Psychiatric causes of behavioural change in adults less than 65 years old

**Opening Vignette**

Mr. Leow, aged 64 years, presents to the polyclinic with a memo from his nursing home stating 3 months of behavioural change. He was observed to have been cleaning his environment excessively, inexplicably even climbing onto the roof in the middle of the night to clean. His restlessness and the ruckus made by him disturb the other residents of the nursing home, and his nurses are finding it difficult to supervise him.

**WHAT IS ALTERED BEHAVIOUR?**

Altered mental state is a broad presenting complaint used to describe abnormal consciousness, cognition or behaviour.\(^1\) In the older population, delirium, specifically a fluctuation in orientation and attention in an ill elderly person, is a main consideration. In the slightly younger adult population of less than 65 years of age, altered mentation can vary greatly in presentation, severity and underlying cause. Acute behavioural change is a subset of altered mental state and does not involve diminished consciousness or awareness.\(^1\) There is no fixed definition. Instead, behavioural changes are usually reported deviations from the patient’s baseline and behaviour generally accepted as appropriate according to cultural norms. These can be in the form of psychomotor agitation, changes in personality, bizarre actions, heightened or decreased energy and others.\(^2\) Most represent either an organic or psychiatric condition, but all warrant expedient and thorough medical evaluation.

There are wide-ranging organic and psychiatric aetiologies causing behavioural changes in adults (Appendix). For the purpose of this article, we will focus on common psychiatric conditions causing altered behaviour.

**HOW RELEVANT IS THIS TO MY PRACTICE?**

Patients with severe and acute changes in behaviour and mental states present more commonly to the emergency department or psychiatric services than primary care clinics.\(^2\) Primary care physicians may encounter patients with subacute presentations or behaviour that is less disruptive to daily life.

There is no data documenting the prevalence of behavioural changes presenting to the primary care clinic. There is, however, high prevalence but underrecognition of mental disorders presenting to primary care.\(^1^3^5^\) resulting in delayed diagnoses and a significant duration of possible untreated psychiatric disorder.\(^6\) This is juxtaposed to the fact that primary care clinics remain the preferred setting patients with mental disorders first seek help from,\(^3^5^7\) making it all the more necessary for family physicians to differentiate psychiatric conditions from organic causes.

**WHAT CAN I DO IN MY PRACTICE?**

**History and examination**

As much as possible, corroborative history should be obtained.\(^8\) Physicians often pick up valuable clues from patients’ or, in this case, caregivers’ observed accounts of the presenting complaint. In an otherwise broad and ill-defined presentation, contextual clues from the caregiver’s accounts help to narrow differentials. A reliable third party’s observations will also facilitate objective comparison between the patient’s baseline and the current pathological behaviour.\(^9\)

Helpful questions include the following:

1. What was the behavioural change observed?
2. Was the onset sudden or gradual?
3. Are there intermittent or fluctuating symptoms?
4. Was there a precipitating event?
5. What perpetuates the behaviour and what alleviates it?
6. What has the progress been since?
7. What was the patient’s baseline mental state, behaviour, personality, cognition and function like?

Severity can be assessed by the degree of disruption to the individual’s function, in terms of activities of daily living, occupation and interpersonal relationships. Risk of self-harm

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**Box 1. Criteria for referral to emergency department.**

| Features suggestive of dangerous conditions\(^1\) |
|---|
| Unstable vital signs |
| Abnormal GCS |
| Presence of fever |
| Severe headache |
| Acute onset of behavioural change |
| History of head injury or trauma |
| Neck stiffness |
| Focal neurological deficit |
| Features suggestive of raised intracranial pressure |
| Suspicion of substance abuse and withdrawal states |
| Multiple comorbidities |

| Features that pose danger to self or others |
|---|
| Agitation despite de-escalation measures |
| Aggression |
| Suicidal or homicidal intent |

GCS: Glasgow Coma Scale
Table 1. Psychiatric differential diagnoses to changes in behaviour in adults less than 65 years old.

| Disorder                        | Type of behavioural change and clinical features                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Late-onset schizophrenia        | Hallucinations – auditory, visual, tactile or olfactory, complicated delusions – persecutory, partition, paranoid   |
|                                  | Thought disorders, affective blunting (although present, these features are less common than in their younger counterparts) |
|                                  | Incoherent or tangential speech, use of neologisms, dishevelled, unkempt appearance                                 |
|                                  | Premorbid functioning less impaired than early-onset schizophrenia                                              |
|                                  | Positive family history                                                                                            |
| Directed bipolar disorder       | Mania episodes: extreme extroversion, heightened energy, behaviour that crosses social limits and interpersonal boundaries, impulsivity, high-risk behaviour, promiscuity, increased interpersonal conflicts, pressured speech, flights of fancy, elation, lack of insight |
|                                  | Depressive episodes: recurrent episodes, increased or decreased appetite or sleep                                  |
|                                  | Positive family history                                                                                            |
| Depressive disorder             | Sleep, appetite disturbance (increased or decreased)                                                               |
|                                  | Low mood, suicidal behaviour, decreased participation, anhedonia, decreased energy                                |
|                                  | Depressed affect, poor eye contact, paucity of speech, mood-congruent hallucinations, inattention                  |
|                                  | Psychomotor retardation                                                                                            |
| Anxiety disorders               | Each specific anxiety disorder has its own defining features. Common features: avoidant behaviour, sleep disturbance, physical symptoms, irritability |
|                                  | Dependent on specific anxiety disorder                                                                             |
| Dementia                        | Common features: cognitive impairment, decline in instrumental activities of daily living and independence and at least one cognitive domain being affected |
|                                  | Incidence increases with age; most patients are above 60 years of age                                              |
|                                  | Insidious onset, steady progression                                                                               |
|                                  | Temporal relation to cerebrovascular event                                                                         |
| Lewy body dementia              | Detailed and complex visual hallucinations, fluctuating cognition, sleep behaviour disorder, parkinsonism          |
|                                  | Gradual onset                                                                                                     |
| Frontotemporal dementia         | Behavioural variant: apathy, disinhibition, speech and language changes, hyperorality, socially inappropriate behaviour |
|                                  | Semantic: fluent speech, lack of word with specific meaning, agnosia                                               |
|                                  | Progressive non-fluent aphasia: hesitant speech, difficulty with naming, grammatical errors                         |
|                                  | Memory usually preserved                                                                                          |
|                                  | May exhibit palmo-mental reflex, gabellar tap, grasp reflex, although non-specific. Rigidly and parkinsonism may also occur |
| Alcohol misuse                  | Acute intoxication                                                                                                |
|                                  | Disinhibited behaviour with slurred speech, incoordination and memory impairment                                    |
|                                  | Acute onset                                                                                                       |
|                                  | CAGE questionnaire for alcohol dependence                                                                          |
|                                  | Delirium tremens (alcohol withdrawal)                                                                             |
|                                  | Agitation, hallucinations with tachycardia, hypertension, tachypnoea, hyperthermia and diaphoresis                  |
|                                  | Onset between 48 and 96 h after last drink                                                                       |
|                                  | CIWA score                                                                                                        |
|                                  | Wernicke encephalopathy                                                                                            |
|                                  | Apathy, disorientation with memory impairment, oculomotor disfunction and ataxia                                   |
|                                  | History of chronic alcohol intake                                                                                  |
|                                  | Gradual onset                                                                                                      |
| Disorders with triggers          | Post-traumatic stress disorder                                                                                    |
|                                  | Avoidant behaviour, hypervigilance, flashbacks and somatic symptoms                                               |
|                                  | Temporal relationship with trigger                                                                                |
|                                  | Postpartum psychosis                                                                                               |
|                                  | During pregnancy, or up to 4 weeks of delivery                                                                    |
|                                  | Religious trance and possession states                                                                             |
|                                  | Presence of an alter ego and loss of identity, inability to control behaviour, related to religious or cultural rituals |
|                                  | Drug abuse, intoxication or withdrawal (see Appendix)                                                             |

*Includes generalised anxiety disorder, panic disorder, social phobia, agoraphobia, post-traumatic stress disorder, obsessive–compulsive disorder, other specific phobias. 1FAB is essential in testing for frontotemporal dementia as MMSE may be relatively preserved in early disease. 2CIWA—Clinical Institute Withdrawal Assessment for Alcohol, FAB—Frontal Assessment Battery, GAD—Generalised Anxiety Disorder, MMSE—Mini-Mental State Examination, PHP—Patient Health Questionnaire.
and/or harm to others needs to be assessed to decide the need for emergent hospital or psychiatric facility admission. See Box 1 for the suggested criteria for referral to the emergency department.

For all patients, a set of vital signs should be recorded and neurological and mental state examinations performed. Where there is suspicion, examination of appropriate systems based on pertinent history should be carried out, for instance, examination for bruising, cataracts, abdominal striae and supraclavicular fat pads for Cushing’s syndrome in patients with history of exogenous steroid ingestion (see Appendix for the list of organic causes).

Although not diagnostic by individual components and many organic conditions may result in similar mental status presentations, the mental state examination (MSE) offers invaluable clues to diagnosis[2,10] and completes the evaluation. See Figure 1 for the suggested algorithm for evaluation in a clinic. Primary care physicians ought to be familiar with the components of the MSE. For instance, a blunted affect, evidence of self-neglect, hallucinations or paranoia support diagnosis of psychosis, whether primary or secondary to organic causes.[11] Inattention may be present in substance abuse, mood disorders or schizophrenia. Observations of speech and behaviour are helpful – disorganised speech or paucity of speech occurs in psychotic conditions or depression, word-finding difficulty in dementia and pressured speech in mania or thyrotoxicosis.[10]

**Approach**

Due to time constraints in the clinic setting, a concise and clear approach to evaluating the patient with behavioural changes is necessary. Clinicians may follow the algorithm below to decide on disposition.

Patients who are clinically stable with manageable behaviour and who do not urgently require inpatient investigations can continue to be evaluated in the clinic. Basic blood tests ought to be performed before attempting to attribute the behavioural disturbance to psychiatric origins.[5,9,12] Where there is clinical suspicion, tests for human immunodeficiency virus, syphilis, or antinuclear antibody and erythrocyte sedimentation rate for systemic lupus erythematosus can be performed.[8]

**WHEN SHOULD I REFER TO A SPECIALIST?**

One should bear in mind that oftentimes, longitudinal follow-up and observation of the patient’s progress over time is necessary for the diagnosis to be reached. Revisitation of the patient’s presentation and further corroborative history may be needed to revise diagnoses as patient’s symptomology evolves. When diagnoses are not clear-cut or when the initial treatment is ineffective, specialist consult should be sought.

**Psychiatric differentials**

See Table 1 for various psychiatric differentials and their features

**Late-onset schizophrenia**

Although generally diagnosed in late adolescence or early adulthood, there is a significant proportion of patients, estimated to be 23.5% from one study,[3] whose symptoms of psychosis only present later in life, after 40 years of age. Patients with late-onset (defined as onset after 40 years of age) or very late-onset (defined as onset after 65 years of age) schizophrenia differ from their younger counterparts in that they have more
positive than negative symptoms. Among positive symptoms, the prevalence of complex visual, tactile and olfactory hallucinations, paranoid, persecutory and partition delusions is higher than that of thought disorders and disorganisation.[11] These patients also tend to be female and have better premorbid function and prognosis.[11,12] In primary care, there are often a myriad of non-specific prodromal symptoms that result in frequent primary care attendances many years before the diagnosis of psychosis is made, suggesting that there is room for earlier identification of at-risk individuals. These range from a variety of somatic complaints, mood-related symptoms and changes in behaviour, such as impaired personal grooming, social withdrawal and odd behaviour, to the more obvious changes in perception.[6] Psychotic symptoms are commonly associated with depression, anxiety, substance abuse[8] and other chronic medical conditions such as diabetes, ischaemic heart disease, autoimmune conditions and chronic lung disease.[6] Very late-onset psychosis is further associated with sensory deficits such as vision or conductive hearing loss.[3,11] These comorbidities ought to be explored and treated where possible.

Undiagnosed bipolar disorder

Bipolar disorders are frequently missed or misdiagnosed as depression in primary care.[4,13] Depressive episodes are frequently the first presentation of bipolar disorder, with episodes of extroversion and increased energy unrecognised as manifestations of mania or hypomania. Certain behavioural changes can be subtle, such as frequent changes in jobs, legal trouble in the past or recurrent depression not responding to antidepressants.[13] With increasing prevalence of depression being managed in primary care[4] and the use of antidepressants as monotherapy being contraindicated in mania, every patient suspected to have depression should be screened for bipolar disorder.

Frontotemporal dementia

Frontotemporal dementia (FTD) is another condition underrecognised in primary care, often resulting in significant delays in diagnosis. There are three variants of FTD: behavioural variant FTD (bvFTD), semantic dementia and progressive non-afluent aphasia. Although distinct, all three conditions overlap in inappropriate behaviour, emotional blunting, loss of insight and relatively preserved memory and visuospatial ability. Behavioural changes in bvFTD occur insidiously over months with decline in social conduct, apathy, disinhibition and poor impulse control manifesting as unwanted sexual advances, hoarding, roaming and hyperorality.[14] As with other major neurocognitive disorders, there must be a deterioration in baseline function, whether interpersonal, occupational or daily function, for FTD to be diagnosed. In contrast to Alzheimer’s disease, anti-cholinesterase inhibitors are contraindicated in the treatment of bvFTD due to preserved cholinergic function[14,15] and may, in fact, worsen the behaviour. N-methyl-d-aspartic acid antagonists show limited efficacy. Instead, treatment is usually targeted at relief of symptoms and management of behaviour.

Take-Home Messages

1. Patients with psychiatric conditions frequently present to primary care, either for prodromal symptoms long before their symptoms manifest or when their behavioural change becomes noticeable by caregivers. A high index of suspicion and thorough evaluation are needed to avoid missing the diagnosis.

2. Corroborative history from a caregiver or family member is crucial in establishing the nature of the complaint, as it provides a reliable picture of the patient’s baseline behaviour.

3. Organic conditions, including drug causes, ought to be evaluated first in changes in behaviour before psychiatric diagnoses can be made. These may require extensive organic work-up, for which a referral to the emergency department for admission is indicated.

4. Late-onset schizophrenia is an important diagnosis to consider, especially if there are complex hallucinations, delusions preceded by prodromal symptoms.

5. Concomitant mood disorders, substance abuse, sensory loss and chronic medical conditions ought to be evaluated and treated in patients with possible psychosis.

6. All patients presenting with depression ought to be also evaluated for bipolar disorder to prevent misdiagnosis and wrong treatment.

7. FTD should be considered when there is a decline in cognitive function with apathy, poor impulse control or deterioration in interpersonal relationship.

Closing Vignette

Due to disruptive behaviour, Mr. Leow was eventually admitted to an acute hospital for work-up. He underwent toxicology studies, further blood tests, a lumbar puncture and magnetic resonance imaging of the brain. All tests were negative, except for uniform atrophy of frontal, temporal and parietal lobes. Further cognitive testing showed frontal lobe dysfunction and moderate cognitive impairment. With an impairment in judgement, impulsivity, lack of insight and an absence of hypomania features, Mr. Leow was eventually diagnosed with FTD. He was discharged after all investigations were complete, initiated on a selective serotonin-reuptake inhibitor and given outpatient specialist follow-up on his behaviour.

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Conflicts of interest
There are no conflicts of interest.

Supplementary Material
The Appendix 1 is available online.
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### SMC CATEGORY 3B CME PROGRAMME

**Online Quiz:** https://www.sma.org.sg/cme-programme

**Deadline for submission:** 6 pm, 18 November 2022.

| Question                                                                 | True | False |
|-------------------------------------------------------------------------|------|-------|
| 1. Patients with psychiatric conditions rarely present for the first time to primary care. |      |       |
| 2. During the first consult, a complete neurological examination should be done to ensure there is no dangerous intracranial cause of the change in behaviour. |      |       |
| 3. There is no need for blood tests to be done if there are no clinical features suggestive of organic conditions. |      |       |
| 4. If there is no history of illicit substance abuse, drug causes are unlikely to be the cause of changes in behaviour. |      |       |
| 5. Beta-blockers can cause depression, sleep disturbances and psychosis. |      |       |
| 6. Besides asking for any new prescriptions of medications recently, patients should also be asked for any over-the-counter medication, herbal or traditional medication intake, any recent titration of doses of existing medication and cessation of previous medication. |      |       |
| 7. Patients can present with years of prodromal symptoms before the diagnosis of schizophrenia is made. |      |       |
| 8. Late-onset schizophrenia accounts for less than 10% of all patients with schizophrenia. |      |       |
| 9. Patients with late-onset schizophrenia tend to have poorer premorbid function. |      |       |
| 10. Very late-onset schizophrenia is associated with sensory deficits such as hearing or visual loss. |      |       |
| 11. Persecutory, paranoid and partition delusions, visual, tactile and olfactory hallucinations are more common than avolition and blunted affect in late-onset schizophrenia. |      |       |
| 12. A diagnosis of schizophrenia can be made after symptoms have persisted for a duration of 6 weeks. |      |       |
| 13. Bipolar disorder should be considered when patients have recurrent depressive episodes that do not respond to antidepressants. |      |       |
| 14. Bipolar disorder can be treated with selective serotonin-reuptake inhibitors as monotherapy. |      |       |
| 15. Social history to elicit frequent changes in jobs, marital problems and criminal history is important to detect subtle features of bipolar disorder. |      |       |
| 16. Without memory loss, a patient cannot be diagnosed with dementia. |      |       |
| 17. Majority of dementia cases under the age of 60 years is caused by frontotemporal dementia. |      |       |
| 18. Magnetic resonance imaging of the brain is required for the diagnosis of frontotemporal dementia to be made. |      |       |
| 19. The Mini-Mental State Examination questionnaire is helpful in screening for frontal lobe dysfunction. |      |       |
| 20. Frontotemporal dementia can be treated with selective serotonin-reuptake inhibitors. |      |       |
APPENDIX 1

A. Possible Causes

Conditions causing changes in behavior in adults span over a wide range of organic and psychiatric disorders. In such heterogeneity, a useful etiological approach is the adapted ‘VITAMINS ABCDE’ mnemonic.\(^{(1-3)}\)

**Supplementary Table 1. Organic and non-organic causes of behavioral change.\(^{(4-7)}\)**

| Category               | Causes                                                                 |
|------------------------|------------------------------------------------------------------------|
| Vasculopathy           | Cerebral ischemia and infarction                                       |
|                        | Cerebral venous thrombosis                                             |
|                        | Cerebral hemorrhage                                                   |
|                        | Moya Moya disease                                                     |
|                        | Hypertensive encephalopathy                                            |
| Infective              | Encephalitis                                                           |
|                        | Meningitis                                                             |
|                        | Brain abscesses                                                        |
|                        | HIV                                                                    |
|                        | Neurosyphilis                                                          |
|                        | Tuberculous meningitis                                                |
|                        | Toxoplasmosis                                                          |
|                        | Septic encephalopathy from other sources                               |
| Trauma                 | Traumatic brain injury                                                |
|                        | Post-concussion syndrome                                              |
| Autoimmune             | SLE                                                                    |
|                        | Multiple sclerosis                                                    |
|                        | Autoimmune encephalitis                                               |
|                        | NMDA encephalitis                                                     |
|                        | Sjogren’s syndrome                                                    |
| Metabolic              | Hypoglycemia                                                           |
|                        | Hyperglycemia                                                          |
|                        | Uremic encephalopathy                                                 |
|                        | Hepatic encephalopathy                                                |
|                        | Vitamin B12 deficiency                                                |
|                        | Hypercalcemia                                                          |
|                        | Hyponatremia                                                           |
|                        | Wilson’s disease                                                       |
|                        | Hypoxia                                                               |
|                        | Carbon monoxide poisoning                                             |
|                        | Nitrogen narcosis from diving                                          |
| Iatrogenic and Injury  | Adverse drug reactions                                                |
|                        | Drug-drug interactions                                                 |
|                        | Abrupt discontinuation of certain drugs                               |
|                        | Drug withdrawal                                                       |
|                        | Bites from venomous animals                                            |
|                        | Lead poisoning                                                         |
| Neoplasm and           | Primary brain tumors                                                  |

| Category                              | Causes                                                                 |
|---------------------------------------|------------------------------------------------------------------------|
| Neurological                          | Metastasis to the brain                                               |
|                                       | Paraneoplastic syndrome                                               |
|                                       | Temporal lobe epilepsy                                                |
|                                       | Non convulsive seizure                                                |
| Structural and Social                 | Raised intracranial pressure                                          |
|                                       | Normal pressure hydrocephalus                                          |
|                                       | Social deprivation                                                    |
|                                       | Abuse and neglect                                                     |
|                                       | Religious trance states and spirit possessions                         |
| Alcohol and other substance Abuse     | Alcohol intoxication                                                  |
|                                       | Korsakoff syndrome                                                    |
|                                       | Delirium Tremens                                                      |
|                                       | Wernicke encephalopathy                                               |
|                                       | Illicit drug abuse                                                    |
| Behavioral (Psychiatric conditions)   | Psychotic disorder                                                    |
|                                       | Schizoaffective disorder                                              |
|                                       | Mood disorders                                                        |
|                                       | Bipolar disorder                                                      |
|                                       | Psychosomatic disorders                                               |
|                                       | Post-traumatic stress disorder                                         |
|                                       | Acute grief response                                                  |
|                                       | Adjustment disorder                                                   |
|                                       | Peripartum mood, bipolar or psychotic disorders                       |
|                                       | Dissociative disorders                                                |
| Congenital and inherited conditions   | Genetic conditions and syndromes                                      |
|                                       | Inherited conditions – Huntington’s disease, Wilson’s disease          |
| Degenerative                          | Dementia – Alzheimer’s disease, vascular dementia, frontotemporal      |
|                                       | dementia, Lewy body dementia, Parkinson disease                        |
| Endocrine                             | Hypothyroidism, myxedema coma                                          |
|                                       | Hyperthyroidism, thyroid storm                                        |
|                                       | Cushing’s syndrome                                                    |
|                                       | Hyperparathyroidism                                                   |

The above table of causes is non-exhaustive.
**Supplementary Material**

**B. Drugs that can cause behavioral change**

*Supplementary Table 2. Drugs that can cause behavioral change.*

| Drug                              | Effect                                                                 | Type of effect   |
|-----------------------------------|------------------------------------------------------------------------|------------------|
| **Commonly prescribed drugs**     |                                                                        |                  |
| Corticosteroids                   | Affective symptoms (depressive, mood lability, mania), insomnia, psychosis | Adverse Drug Reaction (ADR), withdrawal |
| NSAIDs                            | Anxiety, agitation, hallucinations, psychosis, sleep disorders, fatigue | ADR              |
| Antihistamines                    | Sedation, agitation, psychosis                                         | ADR              |
| Montelukast                       | Paranoia, hallucinations, confusion, agitation, drowsiness              | Overdose         |
| Montelukast                       | Nightmares, depression, agitation                                       | ADR              |
| **Cardiovascular drugs**          |                                                                        |                  |
| Calcium channel blockers          | Lethargy, mania, psychosis                                             | ADR              |
| Beta blockers                     | Fatigue, sleep disturbance, depression, psychosis                       | ADR              |
| **Psychiatric drugs**             |                                                                        |                  |
| Selective serotonin reuptake inhibitors | Insomnia, irritability, suicidality                                       | ADR              |
| Benzodiazepines                   | Sedation, disinhibition                                                 | Abuse            |
| **Centrally acting drugs**        |                                                                        |                  |
| Anti-epileptics                   | A variety of psychiatric manifestations: somnolence, psychosis, agitation and irritability, sleep disturbance, depression | ADR              |
| Opioids                           | Sedation, psychosis, euphoria, addiction and dependence, confusion     | Abuse            |
| Sympathomimetics e.g. Phentermine | Agitation, depression, suicidality                                     | ADR              |
| Dopamine agonists (drugs for Parkinson’s disease) | Delirium, visual hallucinations, impulsivity such as hypersexuality, impulse buying, gambling | Abuse            |
| **Anti-infective agents**         |                                                                        |                  |
| Anti-retrovirals                  | Depression, irritability, agitation, sleep disturbances                 | ADR              |
| Mefloquine                        | Nightmares, vivid dreams, psychosis, panic attack                       | ADR              |
| Penicillins                       | Irritability, encephalopathy, anxiety, hallucinations                   | ADR              |
| Other antibiotics (quinolones, tetracyclines, bactrim) | Hallucinations, mood disorders                                          | ADR              |
| Ketoconazole, griseofulvin        | Depression, psychosis                                                  | ADR              |
| Isotretinoin                      | Suicidality, depression, psychosis                                      | ADR              |
Supplementary Material

| Illicit substances       | Hallucinations, euphoria, psychosis, Abuse |
|--------------------------|-------------------------------------------|
| Amphetamines             | paranoia, impaired judgment, hypervigilance |
| Cocaine                  | Depression, lethargy                      |
| Hallucinogens            |                                           |
| Ketamine                 |                                           |
| Glue sniffing            |                                           |

It is useful to ask about recent initiation, cessation or titration of doses of medications. Initiation of other drugs may precipitate drug-drug interactions. The above list is non-exhaustive.

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