




## How can I get a DPYD genetic test?

Your cancer doctor can advise you, but the tests are available to NHS patients in some areas and through private insurance groups or directly from the manufacturer. A simple blood sample is taken and sent to the place where the genetic test is carried out. The doctor gets the result within 2 weeks – in good time to decide on your treatment.

### Contact information:

Oxford Cancer Biomarkers Ltd  [oxfordbio.com](http://oxfordbio.com)

### For further information about cancer:

Bowel Cancer UK  [bowelcanceruk.org.uk](http://bowelcanceruk.org.uk)  
Cancer Research UK  [cancerresearchuk.org](http://cancerresearchuk.org)



## Why have DPYD genetic testing before chemotherapy?

One of the main ways doctors treat cancer is with chemotherapy. This comes in several forms, but one of the most commonly used drugs to treat cancers including breast cancer, head and neck cancers, anal cancer, stomach cancer and colon cancer is called 5FU or capecitabine. It is called 5FU if it is given to you in an injection or drip and capecitabine if it is a pill. This very effective treatment is powerful but can also have unpleasant and in some cases life threatening toxic effects. Today's genetic tests are highly accurate in identifying if you may be at risk of these toxic effects before you are given 5FU or capecitabine treatment. Without a genetic test there is no way for you or your doctor to know if you are at risk.



○ Death of **5 to 10** people per 1000

○ Death of **5 in 100** elderly people

### TOXIC EFFECTS

Nausea/vomiting

Diarrhoea, sometimes very severe

Inflammation of digestive tract

Decreased red blood cell production – breathlessness, feeling weak, tired, pale appearance

Low numbers of white blood cells that fight infection

Skin reddening, numbness and peeling often on hands and feet – Hand Foot Syndrome (HFS)

## What are the risks associated with 5FU or capecitabine?

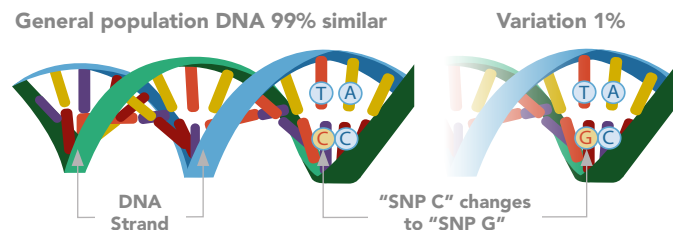
Estimates from UK medical and research data suggest that up to 500 people in the UK die needlessly each year from various complications due to these drugs and as many as 5,000 people could be suffering avoidable severe toxic effects which can have lifelong consequences.

For most people the toxic effects are mild and the benefit of treatment with 5FU or capecitabine outweighs the risk of any toxic effects. However, for some people, if not life threatening, their toxic effects are intolerable and can lead to repeated trips to hospital and sometimes long stays.

## Why is 5FU or capecitabine harmful in some people and not others?

Your genes are responsible for the production of a protein called DPYD. Having DPYD present and active in your body is essential for you to process the 5FU or capecitabine during cancer treatment. Without enough DPYD the 5FU or capecitabine builds up in your body and causes more severe toxic effects than usual.

Some people have a genetic deficiency where one or more of their genes (segments of DNA) has a different code to other people. The most common type of genetic difference is called a SNP (single nucleotide polymorphism). Several SNPs have been identified in DPYD that cause the toxic effects of 5FU or capecitabine.



### TEST RESULTS

#### Most

people are able to receive the standard dose

#### 4-8%

of people advised to start treatment on a lower dose – risk of toxic effects

#### ≤1%

of people advised against 5FU capecitabine treatment – risk of death

Some SNPs cause the more severe toxic effects, whilst others are more specifically associated with conditions such as Hand Foot Syndrome

## How do I know if I am at risk?

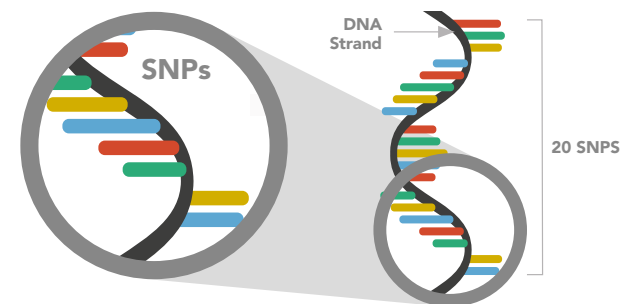
Fortunately, scientists have mapped most SNPs that cause 5FU or capecitabine toxic effects with 20 included in the most comprehensive test. This test is extremely accurate and in almost all cases will identify people at risk of death.

In addition to genetic testing, your doctor will take into consideration other important factors related to your health, before chemotherapy is prescribed.

Having started treatment, if you experience any of the toxic effects listed opposite, tell your doctor immediately.

## Are all DPYD tests the same?

Scientific research has uncovered the majority of the SNPs that cause 5FU or capecitabine toxic effects, with at least 20 shown to play a significant role and 4 of these a major role. The more SNPs included in a test, the higher the chance of that test finding people at risk.



There are several providers of these tests, with each test giving slightly different information based on the number of SNPs included in the test and the testing of other parameters in addition to the use of DNA sequencing.

The most advanced test in this field is ToxNav®, developed and supplied by Oxford Cancer Biomarkers.