Treatment of psychoses in the elderly

A. Phanjoo

Psychotic disorders in the elderly can be divided into three types: disorders that have started in earlier life and persist into old age; disorders that start *de novo* after the age of 60, and psychoses associated with brain disease, including the dementias. The classification of psychoses in late life has provoked controversy for nearly a century. The debate concerns whether schizophrenia can present at any stage of life or whether functional psychoses, arising for the first time in late life, represent different illnesses. The nomenclature of such disorders consists of numerous terms including late onset schizophrenia, late paraphrenia, paranoid psychosis of late life and schizophreniform psychosis. This plethora of terms has made research difficult to interpret.

Historical overview

Although the term paraphrenia was used by Kahlbaum as early as 1861, the concept of paraphrenia was first described by Kraepelin. He used the term to differentiate a certain type of psychotic illness from schizophrenia (dementia praecox) because he believed that, unlike schizophrenia, paraphrenia was not associated with a deterioration of personality, volition was not affected and such patients could engage in a rational argument outside of their delusions. There was also an absence of catatonic symptoms.

In 1921, Mayer published an important literature review and a follow-up study of patients diagnosed as suffering from paraphrenia; he showed that, over a period of time, 70% of such patients develop symptoms which are almost indistinguishable from those of schizophrenia. The impact made by this paper gave the term paraphrenia a 'death blow' according to Manfred Bleuler and the general view

was to consider paraphrenia as a variant of schizophrenia and therefore not a separate entity.

The whole controversy was revived in 1955 with a series of studies by Roth and co-workers, who investigated more fully the range of these disorders. They described a condition, late paraphrenia, which accounted for 10% of mental hospital admissions after the age of 65. The main characteristics of this disorder were florid paranoid delusions and hallucinations occurring in clear consciousness. Unlike the patients followed up by Mayer, Roth's cohort of patients did not undergo personality deterioration. He also found that the condition was more common in females, was associated with sensory deficits, social isolation and a reduced marriage rate as well as reduced fertility. Patients seemed to have an excess of abnormal personality traits of the paranoid or schizoid type. Over the next 20 years, a number of researchers confirmed the findings of Roth and his co-workers, most of whom concurred with their view that late paraphrenia probably represented a variant of schizophrenia (Kay & Roth, 1961).

The situation changed dramatically in 1987 when DSM–III was revised and the age of 45 as the upper limit for a diagnosis of schizophrenia was removed (APA, 1987). Consequently, patients in the US who develop schizophrenic symptoms after the age of 45 are described as having late onset schizophrenia. ICD–10 (WHO, 1992) does not have a diagnosis of late paraphrenia. There has been some concern about the loss of the diagnosis of late paraphrenia because some authors still believe that the major differences in phenomenology, genetic risk and brain imaging do not readily fit within the pattern of changes reported in younger schizophrenics. A recent study (Almeida *et al*, 1995) demonstrates the high prevalence of persecutory delusions and auditory hallucinations in this group of patients and comments on the high female to male ratio (8:1) and the importance of deafness as a risk factor.

A. L. Phanjoo is a consultant in Old Age Psychiatry, and Head of Service and Clinical Director for the Care of the Elderly Unit, Royal Edinburgh Hospital, Morningside Terrace, EH10 5HF. His particular interest is the pharmacological treatment of psychiatric conditions in the elderly.

Treatment strategies

Factors influencing the use of drugs

A variety of treatment strategies have been proposed for the management of psychosis in the elderly including family therapy, psychotherapy and cognitive–behavioural therapy, but the mainstay of treatment remains the use of anti-psychotic drugs. There are a number of factors, however, which make the use of drugs problem-atical. They include:

   (a) altered pharmacokinetics in old age
   (b) poor drug compliance (especially relevant in the elderly many of whom live alone)
   (c) drug interactions
   (d) high incidence of serious side-effects inclu-ding extrapyramidal side-effects (EPS), tardive dyskinesia and the neuroleptic malignant syndrome.

Identifying the cause

Treatment with psychotropic drugs must be preceded by a careful attempt to identify the cause of the psychosis. In some elderly patients, the symptoms may well represent a recurrence of a previous illness. In patients who present with psychotic symptoms *de novo*, potentially remedia-ble aetiological factors should be sought, for example, infection, altered metabolism, drugs or alcohol. Paranoid symptoms may be secondary to delirium or may be seen in the context of organic syndromes as both reversible or irreversible. A psychosis of sudden onset will suggest an organic cause which should be sought for, whereas an illness which has developed over a period of months, if not years, may allow the clinician to make a diagnosis of late paraphrenia with some confidence.

Factors influencing choice of drugs

A considerable range of antipsychotic drugs are now available for clinical use (see Box 1). A few compounds are available for depot intramuscular injections. There is relatively little information in the literature to guide the old age clinician in the choice of an antipsychotic. Clinicians vary widely in their choice of drug, its dosage or its method of administration (oral or intramuscular). Consider-ing that many antipsychotic drugs have been in use for 25 years or more, personal experience of one compound or a class of compounds can be considerable and it is not surprising that anecdotal evidence has accumulated to convince some psychiatrists that one drug is particularly good for one group of symptoms whereas another may be used preferentially in different symptoms. There is little scientific evidence to suggest that one particular drug is more effective than another for certain symptoms. Indeed, before the advent of clozapine, it was recognised that in equivalent doses no antipsychotic had been shown to be consistently superior to chlorpromazine.

Whereas there is a considerable literature on the treatment of psychoses of patients up to the age of 70, there is a dearth of good research on the treatment of psychoses in older patients. Early reports (Kay & Roth, 1961) describe remissions after treatment with ECT or medication with tranquilli-sers. Of the 43 patients reported in that series, approximately 25% experienced a temporary remission. Of the 12 patients who received ECT, seven showed a good to moderate response but the improvement was not maintained at follow-up. Post (1966) described a series of 71 patients who had received antipsychotic treatment in the form of trifluoperazine or thioridazine. Forty-three of the 71 patients had complete response to treatment and 22 were described as showing moderate improve-ment. In the same study, Post also showed that maintenance on antipsychotics was associated with reduced admission. More recent reports have been less sanguine and improvement has been reported in about 26–48% of patients (Pearlson *et al*, 1989; Howard & Levy, 1992).

Since 60% of psychoses in the elderly are characterised by paranoid ideation, drug comp-liance remains a major problem, particularly as a large proportion of elderly psychotics live on their own and show extreme suspiciousness. It is logical to assume that parenteral depot preparations would be associated with more consistent improve-ment. This has indeed been shown in studies comparing depot with oral preparations. Depot preparations, however, are not guaranteed to produce a complete remission of symptoms and many patients still harbour bizarre ideas, although they may not readily express them. Many patients are reluctant to comply with medication because of unpleasant side-effects. Howard & Levy (1992) have shown that the monitoring of patients by community psychiatric nurses and the use of depot rather than oral medication improved compliance with a concomitant improvement in psychotic symptoms, although there was little effect on social adjustment and insight.

It is important for patients to develop a trusting relationship with their therapist. The development

of this therapeutic relationship may be difficult and time consuming but once established it will enable the therapist to persuade the patient of the necessity to take some form of medication, if only to alleviate the distress provoked by the symptoms. Rather than focus on the patient's delusions and hallucinations, the therapist should look instead at how these symptoms are interfering with the patient's day to day living. They may then successfully suggest ways in which the patient's level of functioning could improve. Therapists should be able to deal with patients' anger and criticism and take their complaints seriously. Many patients can be maintained in the community once such a relationship with their therapist has been achieved. All too often, however, such patients are seen by junior doctors who move on after six months without any time being allowed for a trusting relationship to develop. Experienced CPNs who are attached to a psychogeriatric unit over a longer period of time may achieve a great deal in the management of such patients.

Once compliance with a drug regime is assured, due consideration must be given to the choice of medication, the dosage and the method of administration. A simple drug schedule involving one tablet taken once a day is preferable to a combination of antipsychotics which have to be taken at different times of the day. Patients on depot preparation should be managed as far as possible without any oral preparations. Unfortunately this is not always the case. Some patients on a depot preparation may take another antipsychotic as an hypnotic. Relapse rates in patients on depot preparations may not differ markedly from those patients taking oral medication. It is important that the patient and their relatives are given a full description of the side-effects of any drug, as well as the importance of complying with the drug regime.

Range of antipsychotics

Individual studies suggest that high potency antipsychotics are more effective than low potency ones, but have more side-effects. There is no evidence to suggest that the clinical efficacy of an antipsychotic drug is related to its sedative effect. Most clinicians have had experience of using conventional antipsychotics in the management of psychoses in old age and no doubt many of them already have their favourite drug or combination of drugs. The use of the novel antipsychotics in the elderly has been poorly researched. These novel or atypical antipsychotics can be divided according to Gerlach's classification (Gerlach, 1991):

(a) Selective dopamine receptor blockers, e.g. sulpiride
(b) Partial dopamine agonists
(c) Non-dopamine drugs, e.g. ondansetron
(d) Combination receptor blockers, e.g. clozapine and risperidone.

Selective dopamine receptor blockers

The usefulness of these compounds in treating psychosis in the elderly is much less obvious than with younger patients. A good example of the benzamide group is sulpiride which has been shown to have an antipsychotic efficacy equal to that of haloperidol and chlorpromazine, although its effect on negative symptoms is questionable. Another compound of a similar nature, remoxipride, which was introduced in 1989 but subsequently withdrawn because of its propensity to cause blood dyscrasias in some patients, had been tested against haloperidol in a number of studies and was shown to have the same efficacy as haloperidol but a reduced incidence of side-effects. Sulpiride is a useful drug in the elderly because it has fewer EPS than the conventional neuroleptics.

Combination receptor blockers

Clozapine belongs to the the dibenzoxazepine group of compounds. This drug has proved to have

---

Box 1. Commonly used antipsychotics

Oral medication
Phenothiazines
　　Chlorpromazine, thioridazine, fluphenazine
Diphenylbutylpirides
　　Pimozide
Thioxanthenes
　　Flupenthixol, clopenthixol
Butyrophenones
　　Haloperidol
Benzamides derivatives
　　Sulpiride, remoxipride
Dibenzoxazepines
　　Clozapine, loxapine
Benziothiazoles
　　Risperidone

Intramuscular depot medication
Butyrophenones
　　Haloperidol decanoate
Phenothiazines
　　Fluphenazine decanoate
Thioxanthenes
　　Flupenthixol decanoate

beneficial effects in cases of treatment resistant schizophrenia and despite early reports of fatalities due to agranulocytosis, the FDA decided to continue its use on a named patient basis (McKenna & Bailey, 1993). Until the advent of clozapine, no antipsychotic had been shown to be more effective than chlorpromazine in equivalent doses. Clozapine was found to be superior to chlorpromazine in six out of 13 studies. Studies in treatment resistant schizophrenia culminated in a multi-centre trial (Kane *et al*, 1988) which showed the superiority of clozapine over chlorpromazine in negative symptoms as well as a reduced incidence of side-effects. Although this study was criticised by some researchers on the basis that the high doses of chlorpromazine may have been detrimental to some patients, most authorities have become convinced that clozapine is indeed an important addition to the range of antipsychotic drugs.

A note of caution has been introduced regarding the use of clozapine in the elderly since it has been shown to be associated with a decline in memory function, perhaps because of its potent anti-cholinergic effects (Goldberg *et al*, 1993). However, Lee *et al* (1994) have recently produced evidence that clozapine is superior to conventional drugs in improving cognitive function in schizophrenia with particular reference to impaired social function and poor work performance. A recent study by the UK clozapine study group reports that out of 54 in-patients with a diagnosis of severe treatment resistant schizophrenia treated with clozapine, 26 completed the study and 20 of these patients showed improvement in both positive and negative symptoms. The use of clozapine is no longer being restricted to treatment resistant patients or patients with predominantly negative symptoms. It certainly produces a much lower incidence of EPS and is claimed to have a beneficial effect on tardive dyskinesia. On the other hand, it has a tendency to produce hyper-salivation and in a few cases will lower the seizure threshold.

The question of agranulocytosis was addressed in a recent study by Alvir *et al* (1993). The American data of 11 555 patients treated with clozapine showed that 73 patients had developed this problem, which in two cases led to death. It is important to note that 61 out of the 73 patients developed agranulocytosis within three months of starting medication and only three patients developed it after six months. The risk increases with age and women are at greater risk of developing agranulocytosis. Negative symptoms are far more common in younger than in older psychotics. Indeed there is some evidence that these symptoms tend to decline with advancing age. Consequently there has been little justification in

the use of clozapine in the elderly. Two of the limiting factors have been the high cost of the drug and the necessity for regular blood monitoring. There are a number of elderly psychotic patients whose illness fails to improve either because of their unresponsiveness to conventional antipsychotics or their propensity to develop unpleasant side-effects. Clozapine is an obvious drug to be tried on such patients.

Risperidone, a member of the benzisothiazoles, was launched in 1993 and is claimed to be beneficial in both positive and negative symptoms in schizophrenia. The most effective dose of risperidone in younger patients has been shown to be 6 mg; this is slightly more effective than 20 mg of haloperidol in controlling acute psychotic symptoms and has the added benefit of a reduced incidence of EPS. This drug, however, should be used in smaller doses in the elderly and it is advisable to start with a dose of 1 mg per day and gradually increase this to about 3 mg daily. Higher doses in the elderly may result in marked sedation and the development of EPS. There is still controversy as to whether this drug is as effective as clozapine in the negative symptoms of schizophrenia.

Other uses *of antipsychotics*

Apart from schizophrenia and paraphrenia, psychotic symptoms are also found in affective disorders and in organic psychosis. Patients suffering from various types of dementia are liable to have psychotic symptoms such as delusions and hallucinations which may well lead to disruptive behaviour. The use of antipsychotics is popular in the geriatric population. It has been shown recently (Nygaard *et al*, 1994) that on admission to nursing homes, 63% of elderly patients were receiving psychotropic medication and that this figure increased to 68% after three months. Another study of long-stay elderly patients in hospital in Perth, Scotland, showed that 37.5% of the 104 patients were receiving antipsychotic drugs for a variety of reasons (Connelly, 1990).

Antipsychotics are useful in the treatment of Charles Bonnet syndrome but patients suffering from Lewy Body dementia with psychotic symptoms show neuroleptic sensitivity to conventional antipsychotics and may well benefit from drugs like risperidone instead. A meta-analysis of double-blind trials comparing neuroleptics with placebo in agitated patients with a diagnosis of dementia (Schneider *et al*, 1990) found that antipsychotics were marginally more effective than placebo, no single antipsychotic drug was superior to another and that low doses of medication are often

sufficient in controlling target symptoms. Indeed, there have been a number of reports in the literature in the past 10 years suggesting that ultra low doses are equally effective (Gottlieb *et al*, 1988). Treatment sometimes consists of a delicate balancing act between a low dose which may be ineffective and a high dose which may be effective but is associated with unpleasant side-effects.

Side-effects

The elderly are particularly prone to a variety of side-effects including acute dystonic reactions, extrapyramidal symptoms, tardive dyskinesia and the neuroleptic malignant syndrome.

Extrapyramidal symptoms

High potency drugs such as haloperidol and trifluoperazine are more likely to cause severe EPS than low potency drugs such as chlorpromazine. The only reaction which appears to be more common in younger than in elderly patients is acute dystonia. One should not forget, however, that the elderly are sometimes prone to dystonic reactions such as torticollis and oculogyric crises. Such dystonic reactions can be treated on a short-term basis by anticholinergic drugs but their administration should not be prolonged because of the risk of anticholinergic toxicity. Parkinsonian reactions or neuroleptic induced Parkinsonism (NIP) appear to be more common in the elderly. Symptoms include rigidity, tremor and bradykinesia though tremor and festinating gait appear less common than in Parkinson's disease. If symptoms are particularly troublesome, the antipsychotic dose should initially be reduced. If there is no improvement in the symptoms, anticholinergic medication can be prescribed over a short period of time, e.g. 8–10 weeks. It is not good practice to use such drugs on a long-term basis.

Akathisia

This is commonly found in the elderly. It is characterised by a desire or a need to move all the time, motor restlessness, frequent changes in posture, various rocking movements, and abnormal movements of the legs and feet. Treatment involves a reduction in the offending medication and, if symptoms persist, anticholinergic treatment used on a time limited basis.

Neuroleptic malignant syndrome (NMS)

NMS is a serious disorder which is potentially fatal. It develops over a period of 24–72 hours and is characterised by hyperpyrexia and muscular incontinence. Leucocytosis and an elevated serum creatine phosphokinase (CPK) are usually seen. Patients may require intensive care and treatment should consist of immediate discontinuation of the antipsychotics and administration of dantrolene, which reduces muscular rigidity, and bromocriptine, which restores brain dopaminergic function. Although NMS is more rarely seen with the new antipsychotics, there are reports that it has been caused by risperidone in brain damaged elderly patients. Various other effects have been described on the endocrine, cardiovascular, gastrointestinal and autonomic nervous systems. Blood dyscrasias and agranulocytosis may rarely occur with any antipsychotic but it has been reported in 1% of patients taking clozapine. Remoxipride, prior to its withdrawal, had been implicated in bone marrow suppression.

Tardive dyskinesia

Tardive dyskinesia is a serious complication of antipsychotic medication which is particularly common in the elderly. It arises after at least three months treatment with antipsychotics and is associated with choreoathetoid movements of the face, mouth and hands. As the disorder progresses, the upper limbs and trunk may be involved and more rarely the diaphragm, pharynx and intercostal muscles may show incoordination. Risk factors have been shown to be advancing age, female gender and affective disorder. In addition, the length of neuroleptic exposure, brain damage, elevated serum neuroleptic concentration and late onset psychosis may be regarded as possible risk factors. It was shown a few years ago (Jeste & Wyatt, 1987) that the increased incidence of tardive dyskinesia in the elderly is a true finding which may be related to the higher serum neuroleptic concentration found in older patients and also to central mechanisms such as neuronal loss and changes in neurochemical receptors. These authors also noticed that oral facial dyskinesia seems to be more common in the elderly, and also that elderly patients are less likely to show a reversal of their symptoms following antipsychotic withdrawal. For a fuller discussion of this topic, interested readers are referred to reviews by Lohr & Bracha (1988) and Szabadi (1995).

There is good evidence in the literature on younger psychotic patients that the management of first episodes should consist of antipsychotic medication being given for at least one year. Approximately 40–50% of patients are likely to remain well after cessation of medication but the remaining patients will require continuing medication, preferably of the depot type. Of those patients who require long-term medication, 60–70% are likely to relapse within a year and about 85% in two years. There is little information to guide the clinician about continuation of medication in the elderly but the aforementioned suggestions should prove useful in practice. Some guidelines for the use of antipsychotics in the elderly are listed in Box 2.

Non-pharmacological approaches

Many criticisms have been levelled at hospitals who have failed to provide adequate follow-up care for their psychotic patients. Many elderly psychotics live on their own and returning to the community may often equate with social isolation and increasing distortion of reality. The role of the CPN is of paramount importance in maintaining contact with the patient and also promoting liaison between hospital based services and community agencies. It has been shown with reference to

> **Box 2. Guidelines for antipsychotic use in the elderly**
>
> Patients should undergo an assessment of hepatic, renal and cardiac function prior to antipsychotic treatment
> Patients and their carers should be fully informed of the benefits and risks of the treatment
> Treatment should be titrated, starting with very small doses and gradually increasing to the lowest effective dose
> Treatment should be time limited, if at all possible
> Patients should be closely monitored for extrapyramidal side-effects as well as for postural hypertension
> Anticholinergic agents should be used with caution
> Antipsychotic medication is more effective in florid symptoms such as delusions, hallucinations and severe agitation

younger patients with schizophrenia that families who react with hostility and criticism (high EE) increase the risk of the patient relapsing. It is not uncommon to find an elderly couple where the 'well' partner becomes involved in the psychopathology of the patient and may in fact encourage the patient not to cooperate with treatment. Such situations require delicate and diplomatic handling by experienced nurses. Particular attention should be paid to the standard of their accommodation, their social contacts and daytime activities. The availability of day facilities in many areas has proved a valuable asset in the management of psychotic patients. In such settings their progress can be monitored and adequate attention paid to their diet and self-care.

Psychosocial therapies

In the past few years, there has been interest in developing various forms of treatment including social skills training, psychosocial rehabilitation and cognitive–behavioural interventions for psychotic patients. Such non-pharmacological treatments have been summarised in a recent paper (Liberman & Corrigan, 1993). The value of such treatments has yet to be proven but the rationale behind cognitive–behavioural interventions appears sound enough. Problem solving focuses on breaking down problems resulting from the illness into small elements spanning a course of action and setting objectives. If the patient employs strategies successfully to cope with psychotic symptoms then these are enhanced by various techniques (Bellack & Mueser, 1993).

Conclusions

Relatively little is known about the value of medication, the choice of drugs, the duration of treatment and outcome of illness in patients who refuse treatment or whose compliance is poor. Many old age psychiatrists will be familiar with elderly patients living on their own in the community who harbour bizarre delusions for years. Whether such patients should be coerced into accepting treatment is debatable. Recent publicity about the 'dangerousness' of psychotic patients in the community may well influence psychiatrists into imposing treatment on such patients. The identification of psychosis in elderly people living in the community is problematic because many such patients live in isolation and do not share their bizarre ideas with their doctor or other professional

helpers. Although Roth and his co-workers found that 10% of all their admissions could be given a diagnosis of late paraphrenia, the prevalence of such disorders is probably much less in the community.

For further information see Jeste & Zisook (1988), Katona & Levy (1992) and Phanjoo (1995).

References

Almeida, O. P., Howard, R. J., Levy, R., *et al* (1995) Psychotic states arising in late life (late paraphrenia). *British Journal of Psychiatry*, **166**, 205–228.

Alvir, J. J., Lieberman, J. A., Safferman, A. Z., *et al* (1993) Clozapine induced agranulocytosis; incidence and risk factors in the USA. *New England Journal of Medicine*, **329**, 162–167.

American Psychiatric Association (1987) *Diagnostic and Statistical Manual of Mental Disorders* (3rd edn, revised) (DSM–III–R). Washington, DC: APA.

Bellack, A. S. & Mueser, K. T. (1993) Psychosocial treatment for schizophrenia. *Schizophrenia Bulletin*, **19**, 317–338.

Connelly, P. J, (1990) An audit of the use of antipsychotics in a geriatric psychiatry continuing care unit in Scotland. *International Journal of Geriatric Psychiatry*, **7**, 447–454.

Gerlach, J. (1991) New antipsychotics: classification, efficacy and adverse effects. *Schizophrenia Bulletin*, **17**, 289–309.

Goldberg, T. E., Greenburg, R. D. Griffin, S. J., *et al* (1993) The effect of clozapine on cognition and psychiatric symptoms in patients with schizophrenia. *British Journal of Psychiatry*, **162**, 43–48.

Gottlieb, G. L., McAllister, T. N. & Gur, R. (1988) Depot neuroleptics in the treatment of behavioural disorders in AD. *Journal of the American Geriatric Society*, **36**, 619–621.

Howard, R. & Levy, R. (1992) Which factors affect treatment response in late paraphrenia? *International Journal of Geriatric Psychiatry*, **9**, 415–417.

Jeste, D. V. & Wyatt, R. J. (1987) Aging and tardive dyskinesia. In *Schizophrenia and Aging* (eds N. E. Miller & G. D. Cohen), p. 275. New York: Guildford Press.

—— & Zisook, S. (eds)(1988) Psychosis and depression in the elderly. *Psychiatric Clinics of North America*, **11**, 1–33.

Kane, J., Honigfeld, G., Singer, J., *et al* (1988) Clozapine for the treatment resistant schizophrenic: a double-blind comparison versus chlorpromazine/benztropine. *Archives of General Psychiatry*, **45**, 789–796.

Katona, C. & Levy, R. (eds) (1992) *Delusions and Hallucinations in Old Age*. London: Gaskell.

Kay, D. W. K. & Roth, M. (1961) Environmental and hereditary factors in the schizophrenia of old age (late paraphrenia) and their bearings on the general problems of causation in schizophrenia. *Journal of Mental Sciences*, **107**, 649–686.

Kraepelin, E. (1909) *Psychiatrie, Ein Lehrbuch fur Studierende und Artzte* (8th ed) Leipzig: Barth.

Lee, M. A., Thompson, P. A. & Meltzer, H. Y. (1994) Effects of clozapine on cognitive function in schizophrenia. *Journal of Clinical Psychiatry*, **55** (suppl.), 82–87.

Liberman, R. P. & Corrigan, P. W. (1993) Designing new psychosocial treatments for schizophrenia. *Psychiatry*, **56**, 238–249.

Lohr, J. B. & Bracha, H. S. (1988) Association of psychosis and movement disorders in the elderly. *Psychiatric Clinics of North America*, **11**, 61–82.

Mayer, W. (1921) On paraphrenic psychoses. *Zentralblatt Gesamte Neurologie und Psychiatrie*, **71**, 187–206.

McKenna, P. J. & Bailey, P. E. (1993) The strange story of clozapine. *British Journal of Psychiatry*, **162**, 32–38.

Nygaard, H. A., Brudvik, O. B., Juvik, W. E., *et al* (1994) Consumption of psychotropic drugs in nursing home residents. *International Journal of Psychiatry*, **6**, 171–175.

Phanjoo, A. L. (1995) Novel antipsychotics in the elderly. In *Developments in Dementia and Functional Disorders in the Elderly* (eds R. Levy & R. Howard), pp. 151–166. Petersfield: Wrightson.

Pearlson, G., Kreger, L., Rabins, P., *et al* (1989) A chart review study of late onset and early onset schizophrenia. *American Journal of Psychiatry*, **146**, 1568–1574.

Post, F. (1966) *Persistent Persecutory States in the Elderly*. Oxford: Pergamon Press.

Roth, M. (1955) The natural history of mental disorder in old age. *Journal of Mental Science*, **101**, 281–292.

Schneider, L. S., Pollock, V. E. & Lyness, S. A. (1990) A meta analysis of controlled trials of neuroleptic treatment in dementia. *Journal of American Geriatric Society*, **38**, 553–563.

Szabadi, E. (1995) Adverse reaction profile of antipsychotic drugs. *Prescribers Journal*, **35**, 37–44.

World Health Organization (1992) *The Tenth Revision of the International Classification of Diseases and Related Health Problems* (ICD–10). Geneva: WHO.

Multiple choice questions

1. Late onset paraphrenia is characterised by:
   a Hallucinations and delusions
   b Negative symptoms
   c Formal thought disorder
   d Relative preservation of the personality

2. Clozapine has the following properties:
   a It has few extrapyramidal side-effects
   b It causes agranulocytosis in 10% of patients
   c It is not effective against positive symptoms
   d It has been shown to be superior to chlorpromazine in efficacy

3. Tardive dyskinesia is:
   a More common in the elderly than in younger patients
   b More common in elderly women
   c More frequent with high potency antipsychotics

4. The neuroleptic malignant syndrome is associated with:
   a Hyperpyrexia
   b A reduced creatine phosphokinase
   c A low mortality (< 5%)
   d Rigidity

MCQ answers			
1	2	3	4
a T	a T	a T	a T
b F	b F	b T	b F
c F	c F	c F	c F
d T	d F		d T