GUIDELINES FOR THE PROVISION OF ANAESTHESIA FOR PAEDIATRIC PATIENTS

Children who undergo anaesthesia and surgery have special requirements. They are not small adults nor are they a homogenous group of patients. The different age spectrum i.e., premature baby, infant, toddler, preschooler, pre-adolescent and adolescent differ physiologically. An understanding of age appropriate pharmacokinetics of drugs and fluid requirement is required.
Children also have different emotional and psychological needs. Anaesthesia equipment for smaller children differs from that used in older children and adults.

1. General Principles
Wherever and whenever children undergo anaesthesia and surgery, they should be managed by staff with appropriate experience and training.
Health care organisations should have;

1.1.1 Guidelines on credentialing* and privileging* of anaesthetists who care for children in their hospitals.
1.1.2 Policy and protocol for the conduct of paediatric sedation;
1.1.3 Medical staff with the skills to resuscitate and stabilise seriously ill children of all ages.

1.2 Children with the following problems are best managed in Paediatric hospitals with a full complement of specialists and intensive care units.
1.2.1 Neonates
1.2.2 Infants born at less than 37 weeks gestation
With a post- conceptual age of less than 52 weeks.
1.2.3 Children with airway problems
1.2.4 Children with significant acute or chronic
Medical problems (ASA 3 or greater)
1.2.5 Children with complex surgical problems

2. Special considerations

2.1 For the anaesthetised child, pulse oximetry is a suitable alternative to the electrocardiograph for heart rate monitoring.

2.2 The use of routine pre-operative blood testing should be kept to a minimum, unless there are specific clinical indications.

2.3 Access to paediatric resuscitation & life support resources should be ensured at all times

2.4 There should be a paediatric pain service to manage acute post-operative pain, pain in oncology patients and children with chronic pain.

2.5 There should be a workflow; either a pre-anaesthetic clinic or specialist for surgeons to consult regarding the fitness or suitability of patients for surgery

3. Staffing requirements

3.1 Children should be anaesthetised by specialists with relevant paediatric experience.

3.2 The anaesthetist must be assisted by nurses with adequate skills and training.

3.3 There should also be staff to take care of the parent/guardian who may be present during induction.

3.4 In the recovery area or post-anaesthesia care unit, the child should be nursed on a one-to-one basis, by a designated staff who is experienced in the care of paediatric patients.

4. Equipment

4.1 Appropriate equipment and disposable items for general and regional anaesthesia should be available in theatres and all other areas where children are anaesthetised.

4.2 Appropriate temperature monitoring and patient warming devices should be available in both the operating room and recovery areas.

5. Support services

5.1 Paediatric High Dependency and Intensive Care services should be available as appropriate for the needs of the patient.

5.2 On-site haematology, biochemistry, pathology and blood transfusion services should meet the requirements of infants and children with particular reference to the removal and analysis of small blood volumes.

5.3 Pharmacists should be able to provide advice for safe and effective management of drugs in children.

6. Ambulatory surgery

6.1 Selection for day surgery should be made according to surgical, anaesthetic, medical and social criteria.

6.2 The parent or guardian of a patient should be provided with clear instructions, which includes fasting guidelines and what to do if the child becomes unwell before or after the operation.

6.3 There should be clear discharge criteria that must include drugs for pain relief and clear instructions for their use.

Guidelines for listing of day surgery patients

The suitability of patients for day surgery procedures would depend upon the type of procedure, the medical condition and the social situation of the child. The department of paediatric anaesthesia should be consulted regarding suitability of the child for day surgery if the following requirements are not met.

Procedures that are to be done as day surgery should fulfill the following requirements:

1. minimal blood loss
2. minimal risk of post procedural airway compromise
3. pain that requires minimal use of opioids and can be controlled well with oral/ rectal analgesia
4. any care post procedure can be met by a carer at home
5. expected rapid return to normal food and fluid intake

Suitability of the child:

1. ex premature infant should be at least 55 weeks post-conceptual age and free from episodes of apnoea
2. term infant should be at least 3 months old
3. BMI < 35
4. child should have no or mild and well- controlled systemic illness ie ASA 1 or 2 patients
5. no pre-existing airway compromise or potential airway compromise. This includes patients with obstructive sleep apnoea.

Social criteria

1. responsible carer must be with patient for 24-48 hours post procedure
2. the child should be transported home via private vehicle or taxi
3. the carer must have telephone access
4. the carer must be able to carry out pre and post procedural instructions
5. the carer must be given written advice on when the child can resume normal activity
6. the child should be able to travel to the hospital within an hour should complications arise

Guidelines for Air Travel after surgery/ anaesthesia:
Advice for KKH Health Professionals

Main Concern

- Post surgical/ anaesthesia patient elects to take a commercial flight soon after the procedure
- (Not the same as 'Medivac' or professional medically escorted air travel)

Potential problems to consider

- Limited access to medical attention
- Dehydration, PONV, respiratory depression/ hypoxia, OSA/obstruction, pain
- Effects on surgical area
- Long flight?

Commercial Airlines

- Have the right to prevent boarding if the patient is not 'medically cleared' according to their company policy.
- Onus on patient to declare status to airline.
- Medical staff can only advise the patient on best practice and recommendations.
- Mortality within 24 hours may be coroner's case.

Guideline Document

- Medical Guidelines for Airline Travel

Medical Guidelines for Airline Travel, 2nd ed.

AEROSPACE MEDICAL ASSOCIATION, MEDICAL GUIDELINES TASK FORCE, ALEXANDRIA, VA

Introduction

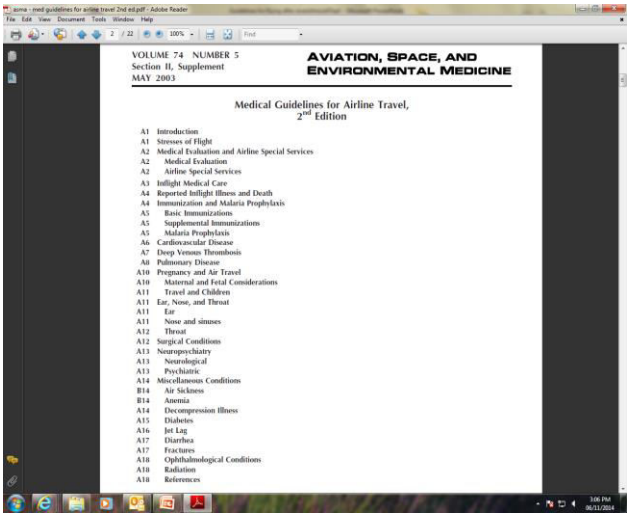
Each year approximately 1 billion people travel by air on the many domestic and international airlines. It has been predicted that in the coming two decades, the number of passengers will double. A global increase in travel, as well as an increasingly aged population in many countries, makes it reasonable to assume that there will be a significant increase in older passengers and passengers with illness. Patients frequently ask their physicians whether or not it is advisable for them to travel, and if so, what precautions they should take. Consequently, physicians need to be aware of the environmental and physiological stresses of flight in order to properly advise their patients. In addition, because international travelers can fly to the four corners of the world in just hours, a basic understanding of vaccinations is requisite.

Two caveats are brought to the attention of the reader. First, if inflight illness or even death has occasionally been reported by the airlines, the event was not necessarily caused by airline travel or the stresses of flight. The physician must be mindful that, with so many passengers spending so many hours inflight, fly-

smoke, uncomfortable temperatures and low humidity, jet lag, and cramped seating (64). Nevertheless, healthy passengers endure these stresses which, for the most part, are quickly forgotten once the destination is reached. In general, passengers with illness (i.e., stable illness) also usually depart the destination airport none the worse. However, there is always the potential for such passengers to become ill during or after the flight due to these stresses.

The primary difference between the aircraft environment and the ground environment relates to the atmosphere. Contrary to popular belief, modern aircraft are not pressurized to sea level equivalent. Instead, on most flights the cabin altitude will be between 5000 and 8000 ft (1524 m and 2438 m). This results in reduced barometric pressure with a concomitant decrease in partial pressure of oxygen (P_{O_2}). While the barometric pressure is 760 mm Hg at sea level with a corresponding P_{aO_2} (arterial O_2 pressure) of 98 mm Hg, the barometric pressure at 8000 ft will be 565 mm Hg with P_{aO_2} of about 55 mm Hg. If these last data are plotted on the oxyhemoglobin dissociation curve, we obtain a blood oxygen saturation of 90%. Although most healthy travelers can normally compensate for this amount of hypoxemia

- By Aerospace Medical Association (AsMA) (2nd Ed. , 2003)



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Examples of recommended 'no fly timing' for specific procedures

- Colonoscopy – 24 hrs
- Laparotomy – 1-2 weeks
- Laparoscopic – the next day (if no bloating)
- Tonsillectomy – 2 weeks
- Casted fracture- 24-48 hr or bivalve cast

- Adopted by major airlines for medical clearance
- **Our department would recommend waiting a minimum 24 hours after a general anaesthetic, before flying.**
- For specific surgery or conditions, please refer to the ASMA guidelines

SUMMARY CHECKLIST

Issues to Consider For Air Travel after Surgery / Anaesthesia:

- Type of surgery
- Type of anaesthetic (eg. spinal headache)
- Patient's background medical history and conditions
- Individual airline regulations: medical clearance
- Insurance policy cover– travel and medical
- Potential complications Eg. DVT, infections, air pressure changes, decreased oxygen partial pressure by 25%, dehydration, lack of access to emergency medical attention
- Urgency of travel plans
- Alternatives to air travel