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## Depression: Can the antidepressants bupropion, mirtazapine and reboxetine help?



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Most of us feel down and gloomy every now and then. These feelings often do not last long and we feel better again after a while. But people who have depression feel that way for longer periods of time and it can make their lives very difficult: they no longer enjoy things, find it hard to work, and neglect their friends and family.

Depression can have many symptoms. The main ones include feeling down all the time, listlessness, a lack of enjoyment and loss of interest – even in hobbies and other activities that used to be fun. Severe depression is associated with a higher risk of suicide. People who are having suicidal thoughts need urgent help. You can read more about possible signs of depression here (URL: <http://www.informedhealthonline.org/index.559.en.html>).

**1 out of 7 people have depression at some point in their lives**

It is estimated that about 15 out of 100 adults in Germany are affected by depression at least once in their lifetime. Depression is roughly twice as common in women as it is in men. It is not unusual for depression to be accompanied by other physical or psychological conditions. For example, depression and anxiety disorders are often closely related.

Depression can come in episodes: many people who have had depression get it again. But there are treatments which reduce the likelihood of that happening.

**Medication for the treatment of depression**

Depression can be treated using psychological approaches or with special medication for depression (so-called antidepressants). These treatments can also be combined. Antidepressants are mainly used in moderate and severe depression. St John's wort is often used in mild depression. You can read more about St John's wort in the treatment of depression here (URL: <http://www.informedhealthonline.org/index.385.en.html>).

Most antidepressants change the amount of particular chemical substances, so-called neurotransmitters, in the brain. This can improve your mood and sometimes have other effects too, like increasing your motivation. Examples of such neurotransmitters include serotonin, noradrenaline

and dopamine. It can take several days or weeks for antidepressants to start working. Unlike some sleeping pills and sedatives, antidepressants do not cause drug dependency.

The potential adverse effects of antidepressants include loss of appetite, dry mouth, problems with arousal and orgasm, as well as problems with ejaculation and impotence in men.

If people stop taking antidepressants too suddenly, they may have temporary problems such as sleeplessness, nausea and restlessness. But these usually go away again within about two weeks. To avoid problems like this, when people stop taking antidepressants the dose is usually reduced gradually.

The most commonly used antidepressants belong to the following groups of drugs: selective serotonin reuptake inhibitors (SSRIs), selective serotonin-norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants and tetracyclic antidepressants. There are also other antidepressants which do not belong to one of the groups mentioned above. Researchers evaluated the advantages and disadvantages of three of those other antidepressants, called bupropion, mirtazapine and reboxetine.

**What can be expected of bupropion, mirtazapine and reboxetine**

The German Institute for Quality and Efficiency in Health Care (IQWiG) – the publisher of this website – analysed randomised controlled trials of bupropion, mirtazapine and reboxetine. In this kind of study, people are randomly assigned to one of several groups that receive different treatments, and the groups are then compared. You can read about why this type of research is important here (URL:

<http://www.informedhealthonline.org/index.61.en.html>).

The IQWiG researchers worked together with researchers from the universities of Bremen and Hamburg-Eppendorf, as well as the Institute for Pharmacology at Bremen-Mitte Hospital.

To find out what the advantages and disadvantages of these antidepressants are, the researchers did a thorough search for published trials. They also asked the companies that make the medications whether there were any trials that had not yet been published. The researchers included a total of 51 trials in their analysis, involving more than 13,000 adults with depression. Most of the trial

participants had moderate depression. In the trials, the antidepressants that were being tested were either compared with a placebo (a dummy drug) or with another antidepressant. As well as looking at how effective they were, the researchers were also interested in how many people stopped taking their medications because of adverse effects.

## **Bupropion: can relieve depression, but is less effective than venlafaxine**

Seven trials tested the antidepressant bupropion. Four of these trials looked at whether bupropion can relieve acute depression. The other three trials looked at whether bupropion could prevent recurrences of SAD (seasonal affective disorder, or “the winter blues”) in people who had already had this condition in the past.

The trials show that bupropion helps to relieve depression:

- 53 out of 100 people who took bupropion experienced a clear improvement in depression symptoms (53%).
- For comparison: 44 out of 100 people who took a placebo experienced a clear improvement (44%).

In other words: compared to a dummy drug, bupropion helped an extra 9 out of 100 people (9%). Three trials showed that bupropion can effectively prevent SAD as well.

Two trials compared bupropion with the antidepressant venlafaxine. This is a SNRI (selective serotonin-norepinephrine reuptake inhibitor). Both trials showed that venlafaxine was more effective than bupropion:

- 57 out of 100 people who took bupropion experienced a clear improvement in depression symptoms (57%).
- 65 out of 100 people who took venlafaxine experienced a clear improvement (65%).

The researchers also looked at the number of people who stopped taking their medications because of adverse

effects. They did not find any clear differences between bupropion and a placebo. There was also no difference between the antidepressants bupropion and venlafaxine in this respect.

Because none of the trials lasted longer than 10 weeks, it is not known how effective bupropion is at preventing depression relapses, or whether people would benefit from taking bupropion over longer periods of time. It is also not clear whether bupropion relieves other symptoms that are sometimes associated with depression, such as anxiety or pain.

## **Mirtazapine: can relieve depression, but often has adverse effects**

Mirtazapine was tested in 27 trials. Only 1 of these trials looked at whether it can also prevent depression coming back. In 11 of the trials, mirtazapine was compared to a placebo. These showed that mirtazapine can help in depression:

- 46 out of 100 people who took mirtazapine experienced a clear improvement in depression symptoms (46%).
- 32 out of 100 people who took a placebo experienced a clear improvement (32%).

In other words: compared to a dummy drug, mirtazapine helped an extra 14 out of 100 people (14%). The trial which lasted 40 weeks found some evidence that mirtazapine can also prevent depression from coming back. Compared to other antidepressants, mirtazapine was not shown to have any advantages or disadvantages in the treatment of depression. It is also not clear whether mirtazapine helps to reduce anxiety or pain.

Mirtazapine caused more adverse effects than placebo treatment. Compared to people who took a placebo, an extra 8 out of 100 people who took mirtazapine stopped taking their medication because of adverse effects (8%).

## **Reboxetine: no proof that it helps in the treatment of depression**

Reboxetine was tested in a total of 17 trials. It was not found to relieve depression more effectively than placebo

treatment. Several trials compared reboxetine with SSRI antidepressants (selective serotonin reuptake inhibitors). Reboxetine did considerably worse than the other antidepressants.

Only one trial found evidence that reboxetine might have a benefit in the treatment of depression. The trial was small, involving 52 people who had very severe depression and were receiving inpatient treatment. Here reboxetine was found to relieve depression more effectively than a placebo.

One of the trials looked at whether reboxetine could prevent depression coming back. Recurrences were less common in people who took reboxetine than in people who took a placebo. The researchers concluded that reboxetine could have benefits. However, the people in this trial had quite severe depression, so it is not clear whether reboxetine also helps in people who have mild to moderate depression.

Reboxetine often caused adverse effects in the trials: compared to people who took a placebo, an extra 6 out of 100 people who took reboxetine (6%) stopped taking their medication because of adverse effects. Reboxetine was also less well tolerated than other antidepressants, such as fluoxetine (an SSRI). Overall, the results of the trials do not support the use of reboxetine – particularly because there are other antidepressants which have been shown to have a clear benefit.

Click [here](http://www.informedhealthonline.org/depression.308.56.en.html) (URL: <http://www.informedhealthonline.org/depression.308.56.en.html>) to read more about depression and other treatment options, including St John's wort and psychological treatments.

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## Note

This health information is a summary of a scientific report published by IQWiG – one of several reports on antidepressants. In a separate report, IQWiG evaluated the antidepressants venlafaxine and duloxetine. You can read about research on these medications in the treatment of depression [here](http://www.informedhealthonline.org/index.604.en.html) (URL: <http://www.informedhealthonline.org/index.604.en.html>) . This information is not an assessment of the right to have health care services reimbursed by statutory health

insurance funds in Germany. By law, decisions about the reimbursement of diagnostic and therapeutic procedures can only be made by the German Federal Joint Committee (G-BA). The Federal Joint Committee takes IQWiG reports into consideration in its decision-making process. You can find information about the decisions of the German Federal Joint Committee on its English-language website, [www.english.g-ba.de](http://www.english.g-ba.de) (URL: <http://www.english.g-ba.de>) .

## Glossary

### evidence

Evidence is what we call scientific proof from well-conducted, good-quality scientific trials that have been carefully designed to answer specific questions. Depending on the types of questions, different scientific research methods (types of study) are most appropriate to find reliable answers to these questions. Randomized controlled trials (RCTs), for example, are the best way to get reliable evidence on the effectiveness of medical treatments (interventions). This type of study, however, is not the best form of evidence for all possible questions, and does not provide the best answers to all kinds of questions, either. Epidemiological studies, for example, are very suitable for establishing well-founded proof for the spreading of a disease in the population.

### depression

Depression is one of the most common mental illnesses, and it can be mild, moderate or serious. There are several different types of depression that can be recognised by different signs. Which symptoms of depression occur and how strong and frequent they are vary from person to person. People in any social or age group can be affected, both women and men. If someone has had at least two of the following symptoms for longer than two weeks, it might mean that they are depressed: deep sadness; listlessness; loss of interest in the things they usually care about.

## **Sources**

German Institute for Quality and Efficiency in Health Care (IQWiG). *Bupropion, mirtazapine, and reboxetine in the treatment of depression. Final report A05-20C. Version 1.0.* Cologne: IQWiG. November 2009. [Executive summary (URL: [http://www.iqwig.de/download/A05-20C\\_Executive\\_Summary\\_Bupropion\\_mirtazapine\\_and\\_reboxetine\\_in\\_depression.html](http://www.iqwig.de/download/A05-20C_Executive_Summary_Bupropion_mirtazapine_and_reboxetine_in_depression.html)) ] [Full text (URL: [http://www.iqwig.de/download/A05-20C\\_Abschlussbericht\\_Bupropion\\_Mirtazapin\\_und\\_Reboxetin\\_bei\\_Depressionen.html](http://www.iqwig.de/download/A05-20C_Abschlussbericht_Bupropion_Mirtazapin_und_Reboxetin_bei_Depressionen.html)) – in German]

## **The German Institute for Quality and Efficiency in Health Care (IQWiG)**

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

## **Evidence basis of our health information**

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at [www.informedhealthonline.org](http://www.informedhealthonline.org)

## **Disclaimer**

This information was prepared and published by the German Institute for Quality and Efficiency in Health Care (IQWiG). It is based on the evidence and other scientific literature available at the time of publication. The information is intended for the use of patients in Germany. It is not intended to for use to diagnose illnesses and the information is not intended to substitute for medical advice.