From efficacy to effectiveness in community mental health services

PRiSM Psychosis Study 10

GRAHAM THORNICROFT, TIL WYKES, FRANK HOLLOWAY, SONIA JOHNSON and GEORGE SZMUKLER

Background The PRiSM Psychosis Study investigated the outcomes of community mental health services for epidemiologically representative cases of psychosis in London.

Method The results presented in the preceding nine papers are interpreted.

Results (a) The health and social gains reported in experimental studies of community health services are replicable in ordinary clinical settings, and are more effective than hospital-oriented services which they replace. (b) Dilution does occur – these gains are less pronounced than in experimental (efficacy) studies. (c) Both models of community services produced a range of improved outcomes. (d) Some limited extra advantages (in terms of met needs, improved quality of life, and social networks) were found in the intensive sector. (e) There is no consistent evidence that community-oriented services (which include in-patient beds) fail service users, their families or the wider public. On balance the results weigh slightly in favour of the two-team model (for acute and continuing care) in terms of clinical effectiveness, but the general model is almost as effective and is less expensive.

Conclusions The evidence supports a community-oriented rather than a hospital-oriented approach and there is little difference between the community mental health team models.

Declaration of interest Funding provided by the Bethlem & Maudsley NHS Trust.

Community mental health services in many economically developed countries have reached a watershed. Despite continued professional and policy support, the rationale to further transfer human and financial resources from hospital to community settings is increasingly questioned, even though it is only a decade since the worst excesses of the asylum era were comprehensively documented (Martin, 1984; Department of Health, 1990, 1994). The consolidation of this paradigm shift is a result of many forces both intrinsic and extrinsic to the mental health field (Kuhn, 1962). Within mental health services, there is a realisation that despite reconfiguring the shape of services, many of the more severe forms of mental illness currently remain stubbornly resistant to treatment. In terms of psychotic disorders, a remarkably stable number of patients experience recurring relapses which are severe enough to need high levels of professional support. Most often this is provided in acute psychiatric hospital beds, and there is as yet remarkably little evidence that either acute day hospitals (Creed *et al*, 1997) or crisis houses (Sledge *et al*, 1996) can act as realistic alternatives for more than about a third of patients currently admitted to hospital.

NEED FOR A REALISTIC TEST OF MENTAL HEALTH SERVICE MODELS

Service models which evidence suggests can reduce the use and expense of hospital beds in a way which is acceptable to patients, their carers and to clinicians are those based upon the assertive community treatment model (Dixon & Lehman, 1995). As paper 1 of this series summarises (Thornicroft *et al*, 1998), there is now substantial evidence that such common types of community mental health service can reduce bed use and increase patient satisfaction without increasing overall ongoing costs. Since the studies in this field have now produced largely consistent results, further experimental replications of such efficacy studies may be redundant (Sayce *et al*, 1991). The key question moves from efficacy on to effectiveness (Cochrane, 1972; Light, 1991; Kassirer, 1993; Sackett *et al*, 1996). Can such services be applied to ordinary clinical settings? If so, do any of the experimental advantages persist? If so, at what cost, is this affordable and does it offer value for money? It is precisely these three types of question that this study uniquely addresses.

This study has the following strengths. It is the first to be based in clinical settings designed to persist and not established purely for research purposes. Uniquely, this study offers a large and epidemiologically representative cohort of people with psychosis for the intervention, without the exclusion of more severely disabled people. The study attempted to avoid a 'Hawthorne effect', by not indicating to the people included in the study whether they were considered to be in the intensive or standard sectors, so that people's knowledge of receiving a 'special' service would not influence outcomes.

Limitations of the study

At the same time, there are a number of limitations to the data presented here. First, although a controlled prospective trial, this study is not randomised. At the level of services for whole populations, the appropriateness of the random allocation method attenuates. If the unit of randomisation is the sector, a satisfactory sample size of sectors would involve interventions applying to thousands of people, at a research cost that is probably prohibitive. Second, although the overall populations of the two research sectors (geographical catchment areas) were extremely closely matched (see Becker *et al*, 1998, paper 2 in this series), the service user populations were not. The intensive sector had more severely disabled people with psychoses, and on average these people were more severely disabled than in the standard sector. Indeed, in terms of prevalence, in the course of the study we learned of the important effect that hostels can have, both on the local prevalence rates and to their complexity, acting as magnets to attract morbidity into an area.

Third, the site of this study, Camberwell in south London, is atypical in two

ways: it is at the upper extreme in terms of social deprivation in Britain, and it is part of the catchment area of the Maudsley Hospital, a specialist postgraduate teaching hospital. The deprived social context makes it more likely that any treatment gains demonstrated here could at least be matched in other less marginal urban contexts. We would not, however, claim that the models we have studied are directly generalisable to rural areas (indeed, the research literature is based almost entirely in urban settings). Concerning the 'special' nature of the mental health staff, there is some weight to this argument, although the training status of the hospital means that, except for some senior medical staff, the staff turnover rate is high, which militates against continuity of care.

Furthermore, this is a quasi-experimental design and other national influences upon the style and content of services, such as the introduction of the supervision register, the more complete implementation of the Care Programme Approach, and an increasing emphasis upon the importance of risk assessment in clinical practice, have occurred during the study period (Calman & Royston, 1997; Furedi, 1997). We have no reason to believe, however, that the local implementation of these national policy guidelines differed systematically between the two study sectors.

Despite vigorous attempts at follow-up, including up to seven home visits to interview some people, the loss to follow-up is still high. This reflects both the fact that we have included all known prevalent cases, including those who actively avoid psychiatric services, and the high rates of residential mobility (up to 30% per year among people with psychosis in London) (McNaught *et al*, 1997). Nevertheless, our service user tracking procedure (described by Johnson *et al*, 1998, paper 3 of this series) was successful in recording key outcome findings for almost all service users.

Categorical errors: the levels of the interventions and of the outcomes

The Robert Wood Johnson multi-site study in North America (Goldman *et al*, 1994) investigated whether establishing a local mental health service, which was planned jointly between the mental health commissioning authority and the housing and urban development agency, had an impact upon individual outcomes. It did not. The only detectable positive outcome for this long-term multi-site North American study was that continuity of care between agencies was enhanced.

It is therefore now essential to ask whether we can any longer reasonably expect that changes in 'inputs' and 'processes' at the local service level (cells 2A and 2B in the matrix model, Table 1) necessarily have manifest effects upon individual 'outcomes' (cell 3C). The limited impact of local-level interventions upon individual service user outcomes is also shown by the study of Tyrer *et al* (1995) of close monitoring of vulnerable patients in west London.

Direct changes in service user outcome, especially in terms of symptomatology, are most closely related to the improved availability and delivery of pharmacological, psychosocial or psychotherapeutic treatments for psychotic disorders, all of which match inputs and outputs at the user level (Dixon & Lehman, 1995; Mari & Streiner, 1996).

One interpretation of our findings, therefore, is that community forms of service organisation, such as those investigated in this study, may have some modest indirect positive effects upon individual outcomes, but that their direct effects are at the service level in terms of improved access to and continuity of care (Johnson *et al*, 1997*a*; Sytema *et al*, 1997). They act as the vehicle for the delivery of effective treatments, but should not be mistaken for the treatments themselves. Indeed, the current confusion about the role of case management, both in terms of its definition and its effects, also reflects precisely this distinction between the active treatment and the treatment delivery process. This confusion has been helpfully identified by Marshall (1996), and has led Kluiter (1997) to adopt the generic term 'community care arrangements' for the now heterogeneous range of such variants.

INTERPRETING THE STUDY FINDINGS

The first aim of the PRiSM Psychosis Study was to answer the question: can the gains of experimental studies which have demonstrated benefits from treatment by community mental health teams be translated to routine settings? In short, the answer is yes. As the previous nine papers in this series show in detail, there was a consistent pattern of improvements in the two sectors, both of which slightly reduced overall clinical costs, largely because they used fewer in-patient bed days. The main findings for the measures used are summarised in Table 2. Over and above this modest widespread service improvement in both sectors, the intensive service achieved some limited additional improvements in aspects of people's social networks, met needs and quality of life. Notably, in both sectors, there was no greater family burden from community-oriented than from hospital-oriented services. Nevertheless, in terms of the primary impairment of the disorder – psychotic symptoms – neither service produced any overall change, the same finding as that reported by the north London Team for the Assessment of Psychiatric Services (TAPS) study of hospital closure and reprovision for long-term patients (Leff, 1993).

The finding that community mental health teams did to some extent effectively substitute for in-patient bed use should not be misinterpreted. Although this substitution effect can take place, it does not follow that it will. Evidence from Nottingham (Beck *et al*, 1997), for example, shows that once bed numbers have reduced to a certain point, further attempts to reduce length of stay are associated with an increase in the readmission rate, suggesting that there is an irreducible base rate of bed needs. This may be met in future by intensive community-based in-patient alternatives, but there is

Table 1 Overview of the matrix model, with examples of key issues in each cell of the matrix

Geographical dimension	Temporal dimension		
	(A) Input level	(B) Process level	(C) Outcome level
(1) Country/regional level	1A	1B	1C
(2) Local level (catchment area)	2A	2B	2C
(3) Client level	3A	3B	3C

Adapted from Tansella & Thornicroft (1998).

Table 2 Summary of sector differences in main clinical outcomes

	Possible range	Sector[1]	n^2	Mean (at Time 1)	Mean (at Time 2)	Pooled s.d. (at Time 2)	Difference at Time 2 (unadjusted)[3] (95% CI)	Difference at Time 2 (adjusted for Time 1 value[4]) (95% CI)
BPRS total	24–168	Nunhead	67	33.5	33.9	8.68	−0.11 (−3.05 to 2.84)	0.003 (−2.46 to 2.52)
(Symptoms)		Norwood	69	33.8	34.0			
SBS total	0–77	Nunhead	83	12.11	9.65	8.30	2.78 (0.39 to 5.17)	2.54[5] (0.18 to 4.91)
(Social behaviour)		Norwood	107	8.32	6.87			
CAN unmet needs: user	0–22	Nunhead	62	1.23	1.90	1.83	0.05 (−0.60 to 0.69)	0.49 (−0.24 to 1.22)
(Needs)		Norwood	63	1.57	1.86			
CAN met needs: user	0–22	Nunhead	62	4.05	4.45	2.45	0.72 (−0.14 to 1.59)	0.96 (−0.02 to 1.93)
(Needs)		Norwood	63	4.51	3.73			
VSSS average	1–5	Nunhead	62	3.54	3.61	0.56	0.01 (−0.19 to 0.20)	0.06 (−0.12 to 0.25)
(Satisfaction with services)		Norwood	69	3.63	3.60			
SNS total network size[6]	Unlimited	Nunhead	64	9.06	14.27	8.64	−3.52 (−6.53 to −0.051)	−1.4 (−4.6 to 1.90)
(Social networks – number of contacts)		Norwood	65	16.43	17.78			
LQOLP: Global QOL user-assessment	1–7	Nunhead	70	4.33	4.40	1.49	−0.1 (−0.60 to 0.40)	0.1 (−0.34 to 0.55)
(Quality of Life)		Norwood	72	4.51	4.50			

BPRS, Brief Psychiatric Rating Scale; SBS, Social Behaviour Scale; CAN, Camberwell Assessment of Need; VSSS, Verona Service Satisfaction Scale; SNS, Social Network Scale; LQOLP, Lancashire Quality of Life Profile.
1. Nunhead, intensive sector; Norwood, standard sector.
2 Number of complete Time 1 – Time 2 pairs.
3. Differences Nunhead–Norwood (+ve=Nunhead higher).
4. Adjusted also for other selected Time 1 variables (see individual papers in series).
5. Adjusted effect estimated for those at median of Time 1 values: significant interaction between sector and Time 1 value; see Paper 4, this series.
6. Medians (Time 1, Time 2): Nunhead (8,13); Norwood (13,17); see Paper 7, this series, for discussion of data distribution.

not at present strong evidence to support this. Any attempt to reduce bed numbers below this lower limit will produce a series of dysfunctional, adverse consequences (Lelliot *et al*, 1995), including over-occupancy rates of beds, and the inappropriate use of acute beds by people requiring longer-term residential care (Johnson *et al*, 1997*b*).

The second aim of this study is to investigate whether the gains reported from experimental studies are diluted in ordinary clinical practice. Again, the answer is yes. Although our findings are similar in kind to those of the home treatment studies (Stein & Test, 1980; Hoult, 1986; Muijen *et al*, 1992; Burns *et al*, 1993*a*,*b*; Mueser *et al*, 1998), the effects are of a smaller magnitude. This was expected as the study included all people with psychosis, including those not receiving treatment at all, and those who had moved out of the catchment area by the end of the study period.

The third aim of this study was to establish the comparative costs of the two services over the study period. Mean total costs per treated person fell by about 4% in each of the sectors during the study. Nevertheless, the mean cost per treated person by Time 2 was 10% higher in the intensive sector (see Table 4 in McCrane *et al*, 1998, paper 5 in this series). As there were more patients (and more severely disabled patients) in the intensive sector, so the total costs of psychiatric services at Time 2 were 54% higher than in the standard sector. From a managerial perspective the standard sector model seems to offer better value, but from a user perspective a modestly better overall pattern of clinical outcomes was achieved by the intensive treatment model.

Areas of particular concern

Four particular concerns emerge from these initial analyses. First, the socially isolated (those single, widowed or divorced) have worse outcomes: more unnatural deaths, higher rates of attempted suicide, higher compulsory admission rates, poorer social networks, and less use of community services (Becker *et al*, 1997). It has long been known that the isolated suffer poorer outcomes in many domains (Wing, 1989); our findings reinforce the view that those without natural networks of social support resort to formal services when in distress. This raises the question whether interventions designed to create or re-activate service users' informal networks may be effective in substituting for statutory services.

The second major issue of concern is the unemployment rate among people suffering from psychotic disorders. Our data show that fewer than 10% of such people have full-time paid employment (Table 3). The implications of such structural unemployment for people with psychotic disorders are not well researched (Warner, 1994), but the adverse effects on

Table 3 Employment rates at Time 1

	Intensive sector (n=222)	Standard sector (n=232)
Unemployed	84%	78%
Part-time	6%	4%
Full-time	9%	9%
Voluntary	1%	1%
Sheltered	1%	7%

mental health more generally are now well understood (Warr, 1987), and may compound the multiple difficulties faced by people with psychosis (Sartorius *et al*, 1986).

Third, people in minority ethnic groups in many ways receive a poorer service than their White counterparts. In previous papers from the baseline stage of this study (Davies *et al*, 1996; Parkman *et al*, 1997), we have shown that in this part of London Black Caribbean and Black African people with psychotic disorders have higher rates of hospital admission, compulsory hospitalisation under the Mental Health Act 1983, imprisonment, treatment in intensive care units, and lower rates of service satisfaction. As yet there is a dearth of research to explain these differential patterns, and to evaluate the outcomes of types of service organisation, or types of individual treatment, specifically designed to deliver a better quality mental health service to people in minority ethnic groups.

Fourth, the social behaviour data indicate that (apart from a small number of the most disabled people in Nunhead) against expectations the standard sector alone produced reductions in disability. This raises the question whether an accessible, intensive service can in fact have negative influences unless the staff are trained specifically to intervene to reduce disability. This reinforces our view that the active ingredients of treatment need to be identified now, rather than the vehicles for their delivery.

CLINICAL IMPLICATIONS

- Outcomes for both types of community service were better than for the hospital-oriented service.
- There were few differences between the two community models.
- The benefits shown in experimental studies can be replicated in routine settings, although the benefits are diluted.

LIMITATIONS

- This study cannot identify the 'active' ingredients of community mental health services.
- There was no clear evidence of services failing patients.
- Careful evaluation is necessary in non-urban sites.

GRAHAM THORNICROFT, MRCPsych, Section of Community Psychiatry (PRiSM), Institute of Psychiatry, London; TIL WYKES, DPhil, Department of Psychology, Institute of Psychiatry, London; FRANK HOLLOWAY, FRCPsych, Maudsley Hospital, Denmark Hill, London; SONIA JOHNSON, MRCPsych, Department of Psychiatry & Behavioural Sciences, University College London Medical School, London; GEORGE SZMUCKLER, FRCPsych, Section of Community Psychiatry (PRiSM), Institute of Psychiatry, London

Correspondence: Professor Graham Thornicroft, Section of Community Psychiatry (PRiSM), Institute of Psychiatry, De Crespigny Park, London SE5 8AF. Tel: 0171 919 2610; Fax: 0171 277 1462

(First received 5 January 1998, final revision 2 June 1998, accepted 3 July 1998)

CONCLUSIONS

The main findings of this study are therefore that: (a) the types of service user gain reported in experimental studies are replicable in ordinary clinical settings, in other words, these forms of community care are somewhat more effective than the more hospital-oriented services which they have replaced; (b) dilution does occur; these gains are less pronounced than in the efficacy studies; (c) both models of clinical service studied here produce such a pattern of improvements; (d) there is some limited extra advantage in terms of met needs, improved quality of life, and social networks for the more expensive service in the intensive sector, with one exception: the data suggest that for people who are not very severely affected by their psychotic condition, the intensive service may have a paradoxical effect of increasing dependency; (e) careful scrutiny of possible adverse outcomes does not find any clear evidence that community-oriented services (which include a complement of in-patient beds) fail their users, their families or the wider public; (f) taking into account the more disabled service user population in the intensive sector, on balance the results weigh slightly in favour of the two-team model (for acute and continuing care) in terms of clinical effectiveness, but the generic model is almost as effective and is clearly less expensive.

ACKNOWLEDGEMENTS

We are pleased to acknowledge the invaluable contributions that the following colleagues have made towards the PRiSM Psychosis Study: Thomas Becker, Sara Bixby, Liz Brooks, Paul Clarkson, Sara Davies, Graham Dunn, Ruth Fermo, Julie Grove, Hilary Guite, Andrew Higginbotham, Frank Kelly, Julia Kleckham, David Nathaniel-Jones, Morven Leese, Linda Loftus, Paul McCrone, Wendy Ojurongbe, Dominic O'Ryan, Sue Parkman, Michael Phelan, Laura Ponti-Sgargi, Mike Slade, Geraldine Strathdee, Ruth Taylor, David Turner, Rozalia Wojcik. We would also like to acknowledge the sustained and invaluable assistance of the users, carers and clinical staff of the Nunhead and Norwood sectors of the Bethlem and Maudsley NHS Trust.

REFERENCES

Beck, A., Croudace, T. J., Singh, S., *et al* (1997) The Nottingham Acute Bed Study: alternatives to acute psychiatric care. *British Journal of Psychiatry*, **170**, 247–252.

Becker, T., Thornicroft, G., Leese, M., *et al* (1997) Social networks and service use among representative cases of psychosis in south London: *British Journal of Psychiatry*, **171**, 15–19.

—, Holloway, F., McCrone, P., *et al* (1998) Evolving service interventions in Nunhead and Norwood. PRiSM Psychosis Study 2. *British Journal of Psychiatry*, **173**, 371–375.

Burns, T., Beadsmore, A., Bhat, A. V., *et al* (1993*a*) A controlled trial of home-based acute psychiatric services. I: Clinical and social outcome. *British Journal of Psychiatry*, **163**, 49–54.

—, Raftery, J., Beadsmore, A., *et al* (1993*b*) A controlled trial of home-based acute psychiatric services. II: Treatment patterns and costs. *British Journal of Psychiatry*, **163**, 55–61.

Calman, K. & Royston, G. (1997) Risk language and dialects. *British Medical Journal*, **315**, 939–942.

Cochrane, A. L. (1972) *Effectiveness and Efficiency. Random Reflections on Health Services*. London: Nuffield Provincial Hospital Trust.

Creed, F., Mbaya, P., Lancashire, S., *et al* (1997) Cost effectiveness of day and in-patient psychiatric treatment: results of a randomised controlled trial. *British Medical Journal*, **314**, 1381–1385.

Davies, S., Thornicroft, G., Leese, M., *et al* (1996) Ethnic differences in risk of compulsory admission among representative cases of psychosis in London. *British Medical Journal*, **312**, 533–537.

Department of Health (1990) The Care Programme Approach for people with a mental illness referred to the specialist psychiatric services. (HC(90)23/HASSL(90)11.) London: DoH.

___ (1994) *Mental Illness Key Area Handbook*, 2nd edn. London: HMSO.

Dixon, L. & Lehman, A. (1995) Family interventions for the treatment of schizophrenia. *Schizophrenia Bulletin*, **21**, 631–643.

Furedi, F. (1997) *Culture of Fear. Risk-Taking and the Morality of Low Expectation*. London: Cassell.

Goldman, H., Morrissey, J. & Ridgely, S. (1994) Evaluating the Robert Wood Johnson Foundation Program on Chronic Mental Illness. *The Millbank Quarterly*, **72**, 37–48.

Hoult, J. (1986) Community care of the acutely mentally ill. *British Journal of Psychiatry*, **149**, 137–144.

Johnson, S., Prosser, D., Bindman, J., *et al* (1997*a*) Continuity of care for the severely mentally ill: concepts and measures. *Social Psychiatry and Psychiatric Epidemiology*, **32**, 137–142.

___, Ramsay, R., Thornicroft, G., *et al* (1997*b*) *London's Mental Health*. London: King's Fund.

___, Leese, M., Brooks, L., *et al* (1998) Frequency and predictors of adverse events. PRiSM Psychosis Study 3. *British Journal of Psychiatry*, **173**, 376–384.

Kassirer, J. P. (1993) Clinical trials and meta-analysis. What do they do for us? *New England Journal of Medicine*, **327**, 273–274.

Kemp, R., Hayward, P., Applewhaite, G., *et al* (1996) Compliance therapy in psychotic patients: a randomized controlled trial. *British Medical Journal*, **312**, 345–349.

Kluiter, H. (1997) In-patient treatment and care arrangements to replace or avoid it – searching for an evidence-based balance. *Current Opinion in Psychiatry*, **10**, 160–167.

Knapp, M. (1995) Community mental health services: towards an understanding of cost-effectiveness. In *Community Psychiatry in Action: Analysis and Prospects*. (eds F. Creed & P. Tyrer). Cambridge: Cambridge University Press.

Kuhn, T. S. (1962) *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Leff, J. (1993) Evaluating the transfer of care from psychiatric hospitals to district-based services. *British Journal of Psychiatry*, **162** (suppl. 19), 6.

Lelliot, P., Audini, B. & Darroch, N (1995) Resolving London's bed crisis: there might be a way, is there the will? *Psychiatric Bulletin*, **19**, 273–275.

Light, D. W. (1991) Effectiveness and efficiency under competition: the Cochrane test. *British Medical Journal*, **303**, 1253–1254.

McCrone, P., Thornicroft, G., Phelan, M., *et al* (1998) Utilisation and costs of community mental health services. PRiSM Psychosis Study 5. *British Journal of Psychiatry*, **173**, 391–398.

McNaught, A. S., Jeffreys, S. E., Harvey, C. A., *et al* (1997) The Hampstead schizophrenia survey 1991. II: Incidence and migration in inner London. *British Journal of Psychiatry*, **170**, 307–311.

Mari, J. & Streiner, D. (1996) *Family Interventions for those with Schizophrenia. The Cochrane Library*. London: BMJ Publications.

Marshall, M. (1996) *Case Management for People with Severe Mental Disorders. The Cochrane Library*. London: BMJ Publications.

Martin, L. (1984) *Hospitals in Trouble*. Oxford: Blackwell.

Mueser, K., Bond, G., Drake, R., *et al* (1998) Models of community care for severe mental illness: A review of research on case management. *Schizophrenia Bulletin*, **24**, 37–74.

Muijen, M., Marks, I. M., Connolly, J., *et al* (1992) The Daily Living Programme: Preliminary comparison of community versus hospital-based treatment for the seriously mentally ill facing emergency admission. *British Journal of Psychiatry*, **160**, 379–384.

Parkman, S., Davies, S., Leese, M., *et al* (1997) Ethnic differences in satisfaction with mental health services among representative people with psychosis in South London: PRiSM Study 4. *British Journal of Psychiatry*, **171**, 260–264.

Sackett, D., Rosenberg, W., Muir Gray, J., *et al* (1996) Evidence based medicine: what it is and what it isn't. *British Medical Journal*, **312**, 71–72.

Sartorius, N., Jablensky, A., Korten, A., *et al* (1986) Early manifestations and first-contact incidence of schizophrenia in different cultures. *Psychological Medicine*, **16**, 909–928.

Sayce, L., Craig, T. K. J. & Boardman, A. P. (1991) The development of Community Mental Health Centres in the United Kingdom. *Social Psychiatry and Psychiatric Epidemiology*, **26**, 14–20.

Sledge, W., Tebes, J., Rakfeldt, J., *et al* (1996) Day hospital/crisis respite care inpatient care: part I – clinical outcomes. *American Journal of Psychiatry*, **153**, 1065–1073.

Stein, L. I. & Test, M. A. (1980) Alternative to mental hospital treatment. *Archives of General Psychiatry*, **37**, 392–397.

Sytema, S., Micciolo, R. & Tansella, M. (1997) Continuity of care for patients with schizophrenia and related disorders: a comparative South-Verona and Groningen case register study. *Psychological Medicine*, **27**, 1355–1362.

Tansella, M. & Thornicroft, G. (1998) A conceptual framework for mental health services: the Matrix Model. *Psychological Medicine*, **28**, 503–508.

Thornicroft, G., Strathdee, G., Phelan, M., *et al* (1998) Rationale and design. PRiSM Psychosis Study 1. *British Journal of Psychiatry*, **173**, 363–370.

Tyrer, P., Morgan, J., Van Horn, E., *et al* (1995) A randomised controlled study of close monitoring of vulnerable psychiatric patients. *Lancet*, **345**, 756–759.

Warner, R. (1994) *Recovery from Schizophrenia*. London: Routledge.

Warr, P. (1987) *Work, Unemployment and Mental Health*. Oxford: Oxford University Press.

Wing, J. (ed.) (1989) *Health Services Planning and Research. Contributions from Psychiatric Case Registers*. London: Gaskell.

Wykes, T., Leese, M., Taylor, R., *et al* (1998) Effects of community services on disability and symptoms. PRiSM Psychosis Study 4. *British Journal of Psychiatry*, **173**, 385–390.