

Risks associated with your general anaesthetic: Equipment failure

This leaflet can be made available
in alternative languages / formats on request.

如有需要，本传单可提供其他语言/版式
此單張的其他語言/格式版本可按要求提供

Na żądanie ta ulotka może zostać udostępniona
w innych językach/formatach.

For further advice, please telephone:

Anaesthetic Preoperative Clinics 01744 646395

Anaesthetic Department 0151 430 1267/1268

Whiston Hospital
Warrington Road,
Prescot, Merseyside, L35 5DR
Telephone: 0151 426 1600



/sthknhs



@sthk.nhs

www.sthk.nhs.uk

Author: Consultant Anaesthetist
Department: Anaesthetics
Document Number: STHK0738
Version: 2
Review date: 31 July 2022

What equipment is used when I have a general anaesthetic?

The anaesthetic machine mixes piped anaesthetic gas (nitrous oxide) and oxygen with an anesthetic vapour and delivers it to the patient through a system of plastic tubes, filters and masks/ throat tubes.

The breathing system may include a chemical absorber to remove carbon dioxide from air breathed out, allowing the remaining gas to be reused.

During some anaesthetic procedures you will breathe for yourself while in others you may be helped by a breathing machine called a ventilator.

In all cases, you will be monitored closely to check your heart rate, blood pressure, oxygen levels and the amount of anaesthetic gases, oxygen and carbon dioxide in your breath. These measurements inform the anaesthetist of any changes in your general condition so he/she can act accordingly.

What type of failures can occur?

Unexpected equipment failure leading to moderate or severe harm is very rare (0.015% of all anaesthetics). The majority of problems have been noted to involve anaesthetic monitors and ventilators and a minority involved leakage from the breathing systems and the gas supply to the machines.

Is there a risk of infection from the equipment?

Anaesthetic equipment can transmit disease but following correct practice, as set out in our Trust's Infection Control guidelines, should prevent this.

Some items are used for only one patient and are then thrown away. Other items are either washed, disinfected or sterilised.

The methods used are determined by our hospital or national policies and depend on the nature of contamination and the risk of particular diseases that could be transmitted. For example, MRSA is removed by standard hospital disinfectants and sterilisation.

How am I protected from equipment failure?

Throughout your operation, an anaesthetist is constantly present to closely monitor you and all the equipment used for anaesthesia and record the observations to ensure your safety. Visual and audible alarms aid the anaesthetist in identifying and responding immediately to any changes in your well-being during the operation.

All anaesthetic equipment is designed to prevent misuse and mistakes. For example, gas pipe connections are colour coded and non-interchangeable thus preventing accidental administration of the wrong gas. A device in the machine makes sure it always provides oxygen rich anaesthetic gas to you during the operation. Pressure relief valves built into the machine prevent high-pressure gas from reaching your lungs.

Anaesthetic machines and monitors are fitted with comprehensive alarm systems. These emit both visual and audible signals, which are appropriate in terms of urgency, loudness and specificity.

Regular checks of equipment are performed and documented as follows:

- Regular servicing and keeping a service record of the machines
- It is the anaesthetist's responsibility to check the anaesthetic equipment at the beginning of each operating session and again before each new patient. Guidelines on checking anaesthetic machines form an important part of anaesthetic training and practice. A summary of the guidelines is attached to every anaesthetic machine and the anaesthetist must be satisfied that this has been carried out correctly. A record is also kept with the anaesthetic machine that this check has been done.

All equipment failures that cause harm or could have harmed will be reported as a 'critical incident'. The Trust has a robust process that monitors and investigates critical incidents looking for ways to improve patient safety.

If equipment fails, is alternative equipment available?

- A back up oxygen cylinder attached to each anaesthetic machine can be used immediately in the event of piped oxygen supply failure
- If the anaesthetic vapour fails, drugs can be given into a vein to maintain anaesthesia until the problem is resolved.
- If the ventilator (breathing machine) fails, each machine has a self-inflating bag and valve system that can be used to provide oxygen and air to you manually.
- If there is an electric failure, a generator should take over immediately without any loss of power to the equipment. This is tested regularly.
- Rest assured that if any problem arises, your anaesthetist is well trained to detect and respond rapidly in order to keep you safe.