

Title: Drug Therapy

Specification: Drug therapy: typical and atypical antipsychotics.

WHAT YOU NEED TO KNOW

1. Outline how drugs treat schizophrenia, including:
 - a. Typical antipsychotics
 - b. Atypical antipsychotics
2. Evaluate the use of drugs to treat schizophrenia.

Antipsychotics

Antipsychotics are a chemical treatment usually prescribed through tablets, intravenous means, or both. This treatment is based on the dopamine hypothesis, which assumes that dopamine activity is linked to schizophrenia. Drugs that treat psychotic illnesses such as schizophrenia are called **antipsychotics**. This type of medication helps the individual improve their functioning and well-being. However, they do not cure the illness, they can only reduce the symptoms so that a degree of normal functioning can occur.

1a. Typical Antipsychotics

Typical antipsychotics are used primarily to combat the **positive symptoms** of schizophrenia (e.g. **delusions** and **hallucinations**). An example of a typical antipsychotic is the drug **chlorpromazine**. The basic function of this drug is to reduce or block the effects/actions of



dopamine and therefore reduce the symptoms of schizophrenia. Drugs like chlorpromazine are **dopamine antagonists**, as they bind to dopamine receptors (particularly the D2 receptors), reducing their action and not stimulating them. By reducing stimulation of the dopamine system in the **mesolimbic system** in the brain, antipsychotic drugs can eliminate the hallucinations and delusions experienced by sufferers. Therefore, antipsychotic drugs like chlorpromazine work by blocking dopamine production through blocking the receptors in synapses that absorb dopamine and eventually normalising neurotransmission by ensuring the postsynaptic cells receive less and can't be affected by dopamine.

Typical Antipsychotics Summary:

- They are dopamine antagonists.
- They bind to the dopamine receptors, particularly the D2 receptors.
- In binding to the receptors, they block the stimulation of these receptors so they cannot absorb the dopamine.
- This normalises neurotransmission as they postsynaptic cells receive less dopamine.

1b. Atypical Antipsychotics

Atypical antipsychotics also combat the positive symptoms of schizophrenia, but there are claims that they also have beneficial effects on **negative symptoms** as well. An example of an atypical antipsychotic is **clozapine**. These drugs also work on the dopamine system but also block **serotonin** and **glutamate** receptors. Drugs like clozapine work by temporarily occupying the D2 receptors and then rapidly dissociating it to allow normal dopamine distribution, as this means the receptors still receive dopamine but just in smaller levels. These drugs are thought to be responsible for lower levels of side effects (such as tardive dyskinesia, see below) compared with typical antipsychotics. Tardive dyskinesia is associated with a variety of involuntary, repetitive movements caused by long-term or high-dose typical antipsychotics. The term *tardive dyskinesia* was introduced in 1964: **Dyskinesia** refers to an involuntary movement. The effect of these drugs can be **tardive**, meaning the dyskinesia sometimes continues or appears even after the drugs are no longer taken.

Atypical Antipsychotics Summary:

- They work on dopamine receptors as well as serotonin and glutamate receptors.
- They occupy the D2 receptors.
- By doing so, it dissociates the dopamine. This means the receptors receive dopamine in smaller levels.

There are three major differences between the two groups of drugs:

1. Atypicals have less of a risk of extrapyramidal (an area of the brain - particularly the motor function) side effects, such as tardive dyskinesia.
2. Research has indicated that atypicals have a beneficial effect on negative symptoms.
3. Atypicals are suitable for a treatment-resistant schizophrenic patient; that is they are more likely to work when typicals have failed.

Evaluation

EVALUATION OF TYPICAL ANTIPSYCHOTICS	EVALUATION OF ATYPICAL ANTIPSYCHOTICS
<p>Kapur et al. (2000) estimate that between 60-70% of D2 receptors in the mesolimbic dopamine pathway must be blocked for typical antipsychotics to be effective. Unfortunately, due to this a similar number of D2 receptors in other areas of the brain must also be blocked, which leads to side effects. One side effect is tardive dyskinesia, which often</p>	<p>Atypical antipsychotics tends to not cause the movement problems found with typical antipsychotics. For example, atypical antipsychotics lower the chances of tardive dyskinesia. Jeste et al. (1999) found that 30% of patients on typical antipsychotics (for nine months) suffered from tardive dyskinesia rates, compared to just 5% on atypical antipsychotics.</p>

<p>becomes a reason why patients stop taking their medication. There are several dopamine pathways in the brain and while blocking dopamine receptors in one of them is useful, blocking dopamine receptors in the remaining pathways, like typical antipsychotics do, may be harmful to the person.</p>	<p>Atypical antipsychotics may ultimately be more appropriate in the treatment of schizophrenia because there are fewer side effects, which means patients are more likely to continue their medications and therefore see more benefits. However, atypicals are not side effect free; they are associated with diabetes for example, which can be fatal, alongside cardiac arrest.</p> <p>There are claims that atypicals are more effective at treating schizophrenia and treat a wider range of symptoms. However, Leucht et al. (1999) conducted a meta-analysis of atypicals and found that two of the atypical drugs were only 'slightly' more effective than typical drugs, one was 'effective' and the other 'slightly worse'. Also, the claim that atypical drugs are very good at treating negative symptoms has also received little support. Indicating that atypicals may not be a superior treatment.</p>
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- Drug therapy is **effective** in reducing the symptoms of schizophrenia, especially positive symptoms. They are relatively cheap to produce making them cost-effective, easy to administer and have positive effects on many sufferers, allowing them to live relatively normal lives outside of institutions. It is estimated that less than 3% of people with schizophrenia in the UK live permanently in hospital-largely due to medication. Drug treatment is successful for a large number of people with schizophrenia, meaning more people can live in the community rather than being institutionalised.
- Drugs are more effective than placebos. **Lecht et al. (2012)** found that patients that remained on their antipsychotic medication were only 27% likely to relapse compared to 64% for those given a placebo. This shows that drugs are successful in preventing relapse.
- Drugs are only palliative, meaning that they only treat the symptoms of schizophrenia and do not offer a cure. If a patient stops taking their medication, their schizophrenia symptoms will return. Those from a Psychodynamic perspective argue that drugs treat the symptoms of the illness but not the cause.

This leads to the '*revolving door phenomenon*', where patients are constantly being discharged and re-admitted to the hospital. They take their medication and therefore feel better; then they wrongly assume that they are cured and stop taking their drugs, only to get ill again and need to be hospitalised.

- There are ethical problems with the use of antipsychotic drugs. If side effects, death and social consequences are taken into account, a cost-benefit approach would most probably be negative. In the USA, a large out-of-court settlement was awarded to a tardive dyskinesia sufferer by the Human Rights Act 1988. Also, many within the psychiatric community see the widespread use of antipsychotics as being fuelled by the powerful influence of drug-producing companies, which stand to make huge profits from their continued use.

Possible Exam Questions

1. Explain what is meant by typical and atypical antipsychotics. (6 marks)
2. Briefly evaluate typical and atypical antipsychotics in the treatment of schizophrenia. (6 marks)
3. Application: Sarah has recently been diagnosed with schizophrenia, and her doctor has proposed putting her on antipsychotics. Using your knowledge of schizophrenia, what advice would you give Sarah about taking drugs to treat her symptoms of schizophrenia? (4 marks)
4. Essay: 'Therapies can be time-consuming and, in some cases, uncomfortable for the client. It is, therefore, very important to offer the most appropriate and effective type of treatment.' Outline and evaluate the biological drug therapy used in the treatment of schizophrenia. (16 marks)
5. Essay: Outline and evaluate drug therapies in the treatment of schizophrenia (16 marks)