

Drug treatments for Alzheimer's disease: Cholinesterase inhibitors

Three drugs in a class called cholinesterase inhibitors are used in Australia to treat Alzheimer's disease. This sheet provides information about how these drugs work, who might benefit, how they are prescribed and what questions people should ask their doctor if being prescribed any of these drugs.

What are cholinesterase inhibitor drugs?

There are several drugs for treatment of Alzheimer's disease approved for use in Australia. This sheet provides information about the three drugs called cholinesterase inhibitors. For information about another drug for Alzheimer's disease, see **Dementia Q&A sheet 3 Drug Treatments for Alzheimer's Disease: Memantine**.

Cholinesterase inhibitors offer some relief from the symptoms of Alzheimer's disease for some people for a limited period of time. These drugs are available on the Pharmaceutical Benefits Scheme (PBS) subject to certain conditions being met.

What is acetylcholine?

Nerve cells in the brain talk to each other by releasing chemicals; these chemicals are called neurotransmitters. Acetylcholine is an important neurotransmitter for memory. People with Alzheimer's disease have low levels of acetylcholine in their brain.

Enzymes called cholinesterases break down acetylcholine in the brain. If their action is inhibited, more acetylcholine is available for communication between brain cells.

How do cholinesterase inhibitor drugs work?

Cholinesterase inhibitor drugs stop or inhibit enzymes from breaking down acetylcholine when it travels from one cell to another. This means that the acetylcholine, which is in short supply in people with Alzheimer's disease, is not destroyed so quickly and there is more chance of it being passed on to the next nerve cell.

Cholinesterase inhibitors result in higher concentrations of acetylcholine, leading to increased communication between nerve cells, which in turn, may temporarily improve or stabilise the symptoms of dementia.

The use of cholinesterase inhibitors is only one possible pharmaceutical approach to treating the symptoms of Alzheimer's disease. Other neurotransmitters are involved and may also be important.

What do cholinesterase inhibitor drugs do?

The effect of these drugs varies for different people. Some will not notice any effect. Others may find that their symptoms improve slightly. And others will stay the same when they would have expected their symptoms to become gradually worse. There is no way to predict how an individual will respond.

The areas in which some people with Alzheimer's disease may find improvement are:

- ability to think clearly
- memory
- function in daily activities
- behavioural and psychological symptoms

How long do the drugs work?

People who have been prescribed cholinesterase inhibitor drugs should be reviewed within a month of starting the drug and again within six months to assess quality of life, cognitive function and behavioural symptoms. Some people with dementia report immediate benefits and some report benefits for longer periods. Some research has shown benefits can be sustained for up to five years, though it depends on the individual response.

Cholinesterase inhibitor drugs registered in Australia

Three cholinesterase inhibitors are currently licensed for use in Australia. The following is general information about these medications, which can only be prescribed by a medical practitioner. Comprehensive product information should be read before taking these medications.

Donepezil (Aricept)

This drug's generic name is donepezil. It is now sold in Australia by several pharmaceutical companies under various brand names, including Aricept. Donepezil is taken once a day and can be taken with or without food.

Rivastigmine (Exelon)

Rivastigmine is this drug's generic name. It is sold in Australia by Novartis under the brand name Exelon.

Capsules

Exelon is taken twice a day, normally with morning and evening meals.

Patch

Exelon is also available in a patch, which delivers the same drug via the skin rather than orally and may reduce gastrointestinal side effects.

Galantamine (Reminyl)

The generic name for this drug is galantamine. It is now sold in Australia by several pharmaceutical companies under various brand names, including Reminyl where galantamine is available in capsule form. It is taken once a day, preferably with food.

Are there side-effects?

Some people who take cholinesterase inhibitors experience side-effects. Potential side-effects from these drugs are more common when someone first takes them, and they often settle down with time. The most likely side effects are diarrhoea, nausea, vomiting, muscle cramps, lowered blood pressure, insomnia, fatigue and loss of appetite. Other reported side effects include falls and dizziness. If the dose is increased gradually the likelihood of side effects is lower.

Caution is required in people with a history of peptic ulcers, asthma, liver or kidney disease, or a very slow heart rate.

The type and rate of side effects vary depending on the drug prescribed and on the individual response of the person. It is recommended that this issue be discussed with your doctor.

Are these drugs effective for all people with dementia?

Clinical trials suggest that cholinesterase inhibitors may provide limited benefits for people with mild to moderately severe Alzheimer's disease and for people with dementia with Lewy bodies, vascular dementia or mixed dementia.

Clinical trials showed no difference in the effectiveness of cholinesterase inhibitors in relation to age, sex or ethnic origin.

These drugs treat the symptoms of Alzheimer's disease only and are not a cure – there is no evidence that they can halt or reverse the process of cell damage that causes the disease. It is also important to realise that these drugs will not help everyone who tries them and that an individual's response cannot be predicted.

How do you get treatment?

It is important that the person has a proper diagnosis and assessment to determine that he/she has Alzheimer's disease and to determine if the person is in the mild to moderately severe stages of the illness and therefore eligible for the PBS subsidy of the drugs.

A specialist, such as a geriatrician, neurologist or psychiatrist will usually be involved in this assessment and the initial prescription of the drug. For further information about the commonly used tests and assessments for diagnosis, see **Dementia Q&A sheet 10 Tests used in diagnosing dementia**.

Whenever a person begins taking a new drug, the doctor, patient and family members should discuss the potential side effects and how the drug may interact with any other medicines being taken.

Is there any subsidy available for these drugs?

Donepezil, rivastigmine and galantamine are approved for listing on the Pharmaceutical Benefits Scheme (PBS) and so the cost is subsidised by the Australian Government. This subsidy is only available to people with a diagnosis of mild to moderately severe Alzheimer's disease (Mini-Mental State Examination score ≥ 10). For more information about the conditions that need to be met in order to receive these medications at a subsidised rate, please see **Dementia Q&A sheet 2 PBS subsidies for cholinesterase inhibitors: What are the conditions?**

People who meet the conditions required by the PBS are able to purchase the prescription at the subsidised rates set each year by the Australian government. The prescribing doctor needs to decide that there has been a clinically significant improvement for supply to be subsidized after the first six months.

People who do not meet the criteria for the subsidy may choose to purchase the prescribed drug at full cost, which varies depending on the drug and dose. Some pharmacies may charge more and people are able to shop around to obtain a more competitive price.

PBS criteria are reviewed regularly. The latest schedule is available online at pbs.gov.au

For more information you can also refer to the Clinical Practice Guidelines and Principles of Care for People with Dementia produced by the NHMRC Partnership Centre for Dealing with Cognitive and Related Functional Decline in Older People.

What questions should you ask your doctor about any drug being prescribed?

- What are the potential benefits of taking this drug?
- How long before improvement may be noticed?
- What action should be taken if a dose is missed?
- What are the known potential side-effects?
- If there are side-effects, should the dose be reduced or should the drug be stopped?
- If the drug is stopped suddenly, what happens?

- What other drugs (prescription and over-the-counter) might interact with the medication?
- How might this drug affect other medical conditions?
- Are there any changes that should be reported immediately?
- How often will a visit to the doctor be needed?
- Is the drug available at a subsidised rate?

Dementia Australia recognises that the currently licensed Alzheimer's drugs are not a cure. It is evident however that these drugs improve the quality of life for some individuals with Alzheimer's disease.

For further information

Speak to your healthcare professional or refer to the Australian Medicines Handbook.

Further Information

Dementia Australia offers support, information, education and counselling. Contact the National Dementia Helpline on **1800 100 500**, or visit our website at **dementia.org.au**



For language assistance phone the Translating and Interpreting Service on **131 450**