Second Edition

# Psychiatry

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pocket tutor



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# Psychosis and schizophrenia

chapter 3

Psychosis involves disturbances of thought and perception. Those affected may be described as having 'lost contact with reality'. Common symptoms of psychosis are hallucinations and delusion, which can be highly distressing.

Schizophrenia is the most important psychotic disorder, but psychosis also has many other associations. For example, it can follow a stressful event, be the result of a non-psychiatric illness such as an infection or drug use, or be part of a mood (affective) disorder (Chapter 4). The latter are separated by psychiatric classifications from non-affective psychoses, which are the focus of this chapter.

## 3.1 Clinical scenario

### Seeking asylum

#### Presentation

Ahmed, aged 19 years, has come to the emergency department, accompanied by his cousin Tarek.

Ahmed is quiet and withdrawn, and at times appears perplexed by the situation. Although he is comfortable with Tarek, he seems to be suspicious of strangers. Initially, he is slow to acknowledge questions, and there is little reactivity to his facial expressions.

Tarek starts to describe what the difficulties are, with no objection from Ahmed. Tarek explains that they are both seeking asylum in the UK, having arrived from Syria 2 months ago. He adds that they both have a reasonable command of English. The journey from Syria lasted several months, and was 'very hard, very scary'. Ahmed's younger brother drowned crossing the Mediterranean, and the cousins became separated from other family members while travelling through Europe. Tarek indicates that he does not wish to talk more about this, but says that he thinks that the journey 'mentally changed' Ahmed.

### Diagnostic approach

This is just a snapshot of the wider picture. Further history and a mental state examination (MSE) are required to gather more information.

The terrible experiences both Ahmed and Tarek have endured should be acknowledged. Ahmed appears to have been particularly affected, but Tarek can also be made aware that support is available for him in the future, if he wishes to receive it. For Ahmed, exploring the various traumas over time may be helpful, both in terms of causes and triggers, and in thinking about therapeutic approaches.

Ahmed does not seem to want to talk at present. He could be encouraged again, but if it remains the case, there is more useful collateral information to gather from Tarek. As well as providing more detail about more recent events, it would be helpful to better understand Ahmed's past, for example his 'premorbid' personality and functioning, any past psychiatric and medical history, and family history. All the while, attempting to establish a relationship with Ahmed and generate a safe space for him to share his thoughts and feelings, is necessary to build trust.

### Initial history

Tarek does not think that Ahmed has ever experienced mental health problems before. Aside from always being a bit quieter than his siblings and cousins, there was nothing else to note. Several members of their extended family have had mental health difficulties, but Tarek is unsure of the details.

For the past 6 weeks, Ahmed has become much less communicative. He seems really scared, especially at night, and fights to stay awake. Tarek is unaware of any reason why Ahmed should be scared. As well as getting little sleep, he is eating less than before. He also spends more time indoors, with the curtains closed, and has stopped watching TV. Tarek wonders if Ahmed is feeling sad about what has happened, but he cannot be sure, because Ahmed can seem happy or laugh when it seems there is no reason.

Tarek adds that sometimes he hears Ahmed talking to people, even though there is no one around. He usually seems

frightened, and sometimes angry. However, he has never become angry or aggressive with anybody.

### Diagnostic approach

So far, Ahmed's initial behaviour and Tarek's account suggest that Ahmed is experiencing symptoms of psychosis. Notably, he may hear auditory hallucinations at times. Other pointers include his paranoia, perplexity, and flattened (sometimes incongruous) affect.

Further history and an MSE are required, focusing on psychosis but also covering other key areas.

### Further history

Ahmed is now a little more comfortable and willing to share his perspective. He falteringly expresses his fears that the human traffickers who arranged for the family's sea crossing are trying to kill him, as they did to his brother. He hears them planning what to do to him. They track him and always know what he is doing, because they talk about his thoughts and his actions. Ahmed says he has thrown away his old clothes and his phone, believing that they may have been bugged. However, this does not seem to have worked, and he thinks that the traffickers must be using other technology. He wonders if they can read his thoughts.

Ahmed becomes visibly more anxious and upset. He tearfully explains that he knows that the 'bad people' are getting closer to him, because they have been sending him messages through car number plates and through people on TV. He must stay alert at night to stay safe, but this is very difficult to keep doing; 'I just want it to stop'.

### Diagnostic approach

Ahmed has described several psychotic symptoms, including auditory hallucinations, and probable delusions of persecution, thought interference and perception.

**Clinical insight**

Schizophrenia cannot be understood without understanding despair.

R. D. Laing

It seems clear that he is experiencing a first episode of psychosis. A diagnosis of schizophrenia would not be made at this stage.

Further history can be obtained and an MSE carried out; a focus on Ahmed's mood, along with a comprehensive assessment of risk, is key. It would also be useful to exclude organic causes, for example by asking about substance misuse and carrying out basic investigations.

Eventually, a collaborative management plan can be made, incorporating social, psychological and pharmacological aspects. Although more acute options may be required in the short term, depending on the immediate risk, Ahmed should be referred to the early intervention in psychosis team.

## 3.2 Psychosis and schizophrenia

Schizophrenia is the most common non-affective psychosis diagnosis. It is a syndrome comprising a diverse range of symptoms. Modern classifications place psychotic symptoms at the centre, although other types of symptoms are also recognised.

Schizophrenia is the most common non-affective psychosis diagnosis. It is a circular concept: it is defined by its constitutive symptoms, symptoms themselves defined according to the concept of 'schizophrenia'. There is no one pathognomonic feature, no specific investigation, and no single affected group with similar patterns of experiences and outcomes.

Because of its diversity of symptoms, the idea of schizophrenia as a single, discrete disorder is slowly becoming obsolete.

### Clinical insight

Research from the UK suggests that people from black and minority ethnic communities are:

- More likely to receive a diagnosis of schizophrenia
- More likely to experience compulsory admission or treatment
- Less likely to be offered psychological therapy

### Epidemiology

About 7 in 1000 individuals will receive a diagnosis of schizophrenia in their lifetime. Point prevalence is around 0.4%. Prevalence estimates show that men and women are affected in equal numbers, although incidence rates show that for

every three men who develop schizophrenia, two women are affected. The onset of psychosis is usually in early adulthood, although it tends to be later in women:

- Men: 17–30 years
- Women: 20–40 years

A later presentation should prompt investigations to rule out an organic cause.

There are strong associations between increased incidence and prevalence of schizophrenia and migrant or refugee status. The incidence of schizophrenia is higher in urban areas than in mixed urban–rural settings, and may also be higher in high-income countries than in low- and middle-income countries.

## Causes and pathogenesis

Some of the most robust evidence for potential causative factors in psychosis and/or schizophrenia comes from epidemiological research.

Traditionally, schizophrenia was viewed as a brain disease, with predominantly genetic causes. However, social factors now receive much more emphasis than before.

People with schizophrenia vary greatly in their experiences. Therefore it is likely that causes and risk factors (including genetic and environmental) are equally heterogeneous.

### Stress–vulnerability model

According to the stress–vulnerability model, also known as the vulnerability–stress–coping model, psychosis results when a vulnerable individual encounters sufficient stress to overcome their coping ability. Vulnerability encompasses enduring but changeable traits, determined not only by genetics but also by psychosocial factors, such as challenging relationships and life events. Stressors may be internal (e.g. puberty, physical manifestations of external stress, or drug use) or external (e.g. new responsibilities, bereavement, or low-level daily annoyances). Stressors require the person to adapt, or cope. The amount of stress required to trigger psychosis is inversely related to vulnerability; the higher the vulnerability, the lower the stress needed to trigger psychosis (**Figure 3.1**).

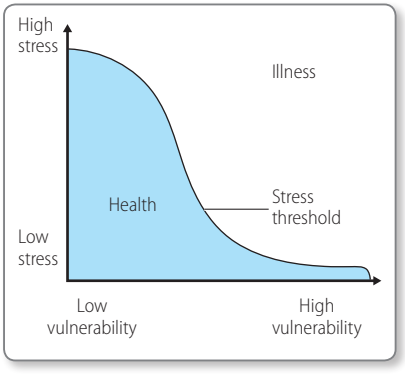


**Figure 3.1** The stress–vulnerability model. Individuals with high vulnerability will only require a low level of stress to trigger psychosis; individuals with low vulnerability require high levels of stress for psychosis to occur.

In this model, anyone can develop psychosis, should the necessary conditions arise.

### Life experiences

Trauma or stress may be acute or chronic. It may result from traumatic or fundamental life events, or seemingly minor background issues. Examples include:

- Childhood abuse
- Social discrimination (abuse, deprivation, victimisation, racism)
- Poverty or financial worries
- Transition to adulthood
- Bereavement
- Painful memories
- Social isolation, loneliness
- Poor housing
- Strained relationships

### Urbanisation

People who grow up in urban areas are more likely to develop schizophrenia. The reasons for this association are unclear, but theories include the effects of stress related to overcrowding and environmental pollutants.

### Migration

Immigrants and their children are more likely than the rest of the population population to be diagnosed with schizophrenia. A raised incidence of schizophrenia in the first and second generation African–Caribbean population is a particularly well-replicated finding in the UK. The evidence does not support genetic or other biological explanations for these associations; social factors are thought to be key contributors:

- Stressors associated with migration (e.g. dangers or hardships in refugees' or migrants' own countries, the journey itself)
- Social isolation, difficulties integrating
- Discrimination, bureaucratic difficulties
- Diagnostic bias by clinicians

#### Clinical insight

In the 1950s, it was noticed that the risk of a schizophrenia relapse was lower in people discharged to live alone than in those who returned to their partner or parents. Subsequent research identified high amounts of a combination of overinvolvement, critical comments or hostility (referred to as 'high expressed emotion') from family members as a significant risk factor for relapse. This is a complex issue. It is important to remain non-judgemental and to consider how such reactions may be borne of misunderstandings, feelings of guilt, distress or anxiety.

### Cannabis use

On average, cannabis users may be 40% more likely to develop a psychotic illness, particularly if they start in adolescence. The risk increases with use.

### Perinatal and early childhood

Associations exist between schizophrenia and perinatal and early childhood factors (e.g. obstetric complications, being born in winter or spring, and maternal stress).

### Genetics

Although environmental factors appear to be more significant, many different genes do confer susceptibility to the disorder. Each of these genes has a minor effect, and there is variability between populations.

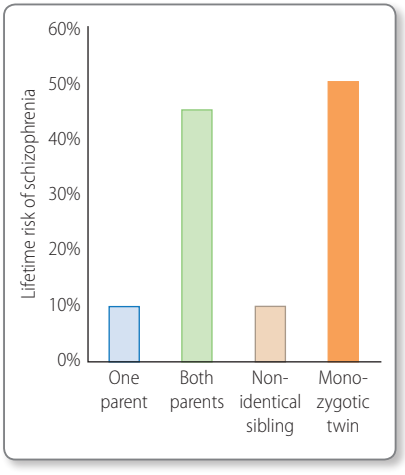


**Figure 3.2** Lifetime risks of developing schizophrenia in relatives of affected individuals.

**Figure 3.2** shows the approximate risks associated with various family histories of schizophrenia. These risks are likely to be the results of a combination of environmental and genetic factors.

## Dopamine hypothesis

The dopamine hypothesis of schizophrenia posits that positive symptoms (see **Table 3.1**) are associated with an excess of dopamine in subcortical brain regions. Two main observations support this:

- $D_2$ agonists, such as amphetamines, induce psychosis
- All drugs deemed to be effective antipsychotics block $D_2$ receptors (although the most effective, clozapine, is a weak $D_2$ antagonist)

A revised hypothesis proposed that:

- Positive symptoms result from raised dopamine in the mesolimbic pathways (**Figure 3.3**)
- Negative symptoms are the consequence of lowered dopamine in the mesocortical pathways

Positron emission tomography studies suggest that acute psychosis may be associated with excessive presynaptic synthesis

of dopamine in the striatum, rather than a primary abnormality of dopamine receptors.

Overall, the dopamine hypothesis is enduring, but questions remain:

- The actual cause of altered dopamine levels is unknown
- Glutamate and *N*-methyl-D-aspartic acid (NMDA) receptors may also be involved

| Symptoms | Clinical features |
|---|---|
| Positive symptoms (additional to normal experience, or exaggerated distortions of normal processes) | Delusions |
| | Thought disorder |
| | Hallucinations |
| Negative symptoms (loss or reduction of normal functions) | Anhedonia |
| | Flattened affect |
| | Apathy, avolition |
| | Social withdrawal |
| | Poverty of speech (alogia) and thought |
| | Poor self-care |
| Disorganised symptoms (noticeably chaotic or unpredictable behaviour that is not thought to be secondary to delusions) | Poorly planned or purposeless actions |
| | Bizarre or silly behaviour |
| | Agitation |
| | Disinhibition |
| Cognitive symptoms (sometimes subtle abnormalities) | Inattention |
| | Problems with learning |
| | Poor memory |
| | Difficulties with executive function, e.g. planning and abstraction (overlap with disorganised symptoms) |
| Affective symptoms | Depression |
| | Anxiety |
| | Elation |

**Table 3.1** A classification of the clinical features of schizophrenia

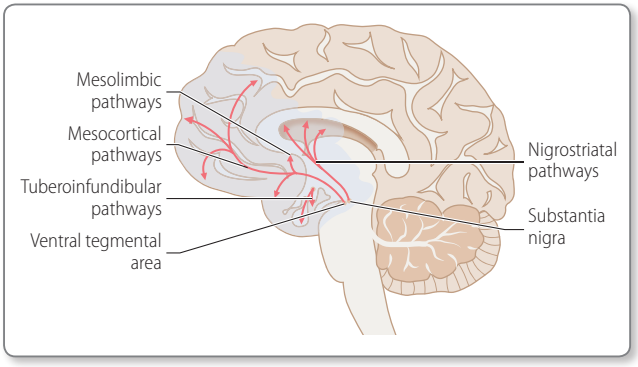


**Figure 3.3** Dopaminergic pathways in the brain.

## Clinical insight

Dopaminergic pathways include:

- Mesolimbic pathways: the ventral tegmental area (VTA) to the nucleus accumbens in the limbic system (hyperactivity may be associated with positive symptoms)
- Mesocortical pathways: the VTA to the frontal cortex (hypoactivity is said to relate to negative symptoms)
- Nigrostriatal pathways: the substantia nigra to the striatum (antipsychotics' actions here lead to extrapyramidal side-effects)
- Tuberoinfundibular pathways: the hypothalamus to the pituitary (antipsychotics' actions here lead to hyperprolactinaemia)

- Many known environmental risk factors also alter dopaminergic and other types of neurochemical regulation

### Neuroanatomy

MRI studies suggest that there may be structural brain abnormalities at first onset of psychosis, but if present, they are subtle. Subsequent changes are linked to environmental factors (e.g. antipsychotics and substance misuse) rather than neurodegeneration.

## Clinical features

Key symptoms can be separated into positive, negative and disorganised categories; cognitive and affective categories are also used (**Table 3.1**).

Positive symptoms are usually most prominent, especially early on, and tend to be the major factors in diagnosis (see *Diagnostic criteria and differential diagnoses*). Other types of symptom may be equally distressing and disabling, even if less prominent.

The presence of negative symptoms varies. Such symptoms may partly be attributable to feelings of depression or helplessness, a response to overwhelming feelings, or side effects of antipsychotic medication. Unfortunately, they may be misconstrued as, for example, laziness, indolence or obstinacy.

### Schneider's first-rank symptoms

In 1959 Kurt Schneider proposed a set of 'first-rank' symptoms, characterised by a transgression of the boundary between the person's internal world, and the external world. They were meant to be pathognomic of schizophrenia, but are neither specific nor sensitive. Despite this, they still influence examiners.

**Auditory hallucinations** These include:

- **Third person**: voices discuss the patient (e.g. 'he looks shifty')
- **Running commentary**: voices comment on the patient's thoughts or actions
- **Thought echo**: the patient's thoughts are heard spoken aloud. This is also known by the German *gedankenlautwerden* ('thoughts become loud'); can be thought of as a manifestation of the person's subjective loss of possession over their thoughts

**Delusions of thought control** Also known as thought alienation. These include:

- **Thought broadcast**: usually described as someone or something else having access to the patient's thoughts, often in the form of a secondary delusional elaboration (e.g. 'MI5 is reading my mind')
- **Thought insertion**: usually described as someone or something else placing thoughts into the patient's mind; the insertion is thought to be a delusional explanation for the subjective experience of having thoughts over which the person has no control

## Clinical insight

Remember the definition of a delusion: 'a fixed belief that is held in the face of evidence to the contrary, not explained by culture or religion'. Ideas thought to be delusional by some can be considered normal by those of a different culture. Similarly, visions and voices regarded as hallucinations by some, may be a normal religious or spiritual experience for others. Consider contextual factors to avoid misinterpretations.

- **Thought withdrawal**: the opposite experience to thought insertion, this can be regarded as a delusional interpretation of thought block – when the mind is suddenly empty of thought (distinct from the sensation of being unable to think when anxious)

**Passivity phenomena** The person experiences a lack of control over aspects of their bodily functioning, again often producing a delusional explanation. These include:

- **Somatic passivity**: the experience of someone or something else having control over the patient's bodily sensations
- **Passivity of affect, volition, or impulse**: the experience of someone or something else having control over the patient's affect, volition or impulses

**Delusional perception** A normal perception is given a delusional significance.

### Course of illness

The presentation, course and outcome of schizophrenia differ widely between people.

Onset of schizophrenia may be either insidious or acute. An at-risk/prodromal phase may precede the onset. This phase may include subtle negative-type symptoms, strange thoughts and behaviours, anxiety, depression and preoccupations, which develop insidiously over a varying period (up to several years) and lead to deterioration in the patient's personal functioning.

People usually first present to services with psychotic symptoms and bizarre behaviour. There may also be clear negative symptoms at this time, although their onset is more variable.

Progressive deterioration is not typical. Most people experience long-term remission and functional recovery. Long-term

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