

## Key messages

- Unstable angina represents a critical phase of ischaemic heart disease
- Stratifying patients with unstable angina for risk remains a difficult clinical problem
- A new cardiac specific protein, troponin T, can now be measured in serum
- The detection of troponin T 12-24 hours after admission identifies a high risk subgroup of patients with unstable angina
- Prospective trials are required to identify optimum therapeutic strategies for this subgroup

test,  $P = 0.004$ ; relative risk 2.45 (1.30 to 4.61)) (fig 1). In the logistic regression model troponin T status was the most significant single variable predictor for this end point ( $P = 0.008$ ; relative risk 2.55 (1.28 to 5.08)). Again the presence of either variable—that is, accelerated angina or troponin T status—was highly significant for this end point ( $P = 0.0007$ ) (table 2).

Eighteen (29%) troponin T positive patients versus 21 (17%) troponin T negative patients either died or suffered a non-fatal myocardial infarction as a first event (fig 1) (log rank test,  $P = 0.07$ ). This difference reached significance when allowance was made for coronary revascularisation by means of the Mantel-Haenszel statistic ( $P = 0.042$ ; relative risk 2.16 (1.03 to 4.53)). In the logistic regression model patients with diabetes (table 2) had a significantly increased risk for this end point. The association with troponin T status did not reach significance ( $P = 0.12$ ).

### Comment

The overall finding from this study is that, though it should not be used as a sole discriminator of future risk, a serum troponin T concentration  $\geq 0.2 \mu\text{g/l}$  measured 12-24 hours after admission will identify a subgroup of patients with unstable angina in routine clinical practice who are at increased risk of cardiac events on long term follow up. Prospective randomised trials are required to identify optimum therapeutic strategies for this subgroup.

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## Characteristics of fatal methadone overdose in Manchester, 1985-94

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Deaths associated with methadone, a drug often prescribed for opiate addiction, are increasing.<sup>1-3</sup> We describe the recent experience in Manchester, particularly in relation to diverted methadone (methadone taken by someone other than the person to whom it was prescribed).

### Subjects, methods, and results

We examined the records of the coroner for the City of Manchester (population around 400 000) from January 1985 to December 1994 and identified all fatal overdoses. Of 602 deaths associated with drug and alcohol toxicity, 90 were attributed wholly or partly to methadone. Another person died after developing gangrene of the arm from intravenous methadone injection. In 52 of the 90 cases methadone was the sole cause of death, the remaining deaths being caused by methadone

combined with other drugs or alcohol, or both. Victims' ages ranged from 2 to 50 years (mean 26.3 years; inter-quartile range 22 to 31 years); 79 were male. Eighteen of the victims were resident outside the city but died within its boundaries; the remainder had Manchester addresses, including one who died in Amsterdam but whose body was returned to Manchester for necropsy. Verdicts at inquest were misadventure (57), open (21), suicide (6), and accidental (1). Five inquests (on four children, aged 2 or 3 years, and one adult) were adjourned for criminal proceedings. Charges were brought in four, manslaughter being proved in two. In the remaining case the inquest was reopened and a verdict of unlawful killing recorded.

Evidence at inquest showed that 36 of the victims had taken methadone that had been prescribed to them; 32 had taken methadone prescribed to others (diversion), including four who bought methadone. In the remaining 22 cases the source was not recorded. The coroner usually records the prescription of methadone, so these cases probably also represent diversion of the drug.

Deaths associated with methadone rose steadily during the study, roughly in parallel with the rise in methadone prescription. In 1994 methadone accounted for 30.6% of all fatal overdoses in Manchester, and methadone associated deaths in Manchester accounted for 18.8% of the total in England and Wales in 1991 (table 1).

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**Table 1—Details of fatal methadone overdoses in Manchester, 1985-94. Values are numbers of overdoses unless stated otherwise**

Variable	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	Total
Fatal overdose:											
All methadone related	0	0	4	4	2	11	12	15	20	22	90
Methadone alone	0	0	1	2	0	6	9	6	14	14	52
Other substances only	46	59	45	53	56	56	61	39	47	50	512
Deaths associated with methadone (% of all overdoses in Manchester)	0	0	8.2	7.0	3.4	16.4	16.4	27.8	29.9	30.6	15.0
Source of methadone:											
Own prescription	0	0	2	2	1	4	3	7	9	8	36
Known diversion	0	0	2	2	1	3	5	5	7	7	32
Probable diversion	0	0	0	0	0	4	4	3	4	7	22
Deaths associated with methadone:											
England and Wales*	9	14	46	32	34	60	64	115	NA	NA	
Manchester (% of total for England and Wales)	0	0	8.7	12.5	5.9	18.3	18.8	13.0	NA	NA	
Opiate users in Manchester†:											
Methadone, alone or in combination	NA	36	31	54	68	141	234	372	320	530	
All opiates	NA	503	559	587	628	737	916	1062	935	1141	

NA = not available.

\*Data from the Office of Population Censuses and Surveys.<sup>4</sup>

†University of Manchester Drug Misuse Database (T Millar, personal communication).

### Comment

Unexpected, unexplained, and unnatural deaths are reported to the coroner. The victims have a full necropsy, with toxicological examination when no clear cause of death is found. During the study toxicological samples were submitted to one of two laboratories. Until 1985 or 1986 these laboratories estimated urinary methadone concentrations using semiquantitative enzymic methods. Subsequently, they used a fully quantitative immunoassay that can be applied to any fluid or tissue. Broad screens for drugs of misuse are routine, and detection of one misused substance prompts a search for other commonly misused substances. Underascertainment of cases is likely to have been small.

Methadone is used in two main ways in opiate addiction. In the client centred approach drug misusers are weaned off all opiates to cure addiction. In contrast, the public health approach aims at reducing the risk taking behaviour associated with heroin misuse, rendering needle sharing redundant and avoiding the risks of HIV infection and viral hepatitis.<sup>5</sup> The public health approach has recently been adopted by Manchester Health Commission, but we understand that it was informally adopted several years ago by some of the authorities responsible for managing drug misuse locally. This adoption coincided with the rapid increase

in methadone prescription (and associated deaths) that started in 1990. We are concerned that many new clients will be recruited to methadone maintenance programmes. They may themselves be at comparatively low risk of overdose, but diversion of methadone endangers others, including children. Indeed, our findings suggest that diversion accounts for most deaths from methadone. A public health approach to opiate misuse is laudable but should be tempered with caution. We hope that the resources necessary for safer dispensing of methadone will be made available.

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## Patients' awareness of adverse relation between Crohn's disease and their smoking: questionnaire survey

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of the management of Crohn's disease, but there are few or no published data describing patients' knowledge of the association between smoking and their disease. We therefore investigated patients' and general practitioners' awareness of the link between smoking and Crohn's disease to identify the standard of education in this area.

### Methods and results

A total of 102 patients (43 men) with Crohn's disease (mean age 42 (range 17-84) years) under the care of two gastroenterologists completed a questionnaire either in the outpatient clinic (n = 33) or by post (n = 69; 83% response rate). This asked whether they were a smoker or an ex-smoker; if they knew of any link between smoking and Crohn's disease; if anyone had informed them of the link and if so was it their general practitioner or hospital doctor; and if they had been advised to stop smoking. It also asked if they associated any effect of smoking on the symptoms they associated with their disease.

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Smoking is an independent risk factor for clinical, surgical, and endoscopic recurrence in Crohn's disease.<sup>1</sup> In a 10 year follow up of 174 patients the recurrence rate was 70% in smokers and 41% in non-smokers.<sup>2</sup> Passive smoking increases the risk of Crohn's disease in children<sup>3</sup> and of having the more severe form. Ileocolonic and small bowel disease is more common in heavy smokers.<sup>4</sup> On current evidence, encouraging patients to stop smoking ought to be an important part