Prison rights: mandatory drugs tests and performance indicators for prisons

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Mandatory drugs testing of prisoners applies throughout England and Wales. Data from the 1995 pilot study in eight prisons show that the proportion testing positive for opiates or benzodiazepines rose from 4.1% to 7.4% between the first and second phase of random testing and that there was a 20% increase over 1993-4 in the provisional total of assaults for 1995. Interpretation of these data is difficult, but this is no excuse for prevarication over the danger that this policy may induce inmates to switch from cannabis (which has a negligible public health risk) to injectable class A drugs (a serious public health risk) in prison. The performance indicators for misuse of drugs that are based on the random mandatory drugs testing programme lack relevant covariate information about the individuals tested and are not reliable or timely for individual prisons.

Introduced in February 1995, mandatory drugs testing of prisoners¹ now applies to all prisons in England and Wales, but information from the mandatory drugs testing pilot study in seven men's prisons and Holloway women's prison² has not had independent scrutiny. Random mandatory drugs testing has been promoted in England and Wales as "a means of gathering information."¹ In Scotland, where the use of injected drugs and prevalence of HIV infection in prisons has been carefully researched,³ random mandatory drugs testing has been seen as a punitive response⁴ when urgent public health action was needed.⁵

The performance indicators that the prison service proposes to introduce for drugs misuse are based on its random mandatory drugs testing programme: every establishment will be required to test a minimum number of prisoners each month and the percentage of inmates testing positive for each type of drug will be monitored. Methodological issues⁶ bedevil comparisons between and within institutions. Even before performance indicators for individual prisons are contemplated,⁷ the likely performance indicators should first be used to evaluate the mandatory drugs testing policy. Evaluation of this policy needs to address a specific healthcare concern—the danger of inmates switching from cannabis (which has a negligible public health risk) to injectable class A drugs in prison (which has a serious public health risk⁸).

Performance indicators for mandatory drugs testing policy

The likely performance indicators for the mandatory drugs testing policy are:

- Change in the percentage of refusals to be tested for drug use (less than 10% of inmates refused in the early phase of random mandatory drugs testing (D Lewis, personal communication));
- Percentage of urine samples testing positive for cannabis or for class A drugs, such as heroin or benzodiazepines (of 871 samples from randomly selected male inmates during February to April 1995, 32% were positive for cannabis and 4% for class A drugs⁹);

- Percentage of inmates seeking detoxification and other forms of assistance;
- Number of inmates on drugs rehabilitation placements in a three month period;
- Number of assaults.⁹

A one third reduction in the proportion of urine samples testing positive for cannabis—down from 30% to 20%, say—would be detected with 80% power on the basis of 600 tests, 300 early tests compared with 300 done later. The seven men's establishments in the pilot phase of mandatory drugs testing contribute about 300 tested samples a month; if mandatory drugs testing had reduced substantially and rapidly the percentage of inmates testing positive for cannabis the effect would now be apparent. The pilot phase has been in operation since February 1995; over 3000 samples will have been tested. Even a modest one sixth reduction in cannabis misuse—down from 30% to 25%—would have been discernible (with 80% power at the 5% significance level) by now by comparing 1300 samples (in the first four months, say) with 1300 later samples.

Prisoners might switch from cannabis to a class A drug like heroin to avoid detection,¹ as cannabis has a longer half life (14-21 days compared with 3 days) and there is only a small difference in punishment (14 v 21 days). Worse, to maximise heroin's effect, they may start to inject it.¹⁰ This means that finding a reduction in the percentage of urine samples testing positive for cannabis without a reduction also in the percentage testing positive for class A drugs is a cause for concern. If the percentage testing positive for class A drugs increases substantially, it is a cause for alarm.

A halving in the percentage of urine samples testing positive for class A drugs—down from 4% to 2%—would be identifiable (with 80% power at the 5% significance level) with a total of 2400 samples; a doubling, to 8%, could be identified with 1200 samples. A less extreme but still untoward increase—from 4% to 6% testing positive for class A drugs—could be identified with 3800 samples. The pilot phase of mandatory drugs testing is sufficiently large that major untoward effects—a 50% increase in the percentage of samples testing positive for class A drugs—should be discernible.

The prison service has not reported data on inmates seeking detoxification or those on drugs rehabilitation placements in sufficient detail to assess the pilot phase of mandatory drugs testing. The number of assaults has been reported: 5655 in 1993-4 and 5702 in 1994-5.⁹ Assuming an average prison population of around 50 000 and that 7% of inmates are accommodated in the men's prisons tested in the pilot, some 400 assaults would have been expected in one year if these prisons were a representative sample—which they are not. Were assaults to reduce dramatically by 20% to around 320 a year, the change would be discernible from the pilot data; however, a smaller but none the less important 10% reduction could escape detection. Mandatory drugs testing might be hoped to reduce assaults by 10-15%⁹; the pilot study has around 60% power to identify a 15% reduction from 400 to 340 assaults a year.

The mandatory drugs testing pilot study is non-randomised but at least has the statistical virtue of adequate power—in over 3000 samples tested to

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Table 1—Logistic risk score for injector inmates who ever injected inside prison (275/484 injectors)

Covariate	Risk score	
	Logarithm of odds*	Odds ratio (95% confidence interval)
Residence:		
Glasgow	0.63	1.9 (1.1 to 3.1)
Edinburgh, Dundee, or Fife	1.48	4.4 (1.4 to 14.2)
Age group:		
26-35	-0.55	0.6 (0.4 to 0.9)
≥ 36	-1.07	0.3 (0.1 to 0.8)
Sentence:		
Remand	-0.22	0.8 (0.4 to 1.5)
1-3 years	0.01	1.0 (0.6 to 1.8)
> 3 years	-0.21	0.8 (0.4 to 1.7)
Time inside since 1 January 1983:		
1-3 years	0.71	2.0 (1.1 to 3.9)
> 3 years	1.69	5.4 (3.1 to 9.4)
Year of first injection:		
Before 1983	1.13	3.1 (1.6 to 5.8)
1983-8	0.86	2.4 (1.4 to 3.9)
Establishment:		
HMP Glenochil	0.27	1.3 (0.6 to 2.9)
HMP Perth	1.94	7.0 (2.9 to 16.6)

*Intercept = -1.86.

date—to discern important changes in the percentage of inmates testing positive for use of cannabis and for class A drugs and in number of assaults. Objective changes, where beneficial, could be deemed to offset the punitive costs of mandatory drugs testing (unpublished data). If changes are harmful, such as an appreciable increase in the percentage of inmates testing positive for use of class A drugs, the results of the pilot should signal alarm, and policy should be revised to meet prisons' duty of care to inmates.¹¹ Not only does initiation into injected drug use in prison put men at risk from transmission of bloodborne viruses like hepatitis B and C and HIV, but use of injected drugs is associated with a 1% annual mortality unrelated to HIV infection (S R Seaman, *et al*, unpublished data).

Performance indicators for prisons and covariate adjustment

Regardless of the results of the pilot study, every prison in England and Wales is now required to test a minimum number of inmates, selected randomly, each month; the percentage testing positive for drug types is being monitored. Will performance be compared within or between prisons?¹²

Prisons differ widely in their function and catchment population. But relevant covariate information about the individuals tested—such as age group, region of residence, number of previous prison sentences, when the inmate first injected drugs—is not routinely available, and so only rough comparisons can be made between prisons. Table 1 shows adjustment for prisoners' attributes in calculating a risk score for inmates who ever injected inside prison (answered yes by 44/75 injector inmates at Glenochil prison, 162/327 at Barlinnie, and 69/82 at Perth^{8 13 14}).

Since mandatory drugs testing lacks covariate data, monitoring within prison would be preferable, but the information obtained may be unreliable over short time periods because of the low number of inmates tested. For example, in an establishment of 500 inmates, 10% of whom are tested randomly each month (600 a year), a reduction of one third in the percentage testing positive for cannabis—down from 30% to 20%—would be detected with 80% power only on 600 tests. Halving (or doubling) in the percentage testing positive for class A drugs would be identifiable with 2400 (or 1200) samples—that is, after four (or two) years—too long to be operationally useful. It

is therefore critically important for individual establishments to know from the results of the pilot study what effects on drugs misuse and order within the prison are associated with the policy for mandatory drugs testing. It is only prudent that they know, and likewise that prisoners and the public know.

Recently disclosed data

The Home Office has recently released data from the pilot study of mandatory drugs testing. During February to May 1995 there were 1089 random tests, of which 362 (33.2%) were positive for cannabis and 44 (4.1%) positive for opiates or benzodiazepines; but from June to December 1995 there were 2282 random tests, of which 663 (29.1%) were positive for cannabis and 168 (7.4%) for opiates or benzodiazepines. The highly significant ($P<0.0001$) 80% increase in the percentage of inmates testing positive for opiates or benzodiazepines—up from 4.1% to 7.4%—signals the need for an urgent policy review. These data sit uncomfortably with a claim from the prison service, published in the *Independent* in early February,¹⁵ that there was no evidence to show that inmates were switching from soft to hard drugs to avoid detection.

Several caveats apply to the above data. Firstly, refusal rate may have changed between periods: surprisingly, the prison service's data on refusals are incomplete, even in the pilot prisons, and fail to differentiate refusals of random testing from refusals of testing on suspicion (R Tilt, personal communication). Secondly, Holloway prison started late and contributed only 60 tests (seven of them positive for opiates or benzodiazepines) to the first period, but confounding due to sex is not the explanation because the percentage testing positive for class A drugs rose from 2.7% (28/1029) to 5.4% (108/2010) in the seven men's prisons or young offenders' institutions ($P<0.001$). Thirdly, the proportions of the 44 and 168 prisoners testing positive for opiates or benzodiazepines during the two periods who also tested positive for cannabis should be compared—a decrease in the second period would be expected if there is conversion from cannabis. The prison service's statistics record only the numbers of multiple positives, not which combinations of drugs were misused. Rather than there being no evidence of inmates switching to class A drugs to avoid detection,¹⁵ relevant data have not been collected; steps have now been taken to rectify the omission (R Tilt, personal communication). Fourthly, accurate data on assaults in the seven men's prisons and Holloway during the February to December period of 1993 and 1994 as well as 1995 should also be scrutinised to see whether random mandatory drugs testing, part of the prisons' "war on drugs," has had a favourable (or an adverse) impact on order in the prisons. And finally, calendar year trends in acute infections with hepatitis B and C, as reported for prisoners and ex-prisoners, should be compared to elucidate any change point in incidence, though this comparison lacks power.¹⁶

Provisional assault figures for 1995 for the pilot prisons have now been made available: in the seven men's prisons or young offenders' institutions, the total number of assaults was 501 in 1993, 505 in 1994, and 603 in 1995, a highly significant 20% increase. The averages for 1993-4 (versus the provisional total for 1995) varied by type of prison, however: there were 201 (*v* 196 in 1995: down by 3%) in the five adult men's prisons, 302 (*v* 407 in 1995: up by 35%) in the two young offenders' institutions, and 149 (*v* 177 in 1995: up by 19%) for Holloway, which has had other problems to deal with besides mandatory drugs testing.¹⁷

Discussion

The prison service's evaluation of the mandatory drugs testing policy has ignored basic principles of statistical design¹⁸ and the local unreliability of performance indicators based on the policy is not acknowledged.⁶ The policy

has not been discussed by the public or professionals before general implementation.

Randomisation, defensible estimates of the likely effects, and numbers sufficient for discernment by statistical criteria are minimum requirements for acceptable evaluation, whether the policies are clinical or custodial. Initial evaluation of the mandatory drugs testing policy was not randomised and relied on baseline or internal comparison of assaults and positive urine samples. Compulsion and punishment jeopardise the quality of data by encouraging inmates to evade testing.¹ Genuine randomisation and quality assurance could have been achieved by randomising prisons to implement the policy either with punitive (and rehabilitative, if available) consequences for inmates who tested positive or with unattributable testing so as to gather unbiased and unpunished information on prevalence and type of drug misuse.

We have proposed moderate effects which, if beneficial, would offset the estimated punitive costs of mandatory drugs testing—between £16 000 and £23 000 every 28 days in a prison of 500 inmates (unpublished data).

In the NHS, posthoc targets,² denial of value for money,^{2 19} and denial of evidence based criteria¹⁸ would not be tolerated. The non-randomised pilot study was at least adequate in size to discern adverse as well as beneficial effects on prevalence of drugs misuse and number of assaults. Comprehensive dissemination of results of the pilot study is overdue: the policy of mandatory drug testing already applies throughout the prison service. We have identified caveats in interpretation of data which show an 80% increase from 4.1% to 7.4% in the percentage of inmates testing positive for use of opiates or benzodiazepines between the first and second phase of random mandatory drugs testing in eight pilot prisons and a 20% increase over 1993–4 in the provisional total of assaults for 1995. These caveats represent scientific caution, not an excuse for prevarication, and need to be resolved urgently because of potential healthcare implications for prisoners.

As with the regulation of medicines, all relevant data should be made available for independent scientific scrutiny. The precautionary principle justifies the cost of retrieving information on refusals of random mandatory drugs testing and on dual positive (class A and cannabis) results in the pilot prisons. This information could exonerate, or further accuse, a policy which seems prejudicial both to prisoners' health and to order in the prisons. Sound data on the prevalence of class A drug users or on supply outside prisons could suggest the trends to be expected inside. For example, the numbers of heroin users notified to the Home Office and seizures of heroin by Customs both doubled in 1995 over 1994 (R Tilt, personal communication). However, these series do not directly measure either prevalence or supply.

The proposed performance indicators of drug misuse, although appropriate for policy evaluation, are unsuitable (because inadequate numbers of inmates are tested) to

monitor trends within individual establishments. Furthermore, unless confounding factors relevant to individuals and localities are properly considered in regression analyses, incorrect inferences about individual prisons and invidious comparisons will result. Relevant personal information—such as year of first injection—is required, but the punitive mandatory drugs testing policy militates against such information being volunteered.

The haste in introducing mandatory drugs testing confuses two priorities: the need for initiatives to tackle drugs within prison, and the need for accurate data on drug types and route of administration.²⁰ The perceived need to punish drug use has compromised opportunities to obtain quality data from which to determine policy. Mandatory testing risks alienating inmates and prison officers, and sublimates important healthcare concerns. The British experience is not new: when random mandatory drugs testing was introduced in the canton of Zurich, Switzerland conversion to class A drugs was also noted; the pragmatic response was to cease testing for cannabis, thereby averting potentially serious healthcare consequences (E Weilenmann, personal communication).

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But for the grace ...

It was sometime in 1942 when, as an aspiring young surgeon in the Emergency Medical Service, I was attached to Park Prewett Hospital in Basingstoke. One night I was asked to see a young soldier with a strangulated femoral hernia. Yes, though rare, they do occur in men. Knowing that I was in the habit of giving my own spinal anaesthetics, the staff had already laid up the appropriate trolley. As it happened the senior anaesthetist at St Mary's Hospital had also been called and seeing the trolley was quite willing for me to proceed. Nevertheless, I was conscious of his seniority and of the fact that his sleep had already been disturbed, so after some friendly banter he was persuaded to give the anaesthetic of his choice.

The operation was performed without incident, but

during convalescence the patient developed an acute meningitis. The infecting organism was *H influenzae*, resistant to any of the then known drugs and, sadly, the patient died.

Had I persisted in my original intention it is certain that I should have been held responsible for the patient's death. The fact that I was willing to revise my plan out of deference to my senior colleague had saved me from a lifelong feeling of personal guilt and the opprobrium of my fellows. Had I persisted the death would have quite wrongly become another case in support of those anxious to collect statistics to prove the danger of spinal anaesthesia.—PATRICK SAMES is a retired consultant surgeon in Bath