Tests carried out before a planned surgical operation

A guide for people who are going to have a planned operation, their carers, and the public
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About this information

This information describes the guidance that the National Institute for Clinical Excellence (called NICE for short) has issued to the NHS on the preoperative (or 'before surgery') tests for people due to have a planned operation. It is based on *Preoperative Investigations in Patients Undergoing Elective Surgery*, which is a clinical guideline produced by NICE for doctors, nurses and other healthcare professionals working in the NHS in England and Wales. Although this information has been written chiefly for people who are going to have a planned operation, it may also be useful for family members or other carers who will be looking after the patient.

Clinical guidelines

Clinical (or medical) guidelines are recommendations for good practice. The recommendations in NICE guidelines are prepared by groups of health professionals, patient representatives with experience or knowledge of the condition being discussed, and scientists. The groups look at the evidence available on the best way of treating or managing a condition and make recommendations based on this evidence.

There is more about NICE and the way that the NICE guidelines are developed on the NICE website (www.nice.org.uk). You can download the booklet *The Guideline Development Process – Information for the Public and the NHS* from the website, or you can order a copy by phoning 0870 1555 455 and quoting reference number N0038.

What the recommendations cover

NICE clinical guidelines can look at different areas of diagnosis, treatment, care, self-help or a combination of these. The areas that a guideline covers depend on the topic. They are laid out at the start of the development of the guideline in a document called the scope.
The recommendations in *Preoperative Investigations in Patients Undergoing Elective Surgery*, which are also described here, cover:

- routine tests that may be carried out when someone is due to have a surgical operation that has been planned (doctors refer to this as ‘elective’ surgery)
- tests that are carried out before surgery in hospital (although the recommendations may also be relevant for some tests to be carried out elsewhere, for example by a GP).

They do not cover:

- surgery carried out in an emergency
- the wider care of patients before or after surgery (for example, what to do if a test result shows there is a problem)
- the diagnosis and management of specific diseases or conditions
- the follow up and treatment of conditions discovered by the preoperative tests, or the specific needs of patients with rare conditions
- how tests should be carried out, the frequency of testing or interpretation of test results
- other aspects of preoperative assessment such as finding out about a patient’s medical history or how to examine a patient.

The information that follows tells you about the NICE guideline on what tests people might need before a planned operation. It does not attempt to explain or describe the tests in detail. If you want to find out more about tests you may have before you go into hospital for a planned operation, ask for further information at the hospital where you will be having the operation or contact NHS Direct (telephone 0845 46 47 or look at NHS Direct Online, www.nhsdirect.nhs.uk).

**How guidelines are used in the NHS**

In general, health professionals working in the NHS are expected to follow NICE’s clinical guidelines. But there will be times when the recommendations won’t be suitable for someone because of his or her specific medical condition, general health, wishes or a combination of these. If you think that
the treatment or care you receive does not match the treatment or care described in the pages that follow, you should discuss your concerns with the person in charge of your care (this would almost always be the consultant surgeon) at the hospital where you are having the operation.

If you want to read other versions of this guideline

Preoperative Investigations in Patients Undergoing Elective Surgery and the full guideline (which contains all the details of the guideline recommendations and how they were developed) are both available from the NICE website (www.nice.org.uk).

Routine preoperative testing

Why and where the tests are done

Usually, you will be asked to visit the hospital a week before your operation in order to be assessed for surgery.

This will involve a routine examination including an assessment of your current health and medical history. Sometimes this assessment may lead to tests being carried out. It is routine medical practice to test people, even apparently healthy people, before surgery to find out about conditions that may affect their treatment. These tests are in addition to any test that might be carried out because of the specific kind of operation or because a patient is known to have a specific health problem.

The results of these tests are sometimes available on the day, but you may have to wait for blood test results. However, some tests, like those directly related to a condition you may have or relating to the operation you are undergoing may be done earlier. Some tests may also be carried out by your GP.

These tests include chest x-rays, ECGs (short for ‘electrocardiograms’) and tests on samples of blood and urine. They also include testing for sickle cell
disorders and pregnancy testing. Some of the tests are described in more detail on page 8.

Preoperative tests are done to get information about patients’ health that might not be available from their medical records.

People see advantages and disadvantages in routine preoperative tests.

Possible advantages include:
- finding out whether you’re fit enough to have an anaesthetic and the surgery
- helping to make sure that you’re going to get the best possible treatment
- finding out about possible problems so that your treatment can be planned to avoid them
- giving an opportunity to carry out other screening tests apart from those needed for the surgery.

Possible disadvantages include the possibility that testing patients unnecessarily or inappropriately could lead to delays before surgery, and some tests (like chest x-rays) should only be carried out for people who really need them.

**Information you should receive**

You have the right to know what tests are being done and why, and to know the results of the tests.

You should be told about the pros and cons of being tested.

The aim of the recommendations is to help clinicians decide which tests should be carried out for which patients and also when tests are unnecessary. You should receive information about which tests you need to have and why (that is, what the tests are for). The consultant responsible for your care should explain to you what the possible consequences of the tests are.
You will be asked to give your consent (agreement) for the test and have the right to refuse consent.

You should be told what the results of the tests are (these might not be available straight away). Some tests only have to be done once – for example, tests for sickle cell. The results of a once-only test should be added to your medical records so that the test is not carried out again.

**How the recommendations on testing were developed**

There has not been much research on how useful preoperative tests are. The group that developed the recommendations looked at the available information and concluded that there is no reliable evidence to suggest that preoperative testing is necessary for most patients unless there is a specific medical or surgical reason why the test is needed.

But preoperative testing is widely carried out, and a lack of evidence of important benefits doesn’t mean that there aren’t any benefits. In other words, just because there isn’t research to show that tests before surgery are useful, doesn’t mean the tests are of no value.

Because of the lack of research evidence, the team developing these recommendations asked two groups of experts to consider which tests were appropriate for which patients. The agreement among the experts in each group and between the two groups was measured using a formal method called a ‘consensus process’.

**The recommendations on preoperative testing**

The number and type of preoperative tests you might have depends on a number of things, including:

- your health – the clinician ordering the tests will look at factors such as your blood pressure, pulse rate, BMI (body mass index, a common measure expressing the relationship [or ratio] of weight to height), what
illnesses you’ve had or have, what medicines you are taking, and the history of health problems in your family

- your age (the need for tests may increase as you get older)
- the type of surgery you are going to have (more tests may be needed if you’re going to have major surgery).

It’s difficult to tell you what tests you might expect to have as all these factors must be considered together by the doctor before a decision is made. The NICE guideline, *Preoperative Investigations in Patients Undergoing Elective Surgery*, contains look-up tables to help your doctor make a decision based on the severity of surgery, the age of the patient, and the health of the patient.

A very brief summary of the most common routine tests is included in this information.

**Chest x-ray**
A chest x-ray may be carried out to detect any previously unknown disease or infection that would make surgery dangerous. A chest x-ray may be required if a patient has a history of smoking, respiratory disease (disease of the airways) or heart disease. This test should not be carried out unless there is a medical or surgical reason to do so. However it may be appropriate to test some patients over the age of 60 years. There is no benefit in testing children unless there is a medical or surgical reason to do so.

**Resting ECG**
An ECG may be carried out to test for heart problems such as abnormal heart rhythm. It is agreed that whether an ECG is needed mostly depends on the age of the patient. Unless you are over 60 years of age, an ECG would not normally be done unless there are medical or surgical reasons to suspect abnormalities (for example if you have asthma).
Full blood count
A sample of blood is taken and analysed in a laboratory. A ‘full blood count’ means that the amount of haemoglobin and the numbers of different kinds of blood cells are measured. If you have got low levels of haemoglobin in your blood you will need special care during surgery. People who are taking a medicine called warfarin need to have a full blood count. Otherwise, a full blood count is usually carried out only if there are medical reasons to suspect low levels of haemoglobin (such as kidney disease). However, a full blood count may be more likely to be carried out before more major surgery.

Tests of haemostasis
Your blood sample may also be used to carry out tests of ‘haemostasis’ – that is, tests that check the way your blood clots and how long it takes to clot. Tests of haemostasis should not be carried out unless there is a reason to test, such as if you are taking warfarin or are on dialysis. It may be appropriate to test if you have a family history of abnormal bleeding, evidence of liver disease or vascular disease (a disease of the blood vessels, such as hardening of the arteries).

Renal function tests
Whether you will need a renal (or kidney) function test will depend on what medicines you are taking and your age, and whether you have health problems like diabetes or high blood pressure. In normal healthy patients a renal function test may only be necessary before major surgery.

Blood glucose
A blood glucose test measures the amount of glucose (sugar) in a blood sample. This test is used to check for previously unknown diabetes, which is quite rare. It may be done if you are going to have major surgery or heart surgery.
Urine ‘dipstick’ test
A urine ‘dipstick’ test might be used as an alternative to measuring your blood glucose. (As the name suggests, a stick is dropped into a specimen of the patient’s urine and it changes colour if there is glucose in the urine.) This may also be used to detect urinary tract infections, it is important to check for these infections before certain types of implant surgery (such as a hip replacement).

Blood gases test
This is another blood test. It analyses the acidity, oxygen content, and carbon dioxide content of the blood. A blood gases test should not be done as a routine test. There should always be a reason for testing, such as to assess respiratory disease.

Pulmonary function tests
Pulmonary (or lung) function tests include measurements of how efficiently you breathe. These are not routine tests, but are reserved for specific groups of patients, such as those with chronic bronchitis or cardiovascular disease (disease of the heart and blood vessels).

Sickle cell test
The presence of sickle cell anaemia, if undetected, can put you at serious risk during surgery. Sickle cell anaemia and other sickle cell disorders are found mainly in groups of people whose families come from Africa, the Caribbean, the Eastern Mediterranean, Middle East and Asia. A special blood test (haemoglobin electrophoresis) can tell you whether you have a sickle cell disorder or are a healthy carrier for sickle cell trait. People in the groups at risk should be tested during pregnancy or before they have an anaesthetic, at hospital or dental clinics.

Pregnancy test
The need to test for pregnancy depends on the risk presented by the anaesthetic and surgery to the unborn baby. If you are a woman of child-
bearing age you should be asked whether or not there is any chance you could be pregnant before you have an operation and you must be made aware of the risks of surgery to the baby. You should also be asked about pregnancy before a chest x-ray. A pregnancy test should be carried out with your consent if there is any doubt about whether or not you could be pregnant.

**Further information**

You have the right to be fully informed and to share in decision-making about your healthcare. If you would like further information about the tests that might be carried out before your operation, ask your specialist or nurse at the hospital where you are going to have your operation.

For further information about the National Institute for Clinical Excellence (NICE), the Clinical Guidelines Programme or other versions of this guideline you can visit the NICE website at [www.nice.org.uk](http://www.nice.org.uk).