



- handoffs. *Acad Med* 2005; **80**: 1094–9.
- 3 Mooney M, Barry S, Draper R. The electronic patient record as a guarantor of personalised mental health care. *Medinfo* 1998; **9**: 14–7.
- 4 Davies S, Priestly M. A reflective evaluation of patient handover practices. *Nurs Stand* 2006; **20**: 49–52.
- 5 King N, Thomas K, Bell D. An out-of-hours protocol for community palliative care, practitioners' perspectives. *Int J Palliat Nurs* 2003; **9**: 277–82.
- 6 Miller C. Ensuring continuing care: styles and efficiency of the handover process. *Nurs Older People* 2006; **18**: 32–6.

Ömür Budanur Miles ST3 trainee, Central Bristol Learning Disability Team, Bristol, email: omurmiles@doctors.org.uk

Psychiatric Bulletin (2009), **33**, 343–346. doi: 10.1192/pb.bp.108.021378

SHARIF GHALI

On-site testing for drugs of misuse in the acute psychiatric ward

AIMS AND METHOD

To explore why and how on-site urine drug testing is performed in in-patient settings. Data were collected by questionnaire in four acute psychiatric wards.

RESULTS

The most commonly cited reasons for testing were suspected drug use and

as a routine part of the admission procedure. On-site testing was typically favoured over laboratory methods owing to the rapid turnaround of results and ease of use. In 81% of cases the result of the tests had no effect on immediate management. The majority of staff had not received formal training in their use.

CLINICAL IMPLICATIONS

Clinical use of on-site drug tests does not reflect their established limitations. Guidance is required to direct staff in the use of this commonly used assessment tool.

There is a growing body of evidence describing the hazards of substance misuse in those with mental illness. These include elevated risk of relapse of psychosis,¹ increased frequency of psychiatric admission,² increased suicidal behaviour,³ worse treatment outcomes,² and elevated potential for antisocial behaviour and contact with the criminal justice system.^{4,5} Despite these findings, illicit drugs are readily available on acute psychiatric wards. In a sample of people with psychotic illness admitted to three inner-London psychiatric units, half showed evidence of substance or alcohol misuse, a quarter reported using cannabis on the ward in the past 6 months, and 1 patient in 25 described their first-ever experience of drug use occurring as an in-patient.⁶

Accordingly, substance misuse has required increasingly careful consideration in the assessment and management of the acute psychiatric in-patient, and testing for drugs of misuse is a tool frequently used by mental health professionals. The desire for rapid turnaround of results has resulted in the development of devices over the past two decades to assess drug use on-site, currently in the form of numerous commercial dipstick and cartridge tests. Despite the obvious advantages of such products in busy acute in-patient settings, concerns have been flagged up regarding their validity and reliability.^{7–11}

This study describes the use of on-site testing for drugs of misuse in acute adult in-patient settings in one London specialist mental health trust.

Method

Data were collected over a 2-month period in 2007 by means of a specifically designed questionnaire. These

were distributed to four acute psychiatric wards in Oxleas National Health Service (NHS) Foundation Trust, which spans three London boroughs. For each on-site test performed, the tester was required to provide the following information:

- the reason for testing for drugs of misuse;
- why on-site testing had been selected over laboratory testing;
- the results of the test;
- how the specimen was collected;
- the impact of the test result on immediate clinical management;
- the profession of the tester, their training in the use of on-site devices, and whether they were confident in interpreting the results.

For most fields, the tester was requested to select one of multiple options. Three fields allowed staff to select as many as applied, with the option of selecting 'other' and entering their own explanation. In order to maximise data collection, a £200 contribution to ward funds was made available and distributed according to the ward's level of participation in the study.

Results

Sixty-seven completed questionnaires were returned. On only 4% ($n = 3$) of occasions was a single-drug (cannabis only) test used. In 91% ($n = 61$) of cases, staff chose to use a multidrug device. In 4% of cases ($n = 3$) the test used was not specified. Testing was most commonly performed because of suspected drug use and as a routine part of the admission procedure. These were



original papers

cited as reasons for testing in 37% ($n = 25$) and 30% ($n = 20$) respectively.

The most common reason cited for testing on-site was that rapid access to results was required for clinical reasons (43%, $n = 29$). In total, 28% ($n = 19$) selected that it was due to the simplicity of the procedure, and 16% ($n = 11$) stated the benefit that patients were able to witness the test being performed. In only one instance (1%) was a urine sample sent to the laboratory for confirmation of results by more validated techniques.

Overall, 61% ($n = 41$) of tests did not detect any drugs of misuse, 15% ($n = 10$) detected one drug, 15% ($n = 10$) detected two drugs, and 9% ($n = 6$) detected three or more drugs. Staff reported witnessing sample collection in 19% of cases ($n = 13$). Of those that were witnessed, 54% ($n = 7$) detected one or more drug of misuse compared with 28% ($n = 13$) in sample collections that were not witnessed.

In 81% ($n = 54$) of cases the test result had no effect on immediate clinical management. All tests with a negative result ($n = 41$) resulted in no change to management. In those that detected one or more drug of misuse ($n = 26$), alteration to management occurred in half of the cases. The most frequent changes were referrals to addiction or dual diagnosis services (9%, $n = 6$) and reduction or withdrawal of leave (4%, $n = 3$). These findings can be seen in more detail in Table 1.

Nursing staff (97%, $n = 65$) most commonly performed the tests, of whom 72% ($n = 47$) were qualified. Only 36% ($n = 24$) of tests were performed by staff formally trained in their use. Formal training was not defined in the questionnaire. The majority (61%, $n = 41$) reported informal training (i.e. taught by colleagues) and 3% ($n = 2$) reported no training at all. The proportion of tests performed by those with formal training was significantly higher for qualified nurses than for

healthcare assistants (Table 2) (Fisher's exact test, $P = 0.04$). In 88% of cases ($n = 59$) staff reported no uncertainty in interpreting the results, with difficulties or doubt described in only 3% ($n = 2$).

Discussion

On-site drug tests are commonly used for routine screening on admission to hospital and to confirm suspected substance misuse, yet few staff members receive formal training in their use, only a minority of urine samples are witnessed and impact on clinical management appears to be limited. The implications of these findings are discussed below.

Indications for use

Despite improvements in the production of these devices, there is a paucity of objective evidence about their validity,¹⁰ limited or variable sensitivity and specificity,⁷ and a lack of available information about cross-reactivity.¹¹ Unlike their laboratory counterparts, on-site tests are subject to little or no quality control auditing.⁷ For cannabinoids the accuracy has been found to vary from 52 to 90%, for opiates it is 37–90%, for amphetamines 44–83% and for cocaine 72–92%.⁸ Although laboratory immunoassays vary according to their type and cut-off values, as an example for comparison the commonly used cloned enzyme donor immunoassay (CEDIA) system carries an average sensitivity of 98.9% (95% CI 98–100).¹² It has been suggested that on-site kits are best suited for testing small numbers of samples, and are probably unsuitable for widespread routine use.¹⁰ Given the frequent use of these kits, it is

Table 1. Detection of drugs of misuse and effect on immediate management

	Number of drugs detected, n (%)				Total
	None	One	Two	Three or more	
No change to management	41 (61)	8 (12)	1 (1)	4 (6)	54 (81)
Referral made to specialist service	0 (0)	0 (0)	5 (7)	1 (1)	6 (9)
Leave reduced or withdrawn	0 (0)	0 (0)	3 (4)	0 (0)	3 (4)
Prompted or accelerated discharge	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)
Level of observation increased	0 (0)	1 (1)	0 (0)	0 (0)	1 (1)
Change to medication regimen	0 (0)	0 (0)	1 (1)	0 (0)	1 (1)
Other	0 (0)	0 (0)	0 (0)	1 (1)	1 (1)
Total	41 (61)	10 (15)	10 (15)	6 (9)	67 (100)

Table 2. Level of training according to profession of tester

	Training received in on-site testing, n (%)			Total
	Formal	Informal	None	
Qualified nurse	21 (31)	24 (36)	2 (3)	48 (70)
Healthcare assistant	3 (5)	15 (22)	0 (0)	18 (27)
Other/not recorded	0 (0)	2 (3)	0 (0)	2 (3)
Total	24 (36)	41 (61)	2 (3)	67 (100)



original papers

unlikely that these limitations are widely understood by clinical staff.

Despite this, the second most common indication for the use of on-site testing was routine screening on admission. Although information regarding possible drug use will form an important part of any psychiatric assessment, it is arguable that an immediate test result would only be required in exceptional circumstances. In the absence of such urgency, it would be favourable to employ more reliable laboratory methods.

In over a quarter of instances staff reported that they had selected on-site rather than laboratory testing because of the relative simplicity of the procedure. This benefit may be insufficient to justify a compromise in the technique accuracy.

Device type

Single-drug on-site tests able to detect cannabis only were rarely chosen by staff and are probably of limited benefit in a setting where polysubstance misuse is often suspected.

Witnessing sample collection

Urine collection was witnessed by staff for only a minority of samples. Witnessed samples were almost twice as likely to detect drugs of misuse. This may be explained by adulterated unwitnessed samples leading to false negative results, or the fact that those more strongly suspected of drug use were more likely to be observed during sample collection. Regardless of the explanation, it would appear that a lack of consistency here may lead to impaired validity of testing.

Laboratory confirmation

Given the above limitations of on-site devices, confirmation of all results by more validated laboratory methods is recommended as good practice.¹¹ This occurred in only 1 of 67 cases, indicating that clinical practice is markedly inconsistent with expert opinion.

Impact on immediate management

Within Oxleas NHS Foundation Trust, in excess of 50 on-site tests are carried out each week. As prices of such devices vary, specific information regarding costs has not been provided, although they are clearly considerable. Less than 20% of the tests performed in this sample led to a change in immediate management and this may partly be explained by a lack of clear guidance for staff about when urine drug testing, and in particular on-site testing, is appropriate. Where action was taken on a positive result, it is of note that this was in the absence of laboratory confirmation. Given the established inaccuracies of on-site tests, there is a potential for false-positive results to misinform management decisions, for example leading to unfair restrictions to leave.

Training

The interpretation of on-site tests can be highly subjective, and without adequate training of staff the rate of incorrect results may be unacceptably high.¹¹ One study concluded that in the absence of careful training of staff and protection from interruptions and distractions, the test evaluated may not be suitable for use in busy clinical settings.⁹ The responsibility for providing such training in the use, interpretation and limitations of these devices should lie with their purchasers, and this should form part of an ongoing process of quality assurance and control.¹³

The study found that the majority of staff had not received formal training in the use of on-site testing kits. This was of particular note for healthcare assistants. This again indicates a divergence from research recommendations and expert opinion. Staff only rarely reported difficulties or doubts in the interpretation of tests. It may be that the particular device used suffers less ambiguity in its analysis. An alternative explanation may be that in the absence of training in its use, staff lack awareness of the potential for misinterpretation.

Limitations of the study

No information was collected regarding refusal of patients to give specimens or failure by staff to complete questionnaires. However, previous audit data suggest that over a 2-month period these four acute wards may use approximately 160 tests. Furthermore, there was some variability in the number of completed questionnaires between the wards, with a range of 5–30. The data here should therefore be considered as an exploration of how on-site testing is incorporated into everyday clinical practice on psychiatric wards and conclusions may not be drawn about the prevalence of substance misuse.

Information was collected pertaining to factors at the time of the procedure and the immediate future. It is therefore not possible to comment on any medium- to long-term effects on management that may have arisen from on-site testing, although it could be argued that any such effect could be equally informed by a laboratory test. As with any such study, it is possible that the introduction of the questionnaire itself led to a change in practice.

Implications for practice

Guidelines are needed to assist staff in deciding when to test for drugs of misuse. The default testing location should be the laboratory and guidelines should inform staff when on-site testing is appropriate. As an example, laboratory methods should be favoured for routine testing on hospital admission.

On-site testing should be performed by staff with training in the use of the specific device, and increased guidance and consistency are required regarding witnessing of urine sample collection.

original
papers

All on-site positive test results should be subject to laboratory confirmation.

Acknowledgements

I thank Deborah Brooke, Carol Paton and James Tighe for their advice and guidance, and Quynh-Anh Nguyen and the Oxleas Audit Department for their practical assistance.

Declaration of interest

None.

References

- Cantwell R, Harrison G. Substance misuse in the severely mentally ill. *Adv Psychiatr Treat* 1996; **2**: 117–24.
- Hunt GE, Bergen J, Bashir M. Medication compliance and comorbid substance abuse in schizophrenia: impact on community survival 4 years after a relapse. *Schizophr Res* 2002; **54**: 253–64.
- Appleby L, Shaw J, Amos T, McDonnell R, Harris C, McCann K, et al. Suicide within 12 months of contact with mental health services: national clinical survey. *BMJ* 1999; **318**: 1235–9.
- Stewart D, Gossop M, Marsden J, Alexander JM. Drug misuse and acquisitive crime among clients recruited to the National Treatment Outcome Research Study (NTORS). *Crim Behav Ment Health* 2002; **10**: 10–20.
- Sinha R, Easton C. Substance abuse and criminality. *J Am Acad Psychiatry Law* 1999; **27**: 513–26.
- Phillips P, Johnson S. Drug and alcohol misuse among in-patients with psychotic illnesses in three inner-London psychiatric units. *Psychiatr Bull* 2003; **27**: 217–20.
- George S, Braithwaite RA. Use of on-site testing for drugs of abuse. *Clin Chem* 2002; **48**: 1639–46.
- Jenkins AJ, Goldberger BA. *On-Site Drug Testing*. Humana Press, 2002.
- Kranzler HR, Stone J, McLaughlin L. Evaluation of a point-of-care testing product for drugs of abuse; testing site is a key variable. *Drug Alcohol Depend* 1995; **40**: 55–62.
- Wolff K, Welch S, Strang J. Specific laboratory investigations for assessments and management of drug problems. *Adv Psychiatr Treat* 1999; **5**: 180–91.
- Wolff K. Biological markers of drug use. *Psychiatry* 2006; **5**: 439–41.
- Wu AHB, Forte E, Casella G, Sun K, Hemphill G, Foery R, et al. CEDIA for screening drugs-of-abuse in urine and the effect of adulterants. *J Forensic Sci* 1995; **40**: 614–8.
- National Academy of Clinical Biochemistry. Evidence-based practice for point of care testing. In *Drugs and Ethanol*: 63–75. AACC Press, 2006.

Sharif Ghali Specialist Registrar, Lambeth Early Onset (LEO) Services, South London & Maudsley NHS Foundation Trust, email: sharifghali@doctors.org.uk