

Consent for General Anaesthesia

Patient Name: _____

Date of Birth: _____ Male Female

AH No: _____ NHS No: _____

Name of the procedure for which a general anaesthetic is required:

Date of the procedure for which a general anaesthetic is required: ____ / ____ / ____

Statement of parent (or person who has parental responsibility)

Tick to confirm:

I confirm that I have parental responsibility for this child.

I have read the 'Consent for General Anaesthesia' Leaflet / watched the 'Consent for General Anaesthesia' Video (<https://www.youtube.com/watch?v=ud92WdcFKGA>).



I understand the information provided in the 'Consent for General Anaesthesia' Leaflet / Video.

I have had the opportunity to ask questions about the risks, benefits, and alternatives to General Anaesthesia. 0151 252 5845.

I give consent for General Anaesthesia.

I understand that you cannot give me a guarantee that a particular anaesthetist will administer the general anaesthetic. The anaesthetist will, however, have appropriate experience.

I understand that additional procedures, which may become necessary during the general anaesthetic, will only be carried out if it is necessary to save the life of my child or to prevent serious harm to his or her health.

Signature: _____ Date: _____

Name (PRINT): _____

Relationship to child: _____

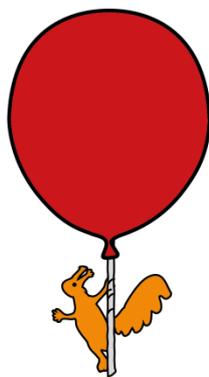
Anaesthetist confirmation of consent

I have highlighted the following specific risks relevant to this patient and procedure:

I have confirmed with the child and his or her parent(s) that they have no further questions and wish to go ahead with the general anaesthetic.

Signed: _____ Date: _____

Name (PRINT): _____ Job title: _____



Jackson Rees Department of Anaesthesia

Consent for General Anaesthesia

Information for parents and carers

Introduction

This leaflet aims to provide you with the information you need when deciding whether or not to give consent for General Anaesthesia. This information is also available as a video: <https://www.youtube.com/watch?v=ud92WdcFKGA>



You need to sign the attached form confirming that you have received and understood the information in this leaflet. You need to bring the signed form with you on the day of the procedure for which the general anaesthetic is required.

You have the right to change your mind at any time before the anaesthetist has started giving the anaesthetic to your child. That includes the right to change your mind after you have signed the form.

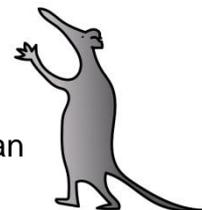
Benefits of General Anaesthesia

General Anaesthesia allows painful or uncomfortable operations and investigations to be performed in a safe and acceptable way. Under General Anaesthesia a child is unconscious and has no awareness of the procedure. Another important function of General Anaesthesia is pain relief.

The anaesthetist will monitor your child's condition throughout the anaesthetic.

Alternatives to General Anaesthesia

A few operations can be done awake, using local anaesthetic. The surgeon or physician performing the operation will be able to advise you if this is an option.



For most operations or investigations done under general anaesthetic in children, the only alternative to general anaesthesia is not to have the operation or investigation.

Common side-effects following General Anaesthesia

- **Feeling or being sick (vomiting)**

About 10 children out of 100 who have had a general anaesthetic will feel sick or vomit.¹ Medicines can be given to treat this. The risk is higher in older children.

- **Confusion and agitation on waking up**

About 10 children out of 100 who have had a general anaesthetic will be very restless and confused on waking up.² They may cry and be difficult to comfort. This usually lasts for less than 10 minutes, but can last for several hours.²

- **Sore throat**

About 12 people out of 100 who have a general anaesthetic will have a sore throat that lasts more than 24 hours.³

- **Headache**

About 17 people out of every 100 who have had a general anaesthetic will have a headache.⁴

- **Dizziness**

About 18 people out of every 100 who have a general anaesthetic will feel dizzy after waking up.⁴

- **Pain**

Between five and ten people out of 100 who have had a general anaesthetic for surgery will have severe pain after the operation, despite medicines given to prevent this.^{5,6} If this is the case for your child, the nursing staff and anaesthetist will take steps to try and treat the pain.

Risks and complications of General Anaesthesia

The following information describes the rare but serious complications of general anaesthesia.

Oxygen

Problems encountered during an anaesthetic may result in low oxygen levels in the blood and this can lead to harm.

Causes of low oxygen levels in the blood include:



- **Laryngospasm**

Laryngospasm is spasm of the vocal cords and muscles of the voice box (larynx) resulting in obstruction (blockage) of the airway making it difficult or impossible to get oxygen into the lungs. A large study of complications of anaesthesia in children reported 120 episodes of laryngospasm for every 10 000 anaesthetics.⁷ At Alder Hey Children's Hospital we perform about 20 000 anaesthetics every year.

Most episodes of laryngospasm are successfully managed by the anaesthetist with no harm to the child. However, severe laryngospasm can lead to cardiac arrest. In cardiac arrest the heart is not pumping blood to the rest of the body.

About 3 out of every 1000 episodes of laryngospasm results in the buildup of fluid in the airspaces of the lung.⁷ This is known as pulmonary oedema. This often gets better quickly, but may require support of breathing with a ventilator (breathing machine) on the intensive care unit.

Coughs and colds due to viral infections make laryngospasm more likely.

- **Bronchospasm**

Bronchospasm is a tightening of the muscles lining the airways (bronchi) in the lungs. It is similar to an asthma attack, but can occur during an anaesthetic even in people who are not asthmatic. It makes it difficult for the lungs to work and may result in low oxygen levels in the blood.

A large study of complications of anaesthesia in children reported 120 episodes of bronchospasm for every 10 000 anaesthetics.⁷

Most episodes of bronchospasm can be managed with no harm to the child. However, about 5 out of every 1000 episodes of bronchospasm during an anaesthetic will be severe enough to require admission to the intensive care unit.⁷

Coughs and colds due to viral infections will make bronchospasm more likely.

- **Aspiration of stomach contents**

Stomach juices (acid) and partially digested food from the stomach can come up the food-pipe (oesophagus) and go down the wind-pipe (trachea) into the lungs. This can injure the lungs and make it difficult to get enough oxygen into the blood. It can also lead to infection in the lungs (pneumonia).

A large study of complications of anaesthesia in children reported 9 cases of aspiration for every 10 000 anaesthetics.⁷ Not all episodes of aspiration result in harm. A large national audit reported 8 episodes of aspiration resulting in death, brain damage or intensive care admission per million anaesthetics.⁸

Children are fasted (not allowed to eat or drink) before general anaesthesia to reduce the risk of aspiration. Please follow the advice you have been given.

- Complications of airway management

The airway refers to the passages that carry air to the lungs: the nose, mouth, throat (pharynx), voice box (larynx), windpipe (trachea), and the lower airways (bronchi).

All general anaesthetics require airway management by the anaesthetist. The anaesthetist must ensure that the airway is not blocked and that the lungs are ventilated with gas containing at least 21% oxygen. Exactly how this is done depends on the nature of the procedure for which the anaesthetic is required and certain characteristics of the person having the anaesthetic. It may involve placing a tube in the wind pipe and using a breathing machine (ventilator) to ventilate the lungs.

Airway management may prove difficult. It may be difficult to overcome a blockage in the airway or adequately ventilate the lungs. It may be impossible to place a tube in the windpipe. These problems can result in low oxygen levels in the blood. In trying to manage a difficult airway the airway may be injured.

When extreme difficulty is encountered it may be necessary to make a hole in the windpipe through the front of the neck in order to save a patient's life.

Complications of airway management may require admission to the intensive care unit. They may also result in death or brain damage. A national audit including patients of all ages estimated the risk of death due to complications of airway management to be about 6 deaths per million general anaesthetics.⁸ The risk of permanent brain damage due to complications of airway management is about 1 person per million general anaesthetics.⁸

Heart Problems

Problems with how the heart pumps blood around the body may occur during a general anaesthetic. These problems may result in an inadequate supply of blood, carrying oxygen and nutrients, to the organs of the body. This in turn may result in harm.

Such problems may be caused by:

- An abnormally slow heart beat (Bradycardia)

A study of complications of anaesthesia in children estimated the risk as 28 cases of slow heart beat needing urgent treatment for every 10 000 anaesthetics.⁷ The anaesthetist will be monitoring your child's heart rate and rhythm throughout the operation and has been trained to manage problems with heart rate and rhythm.

- An abnormally fast or irregular heart beat

The estimated risk is 44 cases of abnormal heart rhythm requiring urgent treatment for every 10 000 anaesthetics.⁷

- An abnormally low blood pressure

The blood pressure is related to how much blood is pumped out by the heart every minute.

There are many causes of low blood pressure during anaesthesia including bleeding, allergic reactions, and the side effects of anaesthetic medicines. The side effects of anaesthetic medicines are more pronounced in very sick children.

Blood pressure is expected to be lower during anaesthesia than when awake and a low blood pressure does not necessarily cause harm, however a very low blood pressure may be associated with inadequate blood supply to organs such as the brain, kidneys and even the heart itself. This may result in brain damage, kidney failure or cardiac arrest.

The risk is 123 cases of low blood pressure during anaesthesia requiring urgent treatment for every 10 000 anaesthetics.⁷

- Abnormally high blood pressure

This is much less likely than low blood pressure, but may result from an underlying disease or a medication error. The risk is 2 cases of high blood pressure requiring urgent treatment for every 10 000 anaesthetics.⁷

Allergic reaction

Allergic reactions can occur to medicines, latex (often used to make surgical gloves), or the solutions used to clean the skin before surgery. Allergic reactions can be life-threatening. The anaesthetist is trained to recognize and treat these reactions. The risk of a life-threatening allergic reaction during anaesthesia in children (called anaphylaxis) is estimated as 2 to 3 reactions per 100 000 anaesthetics.⁹

Malignant hyperthermia reaction

Malignant hyperthermia is a rare genetic condition (it runs in families). When a person with malignant hyperthermia receives certain anaesthetic medicines their muscles over-heat. The muscle cells may be damaged. The result of the heat and muscle damage can be life-threatening. The anaesthetist is trained to recognize this and treat it. For those who are known to have this condition it is possible to avoid the anaesthetic medicines that trigger the reaction. The risk is 1 malignant hyperthermia reaction per 100 000 anaesthetics.¹⁰

Awareness

Awareness describes the situation where a patient who is intended to be unconscious under general anaesthesia is awake. The vast majority of anaesthetics do not require medicines that relax the muscles and make it impossible to move. Your child's anaesthetist will also be monitoring how much anaesthetic medicine is being given. A large national audit of awareness during general anaesthesia found 1 to 2 reports of awareness in children per 100 000 anaesthetics.¹¹

An error in giving a medicine

It is possible to make mistakes when giving medicines. The wrong medicine may be given, a necessary medicine may not be given, or the wrong dose may be given. Medicine may be given by the wrong route (for instance a medicine that should have been used as a local anaesthetic to numb a nerve could be given into a vein). The outcome of such an error can vary from no harm to life-threatening. The risk of such an error is 5 errors per 10 000 anaesthetics.¹²

Some medicines are given in to the veins via a small plastic tube called a cannula. Cannulas can become misplaced such that the tip of the cannula is not within the vein but comes to lie in the flesh just outside the vein. Cannulas may be misplaced at the time they are put in, but they can also become misplaced having initially been correctly placed within the vein. If medicines or fluids are given through a misplaced cannula they can cause injury. Cannulas are also associated with a risk of infection, which may be either localized to where the cannula has been placed in the body, or a more generalized infection in the blood stream. There is a risk of inflammation of the vein where a cannula has been placed. This inflammation is not necessarily due to infection and may be due to medicines given via the cannula or simply the presence of the cannula. Placing a cannula and attempts at placing a cannula may cause bruising.

Equipment failure

It is possible for a piece of equipment to malfunction and fail. Essential equipment is checked on a daily basis before giving an anaesthetic. The risk of equipment failure is 13 incidents of equipment problems per 10 000 anaesthetics.¹³

Eye injury

Fewer tears are produced when people are anaesthetized and not everyone's eyes are completely shut when they are anaesthetized. The sensitive lining at the front of the eyeball (cornea) can dry out and get injured. We take great care to protect the eyes and tape them shut. For some long procedures we also put a lubricating ointment in the eye. The risk of eye injury is 560 in a million.¹⁴ The risk of loss of vision (partial or complete blindness), that is still present 30 days after an anaesthetic for an operation that did not involve the eyes or brain, is 8 in-a-million.¹⁵

Damage to the teeth or dental work such as crowns or bridges

Your anaesthetist will take great care to protect your child's teeth. Nevertheless teeth and dental work can be damaged. Your child may need a plastic tube in the airway or wind-pipe to help with breathing when they are anaesthetized. Teeth can be damaged either as this tube is put in or taken out. It may be safest to remove very loose milk teeth when your child is anaesthetized. Your anaesthetist will ask about loose teeth and discuss this with you. The risk of damaging the teeth is 1 in 10 000.¹³

Injury to lips, tongue, voice box and windpipe

Airway management may result in injury to the lips, tongue, voice box or windpipe. Stridor is noisy breathing caused by narrowing of the airway at the level of the voice box or windpipe. Swelling of the lining of the airway may cause narrowing and stridor. In children, the risk of stridor after an anaesthetic is 70 cases of stridor per 10 000 anaesthetics.⁷ For most children with post-anaesthetic stridor it will settle over a period of hours. However, some children with post-anaesthetic stridor require admission to the intensive care unit.

Nerve injury

Nerves may be injured by pressure or stretch. This is more likely when a patient is lying in one position for a very long time. Great care is taken to position your child to avoid these injuries. In adult patients, the risk of this sort of injury, involving the ulnar nerve that runs behind the elbow, is 47 injuries per 10 000 anaesthetics.¹⁶ The risk appears to be lower in children.

Pressure sores

Great care is taken when positioning anaesthetized children for surgery. Operating tables have specially designed mattresses to reduce the risk of pressure sores. The operating team also place padding in an effort to avoid injuries from pressure. However, it is often not possible to move an anaesthetized child once surgery has started and so there is a risk of pressure sores, especially with long procedures.

Change in behaviour

Behaviour may change after an anaesthetic. These changes in behaviour include withdrawal, apathy, general anxiety, separation anxiety (anxiety provoked by separation from the main carer) and regression (where a child shows behaviour that they have already grown out of). A study of negative behavioural change after anaesthesia found that 24 out of every 100 children who had had an anaesthetic, had significant negative behaviour change 3 days after the anaesthetic.¹⁷ Sixteen out of every 100 children who had an anaesthetic had significant negative behaviour change at 30 days after the anaesthetic.¹⁷ However, it cannot be said that the anaesthetic causes the behaviour change. Children do not receive anaesthesia without hospitalization and some sort of procedure or surgery.

Death

Very rarely a complication of general anaesthesia causes the death of a person. For every million anaesthetics, about ten people die directly as a result of an anaesthetic complication.^{18, 19, 20} These numbers are averages for large groups of patients of all ages having an anaesthetic.

There are many complications of general anaesthesia that can result in the death of a person.

Recent studies have shown the commonest reasons are:

- Aspiration - injury to the lungs caused by stomach acid coming up the food-pipe (oesophagus) and then going down the wind-pipe (trachea) and into the lungs,
- Failure to get enough oxygen into the blood because of a blocked airway, and
- Failure to breathe adequately because of the effect of medicines given to the person (often to relieve pain).^{18,19}

Cardiac Arrest

Cardiac arrest means that the heart is not pumping blood to the body. It may be possible to treat this and get the heart pumping again. The risk is 3 cardiac arrests per 10 000 anaesthetics.⁷

A study of anaesthesia related cardiac arrest in children found that 61% recovered without injury, 5% suffered permanent harm, and 28% died.²¹

Various complications may result in cardiac arrest in an anaesthetized child. The commonest are:

- Bleeding,
- Blockage of the airway caused by spasm of the vocal cords,
- Very high levels of potassium in the blood after blood transfusion or certain anaesthetic medicines,
- The direct effect of anaesthetic medicines on the heart.²¹

Unplanned admission to the Paediatric Intensive Care Unit (PICU)

Some complications of anaesthesia may require admission to PICU for further treatment. This may involve a patient being kept asleep and supporting their breathing with a breathing machine (ventilator).

The risk of an unplanned admission to PICU following an anaesthetic complication is 4 PICU admissions per 10 000 anaesthetics.²²

Coma (failure to regain consciousness)

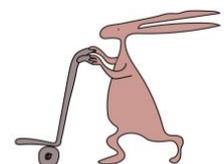
This complication is the result of severe injury to the brain and is not due to the anaesthetic medicine itself. It may be the result of the brain not getting enough oxygen or glucose (blood-sugar). The risk of persistent coma with failure to wake up at 24 hours after the anaesthetic is 50 in-a million.¹⁸

Summary

Most children can be safely anaesthetized. However, complications do happen.

Your child's anaesthetist is highly trained to:

- Deliver the safest possible anaesthetic
- Avoid complications where this is possible
- Detect and treat complications should they occur



Your child's anaesthetist will also try to prevent or treat the side effects of anaesthesia and surgery such as vomiting and pain.

Questions

If you have any questions regarding the risks or benefits of general anaesthesia, please do ask. We are here to help you and your child. You can do so by contacting us on:

0151 252 5845 (Anaesthetic Pre-Op Service).

You will also have the opportunity to speak to your child's anaesthetist and ask questions on the day of the operation or investigation.

References

1. Incidence of postoperative nausea and vomiting in paediatric ambulatory surgery. Villeret I, Laffon M, Duchalais A, Blond MH, Lecuyer AI, Mercier C. *Paediatric Anaesthesia* 2002, Vol. 12, pp. 712-717.
2. Emergence behaviour in children: defining the incidence of excitement and agitation following anaesthesia. Cole JW, Murray DJ, McAllister JD, Hirschberg GE. *Paediatric Anaesthesia* 2002, Vol. 12, pp. 442-447.
3. Postoperative sore throat after ambulatory surgery. Higgins PP, Chung F, Mezei G. *British Journal of Anaesthesia* 2002, Vol. 88, pp. 582-584.
4. Systematic review and analysis of postdischarge symptoms after outpatient surgery. Wu CI, Berenholtz SM, Pronovost PJ, Fleischer LA. *Anesthesiology* 2002, Vol. 96, pp. 994-1003.
5. Postoperative pain in ambulatory anaesthesia. Chung F, Ritchie E, Su J. *Anesthesia and Analgesia* 1997, Vol. 85, pp. 808-816.
6. Effectiveness of acute postoperative pain management: I. Evidence from published data. Dolin SJ, Cashman JN, Bland JM. *British Journal of Anaesthesia* 2002, Vol. 89, pp. 409-423.
7. Incidence of severe critical events in paediatric anaesthesia (APRICOT): a prospective multicentre observational study in 261 hospitals in Europe. Habre W, Disma N, Virag K *et al.* *The Lancet Respiratory Medicine* 2017, Vol 5, pp. 412-425.
8. Major complications of airway management in the UK: results of the Fourth National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society. Part 1: Anaesthesia. Cook TM, Woodall N, Frerk C. *British Journal of Anaesthesia* 2011, Vol. 106, pp. 617-631.
9. Anaesthesia, surgery, and life threatening allergic reactions: epidemiology and clinical features of perioperative anaphylaxis in the 6th national Audit Project (NAP6). Harper NJN, Cook TM, Geraz T *et al.* *British Journal of Anaesthesia* 2018, Vol. 121, pp 159-171.
10. Trends and outcomes of malignant hyperthermia in the United States, 2000 to 2005. Roser EB, Adesanya AO, Timaran CH, Joshi GP. *Anesthesiology* 2009, Vol. 110, pp. 89-94.
11. 5th National Audit Project (NAP5) on accidental awareness during general anaesthesia: summary of main findings and risk factors. Pandit JJ, Andrade J, Bogod DG, *et al.* *British Journal of Anaesthesia* 2014, Vol. 0(0), pp. 1-11.
12. Perioperative anaesthetic morbidity in children: a database of 24 165 anaesthetics over a 30 month period. Murat I, Constant I, Maudhuy H. *Paediatric Anaesthesia* 2004, Vol. 14, pp. 158-166.

13. Critical incidents in paediatric anaesthesia: an audit of 10 000 anaesthetics in Singapore. Tay CLM, Tan GM, Ng SBA. *Paediatric Anaesthesia* 2001, Vol. 11, pp. 711-718.
14. Eye injuries after nonocular surgery. A study of 60,965 anaesthetics from 1988 to 1992. Roth S, Thisted RA, Erikson JP, Black S, Schreider BD. *Anesthesiology* 1996, Vol. 85, pp. 1020-1027.
15. The frequency of perioperative vision loss. Warner ME, Warner MA, Garrity JA, MacKenzie RA, Warner DO. *Anesthesia and Analgesia* 2001, Vol. 93, pp. 1417-1421.
16. Ulnar neuropathy in surgical patients. Warner MA, Warner DO, Matsumoto JY, Harper M, Schroeder DR, Maxon PM. *Anesthesiology* 1999, Vol. 90, pp. 54-59.
17. A cohort study of the incidence and risk factors for negative behavior changes in children after general anesthesia. Stargatt R, Davidson AJ, Huang GH *et al.* *Pediatric Anesthesia* 2006, Vol 16, pp 846 – 859.
18. Mortality associated with anaesthesia: a qualitative analysis to identify risk factors. Arbous MS, Grobbee DE, van Kleef JW, de Lange JJ, Spoormans HHAJM. *Anaesthesia* 2001, Vol. 56, pp. 1141-1153.
19. Survey of anaesthesia-related mortality in France. Lienhart A, Auroy Y, Pequignot F, Benhamou D, Warszawski J, Bovet M, Jouglu E. *Anesthesiology* 2006, Vol. 105, pp. 1087 - 1097.
20. Anaesthesia-related mortality and morbidity over a 5-year period in 2,363,038 patients in Japan. Kawashima Y, Takahashi S, Suzuki M, Morita K, Irata K, Iwao Y, Seo N, Tsuzaki K, Dohi S, Kobayashi T. *Acta Anaesthesiologica Scandinavica* 2003, Vol. 47, pp. 809-817.
21. Anaesthesia-related cardiac arrest in children: update from the pediatric cardiac arrest registry. Bhananker SM, Ramamoorthy C, Geiduschek JM, Posner KL, Domino KB, Haberkern CM. *Anesthesia & Analgesia* 2007, Vol. 105, pp. 344-350.
22. Unplanned Admission to the intensive care unit in postoperative patients - an indicator of quality of anaesthetic care? Piercy M, Lau S, Loh F, Reid D, Santamaria J, Mackay P. *Anaesthesia and Intensive Care* 2006, Vol. 34, pp. 592-598.

This leaflet only gives general information. You must always discuss the individual treatment of your child with the appropriate member of staff. Do not rely on this leaflet alone for information about your child's treatment.

This information can be made available in other languages and formats if requested.

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