

RECOMMENDATIONS ON PRE-ANAESTHETIC ASSESSMENT

Revised 2014



COLLEGE OF ANAESTHESIOLOGISTS
ACADEMY OF MEDICINE OF MALAYSIA

IN COLLABORATION WITH



MALAYSIAN SOCIETY OF ANAESTHESIOLOGISTS

RECOMMENDATIONS ON PRE-ANAESTHETIC ASSESSMENT - Revised 2014

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Academy of Medicine of Malaysia

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PREFACE TO SECOND EDITION

It has been a good sixteen years since the first edition of the Recommendations on Pre-anaesthetic Assessment was published by the College of Anaesthesiologists, Academy of Medicine of Malaysia in collaboration with the Malaysian Society of Anaesthesiologists. In the intervening years, there have been substantial changes in the way anaesthesia is being practised on our country. Even though the basis of pre-anaesthetic assessment (i.e. careful history taking, physical examination and relevant investigations) remains, issues such as risk assessment and stratification, consent specific for anaesthesia and documentation need to be addressed. Additionally, in the climate of cost-consciousness, it is felt that only appropriate investigations deemed to have an influence on the patient's management strategies and outcome should be carried out.

With the above considerations in mind, a list of recommended pre-anaesthetic investigations, both as "routine" as well as those carried out with specific indications has been included in this revised edition. Also included are recommendations on pre-anaesthetic assessment of paediatric patients. It is hoped that the revised edition will be useful in providing guidelines for the practice of anaesthesia in this country.

Dr Lee Choon Yee

January 2014

RECOMMENDATIONS ON PRE-ANAESTHETIC ASSESSMENT

1 INTRODUCTION

Adequate pre-anaesthetic assessment has been identified as an important factor in patient safety and is an *integral part* of anaesthetic practice. It serves to identify associated medical illness and anaesthetic risks, with the ultimate aim of reducing morbidity and mortality associated with anaesthesia and surgery.

Information from multiple sources should be considered during pre-anaesthetic assessment. This includes the patient's medical records, interview, physical examination, and findings from medical tests and evaluations.

The objectives of the pre-anaesthetic assessment are to:

- i) Evaluate the patient's medical condition to ensure that it has been optimised
- ii) Plan anaesthetic technique and peri-operative care.
- iii) Develop a rapport with the patient to allay anxiety and facilitate conduct of anaesthesia.
- iv) Allow appropriate discussion with the patient and/or guardian regarding anaesthesia, peri-operative care and pain management
- v) Obtain informed consent for anaesthesia and related procedures.

The term "pre-anaesthetic assessment" in this document refers not only to situations pertinent to the administration of general anaesthesia but also includes those related to regional anaesthesia/analgesia and sedation.

2. GENERAL PRINCIPLES

2.1 Personnel

- 2.1.1 The pre-anaesthetic assessment should preferably be performed by the anaesthesiologist who is to conduct the anaesthesia.
- 2.1.2 If the above is not possible, a satisfactory mechanism is required whereby the findings of the pre-anaesthetic assessment can be conveyed to the anaesthesiologist concerned.
- 2.1.3 It is the responsibility of the anaesthesiologist conducting the anaesthesia to ensure that all issues pertaining to the pre-anaesthetic assessment have been addressed; and if necessary repeat any elements about which there may be doubts.

2.2 Timing

- 2.2.1 The pre-anaesthetic assessment should be performed at an appropriate time before the scheduled surgery to allow adequate preparation of the patient. This can be done as an inpatient basis or at the Pre-anaesthetic Clinic if such a facility is available.
- 2.2.2 Provision of adequate time for pre-anaesthetic assessment is especially important if:
 - there is significant patient co-morbidity
 - there are specific anaesthetic concerns
 - it entails multi-disciplinary management
 - major surgery is planned

2.3 Pre-operative admission

- 2.3.1 This is indicated in patients who require further medical evaluation or prior to major surgery.
- 2.3.2 Admission should not be merely for pre-operative investigations which can be done as out-patient.

2.4 Day surgery and same day admission patients

- 2.4.1 The difficulties inherent in adequately assessing patients admitted on the day of surgery or medical procedure must be recognised.

2.4.2 Such patients should ideally be assessed in a Pre-anaesthetic Clinic prior to the day of surgery.

2.4.3 If this is not possible, operating list planning and session times must accommodate the extra time required for pre-anaesthetic consultation.

2.5 Conduct of pre-anaesthetic assessment

2.5.1 This may be conducted as a personal interview in the ward, operating theatre or Pre-anaesthetic Clinic.

2.5.2 This can also be conducted by using pre-set questionnaires assisted by trained nursing or paramedical staff under the supervision of an anaesthesiologist.

2.5.3 Pre-operative information in the form of a pamphlet may be provided to the patient prior to conduct of pre-anaesthetic assessment. This has been shown to result in better perceived information, better information gain and a higher degree of satisfaction among patients.

2.6 Multi-disciplinary management

2.6.1 Input from other medical specialties may be required in the pre-anaesthetic management of the patient. This is especially so in patients with significant co-morbid conditions which carry substantial risks in anaesthesia and surgery.

2.6.2 However, the responsibility to determine a patient's fitness to undergo anaesthesia rests on the anaesthesiologist.

2.7 Emergency surgery

2.7.1 The anaesthesiologist is still responsible for the pre-anaesthetic assessment even when early consultation is not possible.

2.7.2 If surgery cannot be delayed in spite of increased anaesthetic risks, anaesthetic risk disclosure should be made and documentation to that effect should be made in the patient's case notes.

3 DETECTING DISEASE AND ASSESSING SEVERITY

3.1 History

- 3.1.1 A patient's medical history provides vital information to identify disease that may affect peri-operative outcome.
- 3.1.2 Medical history should include concomitant medical conditions, past and current medication (including herbal supplements), alleged compliance to treatment, drug and food allergies, previous anaesthesia and family history of anaesthetic complications.
- 3.1.3 System review should focus on those pertinent to anaesthesia and surgery.
- 3.1.4 Menstrual history may be important in women of child-bearing age.
- 3.1.5 Useful information may be obtained from the patient's family doctor, relatives or previous medical records.

3.2 Physical examination

- 3.2.1 Examination of the patient is an essential part of the pre-anaesthetic assessment.
- 3.2.2 Although the cardiovascular and respiratory systems (including the airway) are important in the assessment of the patient, other systems i.e. the renal, hepatic, endocrine and central nervous systems may also require detailed attention as guided by the history.
- 3.2.3 The pathology relevant to surgery is a pertinent part of physical examination. Examples include the site, size and vascularity of tumour mass, features of airway compression/obstruction or endocrine abnormalities.

3.3 Investigations

- 3.3.1 Investigations complement pre-anaesthetic history and physical examination. They should be selectively performed for purposes of guiding or optimizing peri-operative management.

- 3.3.2 Pre-anaesthetic investigations may be indicated for their impact on peri-operative anaesthetic care, such as:
- identification of a disease or disorder
 - verification or assessment of a known disease, disorder or medical therapy
 - formulation of specific anaesthetic plans and alternatives
- 3.3.3 The nature and extent of pre-anaesthetic investigations depend on the patient's age, presence of any co-morbid condition, as well as the nature and extent of the planned surgical procedure.
- 3.3.4 Routine investigations (See **Appendix**) are solely based on age and nature of surgery, for asymptomatic patients without abnormal clinical findings. If a medical condition is present, relevant investigations irrespective of age and type of surgery should be ordered.
- 3.3.5 In an era where cost containment is important, factors like cost-benefit and benefit-risk ratios will have to be taken into consideration. Only appropriate investigations deemed to have an influence on the patient's management strategies and outcome should be carried out.

3.4 Others

- 3.4.1 Multi-disciplinary management, subspecialty referral and medical record retrieval may be helpful in the overall assessment of the patient.
- 3.4.2 Consideration should also be made with regards to the nature, extent and anticipated duration of surgery. If in doubt, it is essential to communicate with the surgeon to seek further clarification.
- 3.4.3 Preoperative preparation and management include the following:
- Advice on cessation of smoking
 - Chest physiotherapy, breathing exercise, incentive spirometry
 - Limb physiotherapy

- Nutritional support, including haematinics
- Prevention of deep vein thrombosis
- Peri-operative pain management
- Instruction on fasting
- Instruction on continuation or withholding of current medication
- Arrangement with Blood Bank regarding blood and blood products - Group and cross-match (GXM), group and screen as appropriate
- Arrangement for post-operative Intensive Care Unit (ICU) or High Dependency Unit (HDU) admission if indicated

4 RISK ASSESSMENT, STRATIFICATION AND DISCLOSURE

- 4.1 The patient's pre-operative condition is not the only determinant of peri-operative outcome. Other factors such as complexity of surgery, urgency of surgery, surgical skill and factors related to anaesthesia also contribute to outcome.
- 4.2 The American Society of Anaesthesiologists (ASA) physical status classification provides a useful means to convey information regarding the patient's pre-operative condition and has been found to have some predictive value when applied to overall operative mortality.
- 4.3 It is imperative that the anaesthesiologist be knowledgeable and well-informed to make a balanced judgment with regard to the risk-benefit ratio of anaesthesia and surgery for the high-risk patient.
- 4.4 The severity of a particular complication (e.g., one which results in permanent disability or death) should be considered in the discussion even though it may be unlikely to occur.
- 4.5 Patients with significant co-morbid conditions and high anaesthetic risks should be counselled about such risks; and alternative surgical and anaesthetic options should be discussed with the patient and/or the next-of-kin. Such discussion should be documented in the consent form as well as the patient's case notes.

- 4.6 The following factors should be considered during risk disclosure to patients:
- The nature of the matter to be disclosed - more likely and more serious risks require disclosure
 - The nature of the proposed procedure - complex intervention typically requires more information
 - The patient's desire for information - patients who ask questions make known their desire for information and should be told
 - The temperament and health of the patient - anxious patients and patients with health problems or other relevant circumstances that make a risk more important for them (such as their medical condition or occupation) may need more information
 - The general surrounding circumstances - the information appropriate for elective procedures may be different from that required in emergency settings

5 CONSENT

- 5.1 It is highly desirable that a separate, written consent for anaesthesia should be obtained by the anaesthesiologist after due explanation and risk information. This avoids the problem of misinformation or miscommunication inherent in a common surgical and anaesthetic consent obtained by the surgeon. The consent form should be signed, witnessed and dated.
- 5.2 Consent should be obtained from the parent or guardian for an under-aged patient, while explanation and discussion should involve the patient's next-of-kin if the patient himself/herself is in no condition to provide consent for treatment.
- 5.3 In an emergency, it is often not practical to delay life-saving procedures on account of the issue of consent. Similarly, unconscious patients may be given essential emergency treatment without consent. In such cases, consent provided by two consultants involved in the care of the patient is deemed appropriate.
- 5.4 In order to allow the patient to make a considered decision, sufficient information should be provided during the pre-operative visit. The following should be included in the discussion:
- The planned anaesthetic procedure
 - Alternative anaesthetic options, if applicable
 - Possible risks and complications pertaining to anaesthesia
 - Benefits versus risks

5.5 As stated in the Guidelines on Consent by Malaysian Medical Council (2013), a standard consent form should contain:

- Patient identification data: Name, IC Number, Address, gender
- Name of procedure / surgery to be performed in full
- Type of anaesthesia
- Name(s) of registered medical practitioner(s) performing the procedure / surgery
- Permission to proceed with any additional procedure that may become necessary during the surgery and related to the procedure for which the original consent had been obtained
- A statement to the effect that the person who is performing the procedure has explained to the patient (or next-of-kin) the nature of the procedure and the potential material risks
- A statement to indicate that the patient has received and read additional explanatory notes, if so provided by the practitioner
- Signature of patient / next-of-kin (relationship) and IC Number and date
- Signature of practitioner and name stamp, and date
- Signature & name of witness (to the signing of the form) and date

5.6 Period of validity of consent

- The consent has to be taken a reasonable period before the procedure. A reasonable period would be no more than 7 days. If during this period there is a change in the circumstances or condition of the patient requiring a review of the procedure initially planned, for which consent had been taken, then it is necessary to obtain a fresh consent.
- In instance when a patient from whom consent had been taken for a particular procedure, and the procedure is delayed or postponed, including and especially when an in-patient is discharged home, a new consent has to be taken before undertaking the procedure, examination, surgery, or treatment, as the circumstances or the disease condition may have changed during that period or the patient may not remember the details of the consent.

6 PRE-OPERATIVE MEDICATION

- 6.1 The patient's current medication should be reviewed and continued when necessary. Clear instruction should be given to the patient/ guardian and nursing staff. This should be documented in the patient's anaesthetic record.
- 6.2 The anaesthesiologist should have a working knowledge of the pharmacology of the patient's medication. Potential adverse interactions of these drugs with anaesthetic agents should be recognized and the anaesthetic technique modified if necessary.
- 6.3 Pre-operative medication may be prescribed to facilitate the anaesthetic management. Such medications include:
- Sedative premedication, such as benzodiazepines, opioids
 - Medication for acid aspiration prophylaxis

7 DOCUMENTATION

- 7.1 A written summary of the pre-anaesthetic assessment, orders or arrangements should be documented in the patient's anaesthetic record.
- 7.2 Instructions for the ward staff with regards to the preparation of the patient for OT must be written clearly. Examples include:
- Repeat investigations if necessary
 - GXM blood or blood products - type of blood product and quantity
 - Time to commence fasting especially for children
 - Medications to be continued or omitted on the day of surgery
 - Premedicant drugs - dose, route, and time of administration
- 7.3 This should be legible and should include the anaesthesiologist's name and signature.

8 PRE-ANAESTHETIC ASSESSMENT OF PAEDIATRIC PATIENTS

A pre-anaesthetic visit is important for the anaesthesiologist to get acquainted with the patient and his/her family and to gain their confidence. This will go a long way towards reassuring the frightened child and anxious parents. It also gives the anaesthesiologist an opportunity to explain to the parents/patient regarding the planned anaesthetic procedure - the pre-operative fasting, method of induction and post-operative pain management

8.1 Pre-anaesthetic assessment

Pre-anaesthetic evaluation of infants and children is similar to that of adults with the following additional features to look for:

8.1.1 History

- Birth history for a child of less than 6 months of age - gestational age and weight, maternal health during gestation, events during labour and delivery, Apgar scores, neonatal hospitalization
- Developmental milestones
- Feeding pattern
- Recent history of respiratory tract infection (RTI), croup or asthmatic episodes

8.1.2 Physical Examination

- General appearance, weight, height
- Congenital anomalies
- Any potential airway / intubation problem
- Respiratory system: evidence of RTI, signs of reactive airway disease
- Cardiovascular system: presence of cardiac murmurs
- Neurological: abnormalities in muscle tones and strength, development milestones
- Potential sites for venepuncture - mark out for EMLA (Eutectic Mixture of Local Anaesthetic) application if intravenous induction is planned.

8.1.3 Laboratory Investigations

- Should be considered according to the physical condition of the child and the nature of the surgery
- Value of routine tests is questionable when the surgical procedures do not involve significant blood loss. Minor surgery in a healthy child usually does not require any investigation.
- Group and cross match blood and plasma if indicated

8.2 A child with RTI

8.2.1 Peri-operative problems include laryngospasm, bronchospasm, airway obstruction by secretion

8.2.2 Incidence is greater in infants less than 1 year old.

8.2.3 Recommendations for anaesthesia in a child with RTI depends on its severity and the nature of the surgery (elective, emergency, minor or major)

8.2.4 The child with mild RTI (no fever, clear nasal discharge, mild cough, child active, feeding well) can be anaesthetized for minor surgical procedure without intubation.

8.2.5 Surgery for the child with active RTI (fever, recent onset of purulent nasal discharge, cough) should be postponed for at least 2 weeks.

8.3 Pre-operative fasting

8.3.1 It has been shown that drinking clear fluid up to 2 hours before surgery does not increase residual gastric volume. More liberal use of clear fluid in the immediate preoperative period may

- Decrease the incidence of preoperative dehydration and possible hypotension during induction
- Prevent hypoglycaemia
- Result in less agitated child and a happier parent.

8.3.2 The College of Anaesthesiologists Guideline on preoperative fasting (2008) recommends the following:

Substance ingested	Fasting time (hours)
Clear fluids*	2
Breast milk	4
Formula milk, solids	6

* Clear fluids include water, glucose drink, cordial drink, clear fruit juice

8.4 Premedication

8.4.1 Purpose of premedication is to relieve patient's anxiety and provide tranquility before the operation.

8.4.2 Premedication must be individualized. The appropriate drug is selected on the basis of child's age, weight, expectation, emotional maturity, personality, anxiety level, co-operation and physiological and psychological status.

8.4.3 The ideal premedication for infants and children should:

- Be safe
- Be easy to administer in a formulation that is acceptable to children - no intramuscular injection
- Be able to provide a rapid level of short term sedation to facilitate a smooth separation from parents and a smooth anaesthetic induction
- Have minimal undesirable side effects

8.4.4 Drugs commonly used for premedication include:

- Midazolam 0.5-0.7 mg/kg p.o
- Diazepam 0.2 mg/kg p.o.

8.4.5 While sedative premedication may be used to provide anxiolysis, other non-drug factors are equally important. These include a visit by the anaesthesiologist to establish rapport and to explain the anaesthetic procedure, and allowing the parents to accompany the child to the operating theatre. It has been found that such measures may reduce the need for sedative premedication.

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APPENDIX

RECOMMENDED PRE-ANAESTHETIC INVESTIGATIONS

The nature and extent of pre-anaesthetic investigations depend on the patient’s age, presence of any co-morbid condition, as well as the nature and extent of the planned surgical procedure.

Routine investigations, listed in **Table I**, are solely based on age and nature of surgery, for asymptomatic patients without abnormal clinical findings. For healthy patients undergoing short, minimally invasive procedures, investigations may not be necessary. Investigations listed in **Table II** are for patients with abnormal clinical findings.

TABLE I: Routine Investigations for Patients Undergoing Anaesthesia

Routine Investigation	Indication
Full blood count	Age > 60 yr Major surgery*
Renal profile	Major surgery*
Electrocardiogram	Male > 40 yr Female > 50 yr
Chest X ray	Age > 60 yr Major thoracic / upper abdominal surgery
Liver function test	Major surgery* in patients > 50 yr

**Major surgery is empirically defined as one in which the cranium, thorax or abdomen is opened or when the anticipated blood loss is significant and exceeds 15% of total blood volume.*

TABLE II: List of pre-anaesthetic investigations and their indications

Investigation	Indication
Full blood count (FBC)	<ol style="list-style-type: none">1. Anaemia2. Other haematological disease3. Renal disease4. Patient on chemotherapy
Renal profile	<ol style="list-style-type: none">1. Renal disease2. Liver diseases3. Cardiovascular disease4. Metabolic disease, e.g., diabetes mellitus5. Abnormal nutritional states6. History of diarrhoea, vomiting7. Preoperative bowel preparation8. Drugs that may alter electrolyte balance or exhibit enhanced toxic effects in the presence of electrolyte abnormality, e.g., digitalis, diuretics, corticosteroids
Blood glucose concentration	<ol style="list-style-type: none">1. Diabetes mellitus2. Severe liver disease
Electrocardiogram (ECG)	<ol style="list-style-type: none">1. Heart disease, hypertension or chronic pulmonary disease2. Diabetes mellitus3. Renal disease
Chest X-ray (CXR)	<ol style="list-style-type: none">1. Significant respiratory disease2. Cardiovascular disease3. Malignancy
Arterial blood gases (ABG)	<ol style="list-style-type: none">1. Debilitated or septic patients2. Moderate to severe pulmonary disease3. Patients in respiratory difficulty4. Patients scheduled for thoracic surgery

Coagulation screen	<ol style="list-style-type: none"> 1. Haematological disease 2. Severe liver disease 3. Coagulopathy due to any cause 4. Patients on anticoagulant therapy 5. Intra-thoracic/Intra-cranial procedures
Lung function test	<ol style="list-style-type: none"> 1. Patients scheduled for thoracic surgery 2. Moderate to severe pulmonary disease
Liver function test	<ol style="list-style-type: none"> 1. Hepatobiliary disease 2. History of alcohol abuse 3. Tumour with possible metastases to the liver
Thyroid function test	<ol style="list-style-type: none"> 1. Thyroid surgery 2. History of thyroid disease 3. Suspected endocrine abnormalities, e.g., pituitary tumour
Cardiac function tests	<ol style="list-style-type: none"> 1. Significant cardiovascular disease 2. Patients with atypical cardiac symptoms which pose a problem to diagnosis 3. Patients with significant haemodynamic disturbances

Normal investigation results are valid for varying periods of time, ranging from 1 week (FBC, urea, renal profile, blood glucose concentration), 1 month (ECG) to 6 months (CXR).

Investigations should be repeated under the following circumstances:

- Appearance of fresh symptoms, such as chest pains, diarrhoea, vomiting
- Assessment for effectiveness of therapy, such as potassium supplement for hypokalaemia, insulin therapy for hyperglycaemia, dialysis for patients with renal failure, blood products for correction of coagulopathy