INTRODUCTION

Acutely ill patients may require short-term treatment in a locked Psychiatric Intensive Care Unit (PICU) when their level of disturbance is such that they are unmanageable on open wards (DHSS, 1974). Chronically disturbed patients may require longer-term care and treatment in Low Secure Units (LSUs) (including some units termed ‘Challenging Behaviour Units’). LSUs also provide rehabilitation for patients who are returning from medium or high security or from special...

Background: Psychiatric Intensive Care Units (PICUs) and Low Secure Units (LSUs) provide care for the most disturbed inpatients in adult mental health services. Little is known about levels of provision or how these units operate within local services. In 2002 the Department of Health (DoH) published National Minimum Standards of Care for Psychiatric Intensive Care and Low Secure Environments, but there remains a paucity of service level data to inform the specialism.

Aim: To offer the first large-scale systematic survey describing service structure and functioning of PICU and LSU.

Method: A questionnaire was sent to ward managers of every PICU and LSU in London. Information was gathered on provision, physical structure, staffing and aspects of unit functioning.

Results: 17 National Health Service (NHS) PICUs containing 193 beds, and 16 NHS LSUs containing 199 beds were identified in London. An additional one third of PICU provision was privately (non NHS) funded and managed. Bed occupancy was high (90%, PICUs; 95%, LSUs in the 8 weeks prior to census day) and waiting lists for LSU beds long (64 patients on waiting lists for LSU beds on the census day, mean waiting time for LSU bed, 93 days). The use of agency nursing staff was high (33% of staff per shift on PICUs, 28% of staff per shift on LSUs).

Conclusions: All but two units failed to meet the National Minimum Standards for PICU and LSU Environments. Improvements need to be made in provision and staffing levels for permanent nursing staff, psychology and other therapies. Idiosyncrasies exist in admission criteria, particularly with regard to informal patients in LSUs and Personality Disordered patients across the board.

Declaration of Interest: The project was part-funded by Department of Health.

Keywords
PICUs; operational management
hospitals (Bluglass, 1978). The role of PICUs and LSUs has so far been to bridge the gap between acute adult psychiatry and forensic services and to provide assessment, treatment and management on a time-limited basis. There is no central commissioning of these services and a paucity of research exists regarding levels of service provision and the operational characteristics of units (Beer et al., 1997). We report on the first fully comprehensive survey of all PICUs and LSUs across London and compare the services these units provide. We also contrast our findings with the National Minimum Standards for PICU and LSU (DoH, 2002).

**METHOD**

**Criteria for inclusion of units**

A list of all facilities with greater London postcodes housing detained patients was obtained from the Mental Health Act Commission (MHAC, 2000). On the basis of this list, an initial telephone survey took place in which mental health bed managers were asked if they managed a PICU or LSU according to the following definitions:

**Psychiatric Intensive Care Unit:** A unit providing intensive multidisciplinary treatment for mentally disordered patients who exhibit severe behavioural disturbance. Treatment is time limited (usually 8 weeks or less) and usually takes place within conditions of security (Pereira et al., 2001).

**Low Secure Unit:** A unit providing ongoing care and rehabilitation, usually within conditions of security for mentally disordered patients who exhibit behavioural disturbance. Patients may have a mixture of offending and non-offending behaviours (Rees, 1994). The unit is not a medium secure unit.

The details of all appropriate facilities were obtained, and suitability was also checked directly with the Unit managers. Data was collected for both NHS and private units. This paper reports on the NHS data.

**Questionnaire design**

The questionnaire was devised by a collaborative team of multidisciplinary clinicians to include the following areas:

- **Levels of service provision and unit facilities:** number of beds, availability of gender specific facilities, locked door status and the availability of gardens and activity areas.
- **Referral, admission and transfer routes:** details of admission criteria, referral sources and discharge directions.
- **Staffing:** qualified nursing staff, ratio of nursing staff to patients, amount of dedicated medical time and the availability of psychology and other therapies.
- **Therapeutic interventions:** use of rapid tranquillisation (RT), high dose antipsychotic medication, ECT, seclusion, time out and control and restraint.
- **Length of stay:** mean length of stay calculated from the last 30 discharged patients, number of current patients whose discharge is delayed, lengths of stay of all delayed discharge patients in the last 6 months.
- **Unit functioning:** bed occupancy, size of waiting lists, average waiting time.
- **Detailed clinical information** on current patients was also collected and is described in detail in a further paper (Pereira et al., 2005b).

The questionnaire was piloted on 6 units (5 PICUs and 1 LSU) and refined in line with the comments received. A copy of the full questionnaire is available from the authors on request.

**Data collection**

A census day design was chosen to avoid duplicating data. Ward managers were asked to provide both unit and patient information for the census day: 12 June 2001.

Two strategies were used to maximise response. Prior to the census day:

1. The assistant director for the National Service Framework for Mental Health from the Department of Health wrote to Trust chief executives and hospitals asking them to encourage ward managers to submit their data.
2. Ward managers of units were contacted by letter to explain the aims of the study and encourage participation.

An initial response rate of 74% was increased to 100% through follow up telephone calls and
letters to ward managers and chief executives. Three units were visited to collect missing information.

**National standards for psychiatric intensive care and low secure environments**

The survey results were compared against the National Minimum Standards for PICU and LSU (DoH, 2002) as a measure of the quality of London services.

**Data analysis**

Statistical analysis was conducted using SPSS 10.0. Descriptive Data are tabulated as actual numbers and percentages.

**RESULTS**

**The sample**

17 NHS PICUs and 16 NHS LSUs were identified in London with a total of 193 and 199 beds respectively. A further 7 PICUs (94 beds) and 1 LSU (24 beds) were identified in the private sector. Only the NHS data is reported further.

**Levels of service provision and unit facilities**

All 9 Mental Health Trusts in London, regardless of size, had at least 1 PICU. Seven of the 9 Trusts had a LSU. Bed numbers varied substantially between Trusts from 2.1 to 9.6 (mean 4.0) PICU beds per 100,000 population and from 0 to 14.4 (mean 4.1) LSU beds per 100,000 population. The relationship between Jarman scores of deprivation and the number of PICU and LSU beds per Trust was non-significant. Trends are shown in Figure 1.

The mean number of beds per unit in PICUs and LSUs was 12 (range 5 to 17 for PICUs and 5 to 26 for LSUs). All PICUs had securely locked doors (‘airlock’ – two sets of lockable doors positioned opposite each other) compared to 75% of LSUs. Eight PICUs (47%) and 7 LSUs (44%) had single sex accommodation. A small proportion of beds were dedicated for use by female patients only (mean 1.9 per PICU and 2.5 per LSU). 14 PICUs (82%) and 12 LSUs (75%) had a dedicated activity area. 15 PICUs (88%) and all LSUs had access to a garden area.

**Referral, admission and transfer routes**

Details are shown in Table 1. LSUs were more likely to accept referrals from medium secure units (LSUs, 94% vs. PICUs, 56%). PICUs were more likely to accept referrals from court diversion (PICUs, 100% vs. LSUs, 31%), prison (PICUs, 100% vs. LSUs, 38%) or directly from the community (PICUs, 88% vs. LSU, 44%). There were trends towards LSUs being more likely to admit patients whose index offence was GBH or more serious and PICUs being more likely to admit patients with a primary diagnosis of personality disorder. Discharge directions from PICUs and LSUs were similar, however PICUs were more likely to discharge patients to prison.

**Staffing**

Nursing staff levels are shown in Table 2 and other staff in Table 3. There was a lower patient: qualified nurse ratio on PICUs with 4.7 patients to each qualified nurse (vs. 7 patients to each qualified nurse on LSU). This difference lessened when unqualified nursing staff were included in the comparison (2.3 to 1 on PICU, and 3.1 to 1 on
Table 1. Referral, admission and discharge behaviour

<table>
<thead>
<tr>
<th>Units accepting referrals from:</th>
<th>PICU N = 17, n (valid %)</th>
<th>LSU N = 16, n (valid %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Mental Health Wards</td>
<td>17 (100)</td>
<td>16 (100)</td>
</tr>
<tr>
<td>Medium Secure Facilities</td>
<td>9 (56)</td>
<td>15 (94)</td>
</tr>
<tr>
<td>High Secure Facilities</td>
<td>1 (6)</td>
<td>5 (31)</td>
</tr>
<tr>
<td>Court Diversion</td>
<td>17 (100)</td>
<td>5 (31)</td>
</tr>
<tr>
<td>Prison</td>
<td>17 (100)</td>
<td>6 (38)</td>
</tr>
<tr>
<td>Directly from Community</td>
<td>14 (88)</td>
<td>7 (44)</td>
</tr>
</tbody>
</table>

Units admitting

| Acutely disturbed patients (for <8 weeks)            | 16 (94)                   | 3 (20)                  |
| Chronically disturbed (for >8 weeks)                | 14 (82)                   | 14 (88)                 |
| Patients detained under the MHA (1983)              | 17 (100)                  | 16 (100)                |
| Informal patients                                   | 3 (18)                    | 7 (44)                  |
| Forensic patients (offence at least GBH)           | 11 (65)                   | 14 (88)                 |
| Forensic patients (less serious offence)           | 16 (94)                   | 15 (94)                 |
| Patients with Mental Illness                        | 17 (100)                  | 16 (100)                |
| Patients with primary diagnosis of PD               | 10 (59)                   | 5 (31)                  |
| Patients with primary diagnosis of LD               | 4 (24)                    | 5 (31)                  |
| Patients with Acquired Brain Injury                 | 2 (12)                    | 3 (19)                  |

Units discharging patients to:

| Local Mental Health Wards                           | 16 (100)                  | 15 (94)                 |
| Medium Secure Facilities                            | 12 (75)                   | 12 (75)                 |
| High Secure Facilities                              | 4 (25)                    | 5 (31)                  |
| Prison                                              | 11 (69)                   | 5 (31)                  |
| Directly to Community                               | 13 (81)                   | 11 (69)                 |

N.B. Valid percentages have been smoothed for missing data.

LSU). Other staffing resources were similar across PICUs and LSUs.

Therapeutic interventions

PICUs and LSUs employed a wide range of strategies for managing disturbed behaviour. All the PICUs in our survey used Rapid Tranquillisation (RT), while this was true for only 50% of LSUs. There was also a trend towards higher use of seclusion, ECT and tendency to use high doses of antipsychotics in PICUs. Full results are presented in Table 4.

Length of stay

Ward managers were asked how many patients currently on the unit had stayed longer than the previously stated typical length of stay. A total of 43 PICU patients (23%) and 58 LSU patients (31%) were identified. Within PICUs these patients had stayed a mean 93 extra days (>300% of the average PICU length of stay) and within LSUs a mean of 359 extra days (almost 200% of the average LSU length of stay). The clinical characteristics of these patients and the cost implications in terms of waiting lists and private sector usage is a possible area for further exploration in future work.

Unit functioning

The mean bed occupancy rate in the 8 weeks before the census date was 90% (mode 100%, N = 6; range 50%–100%), for PICUs and 95% for LSUs (mode 100%, N = 10; range 60%–100%). Census day occupancy varied from 75% to 140% recently discharged, which was 28 days for PICUs (range 3 to 47 days, s.d. = 13.3) and 367 days for LSUs (range 35 to 873 days, s.d. = 269).
for PICUs (mean 97.3%, s.d. = 15.1) and 60% to 100% for LSUs (mean 93.4%, s.d. = 10.8). There were 7 empty PICU beds on the census day and 21 patients on waiting lists for PICU beds. There were 10 empty LSU beds on the census day with 64 patients on waiting lists. PICU waiting times were considerably shorter than LSU waiting times (mean 2.1 days vs. 93.1 days).

National standards for PICU and LSU
Only 2 LSUs met the full criteria laid out in the National Minimum Standards. None of the PICUs met the full standards. A breakdown of current practice as contrasted with the national standards is shown in Table 5.

DISCUSSION
What characterises a PICU and a LSU?
NHS PICUs in London are characterised by locked doors, short length of stay, frequent use of the Mental Health Act and medical interventions such as RT. In contrast, LSUs are not always locked, admit patients for months rather than days, are more likely to admit informal patients and are less reliant on medical interventions to manage disturbed behaviour.

Our findings regarding the characteristics of PICUs relate clearly to the accepted model of care for the specialism. The National Standards and various authors have described the central role of PICUs as time-limited care for patients experiencing a severe and acute episode of mental illness (Beer et al., 1997; Goldney et al., 1989). The importance of the locked door in containing such patients in line with risk management has been described by Dix (2001). The use of RT and medical interventions in PICUs is also well established. Hyde et al. (1998) discussed the use of RT in a PICU setting where 48% of patients had at least one violent episode during their admission. Guidelines for the use of RT specifically in PICU were given by Holmes et al. (2001).

In LSU settings, long lengths of stay and the informal status of a proportion of patients are well established (e.g. Shaw et al., 1999; Lelliott et al., 1994), although the latter is a point of some
debate (Pereira et al., 2001). The use of medical interventions to a lesser extent than in PICUs is also reflected in the literature, for example Dix (1996) pointed out that a proportion of LSU patients may not necessarily present high levels of disturbance, but require a degree of security due to their forensic status.

Levels of service provision and unit facilities

The provision of PICU beds by London mental health Trusts varies widely and follows a similar pattern to acute bed provision, in that there is a non-significant positive correlation between the number of PICU beds and Jarman scores. Provision of LSU beds seems unrelated to Jarman scores and acute bed provision. This may reflect a less co-ordinated approach to needs assessment within London Trusts or the fact that some LSUs are managed within forensic mental health directorates and provide beds on a regional rather than a local level.

Our finding that LSU provision in London is inadequate is not new. Coid (1991a) described a group of patients with long term complex needs who were placed in the private sector, often a long way from home and with little in the way of review from catchment area clinical teams. In a needs analysis for the Wessex Consortium, Badger et al. (1999) identified 24 patients who required LSU care but were placed in more secure environments. These placements contravene the rights of patients to be cared for as close to home as possible in the least restrictive environment possible (DoH, 1999).

The lack of LSU provision also pressurises the system beneath it. Lelliott et al. (1994) described a group of ‘new long stay’ patients with severe psychiatric and social difficulties who had repeated admissions to acute psychiatric wards. Acute services are unable to meet the needs of this patient group and the resulting ‘revolving door’ model of care causes considerable difficulties for patients,

Table 4. Clinical approaches

<table>
<thead>
<tr>
<th></th>
<th>PICU (N = 17)</th>
<th>LSU (N = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (valid %)</td>
<td>n (valid %)</td>
</tr>
<tr>
<td>Number of units using:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid Tranquillisation</td>
<td>17 (100)</td>
<td>8 (50)</td>
</tr>
<tr>
<td>High Dose Antipsychotics</td>
<td>13 (77)</td>
<td>8 (50)</td>
</tr>
<tr>
<td>ECT</td>
<td>11 (65)</td>
<td>6 (40)</td>
</tr>
<tr>
<td>Control and Restraint</td>
<td>16 (94)</td>
<td>13 (81)</td>
</tr>
<tr>
<td>Time Out</td>
<td>14 (82)</td>
<td>11 (69)</td>
</tr>
<tr>
<td>Seclusion</td>
<td>12 (71)</td>
<td>8 (50)</td>
</tr>
<tr>
<td>Aggression De-escalation</td>
<td>17 (100)</td>
<td>13 (81)</td>
</tr>
</tbody>
</table>

Table 5. The standards vs. the evidence

<table>
<thead>
<tr>
<th></th>
<th>PICU</th>
<th>LSU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase of illness</td>
<td>Standards</td>
<td>Long term chronically disturbed patients</td>
</tr>
<tr>
<td></td>
<td>London survey</td>
<td>3 units (20%) admit acute patients</td>
</tr>
<tr>
<td></td>
<td>14 units (82%) admit long term as well as acute patients</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 weeks or less</td>
<td>Up to 2 years</td>
</tr>
<tr>
<td></td>
<td>Mean stay 28 days but 23% stay &gt;120 days</td>
<td>Mean stay 367 days. None</td>
</tr>
<tr>
<td></td>
<td>Compulsory Detained</td>
<td>Compulsory Detained</td>
</tr>
<tr>
<td></td>
<td>London survey</td>
<td>7 units (44%) admit informal patients</td>
</tr>
<tr>
<td></td>
<td>3 units (18%) admit informal patients</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Usually secure conditions</td>
<td>Always secure conditions</td>
</tr>
<tr>
<td></td>
<td>London survey</td>
<td>12 LSUs (75%) locked</td>
</tr>
<tr>
<td></td>
<td>All PICUs locked</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to a therapeutic activity area and to a secure garden</td>
<td>Access to a therapeutic activity area and to a secure garden</td>
</tr>
<tr>
<td></td>
<td>London survey</td>
<td>All LSUs have a garden but 4 (25%) have no activity area</td>
</tr>
<tr>
<td></td>
<td>3 PICUs have no activity area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 PICUs have no garden</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Multidisciplinary: Medical, Nursing, Psych, OT, Soc Worker</td>
<td>Multidisciplinary: Medical, Nursing, Psych, OT, Soc Worker</td>
</tr>
<tr>
<td></td>
<td>London survey</td>
<td>6 units (37%) have no psychology, 3 (19%) no OT, 7 (44%) no social worker</td>
</tr>
<tr>
<td></td>
<td>6 units (35%) have no psychology, 3 (18%) no OT, 13 (76%) no social worker</td>
<td></td>
</tr>
</tbody>
</table>

Note: Two LSUs and none of the PICUs met all of the care standards.
carers and clinicians. Indeed more than 10 years ago, Coid suggested that ‘the game of pass the parcel must stop’ (Coid, 1991b).

The finding that some PICUs are operating at up to 140% bed occupancy suggests that service provision may also be inadequate for PICUs. This observation is supported by the concentration of private PICUs in London that offer almost a third of the total number of available PICU beds. The immediacy of need for PICU care means that long waiting lists for a bed would not be appropriate, and the private sector has stepped in to fill a gap in service provision.

Part of the delayed discharge problem in PICUs could relate to a lack of LSU provision. Delayed discharges in LSUs are often attributed to a lack of supported accommodation or mental health hostels (Pierzchniak, 1999). The transfer needs of delayed discharge PICU and LSU patients is an area deserving of further attention.

Referral, admission and transfer routes
There are clear differences in referral and transfer routes for PICUs and LSUs. Our finding that almost all LSUs accept referrals from medium security is in line with the historical development of these units as ‘step down’ accommodation from higher levels of security. The role of LSUs in the care of forensic patients is well documented (Exworthy, 2000), and is acknowledged in the National Minimum Standards. In this light, it is interesting that LSUs are significantly less likely to accept patients from prisons, a finding partly due to the unlocked status of some LSUs. The need for long-term ‘step up’ care for acute services is also well documented. Coid (1991b) highlighted the need for long stay low secure or semi-secure facilities to cater for the needs of chronically disturbed, intermittently assaultive patients who required prolonged admissions. This aspect of the LSU’s role was reflected in our results, with all LSUs in our survey accepting referrals from adult mental health wards.

In contrast, PICUs have developed in response to a need for short-term specialist care for highly disturbed patients who have been unmanageable on open wards (DoH, Glancy Report, 1974). The suitability of PICUs for admitting patients with serious forensic histories (GBH) and those from prisons remains un-addressed. The Standards make reference to provision in PICUs for forensic patients ‘if suitable’, but the details remain unclear and units are left to make individual decisions on the level of risk that is acceptable. Current practice, as identified by our results, suggests the potential for an unsatisfactory mix of vulnerable acutely mentally ill patients with mentally disordered offenders who may have committed serious offences, in locked shared areas where space is often limited. Inadequate LSU and Regional Secure provision may place extra pressure on PICUs to admit unsuitable patients. It is important that discussions occur and agreement is sought between PICUs and local forensic providers to achieve clarity on these issues (for example on acceptable levels of risk) and in order to promote best practice and ensure consistent quality of care for patients.

Staffing
The use of agency nursing staff on PICUs and LSUs was high, at almost a third of the total nursing staff. While this reflects the situation in London’s mental health services generally (Genkeer et al., 2003), it poses particular problems within PICU and LSU environments. In PICUs patients are at their most disturbed and vulnerable, and staff familiarity with the physical environment and clinical protocols is essential for effective risk management (Dix, 2001). Experienced staff who know and trust in each others abilities are less likely to be involved in adverse incidents than inexperienced staff who are unfamiliar with their surroundings (Carmel and Hunter, 1990; James et al., 1990). In LSUs, developing and maintaining therapeutic relationships that will benefit patients with chronic difficulties is a primary consideration. Consistency and stability are vital in order to maintain a therapeutic environment that promotes rehabilitation. Such approaches may be difficult to implement with a frequently changing nursing team.

Inadequate input from psychologists, occupational therapists and social workers on PICUs and LSUs also hinders the delivery of a high quality service. Psychological, behavioural and social approaches to managing disturbance
require careful planning and may be both subtle and complex. Comprehensive multidisciplinary input is essential for positive clinical outcomes in this patient population.

**Comparisons with the national standards for psychiatric intensive care and low secure environments**

The National Minimum Standards specify the importance of multidisciplinary, ‘intensive’ therapeutic input in both PICU and LSU. This encompasses a level of care that must be patient-centred, multidisciplinary, comprehensive, collaborative and flexible (Comstock PCNA, 1983).

In line with the National Minimum Standards, our results suggest that PICUs fulfil an important role in the treatment of the acutely disturbed and LSUs in the care of the chronically disturbed. However, the finding that the majority of PICUs also admit patients who stay much longer than 8 weeks suggests that PICUs are providing care for a heterogeneous group of patients: those who are acutely disturbed and those who are chronically disturbed. These two groups of patients are likely to have different clinical needs and treatment plans, so their management and treatment within one ward environment has the potential to result in a poor compromise for both groups. However, the admission of chronic-needs patients requiring short-term containment for an acute episode may be an exception if treating and referring teams are fully aware of the nature and limited goals of the intervention.

Some PICUs and LSUs admit informal patients. Sugarman and Moss (1994) found that informal patients on open wards did not always understand that they had the right to refuse treatment and anticipated coercion, restraint or the administration of parenteral medication if they tried to leave the ward. Although no similar studies have been undertaken on locked units, it would seem likely that the presence of locked doors may increase these misconceptions. Patients should always be treated in the least restrictive environment possible (DoH, 1999) so the containment of informal patients on locked wards could be considered a breach of their human rights if this intervention is not justified. As far as possible all patients should be given an opportunity to engage with open ward teams and settle down in open acute wards before a transfer to PICU is considered. This will help promote autonomy for patients and prevent stigmatisation reducing the need for locked ward care on every acute inpatient episode.

**CLINICAL IMPLICATIONS OF THIS SURVEY**

- PICUs and LSUs need to improve multidisciplinary staffing levels to meet the National Minimum Standards for PICU and Low Secure Environments.
- Inadequate provision, resulting in high waiting lists for LSU beds and a high use of costly private PICUs, needs to be addressed at a strategic, possibly London wide commissioning level.
- Guidelines are required to clarify the suitability of admission of forensic patients to PICUs.

**LIMITATIONS OF THE STUDY**

- Data collected is reliant on reporting by ward managers.
- In order to enhance response rates, data collection of retrospective variables of unit functioning (e.g. length of stay, waiting lists) was restricted in the methodology to data that was readily available in unit records.
- Pre-agreed definitions for Psychiatric Intensive Care and Low Secure Units may have limited the identification and inclusion of a small number of units with atypical designs, which nevertheless fulfil the role of PICU or LSU.

**Acknowledgements**

The authors acknowledge the invaluable assistance of Roland Dix, Gloucestershire Partnership NHS Trust; Dr Paul McCrone, Institute of Psychiatry; Professor Graham Thornicroft, Institute of Psychiatry.

**References**


