbs
  - One third of patients with dementia admitted to hospital with an unrelated diagnosis will not go back to their own home

Table 1 Types of dementia and their symptoms.

Type of dementia	UK prevalence	Histopathology	Symptoms include
AD	62%	Beta-amyloid plaques between neurons Tau protein clumps (neurofibrillary tangles) within nerve cell bodies Loss of cholinergic neurons	Early: memory loss, depression Later: confusion, behavioural changes, impaired communication
Vascular dementia	17%	Secondary to acute/chronic small and large blood vessel disease of the brain. People usually have cerebrovascular changes related to co-morbidities: atrial fibrillation, hypertension, diabetes	Chronic changes dependent on the region of brain affected, and/or stepwise reductions in neurocognitive function with successive infarcts
Mixed dementia	10%	Most commonly a mixture of AD and vascular changes	Most commonly a mixture of AD and vascular symptoms
Dementia with Lewy bodies	4%	Alpha-synuclein aggregations in the brain cortex	Similar to AD, but with earlier/initial sleep and visual disturbances or Parkinsonian features
Frontotemporal dementia	2%	A variety of changes, often involving protein aggregations, that primarily affect the frontal and temporal lobes of the brain	Changes in personality and behaviour, difficulties with language Develops at a younger age than AD, with a shorter survival

AD, Alzheimer's disease.

Table 2 Important drug interactions between dementia medication and drugs used in anaesthesia.

	Half-life; hr	Recommendation/effect
Cholinesterase inhibitors		
Galantamine	7	Discontinue[a] day before surgery
Rivastigmine	9	Discontinue[a] day before surgery
Donepezil	70	Not recommended
Memantine	60–100	Care with ketamine, anticholineric and dopaminergic drugs
Gingko biloba	4–6	Monitor blood loss
		Use atracurium; neostigmine may be ineffective/prolong neuromuscular blockade
		Use sugammadex to reverse rocuronium and vecuronium
Drugs used to modify non-cognitive symptoms in dementia		
SSRIs	Various	Risk of serotonin syndrome with fentanyl, ondansetron, tramadol
Cognitive stimulants	Various	Antagonise hypnotic anaesthetic drugs
Benzodiazepines ± antipsychotics	Various	Potentiate neuro- and cardio-depressant effects of anaesthetic drugs

SSRI, selective serotonin reuptake inhibitor.
[a]Discontinue only if appropriate (see text).

Medications

- Cholinesterase inhibitors – risk/benefit, discuss with patient on case-by-case basis
- Neostigmine may not work, and may prolong block
- Solution: avoid NMB if possible, if necessary, use acceleromyography to confirm reversal.

Consent & the Law

May or may not have capacity

People with dementia undergoing surgery are at high risk of post-op cognitive change. Therefore, they should be encouraged to make cognitively demanding decisions pre-operatively, including regarding escalation of care.

Pre-Op

- Screen Individuals >60 for cognitive changes
- Thorough History and medication review
- Assess for frailty
- Encourage organisational use of “This is me” or similar documentation
- Don’t lose their glasses and hearing aids
- Facilitate relatives in staying with disorientated people.
- Aim to minimise fasting times

- Day surgery may be possible.

Intra-operative

- People with dementia are under-represented in research studies on post-operative cognition, and there is no conclusive evidence that any approach harms (or benefits)
- Minimise "deliriant drugs" – e.g. benzodiazepines, and centrally acting drugs with anticholinergic effects (e.g. cyclizine and tramadol)
- Increased anticholinergic burden is associated with poorer cognition, but single doses of drugs with anticholinergic activity in an anaesthetic setting has not shown and harms.
- Brain Monitoring – is unreliable, more likely useful to avoid "over" anaesthesia than to prevent awareness

Post-operative

- Pro-active pain management – recommend a method of pain assessment (e.g. Abbey pain scale)
- Blocks for analgesia
- Actively look for delirium.
- Minimise time without glasses/hearing aids/dentures.
- Post-operative agitation may be multifactorial

Table 5 Peri-operative care bundle.

Is the patient taking cholinesterase inhibitors?		
Galantamine	Y	N
Rivastigmine	Y	N
Donepezil	Y	N
Carer/relative accompanied patient to anaesthesia room?	Y	N
Surgery and anaesthesia discussed with carer/relative?	Y	N
Anaesthetic considerations		
Opioid-sparing analgesia?	Y	N
Reduced anticholinergic load?	Y	N
Cerebral function monitoring?	Y	N
Appropriate postoperative pain assessment and treatment plan prescribed?	Y	N
Cognitive/functional aids returned		
Glasses?	Y	N
Hearing aids?	Y	N
Dentures?	Y	N
Comforters?	Y	N

The Short Version

- This is not a care bundle.

Day Case Surgery

- Patient Selection
- Management and Staffing/Organisational Factors
- Anaesthetic Management
- Regional Anaesthesia and Day Surgery
- Special Patient Groups
- Remote Site Day Units

- Quality Indicators

Patient Selection

- Medical Factors
  - Functional status is a better gauge than ASA grade
  - Obesity is not an absolute contraindication
  - Nor is OSA per se – SOBA guidelines – ambulatory anaesthesia may be appropriate of post-operative pain does not require opiods in well controlled patients.
- Surgical Factors
  - Patient should be able to eat, drink, and mobilise at the end of the procedure. Those with limb casts should have post-operative thromboprophylaxis continued at home.
- Social Factors
  - Responsible adult to accompany (24 hours?)
  - No more than 45 minutes by road from appropriate hospital

Organisational Factors

- Patient information should be provided in written form ahead of time
- Day surgery should have a clinical lead.

- Day surgery works best when separate from inpatient facilities. Beds should be protected from the pressures of inpatient bed shortages where possible. Ideally there should be no capacity for overnight patients.

Anaesthetic Management

- Minimise fasting times
- Allow patients to remain in street clothes as long as possible. Encourage walking into theatres.
- Analgesia appropriate for procedure, long-acting agents appropriate
- Prophylactic anti-emetics

Regional Anaesthesia

- Patients can be discharged home with residual motor and/or sensory block with clear instructions to protect the limb

- Spinals – consider use of 2% hyperbaric prilocaine
  - Avoid excessive fluids (>500ml) to reduce risk of retention
  - Mobilisation – clear criteria – S4/5 sensation should have returned, likewise plantarflexion

Discharge Criteria

- "Not to sick, not too sore, quick pee, piss off"

- Written information and instructions
- Helpline for first 24 hours at least
- No driving after GA or opiates. (not product advice for Isoflurane recommends no driving for 4 days)

Special Patient Groups - Kids

- At least 44 weeks post-conceptual age (60 weeks for ex-prems)
- Tonsillectomy – be cautious in those with OSA – those with severe disease should stay overnight with line-of-sight pulse-oximetry

- Some day-case procedures in children can cause significant post-operative pain – e.g. tonsillectomy and orchidopexy – clear protocolised post-op analgesia should be made available to parents.

Suicide Among Anaesthetists

- Suicide among doctors and anaesthetists is underreported
- We should look to the well-being of our colleagues
- Each department should appoint a lead for looking after at-risk staff & be up to date with local and national initiatives
- Education should be ongoing within departments
- Seek specialist medical input early
- Individuals at particular risk should have a safety plan
- Each department should have a plan for crises, including colleague death

Statistics

- 11-20 physician suicides per year
- Among anaesthetists:
  - 86% by poisoning
  - 83% using anaesthetic drugs

Risk Factors in the Medical Profession

- Stress from complaints/bullying
- High physical/mental demand
- Social and professional isolation due to long hours

- Australian doctor survey – 10% suicidal ideation within the previous 12 months
- 3% anaesthetic trainees reported suicidal ideation within the last 2 weeks

Reducing Risk

- Register with a GP
- Be educated –

- Those at risk – safety plan – escalating steps until person feels safe

- Departments
  - Well-being lead
  - Regular reinforcement of the importance of mental well-being
  - Mention at staff induction
  - National initiatives (e.g. coffee and a gas)
  - Liaise with occupational health

Aftermath

- Colleague suicide can have a devastating effect on the department
- Operational issues and emotional reaction

- Involve clinical and non-clinical staff

- Staff involved in resuscitation attempt at risk of acute stress response/PTSD

Questions?