

CHAPTER 11 - AVIATION PSYCHIATRY

1 INTRODUCTION

This chapter will outline the major categories of psychiatric diagnoses and consider how those more commonly seen in aviators may influence the assessment of fitness for entry into a career in aviation, or for the continuation of flying duties in the established airman.

In the aviation community, psychiatric disorders, including alcoholism, represent the second most common medical reason for the loss of flying licences.

About 80% of all accidents and 60% of fatal accidents are due to human failure, a high proportion through some error of judgement.

Information processing and the capacity to make decisions and initiate a suitable response may be disturbed by psychiatric illness, organic mental illness resulting from brain injury or damage, infectious illnesses or the influence of drugs. Such disorders may be the cause of both acute or subtle incapacitation in flight. It is of paramount importance therefore that any condition which might lead to such error is identified and investigated before air crew licensing is agreed.

Medical requirements for fitness of any given role are decided by the tasks to be performed in that role.

The aviator needs:

- a To be aware of his position in space – this requires an adequate sensory input, visual, auditory, proprioceptive etc.
- b The mental capacity to process this sensory information and to initiate the appropriate action to control the aircraft safely.
- c The necessary physical capacity to carry out the course of action decided upon.

The psychiatric requirements for fitness are determined largely by the second of these tasks.

2 GENERAL PSYCHIATRIC REQUIREMENTS

Medical standards of mental fitness for all categories of air crew require that particular attention should be paid to the following:

- a psychosis;
- b personality disorders, especially if severe enough to have resulted in overt acts;
- c neurotic disorders;
- d alcoholism or alcohol misuse;
- e use or misuse of psychotropic drugs or other substances with or without dependency.

The applicant should have no established medical history or clinical diagnosis of any psychiatric disease or disability, condition or disorder, acute or chronic, congenital or acquired, which is likely to interfere with the safe exercise of the privileges of the applicable licence(s).

3 CLINICAL PSYCHIATRY IN AVIATION MEDICINE

There are several systems of classification used in psychiatry. While differing from one another in important ways all of them share similar principles. For detailed information on current classification of psychiatric illness, such as that of the International Classification of Disease (ICD10) and the American Psychiatric Association Diagnostic and Statistical Manual Classification (DSM IV) reference should be made to standard psychiatric text books.

For the purpose of this chapter a simplified but practical basic classification of mental disorder will be used and where classification indices are shown these are from ICD10.

Basic Classification of Mental Disorder
Personality disorder
Mental retardation
Neurotic, stress-related and somatoform disorders
Organic psychoses
Functional psychoses, schizophrenia, affective psychoses
Mood disorders
Disorders of adjustment
Other disorders
Disorder specific to childhood

In the various systems of classification, mental retardation and personality disorder are separated from mental illness. Mental retardation is present continuously from very early life, personality disorders being recognised from the end of adolescence.

Mental illness arises after a period of normality in adult life.

It should be noted that psychiatric disorders likely to be met in aviation personnel are limited to adult psychiatry and because of the nature of the training required it is axiomatic that an individual with significant mental retardation would be unlikely to consider, or be considered for entry into a flying career. Mental retardation and disorders specific to childhood will, therefore not be considered further in this chapter.

The mental illnesses in this classification are sub-divided into two major groups:

- a The neuroses, being evidenced by anxiety, depression, insomnia, obsessional thoughts etc., arising in a setting of unaltered contact with reality and whose symptoms are close to normal experience.
- b The psychoses, which are major mental illnesses are usually characterised by severe symptoms such as delusions and hallucinations and by a lack of insight. These are further divided into the organic and functional psychoses, the former presenting with a demonstrable physical abnormality, such as general paralysis of the insane, or delirium tremens. The functional psychoses have, to date, demonstrated no underlying physical cause and include schizophrenia and the affective psychoses.

4 DEFINITION OF SOME MENTAL AND BEHAVIOURAL DISORDERS

4.1 Disorders of adult personality and behaviour (ICD F60-F69)

These include a variety of conditions and behaviour patterns of clinical significance which tend to be persistent and appear to be the expression of the individual's characteristic lifestyle and mode of relating to himself/herself and others. Some of these are evident early in the course of individual development, as a result of both constitutional factors and social experience, while others are acquired later in life.

The specific personality disorders discussed are deeply ingrained and enduring behaviour patterns, manifesting an inflexible response to a broad range of personal and social situations. They represent extreme or significant deviations from the way in which the average individual in a given culture perceives, thinks, feels and, particularly, relates to others. These patterns tend to be stable and to encompass a wide range of behaviour and psychological functioning. They are frequently, but not always, associated with varying degrees of the subjective distress and problems of social performance.

4.2 **Neurotic, stress-related and somatoform disorders (F40-F48)**

a *Phobic anxiety disorders (F40)*

A group of disorders in which anxiety is evoked only, or predominantly, in certain defined situations that are not currently dangerous. As a result these situations are characteristically avoided or endured with dread. Concern may be focused on individual symptoms, such as palpitations or faintness, and is often associated with a secondary fear of dying, losing control or going mad. Contemplating entry to the phobic situation usually generates anticipatory anxiety. Phobic anxiety and depression often co-exist.

b *Panic disorder (F41)*

The essential feature here is recurrent attacks of severe anxiety (panic) which are not restricted to any particular situation or set of circumstances and are unpredictable. There is often secondary fear of dying, losing control or going mad. The dominant symptoms, as with other anxiety disorders, include palpitations, chest pain, choking sensations, dizziness and feelings of unreality (de-personalisation or de-realisation).

c *Obsessive compulsive disorder (F42)*

The essential feature here is that of recurrent obsessional thoughts or compulsive acts. Obsessional thoughts are ideas, images or impulses that enter the individual's mind again and again in a stereotyped form. They are almost invariably distressing and the patient often tries unsuccessfully to resist them. They are, however, recognised as his/her own thoughts, even though they are involuntary and often repugnant.

Compulsive acts or rituals are stereotype behaviours which are repeated again and again. They are not inherently enjoyable nor do they result in the completion of inherently useful tasks. Their function is to prevent some objectively unlikely event which he/she fears might involve harm. This behaviour is recognised by the patient as pointless or ineffectual, and repeated attempts may be made to resist. Anxiety is almost invariably present. If the compulsive acts are resisted the anxiety gets worse.

d *Post traumatic stress disorder (F43.1)*

This arises as delayed or protracted response to a stressful event or situation of a brief or long duration, of an exceptional threatening or catastrophic nature which is likely to cause pervasive distress in almost anyone. This basic symptomatology is as described in the text.

e *Generalised anxiety disorder (F41.1)*

The anxiety is generalised and persistent but not restricted to, or even strongly predominating in any particular environmental circumstances. The symptoms are variable but include complaints of persisting nervousness, trembling, muscular tension, sweating,

light headedness, palpitations, dizziness and epigastric discomfort. Fears that the individual or a relative will shortly become ill, or have an accident, are frequently expressed.

f *Mixed anxiety and depressive disorder (F41.2)*

Anxiety depression or neurotic depression should be used when symptoms of anxiety and depression are both present but neither is clearly predominant and neither type of symptom is present to the extent that justifies a diagnosis, if each is considered separately.

4.3 **Schizophrenia, schizotypal and delusional disorders (F20-F29)**

The schizophrenic disorders are characterised in general by fundamental and characteristic distortions of thinking and perception, and affects that are inappropriate or blunted. Clear consciousness and intellectual capacity are usually maintained although certain cognitive deficits may evolve in the course of time.

The most important psychopathological features include thought echo, thought insertion or withdrawal, thought broadcasting, delusional perception and delusions of control, influence or passivity, hallucinatory voices commenting or discussing the patient in the third person, thought disorders and negative symptoms. The course of the disorder can be either continuous or episodic with progressive or stable deficit, or there can be one or more episodes with complete or incomplete remission.

Such a diagnosis should not be made in the presence of extensive depressive or manic symptoms unless it is clear that the schizophrenic symptoms antedate the disturbance of affect.

Schizophrenia should not be diagnosed in the presence of overt brain disease or during states of drug intoxication or withdrawal. (F06.2 and F10-F19).

4.4 **Mood (affective) disorders (F30-F39)**

These are disorders, in which the fundamental disturbances are a change in affect, or mood, to depression (with or without associated anxiety), or to elation. The mood change is usually accompanied by a change in the overall level of activity. Most other symptoms are either secondary to, or easily understood, in the context of the change in mood and activity. These disorders mostly tend to be recurrent and the onset of individual episodes can often be related to stressful events or situations.

a *Manic episodes (F30)*

1 Hypomania (F30.0)

A disorder characterised by persistent mild elevation of mood with increased energy and activity and usually marked feelings of well-being and both physical and mental efficiency. Increased sociability, talkativeness, over-familiarity, increased sexual energy and a decreased need for sleep are often present but not to the extent that they lead to severe disruption of work or result in social rejection. Conversely, irritability, conceit and boorish behaviour may take the place of the more usual euphoric sociability. These disturbances of mood and behaviour are not accompanied by hallucinations or delusions.

2 *Mania without psychotic symptoms (F30.1) and Mania with psychotic symptoms (F30.2)*

Here, mood is elevated out of keeping with the patient's circumstances and may vary from carefree, jovial to almost uncontrollable excitement. This elation is accompanied by increased energy, over-activity, pressure of speech and a decreased need for sleep. Attention cannot be sustained and there is often marked distractability. Self esteem is

inflated with grandiose ideas and over confidence. Loss of normal social inhibitions may result in reckless, foolhardy and inappropriate behaviour.

In addition to the clinical picture described, delusions (usually grandiose) or hallucinations (usually voices speaking directly to the patient) may be super-added or the excitement, excessive motor activity and flights of ideas, become so extreme that the subject is incomprehensible or inaccessible to ordinary communication.

3 *Bipolar affective disorders (F31)*

This disorder is characterised by two or more episodes in which the patient's mood and activity levels are significantly disturbed, this disturbance consisting on some occasions of an elevation of mood and increased energy and activity (hypomania or mania) and on others of a lowering of mood and decreased energy and activity (depression).

b Depressive episodes (F 32)

In typical mild, moderate or severe depressive episodes the patient suffers from lowering of mood, reduction of energy and decrease in activity. Capacity for enjoyment, interest and concentration is reduced, and marked tiredness after even minimum effort is common. Sleep is usually disturbed and appetite diminished. Self-esteem and self-confidence are almost always reduced and, even in the mild form, some ideas of guilt or worthlessness are often present. The lowered mood varies little from day to day, is unresponsive to circumstances and may be accompanied by so-called 'somatic' symptoms, such as loss of interest and pleasurable feelings, waking in the morning several hours before the usual time, depression worst in the morning, marked psychomotor retardation, agitation, loss of appetite, weight loss and loss of libido. Depending upon the number and severity of the symptoms, a depressive episode may be specified as mild, moderate or severe.

4.5 **Organic, including symptomatic, mental disorders (F00-F09)**

This comprises a range of mental disorders grouped together on the basis of having in common a demonstrable aetiology in cerebral disease, brain injury or other insult leading to cerebral dysfunction. This may be primary as in disease, injuries and insults that affect the brain directly and selectively, or secondary, as in systemic disease and disorders that attack the brain only as one of the multiple organs or systems of the body that are involved.

5 **NORMAL MENTAL DEVELOPMENT**

The normal conscious mind experiences a continuing stream of thoughts the content of which is usually related to surrounding happenings. Those which concern us catch our attention; those which threaten us make us feel anxious; those which meet our needs are accompanied by feelings of pleasure. Without any external stimulus the thought stream may be occupied by memories of the past or projections into the future.

If needs or fears become extremely pressing they may monopolise the forefront of the mind crowding out images of the happenings around us.

There is gradual development from early life into individuals with well defined patterns of behaviour, some of which are clearly copied from parents and teachers. Personal aims, ambitions and codes of moral values develop which are adhered to with greater or less tenacity of purpose. This drive or motivation to succeed gives some indication of how the individual will behave under stress, those with poor motivation giving up the struggle more quickly in a crisis. From birth memories of experiences are stored and when meeting similar situations in the future allow the individual to choose a course which previously avoided discomfort and danger. With the development of adult reasoning powers it is sometimes in the individual's interest to choose an unpleasant or dangerous course. Such calculated risks run contrary to the instinct of self-

preservation and cause transient anxiety. This anxiety, or mental tension, is an unpleasant state of mind which, if severe enough, induces the individual to abandon the dangerous alternative. Gradually, by trial and error, the normal developing individual learns how to modify ambitions and desires to his innate capabilities so that intolerable anxiety does not arise.

Mental resilience to anxiety varies from person to person and can be a very important measure of an individual's predisposition to psychiatric illness. In later life failure, and the depression it may cause, are equally important. Anxiety and depression in normal amounts are everyday mental experiences which guide our actions towards safety and contentment. If depression or anxiety becomes excessive, it may dominate the mind which then is no longer free to make rational decisions. In this state of mind a person is unfit for aviation duties.

There are three ways of dealing with anxiety:

- a The normal, healthy adult will naturally feel anxious when his safety is under threat. This anxiety increases in proportion to the degree of danger, being reduced by action aimed at decreasing the danger and disappears when this has been resolved. Re-exposure to the same threat will cause the same amount of anxiety or less.
- b The anxiety prone person will experience the anxiety for longer periods after exposure to danger and on subsequent exposure to a similar threat will feel anxiety for a longer period of greater intensity. If the tension induced becomes excessive and thus interferes with normal mental life, a neurosis has developed.
- c The individual who suffers from a personality disorder appears unwilling, or unable, to tolerate even normal amounts of mental stress. When subjected to anxiety he will behave in a way which removed him from the anxiety-promoting situation, even though his interest would be better served by accepting it for a short period. The anti-social personality will leave his job rather than tolerate temporary attention. The explosive (irritable) personality may well strike out in a rage whenever provoked, even though his interest would be better served by reacting calmly.

A point of distinction between the neuroses and the personality disorders being that neurosis develops against a background of normal mental life and cures are common, however, so are relapses.

A personality disorder is a chronic state dating from childhood or adolescence and is often referred to as emotional immaturity. The individual tends to learn neither from experience nor punishment and cure is rare. The prognosis is usually poor.

6 PREDISPOSITION TO NERVOUS DISEASE

It is important both for the Regulatory Authority and the Industry to identify and reject those wishing to enter a career in aviation who are suffering from or prone to, psychiatric illness.

Strong evidence of such predisposition is a history of previous psychiatric illness.

An inherent difficulty in psychiatric assessment is that a history of a past illness may not easily be obtained at the initial medical examination. Answers to questions may well be untruthful, evasive or coloured by what the applicant wishes us to believe. If the examiner is not fully satisfied with the answers given he should seek further information of the applicant's previous history from the family, the family doctor, the school or others for details of the applicant's previous history.

Adults who develop an anxiety or depressive reaction in one stressful situation are very likely to do so again when exposed to a similar stress.

Other indicators of a predisposition to a psychiatric illness are – a history of nail-biting, bed-wetting, sleep disturbances, psychosomatic disorders, a poor academic record, difficulty in mixing and making friends, frequent changes of employment on leaving school, anti-social behaviour (conflict with the law, alcohol excess, abuse of drugs, sexual deviation), significant mood swings or self-rating as being excessively prone to anxiety or marked feelings in inferiority and shyness.

Flight crew applicants who admit to one or more of the symptoms listed, especially if of significant severity or long-standing, require careful assessment which may well include a formal psychiatric consultation.

7 PSYCHOLOGICAL TESTING OF INTELLIGENCE

In its broadest sense intelligence may be defined as the ability to solve new problems through reasoning and a number of tests have been devised to measure this intelligence. Its relevance to aviation is primarily associated with the process of selection and training of new pilots.

Early in this century Alfred Binet devised a series of tests of varying difficulty which could discriminate between children of different ages. From a given score the mental age could then be calculated in terms of the chronological age for which the specific individual's performance was representative. These tests were further developed by Terman and the Stanford-Binet tests emerged. From these developed the notion of the intelligence quotient (IQ) defined as:

$$IQ = (\text{mental age} / \text{chronological age} \times 100).$$

Other widely used tests include the Wechsler Adult Intelligence Score (WAIS-R).

Psychological testing of intelligence is accurate in skilled hands.

It is likely that an individual with an IQ below 90 will have a much greater than average difficulty in learning new and complex skills within a reasonable time, such as those required in aviation. Should the medical examiner consider an applicant's intelligence to be inadequate an IQ test should be administered.

In addition to the intelligence required to learn the theory of flight there is also a need for aptitude to learn the skills of flying. Test batteries giving scores on a range of aptitudes are available and are often used in vocational guidance and acceptance.

As well as the foregoing it should always be remembered that human performance cannot be accurately predicted merely by measuring ability. It is always important to consider the forces that incite the individual to aim for a particular goal.

A high level of motivation and determination will often overcome some minor deficiencies in the foregoing characteristics.

8 PSYCHOLOGICAL TESTING OF PERSONALITY

Personality testing is on a less secure footing than that of intelligence. There are numerous factors that contribute to the make up of the individual personality so it is not surprising that personality testing is less reliable. A great range of tests are available using widely different techniques. The better known are the Maudsley Personality Inventory (MPI) and the Minnesota Multiphasic Personality Inventory (MMPI). Other projection tests are available, such as those of Rorschach, Sentence Completion Tests and Thematic Apperception Tests (TAT). Competently administered these may add weight to a clinical diagnosis, but unlike IQ tests they are not

diagnostic in their own right. Psychological testing is discussed further in the Aviation Psychology Chapter.

9 PERSONALITY DISORDERS (F60-69)

Personality disorders are always troublesome and are more likely to cause administrative or operational problems rather than frank medical problems. They imply lasting, deeply ingrained, inflexible behaviour patterns which, if severe enough, impair social interactions or produce symptomatic subjective distress in response to external stressors. In lesser form these are referred to as personality traits which exist for years in the 'odd', non-conforming personality and do not cause severe problems.

The majority of mankind learns to conform to society's norms by means of the example set by parents, teachers, religious precepts and fear of punishment. A small number fail to integrate one or more of their anti-social tendencies and retain their childhood selfishness, aggression, timidity or sexual deviation. Neither punishment nor persuasion seem to help such individuals to conform socially. This condition is called a personality disorder and differs from the neurotic reactions by being a steady state dating from early life, while a neurotic illness has a more definite and identifiable onset and termination.

The term 'personality' refers to the enduring features an individual shows in his way of behaving in a wide variety of circumstances. Some of personality features may make an individual more vulnerable to the development of neurotic illness when facing stressful situations. Those who have always worried over minor problems are more likely to develop an anxiety state when faced with difficulties that would not affect another person in the same way. With such a degree of vulnerability in the personality, abnormal behaviour occurs only in response to stressful events.

In more abnormal personalities unusual behaviour may occur even in the absence of stressful events. Some personalities are obviously very abnormal, for example, those of a violent and sadistic nature who repeatedly harm others yet show no remorse. There is no agreed classification of such disorders.

There are other personality traits which predispose to certain psychotic and neurotic illness, thus the 'schizoid' and 'cyclothymic' personalities may culminate in schizophrenic illness, mania and depression. The 'paranoid' personality may develop a true paranoid reaction, the 'obsessive-compulsive' personality often developing an obsessive or compulsive neurosis. However, the existence of such traits does not imply a certainty that psychiatric illness will necessarily occur, but if such people do become psychiatrically ill they are likely to develop the illness suggested by their personality type. Such personality traits, which predispose to psychiatric illness, are mentioned in the various descriptions of psychiatric syndromes and will not be described as separate entities.

Those personalities which are important in the context of this chapter are also called 'sociopathic'.

9.1 Sociopathic personality disorders

a *Dissocial personality disorder (F602)*

Persons with this disorder show a bewildering variety of abnormal features. Basically four features are usefully recognised. A failure to make loving relationships, lack of guilt, impulsive actions and a failure to learn from past experience. The individual is self-centred and heartless. This lack of feeling is in marked contrast to a usually superficial charm. Marriage is marked by a lack of concern for the partner, sometimes violence, and many end in separation or divorce.

Impulsive behaviour patterns are reflected by an unstable work record, often with frequent dismissal, the whole pattern of the individual's life lacks any plan or goal. Offences against the law often commence in adolescence with petty acts of larceny, lying, truancy and vandalism. Some violent, dangerous and incorrigible criminals are representative of this group. This diagnosis includes sociopathic personality disorder, asocial or antisocial personality disorder.

Alcohol and drug abuse makes such behaviour patterns more extreme.

b *Emotionally unstable personality disorder (F60.3)*

People with this disorder cannot adequately control their emotions and are subject to sudden and unrestrained outpourings of anger. These outbursts may also include physical violence leading at times to serious injury. Unlike the dissocial personality this group does not have other difficulties in their relationships. This personality disorder includes explosive personality disorder. There are two types: impulsive type (F60.30) and borderline type (F60.31).

c *Dependent personality disorder (F60.7)*

People with this disorder appear weak-willed and unduly compliant, passively falling in with others wishes. They avoid responsibility and lack self reliance. Some are more determined but achieve their aims by relying upon other people's assistance while protesting their own helplessness. Some drift down the social scale, others may be found among the long term unemployed and the homeless.

9.2 **Sociopathic personality disorders and fitness for aviation duties**

From the preceding brief description of a representative group of sociopathic personality disorders it should be abundantly clear that an individual with such a disorder must be assessed as unfit for any class of flying licence. The great majority of those with personality disorders are unresponsive to any form of treatment and once the applicant is deemed unfit because of such a disorder, the decision should be permanent.

The initial assessment of such a disorder is critical and often difficult for the non-specialist. Significant indicators for sociopathic personality disorder may be found in a family or personal history of repeated clashes with the law, of drug dependence, of alcoholism, of gross immorality or serious psychiatric illness. Disregard for society's rules is a cardinal symptom and this may be manifested in their childhood by truancy from school, acts of cruelty, of prosecutions in juvenile courts, while in adult life alcoholism, drug dependence, sexual perversion, frequent court appearances or violent outburst are similar evidence.

The most difficult evaluations are of those who have never clashed with the law but who have been unreliable or inadequate throughout their lives. Where there is suspicion or established evidence that an applicant suffers from a personality disorder, he should be referred for psychiatric opinion and advice.

10 **NEUROTIC, STRESS RELATED AND SOMATOFORM DISORDERS (F40 - F48)**

Neurotic, stress-related and somatoform disorders have been brought together in one large group because of their historical inter-relationships and the association of many of them with psychological stress.

The diagnostic categories included within this section of neurotic stress-related and somatoform disorders are the ones referring to the phobias, panic attacks, obsessive-compulsive disorders, post traumatic stress disorder and generalized anxiety disorder.

There are also included the various forms of clinical depression of mild or moderate degree excepting those with psychotic features such as delusions (see paragraph 11 b below).

A mixture of symptoms is common, especially the ones of depression and anxiety. In this situation it is usually best to try to decide which is the predominant symptom for diagnosis purposes.

Somatoform disorders include somatization disorder, hypochondrial disorder, somatoform autonomic dysfunction.

Dissociative (conversive) disorders include amnesia, fugues, stupor, multiple personality and other similar situations; these are totally incompatible with any form of flight status and will not be considered further in this chapter.

Anxiety is the chief characteristic of the neurotic disorders. Depression, mild or moderate in degree, also occurs in some neuroses.

a *Generalized anxiety disorder (F41.1)*

The individual complains of increased anxiety which makes life uncomfortable. The anxiety usually covers many things such as health, money or safety. This anxiety state may be acute and short-lived, or chronic – of lower intensity and more prolonged. Anxiety leads to over-arousal causing difficulty in falling asleep and nocturnal restlessness. Because worries keep crowding into the forefront of the mind concentration becomes impaired, prevents the proper retention of information, leading to a complaint that the memory is failing. Irritability with colleagues at work especially at home after work, and associated tension headaches, worse towards the end of the day are common.

The illness can often be traced to an identifiable stress, such as money difficulties or domestic friction. The prognosis for cure may be gauged from the history.

If there has been a previous psychiatric illness, a marked predisposition to neurosis, and if the precipitating cause cannot be permanently corrected, the chance of a permanent cure is not great.

If, however, the neurosis was precipitated by maladjustment to a situation which is capable of correction, the prognosis is good.

Such anxiety states usually occur in people who are markedly prone to anxiety and are relatively rare among flight crew.

Anxiety states in flying personnel are more commonly confined to one specific aspect of flying, such as fear of flying in cloud or high altitude flying. Such a localised anxiety is called a phobic anxiety neurosis, in contrast to the general anxiety neurosis where the anxiety is much more diffuse.

b *Phobic anxiety disorders (F40)*

Many normal people have aversions to certain objects, notably snakes and spiders, which date from childhood and have not been caused by any actual frightening experience. Other than avoidance, these illogical fears cause little interference with the individual's life. They have usually been present since early life and become less intense with age.

A phobic disorder is a much more intense and incapacitating fear, again frequently illogical, which interferes with the individual's life to such an extent that medical aid is often sought. A common example is claustrophobia (a specific phobia), or a fear of entering enclosed space, the act of so doing or even the thought of so doing, causing apprehension, faints, palpitations, sweating, nausea, tremor and panic.

The phobic anxiety is an acquired anxiety neurosis confined to one specific situation and is relatively common among flight crew. Early experiences in flying training or the stress of flying training may sometimes caused a generalised anxiety state in individuals with a low threshold for anxiety. Trained and experienced flight crew with a high anxiety threshold, occasionally develop significant anxiety about a single aspect of flying. There are potentially

many experiences which may precipitate such a phobic disorder and if of sufficient intensity may, in a vulnerable individual, require that his career is terminated.

A special form of phobic anxiety disorders is flying phobia.

c Panic disorder (episodic paroxysmal anxiety) (F41.0)

The essential feature is recurrent attacks of severe anxiety (panic), which are not restricted to any particular situation or set of circumstances and the attacks are therefore unpredictable. The dominant symptoms include a sudden onset of palpitations, chest pain, choking sensations, dizziness and feelings of unreality (depersonalizations or derealization).

d *Obsessive-compulsive disorder (F42)*

An obsession is a thought or urge to undertake a specific action which recurs repetitively and insistently in the mind. When this type of symptom becomes so persistent that it interferes with normal mental life and activities the illness is an obsessive neurosis. These obsessions may take many forms. Some sufferers must dress according to a strict ritual which, if broken, demands that it is started again from the beginning. If the basis is a fear of dirt or contagion the individual may feel compelled to wash the hands each time anything is touched. In the extreme form can waste so much time that normal work becomes impossible. Such symptoms are most often seen in those individuals with a meticulous perfectionist or rigid personality. Because such symptoms often date from early life and are usually resistant to treatment this disorder can usually be identified at the initial medical examination and the individual excluded from training.

e Reaction to severe stress and adjustment disorders (F43.0, F43.1, F43.2)

1 Acute stress reaction (F43.0)

That is a transient disorder that develops in an individual without any other apparent mental disorder in response to exceptional physical and mental stress and which usually subsides within hours or days.

2 *Post traumatic stress disorder (F43.1)*

As the name implies this neurosis arises in response to an overwhelming event outside of normal human experience. Emotional and psychiatric adjustment to such a mishap can be significantly disturbed in a variety of groups of individuals directly or indirectly involved in the event.

- i Those directly involved in aircraft accidents/incidents – the crew, cabin staff, passengers and those involved immediately on the ground.
- ii Professional disaster workers – police, ambulance personnel, fire fighters, hospital staff etc.
- iii Relatives and friends of those involved.
- iv The community – witnessing or involved in the incidents and also supervisors, leaders and co-workers who may feel some responsibility or guilt.
- v The emotionally unstable who over-identify.

Symptoms may arise at any time after the event, sometimes many years afterwards. There is always a vivid memory of the event with flashbacks continually intruding into consciousness.

The disorders in this section are thought to arise always as a direct consequence of acute severe stress or continued trauma. These disorders can be regarded as maladaptive responses to severe or continued stress, in that they interfere with successful coping mechanisms and therefore lead to problems of social functioning.

Predisposing factors, such as personality traits (e.g. compulsive, asthenic) or previous history of neurotic illness may lower the threshold for the development of the syndrome or aggravate its course but they are neither necessary nor sufficient to explain its occurrence. Typical features include episodes of repeated reliving of the trauma in intrusive memories ("flashbacks"), dreams or nightmares, occurring against the persisting background of a sense of "numbness" and emotional blunting, detachment from other people, unresponsiveness to surroundings, anhedonia and avoidance of activities and situations reminiscent of the trauma. There is usually a startle of autonomic hyperarousal with hypervigilance and enhanced startle reaction and insomnia. Anxiety and depression are commonly associated with the above symptoms and signs, and suicidal ideation is not infrequent. The onset follows the trauma with a latency period that may range from a few weeks to months. The course is fluctuating but recovery can be expected in the majority of cases. In a small proportion of cases the condition may follow a chronic course over many years with eventual transition to an enduring personality change (F62.0).

Alcohol and substance abuse may occur as a secondary phenomenon in a misguided attempt to lessen the symptomatology.

Risk factors for the development of a disorder include the nature and intensity of the stressors, the nature of the involvement (direct or indirectly as a witness). There is no sex difference but older age groups would appear to report an increased incidence of anxiety symptoms. Previous exposure to disaster, such as the case of ambulance/medical staff, may help to avoid the development of symptoms, but this is not invariably so.

The goal of intervention must be to limit symptoms and return individuals to normality as quickly as possible by attending to these emotional reactions. Education into the normal emotional reaction to physically and emotionally traumatic experiences is very important. Victims should be made aware of the range of reactions which may occur and should be clearly warned about the risk of increasing drug and alcohol use, of memory and cognitive disturbances and of intrusive thoughts. Encouragement to ventilate their experiences by 'talking through' seems important.

Most victims respond well to these simple measures but a proportion not responding will need formal psychiatric counselling and possibly chemotherapy.

The use of beta blockade and anti-depressive medications, together with psychotherapy offers considerable hope of alleviation of symptoms.

The importance of this stress reaction in aviators lies not only in the symptomatic disorders described above but the very real potential for the development of loss of confidence in, and a fear of flying. Such a development would almost certainly lead to disqualification from continuing certification in a high proportion of such individuals. The role of the airline medical officer, the authorised medical examiner and the psychiatric services, is paramount in such situations.

3 Adjustment disorders (F43.2)

The manifestations vary and include depressed mood, anxiety or worry in a mixture of this, a feeling of inability to cope, as well as some degree of disability in the performance of daily routine.

f Dissociative (conversive) disorders (F44)

These disorders have previously been classified as various types of "conversion hysteria" but nowadays it is found more appropriate to avoid the term "hysteria" because of its various meanings.

The common themes that are shared by dissociative or conversion disorders are a partial or complete loss of the normal integration between memories of the past, awareness of identify and immediate sensations and control of bodily movements, as well.

They are presumed to be psychogenic in origin, being associated closely in time with traumatic events, insoluble and intolerable problems or disturbed relationships. The symptoms often represent the patient's concept of how a physical illness would manifest. Medical examination and investigation do not reveal the presence of any known physical or neurological disorder. In addition there is evidence that the loss of function is an expression of emotional conflicts or needs. The symptoms may develop in close relationship to psychological stress, and they often appear suddenly. These symptoms can be classified in two groups:

- i conversion symptoms – a loss of bodily function solving the patient's dilemma. There are dissociative motor disorders including afonia, disphonia; dissociative convulsions, dissociative anesthesia and sensory loss;
- ii dissociative reactions as an alteration of consciousness such as loss of memory usually of important recent events (dissociative amnesia) or dissociative fugue, dissociative stupor, a.s.o.

These disorders occur in highly emotional, over-drammatic individuals.

g Somatoform disorders (F45)

The main feature is a repeated claim of some presentation assumed physical symptoms together with persistent requests for medical investigations, inspite of repeated negative findings and reassurances by doctors that the symptoms have no physical basis. The individual shows a refusal to discuss the possibility of a psychological cause, even if the symptoms onset and evolution prove a close relationship to unhappy life events or hardships and conflicts.

With this kind of disorders there is a behaviour or focusing on catching the attention of the people around; and that behaviour is common with the individuals having an acute feeling of the incapacity to persuade the physicians about the somatic nature of their illness and the need of a new investigation.

Somatoform disorders include:

1 Somatization disorder (F45.0)

The main features are multiple, recurrent and frequently changing physical symptoms that have persisted many years before the individual's coming to the psychiatrist.

The symptoms can affect each of the body parts nevertheless most of the common sensations are the gastrointestinal ones (pain, feeling bloated and full of gas, regurgitation of food, nausea, vomiting) and also the skin symptoms (unpleasant numbness or tinkling, burning sensations, itching) the sexual and menstrual complains are also common.

The course of the disorder is chronic and fluctuating and is often associated with disruption of social, interpersonal and family behaviour.

2 Hypochondriacal disorder (F45.2)

The essential feature is a persistent preoccupation with the possibility of having one or more serious and progressive physical disorders. The individuals manifest persistent somatic complaints or a persistent preoccupation with their physical appearance. Normal

or commonplace sensations are often considered by these individuals as normal and distressing, and attention is usually focuses upon only one or two organs or systems of the body. Marked depression and anxiety are often present and may justify additional diagnosis.

There is persistent refusal to accept medical reassurance that there is no real physical cause for the symptoms in discussion.

3 Somatoform autonomic dysfunction (F45.3)

Symptoms are presented by the individual as if they were due to a physical disorder of a system or organ that is largely or completely under autonomic innervation and control, i.e. the cardiovascular, gastrointestinal, respiratory and urogenital systems.

The most common and significant complains are the ones referring to the cardiovascular system (cardiac neurosis or Da Costa's syndrome or neurocirculatory asthenia), to the respiratory system (hyperventilation, psychogenic cough), to the gastrointestinal system (gastric neurosis, neurotic diarrhoea, irritable bowel syndrome, flatulence) and also to the urogenital system (dysuria and increased frequency of micturition).

The symptoms are usually of two types neither of which indicates a physical disorder or the organ or system concerned. Firstly there are complains based upon objective signs of autonomic arousal, such as palpitations, sweating, flushing, tremor and expression of fear and distress about the possibility of a physical disorder. Secondly there are subjective complains of a non-specific or changing nature, such as fleeting aches and pains, sensations of burning, heaviness, tightness and feelings of being bloated and distended, which are referred by the individual to a specific organ or system.

h Neurasthenia (F48.0)

In many countries neurasthenia is not generally used as a diagnostic category. Many of the cases so diagnosed in countries where this diagnostic is in use would probably meet the current criteria for depressive disorder or anxiety disorder. They are however, individuals whose symptoms fit the description of neurasthenia better than that of any other syndrom, and such cases seem to be more frequent in some cultures than in others.

With neurasthenia there is a variety of unpleasant physical feelings such as: dizziness, tension headaches, feeling of a general instability, irritability, anhedonia, sleep disturbance, worry about decreasing mental or bodily wellbeing.

i Dysthymia (F34.1)

In this form of a chronic depression, lasting at least several years, there is much in common with the concepts of depressive neurosis and neurotic depression.

What is characteristic for dysthymia is that the depressive mood episodes do not have a long enough duration to justify a diagnostic of severe, moderate or mild recurrent depressive disorder (F33). Periods of normal mood rarely last for longer than a few weeks.

10.2 **Assessment of neuroses**

a *The initial applicant*

The medical examiner has a great responsibility in evaluating an applicant's fitness to train for a career in professional aviation. The cost to the individual in learning to fly is considerable and the investment of an employing airline into further training employees is vast. The examiner has to decide not only upon the individual's fitness at the time of the

examination but must also try to form an opinion and give advice concerning the likelihood of the applicant remaining fit to fly for some years to come.

A decision about psychiatric fitness for flight crew training must be based upon the history of the applicant and that of his family. A history of childhood neurotic traits, or a family history of psychosis should lead to very careful scrutiny.

If the applicant has suffered a psychiatric illness of significant severity requiring a period, or periods, of psychotropic medication, or has required admission to a psychiatric hospital or undergone prolonged out patient care, he should normally be rejected for both commercial flying and air traffic control duties. (Referral for formal psychiatric assessment may allow a private pilot licence to be issued in certain circumstances.)

In all cases it is important that the consultant psychiatrist should be familiar with the aviation environment when such advice is sought.

Some indicators of predisposition to psychiatric illness were discussed earlier in this chapter, and should a group of these be evident at the initial interview it would be wise to seek further specialised advice before making a final decision of fitness.

b *Established flight crew*

The established pilot has proved himself to be competent by successfully completing flying training. The decision as to his suitability to maintain a licence may, therefore, be considered more sympathetically than is the case with the initial applicant.

- i During the acute phase of any neurotic illness the presence of anxiety or depression is likely to interfere with decision making and the individual must be assessed as unfit to follow his profession until there has been full recovery.
- ii The use of psychotropic medication to treat psycho neurotic illness is incompatible with aviation duty and while any form of major or minor psychotropic drug is required the licence must be suspended. This suspension must remain in force until a suitable period has elapsed following the cessation of medication to ensure that stability is maintained.
- iii A single episode which clears completely in less than three months should be considered compatible with a return to flying.
- iv A protracted illness with poor response to treatment or characterised by relapses will normally lead to permanent loss of flying status.

11 THE PSYCHOSES

The psychotic disorders are those presenting with gross impairment of the individual's ability to perceive reality and are usually characterised by severe symptoms of delusions, hallucinations and total lack of insight.

11.1 Functional psychotic disorders

Include such disorders as schizophrenia, delusional disorder, acute and transient psychotic disorders, mood disorders, bipolar affective disorder (manic-depressive psychosis) paranoid disorders and others. A history of, or the occurrence of, such disorders should be considered permanently disqualifying for any class of flying licence, unless in certain rare cases a cause can be unequivocally identified as one which is transient, has ceased and will never recur. While such judgement may be difficult at times the decision should always err on the side of caution. Some psychoses permanently change the personality so that following recovery or remission the individual remains unfit for flying by reason of the personality damage. The functional psychoses

may also recur without warning and for this reason a history of even a single attack must be permanently disbarring.

a *Schizophrenia, schizotypal and delusional disorders (F20-F29)*

1 Schizophrenia (F20)

Schizophrenia is characterised by a loosening of the bonds between the different aspects of mental life. Mood, memory, perception, motor activity, reality, language and thinking cease to be co-ordinated. There is a severe interference with thought processes and eventual disorganisation of the personality.

The symptoms that occur in schizophrenia are numerous and include delusions, visual and auditory hallucinations, thought blocking, feelings of being controlled by outside influences (radio, television, telepathy etc.) and blunting of emotion, all arising in a setting of clear consciousness.

More important than the individual symptom, or symptom-complex, is the change in personality of which the patient is often aware, with a loss of emotional warmth, an air of secrecy or unexplained mood fluctuations. When fully developed it is no longer possible to establish a close rapport with the patient who usually prefers to remain in isolation. Others may be restless with inappropriate affect, with smiling or grimacing, or assume odd and long sustained posturings, such as occur in the catatonic variant.

Schizophrenia is the most frequent cause of admission of the young adult to psychiatric hospitals and its highest incidence is between 17 - 25 years for the young men and 25–35 years for females. In recent years treatment with phenothiazines and other psychotropic drugs has greatly improved the prognosis and the florid may remit with treatment. Nevertheless such a diagnosis, once made, must, as stated above, be a permanent bar to the holding or acquisition of any class of flying licence.

2 Schizotypal disorder (F21)

A disorder characterized by eccentric behaviour and anomalies of thinking and affect which resemble those in schizophrenia, although no definite and characteristic schizophrenic anomalies occur at any stage.

3 Persistent delusional disorders (F22)

The major symptom in this group is a conviction of persecution and unlike the paranoid reaction in schizophrenia, where reason is clearly affected, the paranoid reaction occurs in a setting of clear sanity. The paranoid reaction is elaborate and frequently starts with a belief that some inner personal secret has been discovered and made public so that passing strangers and acquaintances know of it, or the individual may become convinced that his failure to attain promotion is due to victimisation by his superiors. The key symptomatology is that of an over-valued idea in an otherwise rational being. Logical argument does not enable them to see that their views are wrong and much time and money can be wasted on repeated lawsuits in an effort to prove the correctness of their viewpoint. This includes: paranoia, paranoid psychosis, paranoid state, paraphrenia and Sensitiver Beziehungswahn. Such a condition is very resistant to treatment and the individual who develops such a psychosis is most unlikely ever to be considered as fit to hold any class of flying licence.

4 Acute and transient psychotic disorders (F23)

There are a heterogenous group of disorders characterized by the acute concept of psychotic symptoms such as delusions, hallucinations and perceptual disturbances and by the severe disruption of behaviour. Acute onset is defined as a crescendo development of a clearly

normal clinical picture in about 2 weeks or less. There is possible an abrupt concept (onset within 48 hours).

b Mood (affective) disorders (F30-F39)

These disorders are severe illnesses in which the primary symptoms are excess of sadness or joy. These illnesses tend to recur, often periodically, but with a complete return to normality between the attacks.

Some individuals will have no more than a single depressive illness in their life, from which a complete recovery may be made. The dilemma facing the AMS is to identify those who will make a full recovery and never relapse.

When the patient has hitherto been free of excessive mood swings and then the depression follows a non-recurring stress, such as death of a close relative etc. the prognosis for freedom from further attacks is good.

The occurrence of even a single attack of a hypomanic or manic illness must lead to a denial of any form of flying status, whether or not the condition has been controlled by medication.

1 Manic episodes (F30)

In manic-depressive illness (manic type (F30)) which is much more rare, the patient becomes over active and joyful. There is a bounding self confidence and a feeling that any task could be capably tackled, even those well outside of the individual's normal province. The increase in energy and drive leads to reduction in sleep and judgement is very severely impaired by a complete loss of self critical faculties.

2 Bipolar affective disorder (F31)

This is the manic-depressive illness or the manic-depressive psychosis. There are 2 or more episodes in which the patient's mood and activity levels are significantly disturbed (hypomanic, manic, depressed or mixed).

3 Depressive episode (F32)

In manic-depressive illness (depressed type (F32)) energy is reduced and gloom is profound. Sleep may be significantly impaired and early morning waking and rumination is common. Delusional symptoms, usually of guilt or impending doom, may occur and suicidal intentions may arise in the most severely affected. Reason is otherwise not impaired although the stream of thought may be significantly slowed.

4 Recurrent depressive disorder (F33)

This disorder is characterized by repeated episodes of depression as described for depressive episode (F32) without any history of independent episodes of mood elevation and increased energy (mania).

5 Cyclothymia (F34.0)

Cyclothymic disorder is symptomatically a mild form of bipolar disorder, characterized by episodes of hypomania and mild depression.

A persistent instability of mood involving numerous periods of depression and mild elation, none of which is sufficiently severe or prolonged to justify a diagnosis of bipolar affective disorder (F31) or recurrent depressive disorder (F33).

12 Organic (including symptomatic) mental disorders (F00-F09)

Organic mental illnesses are characterised by psychiatric disturbances occurring in response to an identifiable physical cause, such as infections, metabolic disturbances, head injuries, psychoactive substances or degenerative disorders. In such illnesses the prognosis for an eventual return to aviation duties is entirely dependent on the complete resolution of psychiatric disturbances following the resolution of the physical cause.

a *Acute organic brain syndromes*

These are characterised by clouding of the mind, delirium, fleeting hallucinations and shortlived delusions. These may occur in the course of overwhelming infections such as pneumonia, enteric fever or meningitis and encephalitis.

They may occur in the course of acute toxic states induced by alcohol (delirium tremens), psychoactive drug abuse and are common following severe head injuries and multiple traumatic injuries.

Disorders of thyroid function and other endocrine disorders may also induce acute or sub-acute organic psychotic symptoms as may the therapeutic use of corticosteroids.

When the cause of such an acute disorder is clearly identifiable, is responsive to treatment and is non-recurrent, a return to aviation duties may be anticipated in all classes of pilots' licence. This will, however, be dependent upon demonstration of complete physical and mental recovery which will involve psychiatric and psychometric assessment.

(Such disorders arising as a result of alcohol or psychoactive drug abuse require very special consideration as outlined in paragraph 14 below.)

b *Chronic organic brain syndromes*

These arise where there is progressive and irreversible destruction of brain tissue and are characteristically associated with intellectual impairment, impaired judgement, loss of recent memory, disorientation of time and space and loss of drive and emotional control.

Such changes are 'normal' in extreme old age (senile dementia (F00-1)) but can occur in the younger age group (pre-senile dementia (F00-0)) and are characterised by a history of affective disturbance, with decreasing ability to learn in everyday activities, or in psychological tests and marked inconsistency in performance. The diagnosis is difficult and may be mimicked by other illness, notably depressive syndromes, alcohol or drug induced organic brain syndromes etc.

Such dementing disorders are also seen in association with defined psychiatric syndromes, such as Alzheimer's disease, cerebral syphilis (GPI), Huntingdon's chorea, Creutzfeld-Jacob and Pick's disease.

Cerebral atheromatous disease and slow growing, cerebral space occupying lesions may also cause dementia and produce a similar psychiatric picture.

In none of these progressive dementing disorders may medical certification be agreed or maintained for any class of pilot licence.

13 Post traumatic psychiatric disorders

Impairment of consciousness occurs after all but the mildest closed head injuries, but is less common after penetrating injuries. The cause is uncertain, but is probably related to rotational stresses within the brain causing neuronal fibre shearing.

After severe head injury there is often prolonged phase of confusion and sometimes behaviour disorder, disturbance of mood, hallucination, delusions and disorientation.

On recovery of consciousness defects of memory are usually apparent. The period of post traumatic amnesia (PTA) is the time between the injury and the resumption of normal continuous memory. The duration of amnesia is closely correlated with:

- a neurological complications such as motor disorders e.g., epilepsy, dysphasia, and persistent deficits in memory; and
- b psychiatric disability and generalised intellectual impairment and possibly a change of personality.

When head injuries are followed by post traumatic amnesia of more than 24 hours they are likely to give rise to persisting cognitive impairment proportional to the amount of brain damage sustained. Following a closed head injury this may vary in severity, from slight defects becoming apparent only during intellectually demanding activities, to obvious dementia. Personality change is particularly likely after frontal lobe damage and there may be some coarsening of behaviour, irritability, lack of drive and, occasionally, loss of control and aggression.

The above changes may improve gradually with time and require very careful and informed psychiatric and neurological assessment.

14 Immunological disorders

Disordered immune function may affect the CNS and alter its function. CNS, auto-immune and viral processes, in association with systemic or neurological disease may induce neurological, behavioural or neuro-psychological impairment. Such phenomena may classically be seen in CNS involvement in systemic lupus erythematosus (M32), multiple sclerosis (G35) and HIV disease (B22).

The various systematic disorders associated with SLE and MS will, in the majority of cases, not permit any class of medical certification.

15 HIV disease (B22.0)

Neuropsychiatric and psychosocial disorders are among the most common complications seen in HIV disease and are the most likely to have an adverse impact on the maintenance of medical certification in the aviator. The medical management of the individual is the responsibility of the relevant specialist, but in the light of current knowledge the following guidelines are suggested for aeromedical management.

a Initial diagnosis

At initial diagnosis, stress disorders, anxiety and reactive depressive disorders may arise. These are normally transient but may require active psychiatric support.

The possibility of serious suicidal intent is high, as is the possibility of substance abuse. Careful monitoring and counselling during this period will almost certainly be required and it would be wise to suspend medical certification at least temporarily.

b *Subsequent assessment*

A long relatively symptom-free period follows the initial infective illness, the individual looking, feeling and performing well and for all practical purposes is well. During this period which may last for a number of years, it would seem possible to maintain medical certification with the proviso that very strict follow-up is instituted, with both physical and psychiatric assessment at regular intervals of no greater than six months duration. Certification should be limited to that of a multi-crew role only.

During this sub-clinical period, markers of disease progression are important in offering prognostic information in the following areas:

- i the requirement for anti-viral therapy
- ii prophylaxis to opportunistic infection, and
- iii a determination of fitness for continued flight status.

Staging of HIV disorders can be summarised as follows:

- i antibodies only
- ii lymphadenopathy – but not in all cases (AIDS Related Complex)
- iii T4 helpers lymphocyte count (CD4+) – falls below 400/cuml
- iv earliest functional immunological deficits are seen
- v candidiasis
- vi other opportunistic infection (PCP etc.).

It would seem reasonable to suggest that with such regular surveillance, informed psychiatric/psychologic assessment and monitoring of disease markers, that restricted medical certification could safely be sustained in stages 1 and 2. Further progression of the infection would not permit continued medical certification. (See also the Chapter on sexually transmitted diseases.)

16 THE AGEING PILOT

With increasing age new skills take longer to learn and to retain. Thus an experienced captain may find difficulty and take an increasing time to become competent on new aircraft as compared with his juniors. Anxiety and reactive depressive disorders may result from the fear that 'senility' is responsible.

Sympathetic handling and possibly psychological evaluation may prove helpful and may demonstrate that no dementia exists. In other cases the pilot may well have tried his best but finds insuperable difficulty in learning new techniques – or indeed may have lost his motivation. In such cases medical re-certification will require very careful evaluation.

Further difficulty can arise when the ageing pilot fails to master the handling techniques of a new aircraft. The pilot will have tried his best but finds insuperable difficulty learning the new techniques – or may indeed have lost his motivation to fly. In such cases medical re-certification cannot be supported for re-licensing.

17 SUICIDE

It is not unknown, but uncommon, for an individual to use an aircraft as a means of committing suicide and a brief review of assessing an individual 'at risk' is relevant.

There are differences between those who successfully complete the act of suicide and those who survive after overdose or deliberate self harm.

Those who commit suicide are more often male and the majority suffer from a psychiatric disorder. The act is carefully planned, precautions taken against discovery, and the method is usually violent. The majority are suffering from a depressive disorder, many have significant social problems and alcoholism is a feature in about 15% of cases. In the younger age groups personality disorders feature largely, often associated with alcohol or drug abuse, and adverse social factors.

Deliberate self harm is usually an impulsive act, committed in such a way as to invite discovery. Overdosage with minor tranquillisers, antidepressants and non-opiate analgesics are common. Here again personality disorders with alcohol and drug abuse are prominent features together with social isolation and deprivation, but frank psychiatric illness is uncommon. In assessing potential risk the following factors should be considered:

- a a history of direct statement of intent;
- b a history of previous self harm;
- c a previous or current depressive disorder, particularly those in the early phase of recovery;
- d alcohol dependence, particularly where physical complications or severe social damage exists;
- e drug dependence;
- f social deprivation or loneliness.

At the initial selection interview those with a history of previous suicidal attempts should be very carefully and searchingly evaluated psychiatrically and it would be wise not to allow such individuals to enter a flying career.

Those who develop depressive illnesses should be excluded from flying and fully evaluated on recovery before reinstatement in a flying role. It is particularly important that those with alcohol dependence or abuse are assessed as temporarily unfit following diagnosis and treated as outlined in paragraph 14 below. Those individuals with significant personality disorders should be carefully excluded at the initial examination, if at all possible.

18 DRUG, ALCOHOL OR OTHER SUBSTANCE USE, ABUSE AND DEPENDENCE - MENTAL AND BEHAVIOURAL DISORDERS DUE TO PSYCHOACTIVE SUBSTANCE USE

In ICD-10, mental and behavioural disorders due to use of psychoactive substances are classified by the third-character of the code according to substance, and by the fourth and fifth character according to clinical condition. Amongst licensed personnel in the aviation workplace, mental and behavioural disorders due to the use of alcohol (F10) are far more common than those due to any other psychoactive drugs (F11-F19), with the possible exception of nicotine (F17). Most attention will therefore be given here to alcohol, but some additional comments will be made regarding other drugs.

18.1 Mental and behavioural disorders due to the use of alcohol (F10)

- a Acute intoxication with alcohol (F10.0)

This is a concern in the aviation workplace, even when it is otherwise uncomplicated (F10.00), by virtue of the way in which it impairs psychomotor performance. This may potentially lead to accidents and injury (F10.01) of a minor or catastrophic form. These potential complications arguably render it impossible by definition to consider any episode of acute intoxication in a pilot on duty as “uncomplicated”. (ie F10.00 is a category which is effectively excluded on principle in this population).

b Harmful use of alcohol (F10.1)

That is associated with damage to the physical (e.g. hepatitis) or mental health of the individual (e.g. depressive episodes), but in the absence of a diagnosis of the alcohol dependence syndrome (F10.2). Certain specific and severe consequences of alcohol misuse may also be diagnosed separately – notably alcoholic hallucinosis (F10.52), Korsakoff’s psychosis (F10.6), and alcoholic dementia (F10.73).

c The alcohol dependence syndrome (F10.2)

This is a cluster of biological, psychological and social phenomena that may be diagnosed where three or more of the following features may be identified during the preceding year:

- i A strong desire/compulsion to drink;
- ii difficulties in controlling drinking;
- iii a physiological withdrawal syndrome associated with abstinence (F10.3);
- iv increased tolerance to alcohol;
- v neglect of other activities due to drinking;
- vi persistence of drinking despite harmful consequences.

d Alcohol withdrawal (F10.3)

That is associated with mild to severe symptoms, including sweating, nausea, tremor and anxiety. However, it may be associated with serious complications, including convulsions (F10.31), or delirium (“Delirium tremens”, F10.4).

A variety of screening tests are available to assist in the detection of alcohol use/misuse:

- i **Breathalyser**
The breath alcohol meter is easy to use and provides immediate results. It is useful in screening for intoxication, but does not detect harmful use, dependence or other complications of alcohol use.
- ii **Gamma glutamyl transpeptidase (GGT)**
GGT is raised in about 80% of heavy drinkers, but is not a completely specific marker for harmful use of alcohol.
- iii **Mean corpuscular volume (MCV)**
The MCV is raised above normal values in about 60% of alcohol dependant people and, like GGT, is not a completely specific marker. The values takes several weeks to return to normal during abstinence.
- iv **Carbohydrate deficient transferrin (CDT)**
CDT has similar properties to GGT in so far its use as a screening test is concerned. It is more specific to heavy drinking than GGT, but perhaps less sensitive to intermittent “binge” drinking.

All of these tests may also be useful to confirm and monitor abstinence during follow-up of a person who has been previously identified as have a drinking problem. However, the usefulness of GGT, MCV & CDT for this purpose is confined primarily to those cases where it has been demonstrated that the test has been abnormal during periods of drinking. Where it is known that the test has remained normal during a period of heavy drinking, it is clearly unlikely to be useful in the monitoring process (unless subsequent heavier drinking produces an abnormality, where previous “less heavy” drinking has not to do so). In some cases, particularly where a patient presents following successful treatment, test results obtained during a period of heavy drinking may not be available. In such cases, all 3 tests should be conducted at regular intervals (usually by the AP - see below) in support of the monitoring process.

However, an awareness of the limitation of the value of these tests must then be maintained, since there can be certainty that any of them will become abnormal if drinking is resumed.

18.2 Medical Validation

The experience of certain major and airlines authorities is that success in rehabilitation of the alcohol dependent pilot can be achieved by early intervention and treatment, adhering to the strict protocol outline below. By using this programme it has been possible to return air crew to active flying with three to four months.

a Immediate action

The individual must be assessed as temporarily unfit on reasonable suspicion of intoxication whilst on duty, harmful use of alcohol, alcohol dependence, or other alcohol related problems. This action may be taken by airline's own medical officer or by the AME.

In support of the ensuing assessment process, it is essential that information is obtained from all possible sources. In addition to taking the individual's history the medical examiner/AP may find it helpful to see a close relative, usually the partner, to develop the history further and to obtain some idea of the domestic picture. However, partners/relative should not normally be put under any pressure to provide such assistance. A report should also be obtained from the patient's family doctor who should be involved and kept informed of progress throughout the programme. The opinion of the pilot's training captain is often invaluable if this can be discreetly obtained without pre-judging the issue or suggesting to the employer that such a problem must exist. The individual must be seen by an AP. If the opinion given is that the problem is not related to alcohol, or other psychiatric disorder, the report should be available to, and reviewed by, the AS of the licensing Authority before the individual may be considered fit to return to flying. There may occasionally be information on file that is unknown to the airline or family doctor. Before divulging/obtaining the above reports, it is important to obtain written consent from the individual concerned.

Where a pilot is thought to be intoxicated whilst on duty, particular care and sensitivity are required on the part of the OP. The action taken will depend in part upon the Company drug and alcohol policy. However, where possible, it is important to obtain an objective assessment of the alleged intoxication at the earliest opportunity. This might involve use of a breath alcohol meter, a blood alcohol analysis or urinary drug testing. Such procedures may only be conducted with the patient's consent. However, a smell of alcohol is rather subjective physical sign, and such tests offer the opportunity to confirm objectively that a person was or was not intoxicated. Given that blood alcohol concentration falls rapidly with abstinence, such testing should be conducted as soon as possible. Obviously refusal of testing, and any reasons given for this, should also be recorded carefully.

b Treatment and rehabilitation

If psychiatric opinion and examination confirm "alcohol, psychotropic drug or substance abuse with or without dependency" then a rehabilitation programme can be considered, including, if necessary, an in-patient treatment. The treatment programme undertaken should be entirely at the discretion of the treating psychiatrist and may or may not include pharmacotherapy with disulfuram and/or acamprosate. If dependency is not confirmed a treatment programme including a four weeks inpatient can be considered.

The JAR requirement is a stringent one, and constitutes more than would normally be clinically indicated in many cases. Where the diagnosis is considered by the AP not to constitute "alcohol, psychotropic drug or substance abuse with or without dependency" (and it will be noted that this terminology does not conform to ICD 10 diagnostic terminology), but where there is still a degree of concern regarding an alcohol related matter, then the AP and AS, but an unambiguous diagnosis of "alcohol abuse" clearly

requires a four week residential treatment programme under current regulations. Arguably, heavy drinking as a cause of an elevated GGT or hypertension, but without any other complications or problems, might be an example of such circumstances.

An isolated offence of driving under the influence of alcohol does not fulfil ICD-10 criteria for harmful use of alcohol (notably the threshold breath/blood alcohol concentration) vary from one member state to another. However, such offences do indicate an increased probability that other alcohol related problems might be identified, and this probability increases still further where there have been multiple drink-driving offences committed. Depending upon the number of such offences identified, it might be considered appropriate to arrange for a pilot to receive a 4 week residential treatment programme. In isolated cases, out-patient or day-patient treatment might be recommended by the AS/AP as being sufficient. It might be noted that the FAA now prohibits the licensing of pilots who are convicted of 2 or more drink-driving offences within a 3 year period.

c Follow-up and monitoring

The Aeromedical Section of the Authority should be advised as soon as treatment is considered necessary so that follow-up review may be arranged to commence immediately following discharge from in-patient care.

The AP should review the patient after discharge from in-patient care and again immediately before or after revalidation. On-going review should be at 3 monthly intervals (or more frequently if indicated) for at least 2 years, and less frequently thereafter. Overall monitoring should be for not less than 3 years and in most cases will continue virtually indefinitely, or until the pilots retires. This is because of the significant risk of relapse, which continues for many years following treatment. Review will require supportive, confirmative evidence of continuing abstinence from the family, the family doctor and from others in close contact at home or in the workplace. At each review blood tests should be repeated in support of the monitoring process (see above).

Continued attendance at Alcoholics Anonymous or an equivalent organisation, or follow-up by the treatment programme after discharge, should be required in most cases. It should also be required that a peer group member on the same aircraft fleet should act as a "buddy" to supervise the individual's progress and report to the relevant authority at intervals.

d Treatment goals

In most cases, total abstinence will be the only acceptable treatment goal. For less serious cases (eg an elevated GGT with no other evidence of problems arising from alcohol consumption), an attempt at controlling drinking may be allowed, and in such circumstances in-patients treatment will not be required. However, this will be the exception rather than the rule and, in cases of doubt, in-patient treatment and abstinence should both be considered mandatory.

e Revalidation

At the end of the twelve weeks, provided that abstinence is secure, the pilot may be allowed to resume his/her flying role but only in a multicrew capacity. A period of at least two years multicrew limitation (Class 1 "OML" or Class 2 "OSL") is required, assuming good progress. Failure to enter the programme or to maintain the protocol must lead to continued suspension of the licence.

f Relapse

Following treatment, relapse may lead to permanent withdrawal of the aviation licence. However, the definition of a relapse is sometimes not clear cut, and each case should be assessed carefully by an aviation psychiatrist.

18.3 Mental and behavioural disorders due to the use of other psychoactive drugs (F11-F19)

Intoxication, harmful use, dependence, psychotic disorders and disorders associated with psychoactive drugs other than alcohol are much less common against aircrew. However, when they are identified they are potentially a very serious concern and should always be assessed by an AP. The ICD-10 classification specifies diagnosis according to the following groups of substances:

- Opioids (F11)
- Cannabinoids (F12)
- Sedatives or hypnotics (F13)
- Cocaine (F14)
- Caffeine (F15)
- Hallucinogens (F16)
- Tobacco (F17)
- Volatile solvents (F18)
- Multiple and other substances (F19)

In general, illicit drug use will involve substances in categories F11, F12, F13, F14, F15, F16 and F19. The use of volatile solvents (F18), although usually associated with teenage years, and although technically not illegal, would be an equal cause for concern in the aviation environment if it should occur.

Socially acceptable drug use in categories F15 and F17 will not normally pose a clinical or occupational problem. However, significant problems can arise with respect to use of these substances, and this may sometimes require psychiatric or other medical assessment. Excess caffeine use can cause or exacerbate somatic symptoms of anxiety. Technically, of course, harmful use of tobacco (F17.1) includes a wide range of medical conditions all of which might render a licence holder unfit to exercise the privileges of that licence. However, psychiatric assessment would only be appropriate where problems of tobacco dependence and withdrawal were specifically the cause of concern.

Prescribed drug use (F13, or sometimes F11) may pose problems for licensed personnel, especially if the pilot and physician do not notify the occupational physician, the AME or the aviation authority. Prescription of drugs in these categories should always be associated with suspension of the medical certificate. Dependence or other problems arising from prescribed drug use should be subject to assessment by an AP.

18.4 Medical Validation

Drugs alter the mental state, interfere with judgement, alertness, vision and co-ordination and where abuse or dependence upon any such psychoactive substances is suspected the airman/woman should be immediately assessed as temporarily unfit and individually assessed under supervision of the AS. If dependence on such drugs is confirmed a temporarily unfit assessment should continue until treatment has been shown to be completely successful, the individual is on no medication and fully rehabilitated. The management protocol for alcohol dependence is a useful model to follow or adjust according to AMS advice.

19 PSYCHIATRIC TREATMENT

19.1 Medication and drugs

According to the JAR-FCL 3.205 and 3.325 Psychiatric requirements (class 1 and class 2), and according to the JAR-FCL 3.115, psychiatric disorders that need the use of medication or drugs are incompatible with flying status.

The use of psychiatric medication such as, neuroleptic, antidepressant, normothimic, barbiturates, anxiolytic, hypnotic and others, which may affect alertness and upper brain functions should be forbidden, even for therapeutical purposes and under medical supervision.

In order to preserve the quality of sleep, during stop-overs in long-hauls flights, and only for this purpose, the ingestion of very short half-life hypnotics, may be tolerated, but always under medical supervision.

19.2 Psychotherapy

Different approaches of psychotherapy should be used according to different mental disorders. If pilots undergo psychoanalysis treatment, they must be considered unfit for flying during its course, due to necessary respect of unconscious defence mechanisms.

The most appropriate technique is known as Psychotherapy Brief, centralised in concept of the Focus, (the symptoms which lead the pilot to the psychotherapist).

The aim of psychotherapy should be helping the pilot to solve conflicts, and make decisions.