

**FINAL REPORT OF
THE EVALUATION OF
THE SYDNEY MEDICALLY
SUPERVISED INJECTING CENTRE**

MSIC Evaluation Committee

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A number of other people contributed in substantial ways to the material presented in individual chapters, under the supervision of one or more members of the Evaluation Committee. Their role is acknowledged at the end of each Chapter.

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TABLE OF CONTENTS

LIST OF TABLES	V
LIST OF FIGURES	VIII
EXECUTIVE SUMMARY	XI
CHAPTER 1: GENERAL INTRODUCTION	2
1.1 SUPERVISED INJECTING CENTRES	2
1.2 BACKGROUND TO THE MEDICALLY SUPERVISED INJECTING CENTRE	2
1.3 TERMS OF REFERENCE OF THE MSIC EVALUATION	4
CHAPTER 2: OPERATION OF THE MSIC	8
KEY FINDINGS	8
2.1 INTRODUCTION	9
2.2 METHODS	9
2.2.1 MSIC client characteristics and MSIC service utilisation.....	9
2.2.2 Review of MSIC protocols and management interviews.....	11
2.2.3 Staff focus groups	11
2.2.4 Client attitudes.....	11
2.3 RESULTS	12
2.3.1 Review of MSIC service delivery protocols	12
2.3.2 Client characteristics at registration.....	14
2.3.3 Service utilisation	19
2.3.4 Interviews with MSIC Management.....	25
2.3.5 Staff attitudes	29
2.3.6 Changes after 16 months of operation	32
2.3.7 IDU and MSIC client attitudes	33
2.4 DISCUSSION	36
2.4.1 Main findings	36
2.4.2 Limitations	38
2.4.3 Interpretation and implications.....	38
CHAPTER 3: MSIC IMPACT ON OPIOID OVERDOSE	44
KEY FINDINGS	44
3.1 INTRODUCTION	45
3.2 METHODS	46
3.2.1 Ambulance attendance at suspected drug overdose events.....	46
3.2.2 Overdose presentations at hospital emergency departments	47
3.2.3 Drug related deaths.....	47
3.2.4 Estimate of the number of deaths prevented within the MSIC.....	48
3.3 RESULTS	48
3.3.1 Ambulance attendances at suspected opioid overdoses.....	48
3.3.2 Impact of MSIC on opioid poisoning hospital presentations	54
3.3.3 Overdose deaths.....	55
3.3.4 Estimating the potential of the MSIC to prevent opioid overdose deaths	57
3.3.5 An estimate of deaths prevented by MSIC staff resuscitating clients who overdosed	59

3.4 DISCUSSION	60
3.4.1 Main findings	60
3.4.2 Methodological limitations	61
3.4.3 Interpretation and implications.....	61
CHAPTER 4: BLOOD BORNE VIRUSES	66
KEY FINDINGS	66
4.1 INTRODUCTION	67
4.2 METHODS	68
4.2.1 Newly diagnosed HIV, HBV and HCV infections	68
4.2.2 Incidence of HCV in Kings Cross	69
4.2.3 Prevalence of HIV and HCV among IDUs in Kings Cross	69
4.3 RESULTS	69
4.3.1 Newly diagnosed blood borne viral infections	69
4.3.2 Incidence of HCV infection among drug injectors at Kirkton Road Centre.....	74
4.3.3 Prevalence of HIV and HCV infections among drug injectors in Kings Cross.....	75
4.4 DISCUSSION	78
CHAPTER 5: CLIENT HEALTH AND REFERRAL UPTAKE	84
KEY FINDINGS	84
5.1 INTRODUCTION	85
5.2 METHODS	86
5.2.1 IDU survey.....	86
5.2.2 Referral cards	87
5.3 RESULTS	87
5.3.1 Sample characteristics.....	88
5.3.2 Injecting drug use.....	89
5.3.3 Injecting practices	92
5.3.4 Injecting related health	94
5.3.5 Health service use	96
5.3.6 Referral uptake	98
5.4 DISCUSSION	100
5.4.1 Main findings	100
5.4.2 Limitations	100
5.4.3 Interpretation and implications.....	101
CHAPTER 6: PUBLIC AMENITY	108
KEY FINDINGS	108
6.1 INTRODUCTION	109
6.2 METHODS	109
6.2.1 Community telephone surveys.....	109
6.2.2 Publicly discarded syringes and syringes distributed in the Kings Cross area	110
6.3 RESULTS	112
6.3.1 Public nuisance from illicit drug use in Kings Cross	112
6.3.2 Approaches to buy drugs in Kings Cross.....	114
6.3.3 Community perception of public injection	115
6.3.4 Community perception of discarded syringes	116
6.3.5 Counts of publicly discarded syringes.....	117
6.3.6 Syringe provision in the Kings Cross area.....	121

6.4 DISCUSSION.....	124
CHAPTER 7: CRIME AND DRUG-RELATED LOITERING.....	128
KEY FINDINGS	128
7.1 INTRODUCTION	129
7.2 METHOD	129
7.2.1 Data sources	129
7.2.2 Quantitative analysis.....	133
7.3 RESULTS	135
7.3.1 Recorded crime	135
7.3.2 Counts of loiterers in Kings Cross	138
7.3.3 Key-informant interviews	142
7.4 DISCUSSION.....	147
7.4.1 Main findings	147
7.4.2 Interpretation and implications.....	150
CHAPTER 8: EVALUATION OF COMMUNITY ATTITUDES TO THE MSIC.....	152
KEY FINDINGS	152
8.1 INTRODUCTION	153
8.2 METHODS	154
8.3 RESULTS	155
8.3.1 Sample characteristics.....	155
8.3.2 History of drug injection and likelihood of MSIC use.....	157
8.3.3 Knowledge of the MSIC.....	158
8.3.4 Agreement or disagreement with MSICs	159
8.3.5 Location of MSICs	165
8.3.6 Opinions on the advantages and disadvantages of MSICs.....	168
8.3.7 Agreement with selected other drug control strategies	174
8.4 DISCUSSION.....	176
CHAPTER 9: ECONOMIC EVALUATION	180
KEY FINDINGS	180
9.1 INTRODUCTION	181
9.2 METHODS AND RESULTS	181
9.2.1 MSIC operating and set-up costs.....	182
9.2.2 MSIC benefits.....	186
9.2.3 Deaths averted.....	187
9.2.4 Valuation of deaths averted.....	187
9.2.6 Lost production in the workforce	189
9.2.7 Lost production in the household	189
9.2.8 Loss of quality of life.....	189
9.2. The estimates	190
9.2.10 Reduction of overdose-related morbidity.....	190
9.2.11 Utilisation of health care services	191
9.2.12 Overdoses managed at the MSIC.....	192
9.2.13 Needle stick injuries prevented.....	192
9.2.14 Referrals to other health care facilities for treatable conditions.....	192
9.2.15 Ambulance service cost offsets.....	192

9.2.16	Police service cost offsets	193
9.2.17	Impact on the Kings Cross amenity.....	193
9.2.18	Future cost increases resulting from the impact of the MSIC	194
9.2.19	Economic evaluation of the MSIC.....	195
9.2.20	Comparator analysis	197
9.3	CONCLUSION.....	199
 CHAPTER 10: CONCLUSIONS.....		 202
10.1	Conclusions from the results.....	202
10.2	Limitations of the evaluation.....	205
10.3	Recommendations	206
10.4	Summary findings	207
 APPENDICES		 208
 APPENDIX 1: MSIC SERVICE MODEL		 209
 APPENDIX 2: MSIC INITIAL SET-UP COSTS		 210
 APPENDIX 3: MSIC SET-UP COSTS SINCE OPENING.....		 211
 APPENDIX 4: OPERATING COSTS 1 MAY 2001 TO 30 APRIL 2002.....		 213

List of Tables

Table 2.1:	Demographic characteristics	15
Table 2.2:	Drug injected most frequently in month prior to registration.....	15
Table 2.3:	Injecting related problems in month before registration	16
Table 2.4:	Overdose history	16
Table 2.5:	Types of drug treatment entered in 12-months prior to registration.....	17
Table 2.6:	Number of clients and visits to MSIC by client postcode of residence by Area Health Service	17
Table 2.7:	Reason for being in Kings Cross on the day of MSIC registration	18
Table 2.8:	Location of next injection at registration if there were no MSIC.....	18
Table 2.9:	Proportion of visits and clients by age range and gender	20
Table 2.10:	Client characteristics associated with frequent MSIC attendance.....	20
Table 2.11:	Reasons for refusal of registration or entry at MSIC	21
Table 2.12:	Number and type of occasions of MSIC service utilisation.....	22
Table 2.13:	Number and type of referrals.....	23
Table 2.14:	Drug-overdose related incidents by drug type	24
Table 2.15:	Number and type of enquires at reception.....	25
Table 2.16:	Reported reasons for not having used the MSIC among IDU in Kings Cross	33
Table 2.17:	Problems experienced with local business, passers by and police	34
Table 3.1:	Kings Cross area: Changes in ambulance attendances associated with the heroin shortage (Jan '01) and opening of MSIC (May '01).....	49
Table 3.2:	Kings Cross area: Changes in ambulance attendances associated with heroin shortage (Jan '01)	49
Table 3.3:	Rest of NSW: Ambulance attendances to opioid overdose	50
Table 3.4:	Cabramatta: Changes in ambulance attendances	52
Table 3.5:	Kings Cross area: Ambulance attendances during MSIC hours	52
Table 3.6:	Rest of NSW: Ambulance attendances during MSIC hours	53
Table 3.7:	Test of interaction between Area and Time for percentage of overdoses occurring during MSIC hours.....	53
Table 3.8:	Cabramatta: Ambulance attendances during MSIC hours	54
Table 3.9:	Opioid poisoning presentations at Hospitals and the heroin shortage (Jan '01) and opening of MSIC (May '01)	55
Table 4.1:	Number of cases of newly diagnosed HIV infections and the relative risks for the Kings Cross area (2011), Darlinghurst/Surry Hills (2010) and the rest of Sydney	70
Table 4.2:	Number of cases of newly diagnosed HBV infections and the relative risks for Kings Cross (2011), Darlinghurst/Surry Hills (2010) and the rest of Sydney	71

Table 4.3:	Number of cases of newly diagnosed HCV infections and the relative risks for Kings Cross (2011), Darlinghurst/Surry Hills (2010) and the rest of Sydney	73
Table 4.4:	Incidence of HCV infection among injecting drug users at Kirkton Road Centre by age group	74
Table 4.5:	Relative risk analysis for change in HCV incidence among injecting drug users at Kirkton Road Centre	74
Table 4.6:	Number (response rate) of respondents for NSP/MSIC surveys	75
Table 4.7:	Prevalence of HIV infection among IDUs in the NSP/MSIC surveys by demographic characteristics	76
Table 4.8:	Prevalence of HCV infection among IDUs in the NSP/MSIC surveys by demographic characteristics	78
Table 5.1:	Demographic characteristics by year of survey and MSIC use.....	89
Table 5.2:	Type of drug last injected by year of survey and MSIC usage	90
Table 5.3:	Reporting of daily or more frequent injection in the previous month by type of drug last injected and MSIC usage.....	92
Table 5.4:	Reporting of injecting related problems by year of survey and MSIC usage	95
Table 5.5:	Type of changes in injecting technique since using the MSIC	95
Table 5.6:	Body sites used for injection in the previous month by MSIC and non-MSIC users and year of survey	96
Table 5.7:	Type of referral by the number of cards provided and returned	98
Table 5.8:	Frequency of MSIC attendance and referral	99
Table 5.9:	Prior drug treatment experience of clients and MSIC drug treatment referral and referral uptake.....	100
Table 6.1:	“Hot spots” in Kings Cross according to KRC Clean-Up Team sector of collection	110
Table 6.2:	Percentage of King Cross resident and business respondents’ estimate of approaches to buy drugs and the type of drug last offered for sale	115
Table 6.3:	Linear regression model estimating change in level and trend of the average daily number of syringes collected per month before and after the MSIC opened in May 2001, August 1999 to November 2002.....	118
Table 6.4:	Change in the average daily number of syringes collected per month before and after MSIC opened using negative binomial regression modelling, August 1999 to November 2002	118
Table 6.5:	Change in the average weekly number of syringes counted by researchers before and after the MSIC opened using negative binomial regression modelling, July 2000, 2001 and 2002.....	119
Table 6.6:	Change in the average weekly number of syringes counted by South Sydney Council before and after MSIC opened using negative binomial regression modelling, August 1999 to November 2002.....	121
Table 6.7:	Linear regression model estimating change in level and trend of the syringes distributed per month from major NSPs and pharmacies in the Kings Cross/Darlinghurst area, January 1999 – December 2002	123

Table 7.1:	Linear regression for robbery incidents in Kings Cross LAC	136
Table 7.2:	Linear regression for theft incidents in Kings Cross LAC	138
Table 7.3:	Linear regression for 'drug-related' loiterers at the front of the MSIC	139
Table 7.4:	Linear regression for total loiterers at the front of the MSIC	140
Table 8.1:	Location of business or residence for Kings Cross respondents and duration of working/living in Kings Cross.....	155
Table 8.2:	Types of businesses interviewed and position of interviewees	156
Table 8.3:	Demographic characteristics of Kings Cross and NSW resident respondents	157
Table 8.4:	Number (percentage) of Kings Cross and NSW residents reporting that they would use the MSIC and the reason for use.....	158
Table 8.5:	Knowledge of the location of the Kings Cross MSIC	159
Table 8.6:	Percentage agreement of Kings Cross resident respondents' with establishment of MSICs.....	160
Table 8.7:	Business respondents' agreement with the establishment of a MSIC	162
Table 8.8:	NSW respondents' agreement with location of MSICs.....	164
Table 9.1:	Summary of MSIC set-up costs	182
Table 9.2:	Summary of operating costs, May 2001 to April 2002	183
Table 9.3:	Operating cost per client visit.....	183
Table 9.4:	MSIC operating and set-up costs	185
Table 9.5:	Potential benefits from operation of an MSIC.....	186
Table 9.6:	Age-specific employment/population ratios, 2000-2001 ¹	188
Table 9.7:	Estimates of the hypothetical value of life in terms of paid and unpaid production.....	190
Table 9.8:	Costs and benefits of investment in NSPs, 1991 to 2000 inclusive	191
Table 9.9:	Estimated value of ambulance cost savings attributable to operation of the MSIC	192
Table 9.10:	MSIC set-up and operating costs	195
Table 9.11:	Hypothetical benefits of the MSIC (lower benefit basis).....	196
Table 9.12:	Hypothetical benefits of the MSIC (higher benefit basis)	196
Table 9.13:	Summary of costs and hypothetical benefits of the MSIC	196
Table 9.14:	Other MSIC benefits found to be unquantifiable.....	197
Table 9.15:	Comparison of returns on investment in public health with returns to the MSIC.....	198

List of figures

Figure 2.1:	Number of new clients registered per month.....	14
Figure 2.2:	Number of visits and clients attending the MSIC per month.....	19
Figure 2.3:	Proportion of visits to inject cocaine and heroin by month	22
Figure 2.4:	Injecting equipment supplied to clients per month (May 01-Oct 02).....	25
Figure 2.5:	Client agreement with MSIC procedures and services	35
Figure 2.6:	Rating of MSIC procedures by clients.....	36
Figure 3.1:	Kings Cross area: Ambulance attendances to opioid overdose.....	48
Figure 3.2:	Rest of NSW: Time series of ambulance attendances	50
Figure 3.3:	Cabramatta: Times series of ambulance attendances	51
Figure 3.4:	Opioid poisoning presentations at St Vincent’s and Sydney Hospitals	54
Figure 3.5:	Kings Cross area: Deaths where morphine detected (Jan 95-Oct 02)	55
Figure 3.6:	Rest of NSW: Deaths where morphine detected (Jan 95-Oct 02)	56
Figure 3.7:	Cabramatta: Deaths where morphine detected (Jan 95-Oct 02)	57
Figure 4.1:	Population rates of newly diagnosed HIV infections in Sydney by postcode area	70
Figure 4.2:	Population rate of newly diagnosed HBV infections in Sydney by postcode area	72
Figure 4.3:	Population rate of newly diagnosed HCV infections in Sydney by postcode area	73
Figure 4.4:	HIV prevalence among IDUs in the Kings Cross NSP/MSIC survey by sex and sexual identity	75
Figure 4.5:	HCV prevalence among IDUs in Kings Cross	77
Figure 5.1:	Type of drug last injected among IDUs in Kings Cross, by year of survey	90
Figure 5.2:	Reporting of daily or more frequent injection in the previous month by type of drug last injected among IDUs in Kings Cross.....	91
Figure 5.3:	Place of injection in the previous month among IDUs in Kings Cross.....	94
Figure 5.4:	Self-reported uptake of drug treatment in the previous year by type of treatment, MSIC usage and year of survey.....	97
Figure 6.1:	The types of public annoyance attributed to high local levels of drug use reported by Kings Cross resident respondents	113
Figure 6.2:	The types of public annoyance attributed to high local levels of drug use reported by Kings Cross business respondents	114
Figure 6.3:	Observed and predicted average daily number of syringes collected by KRC Clean-up Team per month before and after the MSIC opened, August 1999 to November 2002.....	117

Figure 6.4:	Average weekly syringe count per site by researchers according to location and distance from the MSIC.....	119
Figure 6.5:	Average weekly syringe count by South Sydney Council according to location, July 2000, 2001 and 2002	120
Figure 6.6:	Syringe distribution from major NSP and pharmacy services in the Kings Cross/Darlinghurst area and MSIC visits, January 1999 – December 2002.....	122
Figure 7.1:	Number of robbery incidents in Kings Cross LAC and in the rest of Sydney, January 1999 to September 2002	136
Figure 7.2:	Number of theft incidents in the Kings Cross LAC and in the rest of Sydney, January 1999 to September 2002	137
Figure 7.3:	Mean number of total and 'drug related' loiterers per count at front of MSIC, by week, 15 October 2000 to 31 October 2002	139
Figure 7.4:	Mean number of 'drug related' loiterers per count at back of MSIC, by month, November 2000 to October 2002	141
Figure 7.5:	Mean number of 'total' loiterers per count at back of MSIC, by month, November 2000 to October 2002	141
Figure 7.6:	Mean number of pedestrians per count on Darlinghurst Road, by week, 15 October 2000 to 31 October 2002.....	142
Figure 8.1:	Kings Cross resident respondents' agreement with selected statements on the impact of the MSIC	161
Figure 8.2:	Kings Cross business respondents' agreement with selected statements on the impact of the MSIC	163
Figure 8.3:	NSW resident respondents' agreement with selected statements on the impact of the MSIC.....	164
Figure 8.4:	Kings Cross resident respondents' opinion on locations for MSICs.....	165
Figure 8.5:	Kings Cross business respondents' opinion on locations for MSICs.....	166
Figure 8.6:	NSW resident respondents' opinion on locations for MSICs.....	167
Figure 8.7:	Advantages attributed to MSICs reported by Kings Cross residents	168
Figure 8.8:	Disadvantages attributed to MSIC by Kings Cross residents	169
Figure 8.9:	Advantages attributed to MSICs by Kings Cross business respondents	170
Figure 8.10:	Disadvantages attributed to MSICs reported by Kings Cross business respondents	171
Figure 8.11:	Advantages attributed to MSIC reported by NSW resident respondents	172
Figure 8.12:	Disadvantages attributed to MSIC reported by NSW resident respondents	173
Figure 8.13:	Kings Cross resident respondents' agreement with drug control strategies	174
Figure 8.14:	Kings Cross business respondents' agreement with selected drug control strategies	175
Figure 8.15:	NSW resident respondents' agreement with selected drug control strategies	176

LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
BBV	Blood borne virus
BOCSAR	Bureau of Crime Statistics and Research
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
ICD-9	International Classification of Disease, 9 th Revision
IDU	Injecting Drug User
KRC	Kirkton Road Centre
MSIC	Medically Supervised Injecting Centre
NCHECR	National Centre in HIV Epidemiology and Clinical Research
NDARC	National Drug and Alcohol Research Centre
NIROA	Non-injecting routes of administration
NSP	Needle Syringe Program
NSW	New South Wales
NSW Health	New South Wales Department of Health
RR	Relative risk
SIC	Supervised Injecting Centre
SSC	South Sydney Council
STD	Sexually transmissible disease
UNSW	University of New South Wales

Executive Summary

CHAPTER 2: PROCESS EVALUATION

Compliance with protocol

- MSIC service delivery protocols met with the specifications of the Drug Summit Legislative Response Act.

Client characteristics

- During the 18 month trial, 3,810 individuals registered to use the MSIC, and 73% were male. On average, their age was 31 years, they started injecting at 19 years, and had been injecting for 12 years. Almost half (44%) reported a previous non-fatal heroin overdose and two thirds (66%) had been in drug treatment.
- Clients made 56,861 visits to the MSIC with an average of 15 visits per client in the 18-month trial, with a range of 1 to 646 visits.
- Heroin was the drug most frequently injected at the MSIC (61% of visits) followed by cocaine (30% of visits).

Service utilisation and referral

- On approximately one in every four visits, health care services in addition to the supervision of injecting were provided to clients. Over half of the occasions of service were injecting and vein-care advice (56%).
- Approximately one in 41 visits resulted in a referral for further assistance. Among the 1,385 referrals for further assistance made for 577 clients, 43% were for the treatment of drug dependence, 32% were to primary health-care facilities and 25% were to social welfare services.

Clinical incidents managed

- Four hundred and nine (409) drug-overdose related incidents requiring clinical management occurred at the MSIC, a rate of 7.2 overdoses per 1000 visits. These were 329 (80%) heroin-related overdoses, 60 (15%) cases of cocaine-related toxicity, 13 benzodiazepine (3%) overdoses and seven (2%) other opioid-related overdoses.

CHAPTER 3: OVERDOSE

Pre-MSIC opioid overdoses

- In the months preceding the opening of the MSIC, the number of opioid-overdose ambulance attendances and deaths decreased dramatically in the Kings Cross area and across NSW. These decreases were attributed to the substantial reduction in the supply of heroin in Australia that occurred at the same time.

Post-MSIC changes in ambulance and emergency attendances

- Subsequent to the opening of the MSIC, there were further reductions in the number of opioid overdose ambulance attendances in the Kings Cross area and the across NSW. These reductions were associated with the ongoing fall in heroin availability. It was not possible to distinguish the role of the MSIC in reducing demand on ambulance services from the effect of the continued reduction in heroin availability.
- The proportion of ambulance attendances to opioid overdoses in the Kings Cross Area that took place during hours of MSIC operation changed little during the Evaluation period compared to the equivalent calendar period prior to the Evaluation.

Post-MSIC changes in heroin overdose death

- There was no evidence that the operation of the MSIC affected the number of heroin overdose deaths in the Kings Cross area.

Management of heroin overdoses in the MSIC

- It is likely that the MSIC staff prevented some overdose fatalities among those who used the Centre, as a proportion of the 329 heroin overdoses managed by staff in the MSIC may have been fatal, if they had occurred elsewhere. On the basis of clinical and epidemiological data on heroin overdose outcomes, at least four deaths per year are estimated to have been prevented by clinical intervention of the staff at the MSIC.

CHAPTER 4: BLOOD BORNE VIRUSES

Notifications of cases of HIV, HBV and HCV infection

- There was a trend of increased notifications of cases of newly diagnosed sexually transmitted HIV infection in the Kings Cross postcode area during the time period when the MSIC was established, but no change in the small number of injecting-related infections.
- Notifications of HBV infection remained stable in the Kings Cross and Darlinghurst/Surry Hills postcode areas during the time period when the MSIC was established but increased annually in the rest of Sydney.
- Notifications of newly diagnosed HCV infection increased in the Darlinghurst/Surry Hills postcode area and the rest of Sydney during the time period when the MSIC was established, but remained stable in the Kings Cross postcode area.

HCV incidence

- HCV incidence was stable among injecting drug users tested at Kirkeaton Road Centre during the time period when the MSIC was established.

HIV and HCV prevalence

- Prevalence of HIV infection among injecting drug users in the Kings Cross NSP/MSIC survey was very low during the time period when the MSIC was established, except among male respondents reporting homosexual identity.
- There was a trend of increased HCV prevalence among injecting drug users surveyed in Kings Cross during the time period when the MSIC was established, consistent with national trends among this population.

CHAPTER 5: CLIENT HEALTH AND REFERRAL

Injecting related health

- Injecting drug users in the Kings Cross area had a high level of injecting-related health problems, with those attending the MSIC more likely to report abscesses/skin infections or thrombosis of the vein than those who did not attend.
- Over time there was a small decrease in the frequency of injecting-related problems among MSIC clients.
- Nearly half the MSIC clients reported that their injecting practices had become less risky since using the MSIC.
- The MSIC client group generally reported higher rates of injection in public places than other injectors.
- The frequency of public injection among MSIC clients decreased during the trial period.

Use of health services

- Injecting drug users in the Kings Cross area reported high levels of testing for blood borne viruses and previous treatment for drug dependence.
- The MSIC client group were more likely than other injectors to report that they had started treatment for drug dependence.

Uptake of referral

- Around half the 1385 referrals were made in writing and, of these, 20% were confirmed to have resulted in the client making contact with the specified agency.
- The MSIC provided referrals to treatment for drug dependence for 11% of clients. The more frequent attenders at the MSIC were more likely to be referred for treatment and take up the referral.

CHAPTER 6: PUBLIC AMENITY

Community telephone interviews

- Kings Cross area local resident and business respondents reported sighting fewer episodes of public injection and syringes discarded in public places in 2002 compared to 2000.

Counts of syringes discarded in public places in the Kings Cross area

- Syringe counts in Kings Cross were generally lower after the MSIC opened than before.
- There was a gradual increase in syringe counts in the period after the MSIC was established that may have reflected a return in the availability of heroin.

CHAPTER 7: CRIME

Theft and robbery incidents

- There was no evidence that the MSIC increased the number of theft and robbery incidents in Kings Cross. There was a downward trend in these incidents from early in 2001 that was likely to be due to the reduction in heroin availability in Australia.
- The trend in theft and robbery apparent in Kings Cross was also reflected in recorded crime rates for the rest of Sydney. This result provides further evidence that the change in these offences in Kings Cross was due to factors that affected crime in the whole of Sydney, rather than being related to the opening of the MSIC.

Loitering

- The available evidence does not suggest that there was a large increase in drug related loitering in Kings Cross following the opening of the MSIC.
- Drug-related loitering at the front of the MSIC began to decline after it opened. There was a very small but sustained increase in drug-related loitering at the back of the MSIC after it opened. Overall, however, the likelihood of observing a drug-related loiterer at the back of the MSIC was low.
- The level of 'total' loitering increased initially at the front of the MSIC by approximately 1.2 persons per occasion of observation, but began to decline thereafter. There was a very small but sustained increase in total loitering at the back of the MSIC after it opened.
- Qualitative interviews with community key-informants and police focus groups confirmed that the MSIC had minimal effect on drug-related activity in the local area. There was some indication of an increase in drug-related activity and loitering at the Kings Cross train station, which was attributed by some informants to the MSIC.

CHAPTER 8: COMMUNITY ATTITUDES

Agreement with the establishment of the MSIC

- Levels of agreement with the establishment of the MSIC in Kings Cross were high among local resident and business respondents surveyed in a telephone poll before the MSIC opened (68% and 58% respectively).
- Levels of agreement with the establishment of the MSIC in Kings Cross increased when the survey was repeated towards the end of the evaluation period with 78% of Kings Cross resident and 63% of NSW business respondents reporting agreement.
- The proportion of local resident respondents reporting disagreement with establishment of MSICs also decreased significantly from 2000 to 2002 for both Kings Cross (26% to 17%), and for other areas of New South Wales associated with high levels of drug use (21% to 14%).
- One-third of the Kings Cross business and half the Kings Cross resident respondents did not know the location of the Sydney MSIC in 2002, suggesting that at least for those people the MSIC had a low impact.
- Kings Cross business and resident respondents who knew the MSIC location were more likely to agree than disagree with the establishment of a MSIC in Kings Cross.
- One-third of local residents and one-quarter of local businesses reported that they found no disadvantages with the MSIC in 2002.

CHAPTER 9: ECONOMIC EVALUATION

Cost of MSIC operation and visits

- Financial cost evaluation of current operation of the Kings Cross Medically Supervised Injecting Centre (MSIC) shows that the set-up costs were \$1,334,041; the initial year's operating costs were \$1,995,784; and the budgeted costs for 12 months until 30.06.03 were \$2,420,214.
- The cost per client visit was \$63.01 in the initial year of operation, and the cost per client visit was projected to be \$37.23 assuming increased client throughput and efficiencies in the 2002/2003 year.

Economic evaluation

- As a method of valuing deaths averted and based on a number of assumptions, the economic evaluation of current operation of the Kings Cross Medically Supervised Injecting Centre (MSIC) suggests that the benefit/cost ratio was 0.72 (lower estimate) and could range up to 1.19 (higher estimate).

- As a method of valuing deaths averted and based on a number of assumptions, the economic evaluation of future operation of the Kings Cross MSIC, working at a higher capacity and implementing efficiency-based cost-savings, suggests that the benefit/cost ratios could range from 1.20 (lower estimate) to 1.97 (higher estimate).
- The analysis indicates that the potential rate of return of the MSIC to the community in terms of the valuation of deaths averted is comparable to some other widely accepted public health measures.

CHAPTER 10: CONCLUSIONS

In summary, the evidence available from this Evaluation indicates that:

- operation of the MSIC in the King Cross area is feasible;
- the MSIC made service contact with its target population, including many who had no prior treatment for drug dependence;
- there was no detectable change in heroin overdoses at the community level;
- a small number of opioid overdoses managed at the MSIC may have been fatal had they occurred elsewhere;
- the MSIC made referrals for drug treatment, especially among frequent attenders;
- there was no increase in risk of blood borne virus transmission;
- there was no overall loss of public amenity;
- there was no increase in crime;
- the majority of the community accepted the MSIC initiative;
- the MSIC has afforded an opportunity to improve knowledge that can guide public health responses to drug injecting and its harms.

CHAPTER 1: GENERAL INTRODUCTION

1.1 Supervised Injecting Centres

Supervised Injecting Centres (SICs) are legally sanctioned health and social welfare facilities that enable the hygienic injection of pre-obtained drugs under professional supervision in a non judgemental environment (Dolan et al., 2000; Schneider & Stöver, 2000). Characterised as taking a role in public health and public order (Stoever, 2002), SICs aim to reduce the mortality and morbidity associated with drug overdose; reduce the public nuisance associated with public drug use, intoxication and discarded injecting equipment; reduce blood borne virus risk behaviour; and to act as an access point to drug treatment, health-care and social welfare assistance (Dolan et al., 2000).

SICs are distinguishable from illegal “shooting galleries” which usually operate for profit and with little regard for the health and safety of patrons (Carlson, 2000; Chitwood et al., 1990; Parliament of New South Wales, 1998) and from heroin prescription programmes, where severely heroin dependent clients are dispensed pharmaceutical heroin in a supervised high threshold drug treatment programme (Bammer, 1999).

SICs, also known internationally as drug consumption rooms (DCRs) due to the provision for inhalable routes of drug administration as well as injecting, have operated in Europe for over 20 years (Dolan et al., 2000). Including the Sydney trial, 59 DCRs were operating across 33 cities in Switzerland, Germany, Netherlands, Spain, and Australia in 2002 (Kimber et al., 2003).

The English language research literature on SICs is limited and little evaluation of the impact of SICs has been undertaken to date. Reviews of the available evidence, however, suggest that SICs are feasible to operate, acceptable to the targeted client group, contribute to some reductions in drug overdose mortality and morbidity and injecting related risk behaviour, and improvements in public amenity and client health (Dolan et al., 2000; Kimber et al., 2003).

1.2 Background to the Medically Supervised Injecting Centre

Kings Cross is the location of one of the largest illicit drug markets in NSW (Darke & Ross, 1999) and has been associated with prostitution, gambling, and drug use since the 1960s (McCoy, 1980). The area which accounts for less than 5% of the NSW population was estimated in the mid to late 1990s to have: approximately 20% of ambulance attendances to suspected drug overdose and fatal opioid overdoses in the State (Darke & Ross, 1999; Degenhardt et al., 2001); and approximately 12% of syringes distributed by the Needle and Syringe Program in NSW (NSW Health AIDS and Infectious Diseases Branch, personal communication).

Discussion concerning the establishment of a SIC in Kings Cross began in earnest following the NSW Wood Royal Commission into the NSW Police Service in the mid 1990s (Dolan et al., 2000). Among other drug related criminal activity and police corruption, the Commission exposed the operation of shooting galleries in the Kings Cross area, where injecting drug users could rent a room for a short period of time to inject drugs.

Justice Wood recommended the establishment of licensed supervised injecting rooms, staffed by health professionals to provide a sanitary environment, sterile injecting equipment, education on harm minimisation and referral to treatment for addiction and other health problems (Wood, 1997).

Following the Commission, a NSW Parliamentary Joint Select Committee was established in July 1997 to consider the feasibility of a trial of a supervised injecting centre. The Committee reviewed extensively the arguments for and against such a trial, and a majority voted for a recommendation not to support the trial (Parliament of New South Wales, 1998). At the same time, local community support for a supervised injecting centre in Kings Cross was high, increasing from 69% in 1997 to 76% in 1998 (MacDonald et al., 1999).

An unsanctioned supervised injecting centre, the Tolerance Room, operated briefly at the Wayside Chapel in Kings Cross in early May 1999 by health and welfare workers, clergy, parents of living and deceased drug users and the former chair of the Parliamentary Joint Select Committee before being closed down by the Police. Consequently, the debate around the trial of a supervised injecting centre became a pivotal agenda item at the NSW Parliament's Drug Summit in late May 1999 (Dolan et al., 2000).

Guided by the recommendations of the Drug Summit, the NSW Government supported an 18-month trial of a single Medically Supervised Injecting Centre (MSIC) in Kings Cross in recognition that its operation may

“decrease overdose deaths, provide a gateway to treatment, reduce the problem of discarded needles and users injecting in public places” (NSW Government 1999, p.47).

The Drug Summit Legislative Response Bill (1999) stipulated that the MSIC should include:

- “direct oversight and supervision by a medical director and nurses; direct linkages to drug and alcohol counselling and assessment services;
- opportunities for drug users to access health services including medical consultation and assessment, health education and drug treatment;
- direct linkages to services for testing for blood borne and sexually transmissible infections at the facility;
- provision of a needle and syringe program on the premises;
- provision for referral services for young people under the age of 18 years or children accompanied by parents” (Parliament of New South Wales, 1999).

Due to considerable delays relating to approval of the license application and a legal challenge by the local chamber of commerce, the MSIC did not open for client services until 6 May 2001, 22 months after the legislation was passed. The 18-month MSIC trial period (1 May 2001 – 30 October 2002) was subsequently extended for additional 12-months (to 30 October 2003) to allow for the continued operation of the service during the finalisation of this report and its due consideration by the NSW Parliament.

To foreshadow a major obstacle for the evaluation of the MSIC it is noted that between December 2000 and January 2001, a marked and unexpected reduction in the availability of heroin to Kings Cross and other Australian illicit drugs markets was sustained throughout 2001 (Topp et al., 2002). This was accompanied by reported increases in price, decreases in the purity of available heroin and increased time taken to successfully purchase heroin.

A number of studies during this time point to a decrease in the prevalence and frequency of heroin use among IDU and corresponding increases in use of cocaine, amphetamines and benzodiazepines and associated harms and a marked decrease in heroin related overdose events (Day et al., 2003; Topp et al., 2003; Weatherburn et al., 2001). The available evidence suggests that by February 2002 heroin in Kings Cross had returned to reasonable availability (Topp et al., 2002). The implications of the reduction in the availability of heroin also known as the 'heroin shortage' on the evaluation of the impact of the MSIC will be discussed in more detail throughout this report.

1.3 Terms of reference of the MSIC evaluation

The Medically Supervised Injecting Centre Evaluation was commissioned by the NSW Department of Health in July 1999 to independently evaluate the feasibility and impact of the MSIC and report its findings to the NSW Government.

A protocol was developed comprising of a process, impact and economic evaluation (MSIC Evaluation, 2001). The parameters of the evaluation were largely formulated to address the arguments of the potential positive and negative impacts of a MSIC, as put forward to the Parliamentary Committee (Parliament of New South Wales, 1998) and later to the NSW Drug Summit (Parliament of New South Wales NSW, 1999).

The MSIC Evaluation research questions as set out in the protocol are summarised below.

1. Was it feasible to operate a MSIC in Kings Cross? (Chapter 2)
2. What impact did the 18-month trial of a MSIC have on:
 - (i) Opioid overdoses in the Kings Cross area and among its clientele? (Chapter 3)
 - (ii) BBV incidence, prevalence and risk behaviour in Kings Cross? (Chapter 4)
 - (iii) Client health and utilisation of drug treatment and other health and social welfare services? (Chapter 5)
 - (iv) Public injecting and inappropriately discarded needles and syringes in Kings Cross? (Chapter 6)
 - (v) Drug related loitering and property crime in Kings Cross ? (Chapter 7)
 - (vi) Attitudes of local residents and businesses and NSW residents toward the MSIC? (Chapter 8)
3. What were the economic costs and benefits of operating the MSIC? (Chapter 9)

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CHAPTER 2: OPERATION OF THE MSIC

Key Findings

Compliance with protocol

- MSIC service delivery protocols met with the specifications of the Drug Summit Legislative Response Act.

Client characteristics

- During the 18 month trial, 3,810 individuals registered to use the MSIC, and 73% were male. On average, their age was 31 years, they started injecting at 19 years, and had been injecting for 12 years. Almost half (44%) reported a previous non-fatal heroin overdose and two thirds (66%) had been in drug treatment.
- Clients made 56,861 visits to the MSIC with an average of 15 visits per client in the 18-month trial, with a range of 1 to 646 visits.
- Heroin was the drug most frequently injected at the MSIC (61% of visits) followed by cocaine (30% of visits).

Service utilisation and referral

- On approximately one in every four visits, health care services in addition to the supervision of injecting were provided to clients. Over half of the occasions of service were injecting and vein-care advice (56%).
- Approximately one in 41 visits resulted in a referral for further assistance. Among the 1,385 referrals for further assistance made for 577 clients, 43% were for the treatment of drug dependence, 32% were to primary health-care facilities and 25% were to social welfare services.

Clinical incidents managed

- Four hundred and nine (409) drug-overdose related incidents requiring clinical management occurred at the MSIC, a rate of 7.2 overdoses per 1000 visits. These were 329 (80%) heroin-related overdoses, 60 (15%) cases of cocaine-related toxicity, 13 benzodiazepine (3%) overdoses and seven (2%) other opioid-related overdoses.

2.1 Introduction

This chapter describes the final findings of the MSIC *process evaluation*, an 18-month study of the day to day operation of the MSIC. Interim findings were released previously (Mattick et al., 2001; MSIC Evaluation, 2001, 2002). The main aim of the process evaluation was to examine the feasibility of operating a supervised injecting centre in Kings Cross. In particular to examine to what extent the MSIC was used by and acceptable to target population, the characteristics of MSIC clients and their patterns of service utilisation, and the attitudes of MSIC management, staff and clients toward MSIC service delivery.

Available studies point to a high level of willingness to use SICs if made available and actual use of existing SICs among injecting drug users (IDU), especially those who inject in public places, daily injectors, sex workers and those at risk of heroin overdose (Fry, 2002; Gerlach & Schneider, 2003; Homann et al., 2000; Kimber & van Beek, 2003; Malinowski, 2002; MSIC Evaluation, 2002; van Beek & Gilmour, 2000; Wood et al., 2003; Zurhold et al., 2001).

Reasons given for willingness to use a SIC include the desire for safety and privacy while injecting; to keep off the street and out of public areas and to be free from police pressure and avoid criminal sanctions (Fry et al., 1999). Variables independently and significantly associated with willingness to use a SIC include difficulty accessing syringes, requiring assistance when injecting, frequent injection of heroin, participation in sex work and injecting in public places (Wood et al., 2003).

Reasons given for utilisation of SICs include: the opportunity to consume 'in peace'; the availability of a needle and syringe program (NSP); availability of advice and counselling; and as a meeting place or place to spend time during the day (Geense, 1997; Jacob et al., 1999). Reasons given for continued public drug use in spite of the availability of a SIC include: limited opening hours; waiting times, the distance to the SIC from the point of drug purchase (Kemmesies, 1999; Zurhold et al., 2001)

2.2 Methods

The process evaluation comprised four separate studies: (1) MSIC client characteristics and service utilisation; (2) Review of MSIC protocols and interviews with MSIC management; (3) Focus groups with staff; and (4) a survey of IDU and client attitudes.

2.2.1 MSIC client characteristics and MSIC service utilisation

Participants

This study is based on the activity of clients registered at the MSIC to 31 October 2002. The eligibility criteria for MSIC registration were a history of injecting drugs, being aged 18 years or older, not pregnant, not accompanied by a child, not intoxicated and acceptance of the MSIC Client Code of Conduct.

Design

The design used for this analysis was an observational prospective cohort design.

Procedure

Potential clients were screened, and if eligible for registration, were interviewed by MSIC staff. Clients were assured of the confidentiality of the information they provided to MSIC staff and informed consent to participate in evaluation research was also sought. Clients were allocated a unique MSIC Number. The MSIC Number identified clients at subsequent visits and facilitated update of their service utilisation records in the MSIC client activity database (Microsoft® Access 97).

Measures

The MSIC registration questionnaire includes questions on demographics, injecting-related health and blood borne virus risk behaviour, drug use, and drug treatment and overdose history. Some questions are comparable to the Australian Needle and Syringe Program Survey (MacDonald & Zhou, 2002) and the IDU Overdose Questionnaire (Darke et al., 1996).

The MSIC client database recorded information on drug(s) to be injected, last drug injected and time since last injection; alcohol, benzodiazepine and methadone on the day of each visit; services used at visit; referrals to other services, needles and syringes dispensed and drug overdoses and other incidents. The number and type of enquiries at the MSIC reception and the reasons for refusal of registration or entry were recorded.

Data management and analysis

A relational database management system was developed and monthly routine data cleaning and validity checks undertaken. Standardised queries were used to retrieve data and generate aggregate reports. The data reported herein refer to calendar months from May 2001 to October 2002 inclusive.

An audit of the database at the conclusion of the trial period found 339 errors which were unlikely to have been corrected at the data-entry phase (0.6% of all attendances). Records with errors were removed from the final dataset. Eight duplicate registrations were also identified. For these clients, the first registration questionnaire was included as their valid registration information and duplicate registration data were removed from the database. All service utilisation data were merged under the client's original MSIC number and the duplicate MSIC numbers reissued.

In addition to routine database management, a research officer verified drug overdose incidents in the MSIC activity database against the clinical file notes. In instances where there was no supporting documentation of the incident it was removed from the database. In instances where clinical file notes existed for a drug overdose incident but the data were absent from the database, these data were entered into the database.

Frequencies, means and standard deviations were reported. Where data were skewed medians were reported. T-tests were used for continuous variables. Categorical variables were analysed using chi-square (χ^2), odds ratios (OR) and corresponding 95% confidence intervals (95% CI).

A client was categorised as a *frequent attender* if their total number of visits was in the top quartile of the visit frequency distribution. Multiple logistic regression was used to determine factors independently associated with client visit frequency. Backwards elimination of variables was used to select the most appropriate model. Data analyses were conducted using SPSS for Windows (Version 11).

2.2.2 Review of MSIC protocols and management interviews

MSIC service delivery protocols were reviewed for compliance with the specifications set out in the Drug Summit Legislation Response Act 1999 (Parliament of New South Wales, 1999). In addition, two evaluation researchers undertook semi-structured interviews with the medical director and clinical services manager on June 17, 2002, after 14 months of operation. The interview was approximately two hours in duration and content included the perceived strengths and limitations of the MSIC service model, and suggestions for changes to the MSIC service model into the future. Summary notes were taken during the interview and analysed for thematic content.

2.2.3 Staff focus groups

Focus group interviews were held with MSIC staff to assess their attitudes toward the MSIC service model and its impact on clients' health. Nursing staff and counsellors were interviewed in October 2001 and management staff in December 2001, five and seven months respectively after the MSIC opened. In addition, a follow-up focus group interview with all staff was held in September 2002, 16 months after the MSIC opened.

The initial interview protocol explored six key areas of MSIC service delivery: (1) MSIC objectives; (2) IDU access to the MSIC; (3) rules and procedures; (4) impact on client health; (5) impact on public injecting and (6) integration with other service providers. The interviews were one-hour duration and were conducted by NCHECR and NDARC researchers. Key themes were identified using qualitative content analysis. At the follow-up interview, the findings from the initial interview were presented and opinions sought on whether the researchers' interpretation adequately reflected the service at six months of operation. Changes in attitudes toward: MSIC service delivery and the MSIC's impact on client health in the subsequent 12 months were solicited.

2.2.4 Client attitudes

Cross-sectional surveys were carried out among IDUs in Kings Cross for one week each year from 2000 to 2002 as part of the Australian NSP survey. IDUs were recruited from two NSPs, Kirkton Road Centre and K2, from 2000 to 2002 and from the MSIC in 2001 and 2002. All clients attending KRC, K2 or MSIC during the designated survey week were asked to complete a questionnaire and provide a finger-prick blood sample for testing HIV and HCV antibody.

The brief, self-administered, anonymous questionnaire was an extended version of the Australian NSP survey (MacDonald et al., 1997). Participants who reported ever using the MSIC were asked if they had experienced any problems with local businesses, police and passers by and if they had changed their frequency and technique of injection since using the MSIC. Participants reporting ever using the MSIC were also asked to rate the service and procedures of the MSIC. More detailed information on the methods of the IDU Survey is presented in Chapter 5.

Statistical analysis

Data were analysed using the Stata computer package (Stata Corporation 1985-2000). Changes in categorical variables were assessed using the χ^2 test for linear trend. Kruskal-Wallis or Mann-Whitney tests were used to assess change in discrete variables. Changes in demographic and behavioural characteristics over time (2000 to 2002) were assessed using χ^2 test for linear trend, and between MSIC and non-MSIC users using χ^2 test.

2.3 Results

2.3.1 Review of MSIC service delivery protocols

On the basis of review of MSIC service delivery protocols and interviews with MSIC management, the MSIC was assessed to meet the specifications of the NSW Drug Summit Legislative Response Act in terms of providing or containing satisfactory access to the range of services and procedures as described below.

Primary health care including medical consultation and medical assessment services

Medical assessments are offered by nursing staff on site. The majority of access to primary health care assessment and consultation is via referral (e.g. KRC, St Vincent's Hospital, and Sydney Hospital). In non urgent cases, referral is also offered to local GPs.

Drug and alcohol counselling services

Occasional and crisis drug and alcohol counselling is offered onsite. For ongoing drug and alcohol counselling MSIC clients are referred to appropriate drug and alcohol counselling services (e.g. KRC, Rankin Court, The Langton Centre, Oasis, and the Come in Centre). A multi-denominational chaplaincy service is also offered.

Health education services

Health education is a core onsite service, in particular, education pertaining to injecting related health, drug overdose, blood borne viruses (BBVs), sexually transmitted diseases (STDs) and sexual health. Some clients are also referred for additional education (e.g. KRC, K2 and Wayside Chapel)

Drug and alcohol detoxification and rehabilitation services

Referral is offered for outpatient detoxification (e.g. KRC, The Langton Centre, Rankin Court, Regent St Clinic, Kobi Clinic, and some specialist practitioners); inpatient detoxification (e.g. Gorman House and Sydney Hospital); and rehabilitation services (e.g. Odyssey House, We Help Ourselves).

Services of a methadone provider

Referral is offered for methadone and buprenorphine maintenance treatment (e.g. KRC Methadone Access Program, The Langton Centre, Rankin Court, specialist private methadone prescribers). A brokerage model of referral enabling MSIC to purchase treatment places for clients was also available so as to maximise client access to drug treatment.

Testing for blood-borne and sexually transmissible diseases

Referral is offered to relevant services (e.g. KRC and the Sydney Sexual Health Centre)

Needle and syringe program

An onsite service is offered for MSIC clients using the MSIC only. Non-clients and MSIC clients not using the service on that occasion are referred (e.g K2 and KRC vending machines and pharmacies). In cases assessed by staff to pose an occupational health and safety risk or significant public health risk NSP is offered.

Procedures to enable staff to ascertain if person seeking admission is a child

All individuals seeking registration at the MSIC are required to sign a declaration that they are aged 18 years or older. Consistent with proof of age requirements at premises with liquor licenses, if assessed by staff to be aged less than 18 years of age at their first or subsequent visits, photo identification verifying their age is requested. Referral to appropriate youth specific services is offered to individuals assessed to be less than 18 years of age (e.g. Oasis).

Staff with qualifications and/or experience in child protection and youth support who are in attendance or on call at all times

The Clinical Services Manager is an accredited trainer for the NSW Health Department mandatory child protection training and it is provided to all MSIC staff at orientation and ongoing three-monthly training. Several MSIC staff have formal qualifications in child welfare. The Clinical Services Manager and Medical Director are in attendance or on call during operating hours.

Protection of the health and safety of staff and users

The MSIC complies with Occupational Health and Safety (OH&S) as set out by the War Memorial Hospital protocols¹. Staff training on OH&S occurs at orientation and ongoing three monthly training. OHS issues are a standing item at fortnightly team meetings. A designated OHS officer and/or the Clinical Services Manager undertake a monthly 'minor' and three monthly 'major' audit of OH&S compliance.

Duress alarms are fitted in each stage (one back to base and to MSIC offices) and personal duress alarms are available to staff. Procedures and rules regarding appropriate client behaviour are provided at registration and posted throughout the building. The flagging system in the database allows staff to identify clients with behavioural problems. A formal debriefing is policy after any clinical incident and additional supervision and support are provided as required by management staff. External clinical supervision is also available to MSIC staff on needs basis.

¹ The MSIC, administered by *UnitingCare* of the Uniting Church, and is affiliated with the War Memorial Hospital, a Schedule 3 Public Hospital of the South Eastern Sydney Area Health Service.

2.3.2 Client characteristics at registration

A total of 3,810 clients were registered during the 18-month evaluation period, an average of 211 (range 150-321 registrations) new registrations per month (Figure 2.1). The number of new registrations per month started to decline slightly in 2002 but remained at or above 150 new registrations per month.

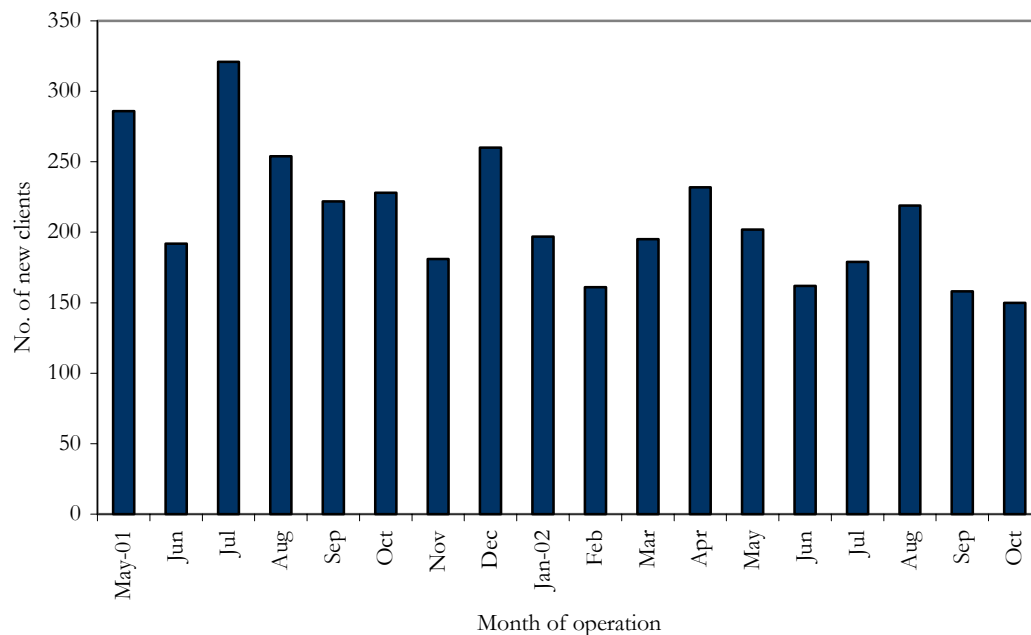


Figure 2.1: Number of new clients registered per month

Seventy-one percent were male, 28% female and less than one percent identified as transgender (the data for transgender clients are excluded from these analyses due to their small number). Table 2.1 outlines the basic demographic characteristics of MSIC clients. The average age of clients at registration was 31 years (range 18 -67 years) and they started injecting drugs on average at 19 years of age (range 10-54 years) with a average of 12 years of injecting drug use (range <1 -41 years). Ninety-three percent reported English as the language spoken at home. Nine percent of clients reported an Aboriginal and/or Torres Strait Islander (ATSI) background.

Female clients were significantly more likely than males to have engaged in sex work in the month prior to registration (29% vs 3%, OR 14.3, 95% CI 11.0– 18.8, $p < .001$). Twenty-eight percent of clients completed six years of high school. More than half of MSIC clients reported their main source of income was social security benefits (57%) and 21% full time employment, 9% part time employment and 4% sex work. Male clients were significantly more likely to be living in unstable accommodation (i.e. on the street, shelter or in an abandoned building) compared with female clients (11% vs 9%, OR 1.3, 95% CI 1.02-1.7, $p < .05$).

Table 2.1: Demographic characteristics

Characteristic	Number of clients = 3,782
Average age in years (SD)	31years (8)
Average age started injection (SD)	19 years (6)
% English speaking background	93 %
% Indigenous background	9 %
% Completed high school	28 %
% Social security main source of income	57 %
% Unstable accommodation ¹	11 %
% Imprisoned in previous 12-months	26 %
% Injection daily in previous month	42 %
% Sex work in previous month	10 %
% Injected in a public place in previous month	39 %

1 = Includes living on the street, shelters and abandoned buildings.

Over half of MSIC clients (55%) reported that the drug they injected most often in the month prior to registration was heroin and almost one fifth of clients reported injecting cocaine or amphetamine most frequently (Table 2.2).

Table 2.2: Drug injected most frequently in month prior to registration

Drug injected most frequently	Number of clients = 3,782
Heroin	55 %
Cocaine	19 %
Amphetamine	18 %
Heroin and cocaine	4 %
Morphine	2 %
Methadone	1 %
Other	1 %
Total	100 %

One thousand and sixteen (35%) clients reported having ever experienced injecting related problems and 529 (14%) had experienced injecting related problems in the month prior to registration (Table 2.3). The injecting related problems most frequently reported by clients in the month prior to registration were multiple attempts to access a vein (9%) and prominent scarring or bruising at injection sites (7%). Females were significantly more likely than males to report injecting related problems in the month prior to registration (23% vs 11%, OR 2.4, 95% CI 2.0 – 2.9, p<.001).

Table 2.3: Injecting related problems in month before registration

Injecting related problems ¹	Number of clients = 3,782
Multiple attempts to access a vein	9 %
Prominent scarring or bruising	7 %
Swelling of hands or feet	2 %
Thrombosis	2 %
Abscesses/skin infections	1 %
Septicaemia	<1 %
Endocarditis	<1 %
Other	<1 %

1 = More than one problem can be reported.

Previous non-fatal heroin-related overdose was reported by 44 % of clients; with a median number of three episodes reported. At least one heroin-related overdose in the 12-months before registration was reported by 12% of clients with a median of one episode (range 1-31 episodes). The mean age of first overdose was 23 years (SD=7). On average female clients were 1.8 years younger than males at the time of their first overdose (22 vs 23 years, 95% CI 1.5-3.2, $p < .01$). At the time of their last overdose, 74% of clients reported being attended by ambulance and 68% reported being administered naloxone (Table 2.4).

Table 2.4: Overdose history

Overdose history	Number of clients = 3,782
Ever overdosed	44 %
Overdosed in past 12 months	12 %
Attended by ambulance at last overdose	74 %
Administered naloxone at last overdose	68 %
Last overdose occurred in public place ¹	36 %

1 = Street, park, beach or public toilet.

At registration, 2,435 (66%) MSIC clients reported that they had ever been in some form of drug treatment for their drug problems and/or drug dependence and 993 (26%) had entered at least one type of drug treatment in the 12 months prior to registration (Table 2.5). The most common type of drug treatment MSIC clients had entered was methadone maintenance (13%). Females were significantly more likely to report having entered drug treatment in the 12-months prior to registration than males (36% vs 23%, OR 1.9, 95% CI 1.6-2.2). Forty one percent of MSIC clients at registration reported that they were also clients at the Kirkton Road Centre (KRC), a nearby primary health care service which includes needle syringe, methadone and outreach programs targeting injecting drug users, sex workers, and “at risk” youth.

Table 2.5: Types of drug treatment entered in 12-months prior to registration

Type of drug treatment ¹	Number of clients = 3,782
Methadone maintenance	13 %
Inpatient detoxification ²	5 %
Counselling	5 %
Residential rehabilitation	5 %
Outpatient detoxification	3 %
Buprenorphine maintenance	3 %
Self help groups	3 %
Naltrexone	2 %
Other	1 %

1 = More than one type of treatment can be reported per client.

2 = Includes conventional and rapid inpatient detoxification.

Most MSIC clients at registration reported residential postcodes from within NSW metropolitan health areas, with the largest proportion of clients residing in the South Eastern Sydney Health Area (42%) where the MSIC is located. Clients from South Eastern Sydney Health Area also accounted for the majority of visits (62%) to the MSIC during the evaluation period (Table 2.6). Approximately one quarter of MSIC clients (23%) reported their residential postcode was a Kings Cross area postcode (2010 or 2011) and these clients accounted for 38% of all visits to MSIC.

Table 2.6: Number of clients and visits to MSIC by client postcode of residence by Area Health Service

NSW Health Areas	Number of clients with residential postcode in Health Areas (%)	Number of visits by clients with residential postcode in Health Areas (%)
<i>Metropolitan Areas</i>		
South Eastern Sydney	1573 (42%)	34,963 (62%)
Central Sydney	596 (16%)	8604 (15%)
Northern Sydney	384 (10%)	4941 (9%)
South Western Sydney	194 (5%)	1639 (3%)
Western Sydney	192(5%)	1322 (2%)
Illawarra	81 (2%)	544 (1%)
Central Coast	73 (2%)	263 (<1%)
Hunter	71(2%)	385 (1%)
Wentworth	61(2%)	496 (1%)
<i>Rural Areas</i>		
Mid North Coast	36 (1%)	500 (1%)
Northern Rivers	34 (1%)	213 (<1%)
Mid Western	32 (1%)	193 (<1%)
Southern Area	19 (<1%)	183 (<1%)
Greater Murray	15 (<1%)	86 (<1%)
New England	11 (<1%)	52(<1%)
Macquarie	10 (<1%)	20(<1%)
Far West	5 (<1%)	16(<1%)
<i>Interstate</i>	233 (5%)	691(1%)
<i>Postcode not provided</i>	162 (4%)	1491 (3%)
Total	3,782 clients	56,602 visits

In addition, 80% percent of all visits to the MSIC were made by clients who reported spending the evening prior to their MSIC visit at a postcode within the South Eastern Sydney Health Area, with 66% of visits being made by clients who spent the previous evening in the Kings Cross area postcodes (2010 or 2011). Available ambulance data on the postcode of residence of individuals attended by ambulance for heroin overdose in Kings Cross area postcodes (2010 and 2011) prior to the operation of the MSIC (May 1995-April 2001) show that 62% of individuals attended in the Kings Cross area were not resident in the area.

Three-quarters (74%) of MSIC clients at registration reported that they had previously injected drugs in Kings Cross and almost half of MSIC clients reported their main reason for being in Kings Cross on the day of registration at MSIC was to buy drugs. Ten percent reported their main reason for being in Kings Cross was to use the MSIC (Table 2.7).

Table 2.7: Reason for being in Kings Cross on the day of MSIC registration

Reason for being in Kings Cross	Number of clients	%
To buy drugs	1685	44 %
To visit friends or social reasons	787	21 %
To inject drugs at MSIC	370	10 %
To visit other health or social welfare services	59	2 %
Other	358	9 %
Not reported	553	15 %
Total	3,782	100 %

If there had been no MSIC available on the day of registration, 42% of clients reported their next injection would have occurred in a public place (i.e. street, park or beach, public toilet), 28% reported their own home, and 5% indicated they would have used a shooting gallery (Table 2.8).

Table 2.8: Location of next injection at registration if there were no MSIC

Location of next injection	Number of clients	%
Street, park, beach, public toilet	1589	42 %
Own home	1057	28 %
Friend's home	202	5 %
"Shooting gallery"	178	5 %
Car	146	4 %
Dealer's home	19	<1 %
Abandoned building	16	<1 %
Other	132	4 %
Not reported	443	12 %
Total	3,782	100 %

2.3.3 Service utilisation

Days open for operation

The MSIC was open on 538 days for a total of 4,252 hours in its first 18-months of operation. Client services commenced for four hours per day on 6th May 2001. By 2nd July, the MSIC was open for eight hours per day, providing services in one afternoon session (12.00 noon until 4.00pm, with clients to exit the premises by 4.30pm) and one evening session (6.00pm until 9.30pm, with clients to exit the premises by 10.00pm). From March 18th 2002, day shift hours were extended to 4.30pm every day except for Wednesdays and from 18th May 2002, weekend hours extended into one shift from 12.00pm to 9.30pm. As of 17th August 2002 weekend hours were changed to 10am to 6.00pm. The MSIC was closed on five days for staff training (8th August 2001, 21st November 2001, March 20th 2002, June 19th 2002, September 11th 2002), and for the evening shift on 31 December 2001.

Number of visits

There were a total of 56,861 visits for injection at the MSIC during the 18-month period. The number of visits per month increased rapidly in the first five months from 401 in May 2001 to approximately 3,000 visits in October 2001. The number of visits per month continued to increase steadily with some fluctuations to over 4,000 visits per month by October 2002 (Figure 2.2). The MSIC had an average of 106 visits per day over the 538 days of operation (range 1-206 visits per day).

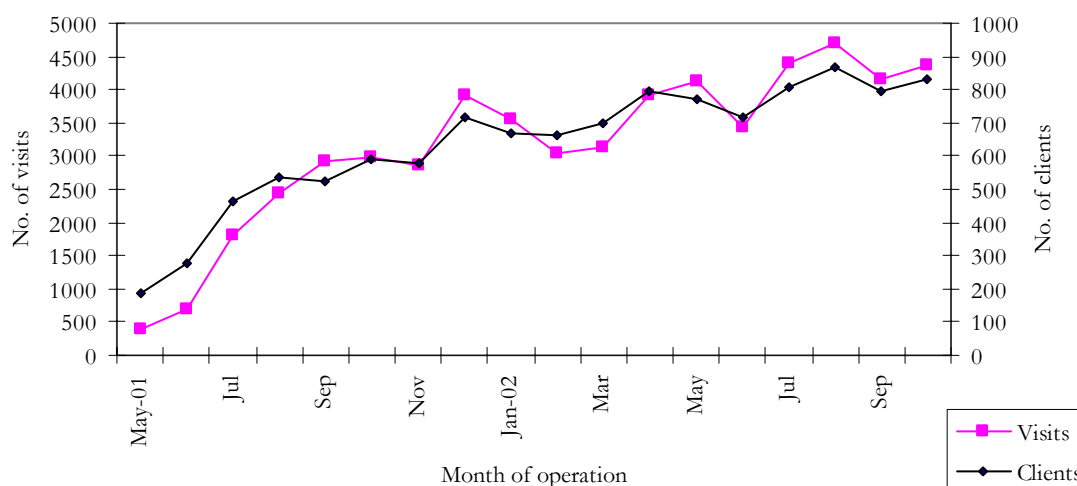


Figure 2.2: Number of visits and clients attending the MSIC per month

The number of individual clients attending per month also increased rapidly in the first five months of operation from 187 in May 2001 to 588 in October 2001. The number of clients attending per month then continued to increase at a slower rate and some monthly fluctuations, with between 600 to 800 clients attending the MSIC per month from November 2001 to October 2002 (Figure 2).

Table 2.9: Proportion of visits and clients by age range and gender

Age group	Clients ¹ (Number = 3,782)		Visits (Number = 56,602)	
	Female %	Male %	Female %	Male %
18-25 years	10 %	17 %	15 %	13 %
26-35 years	10 %	32 %	13 %	27 %
>35 years	6 %	23 %	8 %	24 %
Total	26 %	73 %	36 %	64 %

1 = Transgender clients accounted for less than one percent of registrations and visits.

Male clients made 64% of the visits to inject drugs at the MSIC (Table 2.9). There were more male than female clients in the 18-25 years age group (17% versus 10%) but female clients accounted for more visits in the youngest age group (15% versus 13%). Male clients accounted for proportionally more client registrations and visits in the 26-35 and over 35 year age groups.

Table 2.10: Client characteristics associated with frequent MSIC attendance

Characteristic	Number of clients	Percent ≥11 visits	Adjusted Odds Ratio	95% CI
Injection at least daily				
No	2233	19 %	1.0	
Yes	1550	35 %	1.9#	1.5-2.4
Reside in Kings Cross area				
No	2970	22 %	1.0	
Yes	862	37 %	1.8#	1.3-2.4
Prior injection in Kings Cross				
No	986	24 %	1.0	
Yes	2799	26 %	1.6*	1.1-2.4
KRC client ¹				
No	2230	19 %	1.0	
Yes	1555	36 %	1.5**	1.2-1.9
Aged 25 years or less				
No	2747	25 %	1.0	
Yes	1038	28 %	1.4**	1.1-1.9
Main drug used				
Amphetamine	630	12 %	1.0	
Cocaine	664	32 %	3.2#	2.0-5.1
Heroin	1867	29 %	2.6#	1.7-3.9
Other ²	261	29 %	1.9*	1.1-3.5
Main reason in King Cross ³				
Use MSIC	369	26 %	1.0	
Buy drugs	1685	25 %	.80	.54-1.2
Social reasons	787	15 %	.44**	.28-.71
Visit other services	59	14 %	.87	.37-2.0
Other	329	32 %	.91	.55-1.5

1. = Relates to lifetime KRC client status, not only in the month before registration.

2 = Includes heroin & cocaine combinations, methadone, morphine, and benzodiazepines.

3 = On the day of registration.

*p<.05, **p<.01 #p<.001.

Sixty-two clients (<2%) underwent the registration process but did not proceed to inject at the MSIC during the 18-month study period. Of the remaining 3,748 clients who did inject, they made an average of 15 visits (range 1- 646 visits). Two thirds (66%) of these clients visited more than once and one quarter (25%) returned 11 times or more.

Characteristics at registration independently associated with more than 11 visits to the MSIC were also being a client of KRC, daily injection in the previous month, having injected drugs in Kings Cross previously, residing in the Kings Cross area, and being aged 25 years or less (Table 2.10). In addition, clients who injected heroin, cocaine or drugs other than amphetamine as their main drug in the month before registration were more than twice as likely as amphetamine injectors to be frequent attenders at MSIC. Clients whose main reason for being in Kings Cross on the day of MSIC registration was for social reasons were half as likely to be frequent attenders compared with clients whose main reason for being in Kings Cross was to use the MSIC.

On 151 occasions individuals seeking to use the MSIC were refused entry (Table 2.11). The main reasons for being refused entry were being intoxicated (48%) or being aged less than 18 years (18%). In addition, 93 individuals expressed the wish to use the MSIC, but did not proceed to register, as they were unwilling to wait or did not wish to undertake the registration interview at that time.

Table 2.11: Reasons for refusal of registration or entry at MSIC

Reason for refusal	Number of applicants	%
Intoxicated	72	48 %
Aged <18 years old	27	18 %
Wishing to share drugs	13	9 %
Unacceptable behaviour	12	8 %
Accompanied by children	8	5 %
Not previously an injecting drug user	6	4 %
Pregnant or possibly pregnant	6	4 %
Sanctioned ¹	5	3 %
Unable to self-administer drugs	1	<1 %
Wishing to use non-injecting routes of administration	1	<1 %
Total	151	100 %

1 = A temporary ban on accessing the MSIC was imposed once.

Drugs injected

The most commonly injected drugs at the MSIC were heroin (61%) and cocaine (30%). The remaining injections were amphetamine (3%), benzodiazepines (3%), heroin/cocaine combinations (1%) and other drugs (1%).

There was monthly variation in the relative proportion of cocaine and heroin injected at the MSIC (Figure 2.3). Between May 2001 and January 2002 the proportions of heroin and cocaine injected at MSIC were similar. However, a marked increase in the proportion of heroin injected at the MSIC occurred between February (53%) and October 2002 (82%) with a corresponding marked decrease in the proportion of cocaine injected during that period.

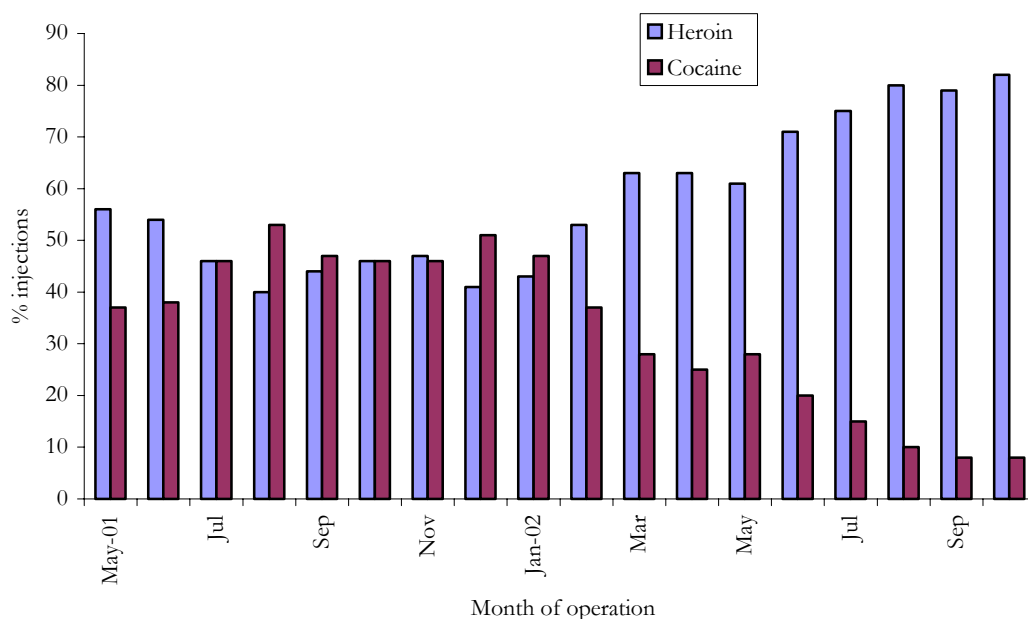


Figure 2.3: Proportion of visits to inject cocaine and heroin by month

Table 2.12: Number and type of occasions of MSIC service utilisation

Service type	Number	%
MSIC basic services		
Injecting and vein care advice	7,732	56 %
Well woman advice	424	3 %
Drug and alcohol information	284	2 %
Sexual health advice	243	2 %
Advice on drug treatment	149	1 %
Other health education	129	1 %
<i>Subtotal for basic services</i>	<i>8,961</i>	<i>65 %</i>
General medical services		
Miscellaneous medical	624	5 %
Wound dressing or tissue trauma	421	3 %
Skin disorder	200	1 %
Asthma/chest infection	26	<1 %
<i>Subtotal for medical services</i>	<i>1,271</i>	<i>9 %</i>
Psycho-social services		
General counselling	2333	17 %
Accommodation	391	3 %
Legal	317	2 %
Crisis counselling	247	2 %
Finances	95	1 %
Other	81	1 %
<i>Subtotal for psychosocial services</i>	<i>3,464</i>	<i>25 %</i>
Total services provided	13,696	100 %

Well woman advice included contraception and reproductive health advice. Skin disorders included abscesses, rash and other topical infections. Psychosocial services included counselling other than crisis counselling, and themes of counselling focussed on drug use, living skills, relationship and custody issues, and sex work issues.

Duration of MSIC visits

The average duration of visits for clients admitted to use the MSIC was 28 minutes. Clients spent on average less than two minutes in Reception, 12 minutes in the Injecting Room, and 14 minutes in the After-Care area. The average duration of client visits per month did not vary substantially across the 18-months.

Client use of other MSIC services

In addition to the supervision of injection, MSIC staff provided 13,696 other occasions of service to 2,186 clients in 18-months, approximately one occasion of service for every four visits (Table 2.12). Injecting and vein-care advice accounted for the majority of service provision (56%), followed by general counselling (17%).

Referrals to drug treatment, health care and social welfare services

A total of 1,385 referrals for further assistance were provided to 577 clients, with approximately one referral for every 41 client visits (Table 2.13). Fifty five percent were verbal referrals and 45% written referrals. The most frequent referrals were for drug treatment (43%), in particular buprenorphine maintenance treatment (13%), detoxification programs (10%), and methadone maintenance treatment (9%). The most common health care referral during the 18-months was for medical consultations (23%). The most frequent social welfare referral was for social welfare assistance (16%).

Table 2.13: Number and type of referrals

Referral type	Number	%
<i>Drug treatment</i>		
Buprenorphine treatment	179	13 %
Detoxification program	134	10 %
Methadone maintenance	125	9 %
Drug and alcohol counselling	107	8 %
Residential rehabilitation	43	3 %
Narcotics Anonymous/Self-help	10	1 %
Naltrexone maintenance	3	<1 %
<i>Sub-total for drug treatment</i>	<i>601</i>	<i>43 %</i>
<i>Health care</i>		
Medical/dental consultation ¹	313	23 %
Health education	86	6 %
BBV/STD testing	40	3 %
<i>Sub-total for health care</i>	<i>439</i>	<i>32 %</i>
<i>Social welfare</i>		
Social welfare assistance	227	16 %
Other counselling	63	5 %
Legal/advocacy	51	4 %
Other	4	<1 %
<i>Subtotal for social welfare</i>	<i>345</i>	<i>25 %</i>
Total	1,385	100 %

Drug overdoses and other incidents

In 18-months, 409 drug-overdoses occurred among 267 clients (range 1 to 10 overdoses per client; Table 2.14). Three hundred and twenty-nine of these 409 overdoses were caused by heroin (80%), and 81 (25%) of these heroin-related overdoses required the therapeutic administration of naloxone (Narcan®)². Sixty cases of cocaine-related toxicity (15%), 13 benzodiazepine overdoses (3%) and seven other opioid overdoses (2%) were also managed. All of these incidents were effectively managed on-site, however, four of the heroin-related overdoses, three of the benzodiazepine overdoses, and two cocaine toxicity cases, were transported to hospital for further observation. There was an overall drug overdose rate of 7.2 per 1,000 visits to the MSIC, and a heroin-related overdose rate of 9.6 per 1,000 visits where heroin was injected.

In addition to the drug-overdose incidents, 29 other incidents were reported: 21 occasions of client aggression towards staff and/or other clients, three epileptic seizures, two cases of a severe allergic reaction to the drug solution (one requiring ambulance transport), one psychotic episode requiring ambulance transport, one case of renal disease requiring ambulance transport for routine peritoneal dialysis, one case of dehydration due to severe opioid withdrawal requiring ambulance transport, one case of a profuse nose bleed requiring ambulance transport, one case of severe migraine, and one case of unremitting vomiting.

Table 2.14: Drug-overdose related incidents by drug type

Drug type	Number	%
Heroin	329	80 %
Cocaine	60	15 %
Benzodiazepines	13	3 %
Other opioids	7	2 %
Total	409	100 %

Needle and syringe program

In addition to the sterile injecting equipment provided during supervised injection at the MSIC, a total of 30,271 needles and syringes were dispensed on 3,545 occasions to take from the premises, an average of nine needles and syringes per occasion. The number of needles and syringes dispensed increased by its largest margin between May and September 2001 and then remained relatively constant between October 2001 and October 2002, with approximately 1500 to 2250 needles and syringes dispensed per month (Figure 2.4). The total distribution of the MSIC NSP represented less than 2% of the total volume of needles and syringes dispensed in South Eastern Sydney Area Health Service in the corresponding time period (Owen Westcott, personal communication).

² Naloxone is an opiate antagonist indicated for the complete or partial reversal of narcotic depression, including respiratory depression and sedation induced by natural (e.g. heroin, morphine) and synthetic (e.g. methadone) opioids (Caswell, 2001).

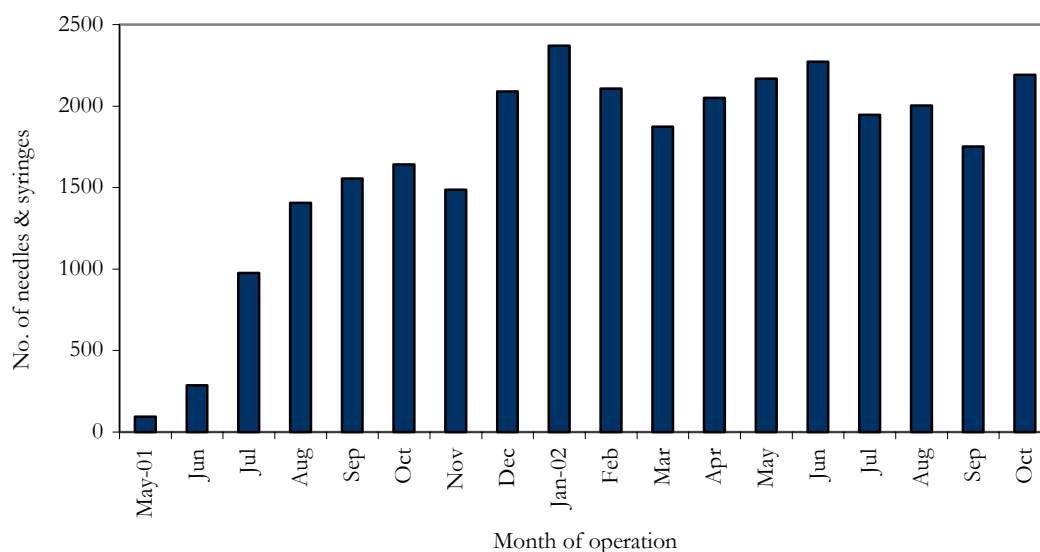


Figure 2.4: Injecting equipment supplied to clients per month (May 01-Oct 02)

Enquiries at reception

There were 1,213 additional enquiries at the MSIC reception (Table 2.15). The most common enquiry was requests for NSP (44%) followed by requests for information about the MSIC (15%).

Table 2.15: Number and type of enquires at reception

Nature of enquiry	Number	%
Seeking NSP	534	44 %
Seeking information about the MSIC	176	15 %
Seeking or waiting for MSIC clients	118	10 %
Seeking referrals	110	9 %
Wishing to tour MSIC	84	7 %
Compliment to staff regarding MSIC	32	3 %
Other	159	13 %
Total	1,213	100 %

2.3.4 Interviews with MSIC Management

Semi-structured interviews relating to MSIC service provision were conducted with the Medical Director and Clinical Services Manager after 14 months of MSIC operation. The perceived strengths and limitations of the MSIC clinical service model, entry criteria, client rules, management of drug overdose and other incidents, the NSP program, referral practice, staffing and evaluation are presented below.

Clinical service model

MSIC management believed that the MSIC clinical three stage model of service delivery (Appendix 1) was efficient in terms of client throughput and an effective way of maintaining a controlled environment and regulating client activity on the premises. Design features such as one-way client flow through the premises and the installation of one to two person-injecting booths worked to minimize client interaction and allow for greater client privacy. These features in particular were believed to reduce the likelihood of intimidation or “stand over tactics” from other clients. MSIC management suggested that had the MSIC adopted the typical European service model with a contact café, it may have been more difficult to regulate drug dealing on the premises.

The extension of hours of operation to 12 hours per day was seen to be desirable by Management as it would increase the potential impact of the MSIC on client health outcomes and public amenity, as well as improving the cost efficiency of the service. It was also proposed that service delivery could be expanded by targeting IDU who otherwise were not engaging with the service by the operation of an outreach component to both recruit clients and respond to drug overdose incidents off the premises.

Entry criteria

Management supported the MSIC entry criteria relating to the non-admission of IDU accompanied by children and individuals who had not injected drugs previously or individuals seeking to use non-injecting routes of drug administration. Management were critical, however, of the exclusion of youth (i.e. IDU aged 16-17 years) and pregnant women as required by the legislation and license conditions. Specifically, Management believed there were no public health grounds for excluding these two high-risk IDU sub-populations and that those who are more marginalised are most in need of MSIC services. While underage and pregnant clients are offered referral to other services, it was the view of MSIC management that uptake of these referrals was rare and may be more effective if such clients were able to be engaged by staff early.

Management proposed that an improved MSIC service model would allow for case-by-case assessment of individuals aged between 16 and 18 years of age and for pregnant clients. Two clinicians would be required to assess a case to be high need prior to admission and develop a case management plan to be reviewed on a regular basis.

Client rules

Management concurred that the prohibition of sharing or dividing of drugs on the premises by clients was a consistently challenging aspect of MSIC service delivery. It was suggested that while clients sharing drugs may legally constitute drug supply, it does not reflect the reality of drug use and dynamics of the illicit drug market, where drugs are not sold in “single dose” quantities, so clients often pool resources to jointly purchase drugs. To expect clients to present with individual quantities of drugs was perceived as problematic. In the first instance, as drugs are typically divided in aqueous solution (as opposed to powder form) using a syringe for greater accuracy and reduced wastage, and secondly for clients to be carrying pre-loaded syringes of drug solution or attempting to divide powder on the street is unlikely. Management believed that the onus of policing this activity was burdensome to staff, and that it could impact on the acceptability of the service to the client group. It was recommended that the legislation be changed to also allow ‘joint possession’ of drugs by clients who present to the MSIC together. Management supported the rule preventing clients from injecting into their necks.

Management of drug overdose and other incidents

Management reported that MSIC had seen both the refinement and generation of new clinical protocols in the management of drug overdoses. For example, the heroin overdose protocol, originally consistent with the NSW Ambulance protocol, was revised specifically to delay the administration of naloxone, when adequate management of the airway could be obtained through expired air resuscitation (EAR). This reflected the immediate opportunity for intervention in the early stages of heroin overdose in the MSIC setting, compared with the time delay associated with ambulance attendance in community settings. New protocols were developed for the management of cocaine toxicity (e.g. seizures and chest pain) in response to the unanticipated prevalence of harms associated with cocaine injecting during the MSIC operation.

Management were pleased by the low rate of client aggression toward staff and other clients, given the volatility and lack of inhibition inherent in an acutely drug affected client population, in particular those using psycho-stimulants or benzodiazepines.

The NSP program

Management expressed concern about the limitation of the operation of the MSIC NSP to MSIC clients accessing the service. Management had applied unsuccessfully to have this license condition amended so that MSIC could provide general access NSP during MSIC operating hours when other local NSP service providers are closed. Staff were directed to provide NSP to non-MSIC clients and MSIC clients not using the service on that occasion in cases where they perceived a significant public health or occupational health and safety risk. It was proposed that an improved model of the MSIC allow for general access NSP at all times, as this would also be a gateway to use of the MSIC by local IDUs, and increase service efficiency through a possible reconfiguration of NSP provision in nearby services.

Referral Practice

Management were pleased with the level of staff and client engagement in referral. It was noted that the MSIC *brokerage model* of referral which allowed the MSIC to purchase treatment places for MSIC referred clients to maximise access to drug treatment and rehabilitation went largely un-utilised because there was sufficient access to drug treatment through conventional referral pathways. Management suggested however that this could change with a return to pre 2001 levels of heroin availability and increased demand on the capacity of the drug treatment sector in NSW

Staffing

The MSIC staff comprised a medical director (0.5 FTE), clinical services manager (0.7FTE), nurse unit manager, counselling unit manager, office manager, and a pool of rostered nurses and counsellors. Management believed that current staffing levels and skill mix (i.e. a nurse and counsellor stationed in each stage and two floating staff, the nurse unit manager or nurse in charge to direct flow and coordination of overdose management, and another staff member to relieve for breaks) were necessary.

It was not foreseen in the original staffing plan that a nurse would be required at the reception (Stage 1), however, it became evident that this was necessary for clinical assessment of intoxication, both in meeting the entry criteria and overdose prevention. The continued employment of a part time medical director was seen to be desirable to oversight the clinical procedures and development of protocols as well as meeting the legal requirement for the authorisation of the dispensation of naloxone and other

medication. A medical officer was, however, not required in most instances in the clinical management of drug overdoses (undertaken by nursing staff). Management identified the lack of general staff positions (as opposed to clinical and management positions) to carry out in-house IT and database management, development of health promotion resources and evaluation and research.

The provision of regular training and supervision to a large part time staff was described as challenging, and required the closure of the service for an entire day to conduct the required training every three months at this stage. Access to clinical supervision was identified as an important component of the MSIC service model. In particular, the nature of the work (i.e. watching clients inject themselves and in some instances overdose) was described as stressful and at times professionally demoralizing due to the limited continuity of care. Management highlighted that many staff would like to engage in more ongoing case-management of clients.

It was suggested that the MSIC could achieve greater efficiency if it were integrated administratively with other local drug services through the rationalisation of management, administration, training, supervision and community development. It was suggested that this could involve rotation of staff and expand professional skill base and may contribute to an increase in the continuity of care and also to improve referral outcomes. It was anticipated that this may also foster a greater level of cooperativeness between service providers and achieve a multidisciplinary approach to case management and overcome potential client confidentiality issues.

Evaluation

Management agreed that participation in the MSIC evaluation process had been a largely value adding experience and that the MSIC client database which provided an integrated system of clinical and evaluation data collection, had been efficient and maximised clinical effectiveness. The registration process and ongoing collection of information from clients was described as useful for initiating and building therapeutic rapport and establishing the clinical context of the service with new clients. The database system also allowed for monitoring of client flow throughout the service.

Further, the unique experience of MSIC service provision provided considerable insight into real life injecting practice and ways to improve the relevance and impact of IDU related health education. Management suggested the value of having the capacity to develop materials to disseminate this experience and conduct further research with a large sentinel IDU population.

Other comments

Management highlighted that a major challenge from a planning, implementation and staff morale point of view was the intense public and political scrutiny of the development of the service, its operation and opposition from some sectors of the local community.

2.3.5 Staff attitudes

Two of 10 nurses, three of 15 counsellors and four of five management staff participated in the 2001 interviews. Twenty five of 30 staff participated in follow-up interview in 2002.

Service objectives

The main objectives of the MSIC service identified by all levels of staff were to: Reduce overdose; improve public amenity; reduce transmission of blood borne viruses and the health risks of public injecting; and to fast-track injecting drug users into treatment.

Access to the MSIC

Most participants felt that the service was well utilised and utilised by regular clients. *“The target population [is people] otherwise injecting on the street, we are reaching a high percentage of them. [The] amount of registrations the quick uptake of clients even after people score, they still make an effort to come here. ... [It’s] less hassle [for clients than injecting on the streets] ... [and] common for clients bringing another one to register. [Even cocaine injectors] they don’t mind doing the lap[around the block].”*

There were also several barriers to access identified. *“Getting through the door for the first time is the biggest barrier. [However] there is very limited stuff that they don’t like, the non-smoking and the hours. [There are also issues of] security, ... fear of surveillancepolice cameras.”*

According to one client, even though it was *“a hassle coming in here heaps of times. I get my noddies interrupted, but less hassle than being kicked over”*.

Rules and procedures

Most participants suggested that the rules and procedures were fairly well accepted by clients. Some participants also said that they found *“constantly having to enforce the rules”* difficult. There was however general agreement that the rules and procedures were necessary. In particular, all participants agreed that *“the clients like washing their hands”*.

“Some stop at registration. ... [They] don’t have time to do that. [They think that] the cops are going to get their information, [that] there are cameras on them.” With regard to pregnant women, *“it hasn’t been a big issue. ... [Although] there is no sound medical reason for them not to have access if they are injecting anyway.”* Similarly, with young injectors, *“there’s probably only been two or three.The under 18 year olds generally don’t access any services well because of their age.”*

The type of rules that were generally not well accepted by clients were *“three people coming in together and wanting to sit together, that is a difficult one, [and] not talking between booths. Forcing people to sit or don’t walk around with a needle ... or stop chatting to the person two down. ... Stuff has happened between clients [outside of the MSIC], that can put clients in difficult situations. ... The whole drug economy revolves around, you shout me now, I’ll shout you later. People have to abide by that to stay in the Cross and survive. The subtleties of dealing and supply are so subtle that it takes a long time for those subtleties to show themselves and be revealed for what they are.”*

However, most clients recognised that the rules were *“for safety for them and the staff. [Clients] need boundaries and often work well within the boundaries.”*

Client health

There was much discussion on the honesty and reality of the therapeutic relationship between staff and clients. It was generally agreed that the reality of the relationship helped with provision of appropriate health care. *“It is the most honest relationship than any other service that I know of. What we see here is never reflected in the literature. [Observing the injecting process also provides] a level of intimacy with the clients.”*

Providing clients with respect and improving self-esteem was also reported as an important factor in improving clients’ psycho-social functioning and health. [Clients can see that] *“we might not agree with what they do, but we respect them as people. Taking the time and listening to them and waiting when they go on the nod. [We] don’t judge. [Consequently], it’s easier to get them to think about options for treatment, ... [or] what they want to do with their lives, having a sounding board rather than counselling.”*

Injecting technique

The impact on injecting techniques was suggested by several staff as one of the main benefits of the service for clients. Observation of behaviour helped in developing education strategies to reduce the direct harms of injection. *“[Lack of injecting] site rotation, [limited] use of peripheral veins, and [inappropriate] angle of penetration and tourniquet use”* were identified as specific problems. [Most of the clients are] *“experienced injectors, [therefore there was] ...surprise,...shock, ...and amazement at their injecting technique.”* The strict adherence to inappropriate rituals of injecting was also discussed. *“We are trying to de-ritualise some of the entrenched rituals of injecting.”*

There was agreement that generally injecting techniques had improved. Examples of groin injectors now being able to use peripheral veins were provided. *“With education and assistance, a huge impact from both a blood borne virus point and a potential death issue. ... [There’s] been an increase in hand washing definitely, also less bruising, scars and abscesses.people ask for help too now. ... [We have the] ability to demonstrate, A more lasting effect.”* Some participants suggested that change was slow, because it’s difficult to change the rituals. [The MSIC was] *“also not set up for people who are open and amenable to change. ... It’s set up for people who are doing something wrong.”*

The type of education provided included vein selection. [Clients have] *“a real appreciation for education, particularly about the injection site, being provided with information on how to find veins. [There was a] strong culture against rotating injecting sites. ... It’s not necessarily their technique, but also types of drugs they’re using ... each one has different implications. Peer education may in fact be reinforcing bad behaviour.”*

Cocaine injectors

Clients injecting cocaine were identified as particularly problematic with regard to injection technique and transmission of blood borne viruses. [The injection] *“is more of an infusion than a bolus [They are] actually coking and still injecting. [Some] try more than 50 puncture sites per injection. Particularly, the groin injectors, they fill up the syringe, a 10ml barrel, then go for a peripheral site. [Cocaine injectors] can’t pull themselves out of it, they just keep stabbing.It is almost impossible to stop that process. [They] don’t understand the [local] anaesthetic property of coke puncture themselves 20 times, they don’t know it, don’t feel it.”* According to some clients, *“the more you jack back with coke the bigger the hit you get, it helps wash it through,and get to your heart faster.”*

Benzodiazepine injectors

Injectors of benzodiazepines were also identified as particularly problematic and at high risk of blood borne virus transmission. *“A person in their own little drug taking world which often ends in a blood bath. Trying to find a vein, stabbing. ... Their visual perception is gone, [they have] tunnelled vision, just injecting, injecting. The whole fiddling around thing is unnecessary. [However] it wouldn't be the same sort of enjoyment if they didn't get to spend an hour doing it.”*

Service integration

Most participants said that the MSIC had been well received by other health, and welfare services and other services for drug users. *“Welcomed by services, in particular other services in the area that might have had problems with clients injecting on premises. They report a big reduction in problems with clients. ... [There have also been] lots of calls from services wanting to know if they can refer clients for advice about vein care. ... Most services have been very supportive, particularly, the Salvation Army, the detoxes, and Mission Beat.”*

Drug overdose

Most participants agreed that the MSIC had reduced the negative health consequences of drug overdose. The objective was to *“stop people dying”* and *“the person who overdosed in here may have overdosed on the street.”* There were suggestions that *“clients liked that staff here can potentially resuscitate them. ... [Clients] have chosen to use here, because they feel safe. ... When someone else drops it reinforces that they know that they are going to get looked after”*.

Public amenity

Most participants were reluctant to provide an opinion on the impact of the MSIC on public amenity. However, a few participants had *“been told [that there were] not so many syringes left out on the streets”*. It was also suggested that any reduction in the level of publicly discarded syringes or public injection *“could also be due to the police sniffer dog campaigns which has pushed people to darker corners further away.”* There was general consensus that with *“the numbers that we are now seeing, [the MSIC] has to be having an impact.”*

Blood borne virus transmission

Most staff, particularly staff with many years of experience in the field, expressed surprise and concern over clients' injecting techniques, the amount of blood and the potential for blood contact during injection. The purpose of the MSIC was *“having the injecting process be a clean and safe process. Even the cleanest injector with the best technique, there is always blood left on the cubicle, that is pretty risky.....the closeness, the drawing up, those syringes could get muddled up... [and] that is in a sterile dedicated environment.”* There were also concerns expressed about the *“increase in coke and the impact of the heroin drought ... doubt if anything will change.”*

Access to treatment

It was generally agreed that the MSIC provided many opportunities to facilitate uptake of treatment. However, it was also suggested that facilitating access to treatment was a gradual process and that it was important *“not [to] bombard people with treatment options on the first visit. ... [The MSIC is] a much better starting place [than other services]... more amenable. ... It is the access and the services, primary health care re-socialise them a little before you can throw them into even the basic detox. The most rewarding thing is seeing so many referrals being made to treatment agencies and that sort. It takes time.”*

2.3.6 Changes after 16 months of operation

The main changes reported by participants after 16 months of operation were less paranoia among clients, less perceived barriers to access among clients, and changes in the types of drugs injected. *“Peer promotion of the service, ... less media coverage, ... [and] removal of the [closed circuit] camera [from outside] the neighbouring shop”* were identified as contributing factors. *“Getting through the door was not a problem anymore.”* There were also some clients who only used the service when they had specific needs. For example, one client who lived nearby used the MSIC when she had trouble locating a vein.

Again, there was a focus on the *“poor injecting practices. There is so much variability between and within individuals but it would be good to move improvements to other injecting contexts. The important thing is to improve ritual acts.”*

Types of drugs injected

Participants reported that injection of heroin had increased and injection of cocaine had decreased. There was also a *“small increase in amphetamine injection but no real change in benzo injection.”* It was also reported *“that clients like the environment better on heroin. ... The bunker design is more conducive to depressants than stimulants”*.

Rules and procedures

It was agreed that the clients were *“generally appreciative of the rules and were responsive”*. [However], *“a few clients were noisy exceptions. For this target group, they are relatively well behaved. People know what to do nowbut we still have to reinforce the rules”*. Several of the staff with responsibilities that placed them in the actual injecting room reported that they found continuous reinforcement of the rules and procedures extremely stressful.

There appeared *“better acceptance of the other client’s confidentiality.Wanting to be three in a booth, ... rules about not sharing drugs, .. [and] neck injecting”* [remained the biggest problems]. Although some clients will *“still try to walk through just to have a place to sit and chat or to look for other clients.”*

There was an obvious hierarchy reported within the client group, with some clients becoming *“quite indignant about other clients’ behaviour if it was out of order”*. Some clients were also *“disturbed by groin injectors who have their pants down when they enter the injecting room”*. It was also generally agreed that there was a turnover of the client population about every three months, However, during their time of regular attendance, it was possible to establish a strong rapport with regular clients.

Participants generally agreed that the architecture of the building had an impact on behaviour. *“The clean, new design reflects respect for them, ...better aesthetic,... and encourages them to be respectful. ... [Although] some clients would stay all day if stage three [the After-Care room] was too comfortable.* The no smoking rule and the limited opening hours were still the main complaints from clients.

Impact on MSIC staff

The theme of staff stress was revisited several times throughout the follow-up interview. Several staff reported that they found enforcing the rules draining. *“Repeating the same things day in and day out. The benzo injectors are the most draining, and problematic, especially the physical damage, ... and the tissue injury”*.

There was general agreement that while “*the statistical feedback [was] good, ... we never see what happens to clients in the long term. Clients get better so they don't come back. ... They have possibly died or gone to prison. ... [Although] we hear if they have died. Sometimes it's hard to remember the things that don't happen, they haven't got HIV, ... they haven't died. ... These things haven't happened. It's just a snap shot of a client's moment. It would be good to track individual client improvement in injection-related harms, ... document the individual improvement. ... Can't imagine there's been an impact on hep C but it's relative to other circumstances, like the street*”.

2.3.7 IDU and MSIC client attitudes

IDU attitudes toward MSIC

The NSP survey recruited 260 (38%) and 287 (42%) IDUs from Kings Cross in 2001 and 2002, respectively. Use of the MSIC was reported by 58% (n=152) and 69% (n=199).

Reasons for not using the MSIC

The most frequently reported reason for not using the MSIC was a preference for injecting elsewhere (44% and 71%), usually injection at home (26% and 51%). The second most frequently reported reason was that the entry was too public (Table 2.16).

Table 2.16: Reported reasons for not having used the MSIC among IDU in Kings Cross

Reasons for not having used MSIC	2001 ¹ n=102	2002 ¹ n=78
Cannot inject self	3 (3%)	-
Don't like injecting with others	14 (14%)	7 (9%)
Don't like supervision	11 (11%)	11 (14%)
Entry too public	18 (18%)	13 (17%)
Not allowed in	2 (2%)	1 (1%)
Opening hours don't suit me	11 (11%)	5 (6%)
Prefer to inject elsewhere	45 (44%)	56 (72%)**
<i>Prefer to inject at home</i>	27 (26%)	40 (51%)*
<i>Prefer to inject in private</i>	1 (1%)	-
<i>Prefer to inject in the park</i>	1 (1%)	-
<i>Prefer to inject in "shooting" room</i>	-	1 (2%)
<i>Did not specify preference</i>	16 (16%)	15 (19%)
Pregnant	-	1 (1%)
Too far from where I score	12 (12%)	6 (8%)
Under age	-	1 (1%)
Waiting times too long	5 (5%)	4 (5%)
Worry about police	-	2 (3%)
Don't like it	4 (4%)	-
In Goal	1 (1%)	1 (1%)
No chance or no need	4 (4%)	-

¹ = More than one response could be reported therefore percentages add up to more than 100.

* p=.001, ** p<.001.

Problems experienced with local business, passers-by or police

Problems with passers-by or police were reported by 9% and 8% respectively of respondents who reported use of the MSIC in both surveys (Table 2.17). Very few respondents reported problems with local businesses (3%).

Table 2.17: Problems experienced with local business, passers by and police

Type of problems experienced	2001 n=152	2002 n=199
<i>With local business</i>	3 (2%)	8 (4%)
Discrimination	-	1 (1%)
Not specified	3 (2%)	7 (3%)
<i>With police</i>	11 (7%)	20 (10%)
Searched by police	3 (2%)	4 (2%)
Pulled over by police	2 (1%)	1 (1%)
Police lounging around	-	2 (1%)
Charged by police	-	1 (1%)
Not specified	6 (3%)	12 (5%)
<i>With passers by</i>	11 (7%)	15 (8%)
Dirty looks	-	1 (1%)
Comments	5 (3%)	6 (3%)
Stood over or pushed away	1 (1%)	2 (1%)
Not specified	5 (3%)	6 (3%)

Client attitudes toward the MSIC

Most clients agreed that the location of the MSIC was good for them in both 2001 and 2002 surveys (46% and 47% reported strong agreement, 16% and 16% agreement, and 25% and 22% neither agreed nor disagreed). There was less consensus about the opening hours, with 42% and 45% of respondents respectively reporting agreement and 32% in both years reporting disagreement. Very few reported that they were kept waiting too long (13% and 15%).

Most clients also agreed that their privacy and confidentiality were respected and that the MSIC made it easier for them to obtain drug treatment and welfare services (Figure 2.5). Most clients reported that the care they received at the MSIC was good (80% and 75% in 2001 and 2002). Very few rated the care as poor (1% and 2% respectively). The majority also rated the MSIC as a “good” or “OK” place to inject in both surveys (78% or 10%, and 76% or 14% respectively).

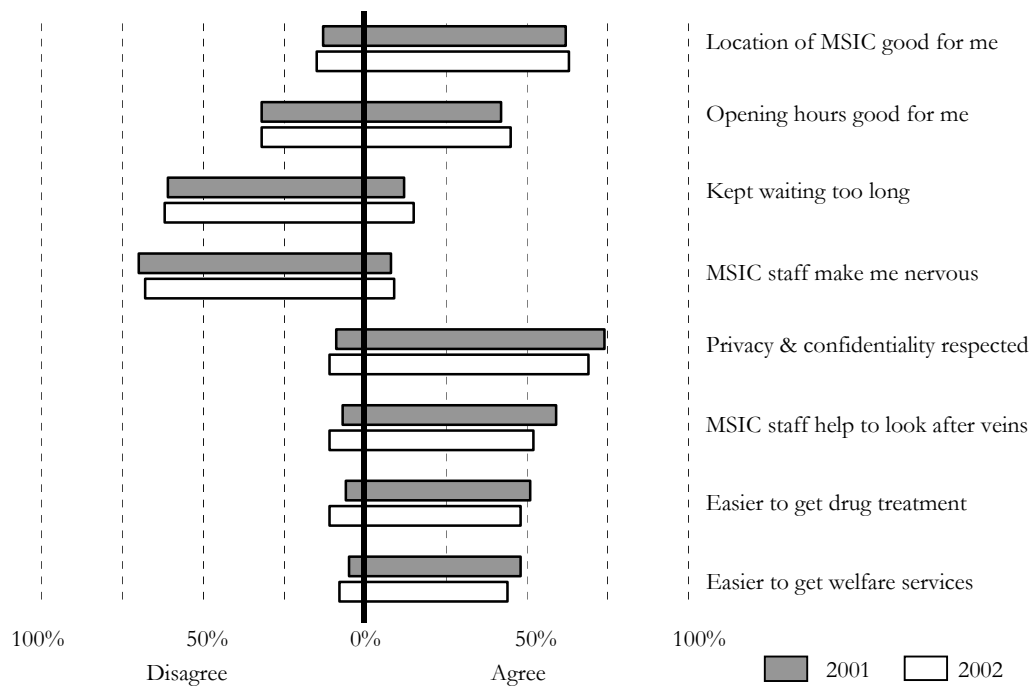


Figure 2.5: Client agreement with MSIC procedures and services

Note: Percentages add up to less than 100 because respondents reporting neither agreement nor disagreement have been included in the percentage calculations but excluded from the figure.

Procedures such as the registration process, not being allowed entry if intoxicated, not being allowed to inject into neck veins and other users being able to see you inject were generally well received by clients in the survey (Figure 2.6). There was less support for only one injection at each visit, particularly in 2001 (20% rated “poor”) than in 2002 (12% rated “poor”) and not being able to split deals (32% and 20% rated “poor” in 2001 and 2002 respectively).

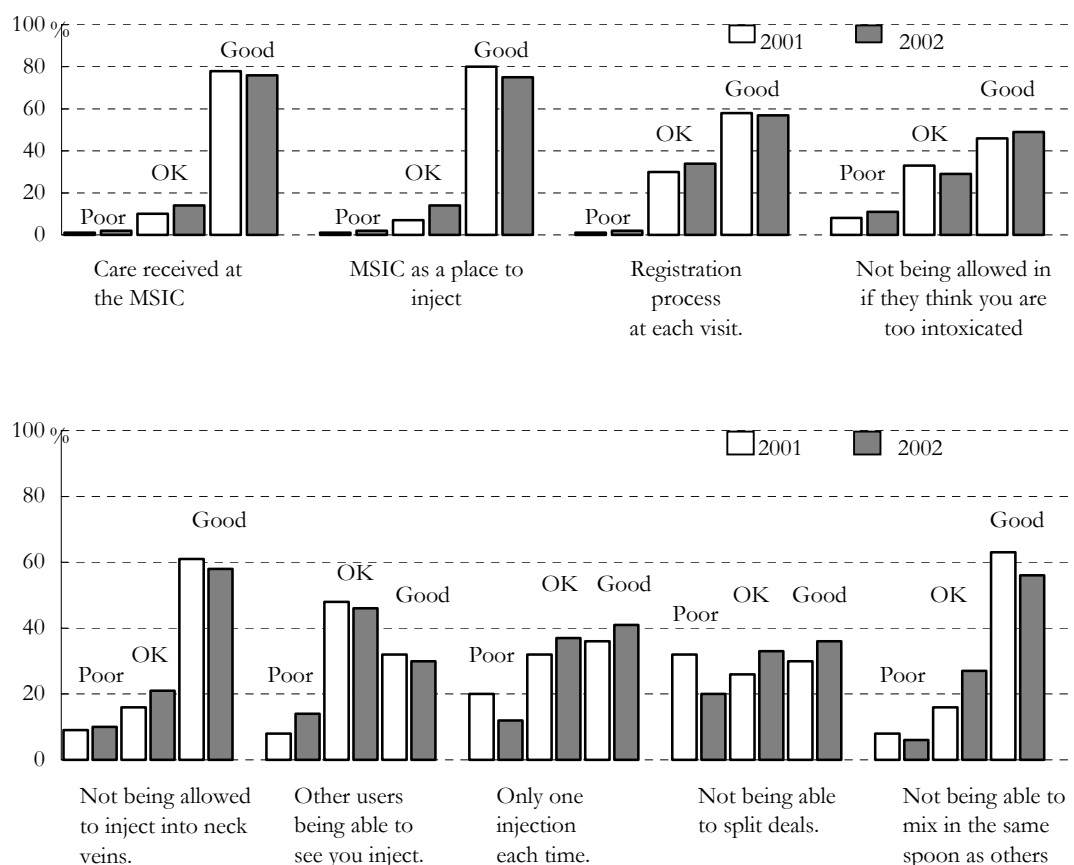


Figure 2.6: Rating of MSIC procedures by clients

2.4 Discussion

2.4.1 Main findings

A total of 3810 IDU registered at the MSIC across 18-months and achieved high levels of service utilisation within six months of operation, with an average of 106 visits per day across the study period and a maximum of 206 visits on any one day. This was consistent with the projected capacity of 150-200 visits estimated by the service provider in the planning phase of the MSIC service delivery model.

The most frequently injected drug at the MSIC was heroin, although between July 2001 and January 2002 the proportion of visits to inject cocaine was similar to or exceeded visits to inject heroin. Approximately one in every four visits resulted in the provision of clinical services other than supervised injecting, drug overdose management or NSP, most commonly vein care and injecting advice and counselling. One in 41 visits resulted in a referral to other agencies, most frequently to drug treatment. The MSIC effectively managed 409 drug overdoses with no reported ongoing adverse sequelae. Several other clinical and behavioural incidents were also managed.

MSIC clients were mostly male, aged on average in their early thirties, and reported they started injecting in their late teens. Most had not completed secondary school and social-security was their main source of income. Previous episodes of non-fatal heroin-related overdose and treatment for drug dependence were common. Almost half the clients reported public injecting and daily or more injecting in the month prior to registration, with heroin the most frequently injected drug in the month prior to registration.

Three out of four MSIC clients had used drugs in Kings Cross prior to registering at MSIC and did not reside in the Kings Cross area. Almost half reported the main reason given for being in Kings Cross on the day of registration was to buy drugs. Only a small proportion of potential clients did not meet the eligibility criteria for registration or entry. The most common reasons for refusal of registration and/or entry were being aged less than 18 years and intoxication.

Client characteristics independently associated with frequent attendance in the first 18-months of operation were at least daily injection, residing in the Kings Cross area, having injected drugs in Kings Cross previously, being a client of KRC, being aged 25 years or less, and reporting injection of heroin, cocaine or other drugs compared to amphetamine. Individuals whose main reason for being in Kings Cross on the day of registration was for social reasons were half as likely to be frequent attenders as individuals in Kings Cross to use the MSIC.

MSIC service delivery protocols met with the specifications of the Drug Summit Legislative Response Act. The three-stage clinical model was assessed by management to be an effective way to maintain a controlled and therapeutic environment for staff and clients. The exclusion of IDU, such as those aged 16-17 years, and pregnant women as per the licence conditions was viewed by management to further marginalise individuals who might most benefit from MSIC service provision. Further, the prohibition of the division of drugs co-purchased by two or more clients on the premises was perceived to be out of touch with reality of the illicit drug market (Southgate et al., 2003) and was consistently challenging for staff to enforce this rule. Suggestions for improving the efficiency and impact of the service included increasing operating hours to 12 hours per day (which occurred in January 2003), incorporating an outreach arm to the service as occurs in some European models (Dolan et al., 2000) and integrating the service administratively with another existing local drug service provider.

Staff believed that the target population was being reached and MSIC service delivery objectives were being met. They identified few barriers to access and believed that the rules and procedures were well accepted by most of the clients. The main impact on client health as identified by staff were less scarring and abscesses and vascular damage, less groin injection, improved self esteem and psycho-social functioning and increased client uptake of treatment. Staff also highlighted that the MSIC had provided a unique insight into the rituals of drug injection and had vastly improved staff understanding of injecting related harms, particularly those associated with the injection of cocaine and benzodiazepines.

Client attitudes toward the MSIC were mostly positive with almost three-quarters of clients rating the care that they received at MSIC as of a good standard and that the MSIC was an acceptable place to inject. The majority of clients agreed that the location of the MSIC was suitable although many suggested that the opening hours should be extended. Few clients reported experiencing delays when presenting to use the MSIC and

found the amount of data collection each visit at MSIC reception acceptable. The large majority of clients reported that their privacy and confidentiality was respected, and that the MSIC made it easier to access drug treatment and welfare services. Rules that were relatively poorly rated by clients were being allowed only one injection at each visit and being unable to share co-purchased drug deals.

As has been reported elsewhere, very few clients reported problems with passers by, police or local businesses in accessing the service (Jacob et al., 1999). The most frequently reported reason given by IDU for not having used the MSIC was that they preferred to inject elsewhere, most commonly their own home.

2.4.2 Limitations

There are several limitations that need to be considered when interpreting these findings. In the case of information collected in the client registration questionnaire and MSIC activity database, the reliability and validity of this data may have been compromised in some instances by IDUs seeking to maximise their likelihood of admission and to minimise the time taken to enter the injecting room. It is also possible client's other service utilisation and lesser clinical and behavioural incidents at MSIC may have been underestimated due to staff having to enter the data in real time in a sometimes hectic clinical environment.

In the case of the IDU attitudes study, IDU self-selected to participate in the surveys, with participation rates around 30-50% among total NSP participants although participation rates were higher at the MSIC. As such the findings cannot be assumed to be generalisable to all people who inject drugs nor to all injectors in Kings Cross. In addition, behavioural information was self reported and therefore subject to recall or social desirability biases. Restriction of behavioural information to the past month and using of a self-completed questionnaire should have limited the extent of such bias (Bale et al., 1981; Darke et al., 1992).

2.4.3 Interpretation and implications

The large number of MSIC client registrations and visits suggest that there is considerable demand for a service of this kind in Kings Cross. With extended hours of operation it is likely that the MSIC can increase its current capacity. MSIC service utilisation after weekday operating hours were extended to 12 hours per day showed the MSIC could accommodate up to 330 visits per day (Kimber & Mattick, 2003)

Further it appears that the entry criteria, rules, registration process and service utilisation data collection did not create major barriers to service access. The MSIC was seen to engage the client group in relevant onsite service provision and referral to the drug treatment, health and social welfare services. Drug related overdose on the premises was prevalent and its management by MSIC was effective. The attitudes of clients and staff toward the service delivery model were largely positive and both clients and staff reported improvements in injecting related risk practices and health.

In general, the characteristics of MSIC clients at registration were similar to those reported in studies of IDU recruited from NSP and drug treatment facilities in NSW (Darke et al., 1996; Day et al., 2002; MacDonald & Zhou, 2002; McKetin et al., 2000; Topp et al., 2002). MSIC clients, however, reported considerably lower rates of lifetime

and current injection-related health problems than injectors in recent studies of injection-related problems (Darke et al., 2001a; Darke et al., 2001b). This is most likely due to methodological differences.

The prevalence of cocaine injection among MSIC clients at registration is consistent with the growth of the cocaine drug market in Sydney (Darke et al., 2002; MacDonald et al., 1999). The concurrent high prevalence and in some months greater overall frequency of cocaine injecting at the MSIC, however, may have been related to a reduction in the availability of heroin (Rouen et al., 2001; Weatherburn et al., 2001) as well as the existence of a cocaine drug market in the Kings Cross area (Darke et al., 2002). The marked increase in the proportion of visits to the MSIC to inject heroin from February 2002 onwards, suggests an increase in heroin supply in the Kings Cross drug market.

There was little evidence from client characteristics data that the MSIC acted as a “honey pot” or attracted new drug users to the area. The majority of clients had used drugs in Kings Cross prior to MSIC registration and almost half of MSIC clients cited their main reason for being in Kings Cross on the day of registration was to buy drugs, suggesting a pre-eminence of the drug market rather than health services in the area. While, many clients were not resident in the local area postcodes, historical data available on the residential postcode of individuals attended by ambulance for overdose in Kings Cross area suggests that the majority of individuals overdosing in Kings Cross area postcodes prior to the operation of the MSIC were also not resident in the area. The largest proportion of visits to the MSIC, however were accounted for by clients from the local postcode areas or those who had spent the evening prior to visiting the MSIC in the local postcode areas further highlighting that the regular users of the MSIC are already in the area.

The predominantly positive client ratings of the majority of MSIC procedures and service provision, in particular the quality of care received, highlight the general acceptability of the service model to clients. This was also reflected in the attitudes of staff toward the acceptability of the service to clients. The most frequently cited reasons given by IDU in the Kings Cross area for not having used the MSIC were that they preferred to inject elsewhere, most commonly in their own home. This is consistent with the MSIC targeting and being used by IDU who would otherwise be likely to inject in a public place. The characteristics of MSIC clients and in particular predictors of frequent attendance point to the role of the MSIC in engaging high risk local IDU sub-populations, such as daily injectors, street based injectors, sex workers, and drug users most at risk of heroin-related overdose.

Taken together we conclude it is feasible to operate a supervised injecting centre in Kings Cross, it was used by and acceptable to the target population, and has generally met its operational service delivery objectives.

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CHAPTER 3: MSIC IMPACT ON OPIOID OVERDOSE

Key Findings

Pre-MSIC opioid overdoses

- In the months preceding the opening of the MSIC, the number of opioid-overdose ambulance attendances and deaths decreased dramatically in the Kings Cross area and across NSW. These decreases were attributed to the substantial reduction in the supply of heroin in Australia that occurred at the same time.

Post-MSIC changes in ambulance and emergency attendances

- Subsequent to the opening of the MSIC, there were further reductions in the number of opioid overdose ambulance attendances in the Kings Cross area and the across NSW. These reductions were associated with the ongoing fall in heroin availability. It was not possible to distinguish the role of the MSIC in reducing demand on ambulance services from the effect of the continued reduction in heroin availability.
- The proportion of ambulance attendances to opioid overdoses in the Kings Cross Area that took place during hours of MSIC operation changed little during the Evaluation period compared to the equivalent calendar period prior to the Evaluation.

Post-MSIC changes in heroin overdose death

- There was no evidence that the operation of the MSIC affected the number of heroin overdose deaths in the Kings Cross area.

Management of heroin overdoses in the MSIC

- It is likely that the MSIC staff prevented some overdose fatalities among those who used the Centre, as a proportion of the 329 heroin overdoses managed by staff in the MSIC may have been fatal, if they had occurred elsewhere. On the basis of clinical and epidemiological data on heroin overdose outcomes, at least four deaths per year are estimated to have been prevented by clinical intervention of the staff at the MSIC.

3.1 Introduction

Opioid overdose has become a significant public health problem and cause of death in Australia and particularly in Sydney and New South Wales (Darke, 1999; Hall et al., 1999). The potential to reduce the rate of opioid-overdose deaths was one of the leading arguments made for the establishment of the Sydney MSIC (New South Wales Government, 1999).

Some limited support for the role of injecting centres in managing overdose comes from overseas injecting centres which have managed drug overdoses with virtually no deaths (Dolan et al., 2000; Happel & Steinmetz, 2001; Hedrich, in press); to date, there has been one reported death, from anaphylactic shock, occurring at an overseas injecting centre (Gerlach & Schneider, 2003). A recent German study of drug-related death in four cities found a statistically significant relationship between the operation of supervised injecting centres and the reduction of drug-related deaths (Bundesministerium für Gesundheit und Soziale Sicherung, 2003). Consistent with this information, a German study found the risk of staying in hospital for one night was ten times greater for a street-based overdose compared to an injecting centre overdose (Integrative Drogenhilfe, 1997).

Turning back to the local situation, from Chapter 2 it is noted that: almost half of the MSIC clients had experienced at least one non-fatal heroin overdose in their lifetime; and that at the last overdose, three-quarters were attended by ambulance officers; and in a third of cases they overdosed in a public place (Chapter 2). Thus, there is some basis to expect that an injecting centre might reduce fatal and non-fatal overdoses in the Kings Cross area.

The aim of this study then was to evaluate whether the operation of the MSIC had a detectable impact on the incidence of fatal opioid overdoses. The focus of the analysis was whether the rate of fatal opioid overdose events occurring in the Kings Cross area was reduced, and whether utilisation of ambulance and emergency department services for overdose management altered. Secondly, given the unexpected high rate of overdoses within the MSIC, it was decided post-hoc to examine to what extent the overdoses within the MSIC may have been fatal had they occurred elsewhere.

To examine the impact of the MSIC on the rate of opioid overdose occurring in the community: data on ambulance attendance at suspected opioid overdoses; opioid poisoning presentations at local hospital emergency departments; and deaths from opioid overdose were analysed. Further, on the reasonable assumption that the MSIC can only impact on the rate of overdose in the community during its hours of operation, an analysis of ambulance attendances to opioid overdose during and outside opening hours was undertaken.

To address whether the management of overdose within the MSIC prevented any deaths, the number of heroin overdoses managed at the MSIC were considered with other clinical and epidemiological evidence relating to fatal opioid overdose (Darke et al., in press; Degenhardt et al., 2001, 2002). This information was used to estimate the number of potential deaths averted by the clinical management of heroin related overdoses occurring at the MSIC.

3.2 Methods

3.2.1 Ambulance attendance at suspected drug overdose events

Data description

Data were obtained on ambulance attendance at suspected opioid-related drug overdoses across NSW between May 1995 and October 2002 inclusive. These data were derived from the number of attended patients who were administered the opioid antagonist, naloxone (Narcan®). These data will: (a) include a small number of patients who have not overdosed on heroin; and (b) exclude actual heroin overdose cases where naloxone was not indicated or where the attending officers were not authorised to administer naloxone. These data on ambulance attendance at suspected drug overdose in NSW have been demonstrated to be a reliable indicator of the prevalence of non-fatal opioid overdose (Degenhardt et al., 2001) and are highly correlated with trends in fatal overdose (Degenhardt et al., 2002).

Statistical analysis

Analyses of deaths over time

Analyses of deaths over time (i.e., interrupted time-series analyses) were conducted to assess the impact of the operation of the MSIC on the number of ambulance attendances for overdose in the Kings Cross area. The “Kings Cross area” was defined as the overdose location occurring in postcode areas 2011 or 2010. Separate control areas in NSW were also assessed, these being firstly the “Rest of NSW” (all postcode areas other than 2011 and 2010) and Cabramatta (postcode area 2166). Data were available for 90 months covering the period May 1995 through October 2002. Visual inspection of these time series graphs revealed that there had been a substantive reduction in the number of such overdose incidents across NSW around January 2001 (i.e., four months prior to the commencement of the MSIC) associated with the previously documented reduction in heroin availability. This potentially confounding influence therefore needed to be taken account of when conducting the time series analyses to assess the impact of the MSIC. The technical aspects of this analysis are presented in Appendix 2.

Changes in proportion of incidents occurring during MSIC opening hours

Another measure of MSIC impact was to examine whether the risk of an overdose incident occurring was reduced during the hours of the day during which the MSIC was open. Using the overdose incident as the unit of analysis, pre-intervention and post-intervention time periods were compared in terms of the percentage of overdose incidents which occur during the MSIC hours of operation (Armitage & Berry, 1994). This was conducted using the ambulance attendance data for the Kings Cross area and also for the Rest of NSW. In order to control for potential seasonal influences the 18 months after the opening of the MSIC (May 2001 through October 2002) was compared with the 18 months of May 1999 through October 2000.

Analyses were conducted to test whether the proportion of incidents occurring during MSIC opening hours was significantly different after the MSIC had actually opened compared to the same times during the time period before it had opened. The difference in the magnitude in this change in proportions was compared for Kings Cross versus the Rest of NSW by testing for an interaction between area and time using logistic regression analysis (Hosmer & Lemeshow, 1989).

3.2.2 Overdose presentations at hospital emergency departments

Data description

Data were obtained for all opioid-related poisoning presentations at hospital emergency departments in the study area between July 1996 and October 2002. Data were available continuously for every patient who received treatment at St Vincent's and Sydney Hospitals through the NSW Emergency Department Data Collection (EDDC). EDDC includes a primary and up to five additional Emergency Department diagnoses based on ICD-9-CM and data were obtained for opioid poisonings (ICD-9 codes 965 to 965.09). As the ICD-9-CM presenting problem may be missed or the actual diagnosis may not be determined in the emergency department, or it may be recorded as a symptom rather than a diagnosis, EDDC is likely to underestimate the true incidence of drug-related presentations. The study area hospitals, however, have considerable experience in managing drug-related presentations so these data are likely to provide a reasonably reliable indicator of drug related presentations in the study area.

Statistical analysis

Interrupted time-series analyses similar to those described in section 3.2.1 were conducted to assess the impact of the MSIC on number of opioid poisoning presentations at St Vincent's and Sydney Hospital emergency departments for the period July 1996 through October 2002.

3.2.3 Drug related deaths

Data description

Data were obtained on opioid-related deaths processed by the Division of Analytical Laboratories (DAL) between July 1996 and October 2002. DAL monitors drug and alcohol constituents found in blood and tissue samples of persons who died in drug-related circumstances. For the purposes of the MSIC evaluation, data were obtained on deaths where morphine, a primary heroin metabolite, was detected. Although the DAL data collection is indicative only, there is a high correlation between DAL data and coronial findings, and DAL provides a good early indicator of drug related mortality (Degenhardt et al., 2002). The National Coronial Information System (NCIS), the overdose death data source originally proposed in the MSIC Evaluation protocol, was not used due to a time lag which would not allow for analysis of deaths which occurred as recently as October 2002.

Statistical analysis

A similar interrupted time series analysis strategy was adopted for the DAL data. The number of deaths per month in each of the Kings Cross area postcodes and Cabramatta postcode comprised relatively small numbers of counts and in some instances were zero counts. It was therefore necessary to model these data using observation driven Poisson models which can also control for autocorrelation. These models were run using dedicated routines provided by the School of Mathematics, University of New South Wales (William Dunsmuir, personal communication). For deaths in the Rest of NSW, a similar regression approach as used for the ambulance callout data was able to be adopted and a sensitivity analysis using an ARIMA approach was also applied.

3.2.4 Estimate of the number of deaths prevented within the MSIC

Data description

Client history and circumstances of previous client drug overdoses, and the number and type of drug overdoses managed at MSIC were presented in Chapter 2. An analysis of the number of these managed overdoses which may have been fatal, if they occurred elsewhere, was undertaken. Information on the rate of heroin overdose in the community and of naloxone administration at MSIC were triangulated with other available epidemiological data and clinical information on overdose to estimate the likely number of deaths that may have been averted by the intervention of the MSIC staff.

3.3 Results

3.3.1 Ambulance attendances at suspected opioid overdoses

Time series analyses of ambulance attendances: Kings Cross area

Figure 3.1 shows the series of monthly ambulance attendances in the Kings Cross area (postcode areas 2011 and 2010) over the period May 1995 through October 2002. Linear regression models incorporating auto-correlated errors were fit to assess the impact of both the heroin shortage which was detected around January 2001 and the opening of the MSIC (May 2001) on the number of overdose incidents (Table 3.1).

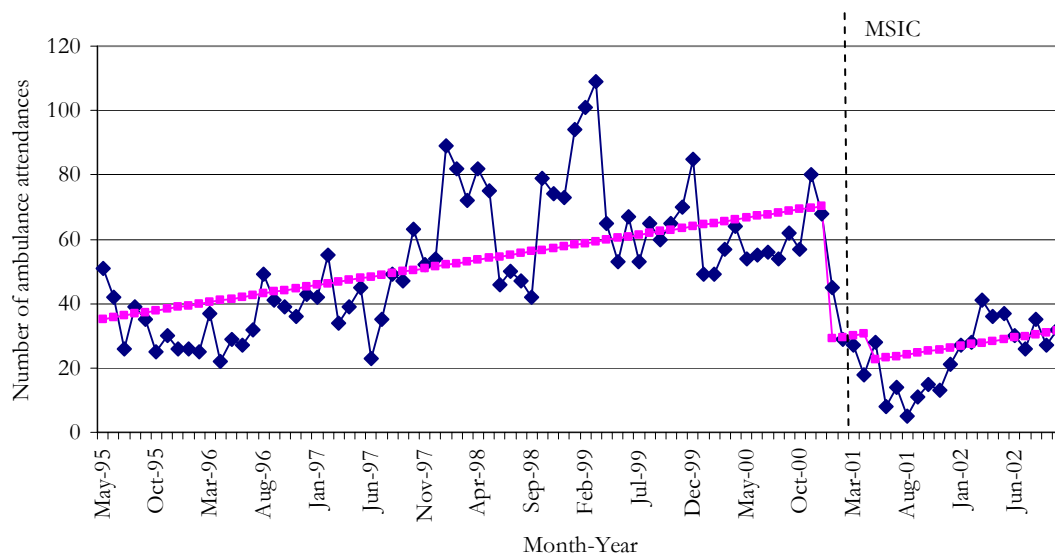


Figure 3.1: Kings Cross area: Ambulance attendances to opioid overdose

There was a significant underlying trend for increasing overdose incidents over the entire study period. The model estimates that on average the number of overdose incidents in the Kings Cross area increased by 0.5 per month. However, as depicted in Figure 3.1, there was a sudden decline in the number of overdose incidents from January 2001 before the MSIC opened.

The model in Table 3.1 shows that after the onset of the heroin shortage, there was a significant decline in the level of the overdose incidents series of on average 42 less incidents per month. After the opening of the MSIC in May 2001, there was a further decline of on average 9 less overdose incidents though this was not a statistically significant effect. The model shown in Table 3.1 accounted for 71% of the total variance. There was no statistically significant change to the magnitude of the underlying trend associated with the opening of the MSIC ($t=-0.1$, $df=84$, $p=1.0$). Analysis of the postcode areas 2010 and 2011 separately showed no different pattern of results.

Table 3.1: Kings Cross area: Changes in ambulance attendances associated with the heroin shortage (Jan '01) and opening of MSIC (May '01)

Term	Coefficient	Standard Error	t	p value
Intercept	34.7	6.2	5.6	<0.0001
Underlying Trend	0.5	0.2	3.4	=0.001
January 2001 (change in level)	-41.7	10.0	-4.2	<0.0001
May 2001 (change in level)	-8.6	10.0	-0.9	=0.4

Estimated autoregressive parameter (lag 1)=0.56, $t=6.2$, $p<0.001$

A plausible interpretation of the model in Table 3.1 is that the heroin shortage persisted for some time after January 2001 including after May 2001 when the MSIC opened. Thus, any possible effect of the MSIC on ambulance attendances to opioid overdoses may have been made less apparent due to the impact of the heroin shortage. Given this, a second model was also fit which just included a term for the change in level associated with the heroin shortage per se (Table 3.2). This model showed that there were on average 46 less overdose attendances after the onset of the heroin shortage (January 2001 through October 2002) compared to prior to this. This model accounted for 71% of the total variance.

Table 3.2: Kings Cross area: Changes in ambulance attendances associated with heroin shortage (Jan '01)

Term	Coefficient	Standard Error	T	p value
Intercept	35.8	6.2	5.7	<0.0001
Underlying Trend	0.5	0.2	3.2	=0.002
January 2001 (change in level)	-46.1	8.5	-5.4	<0.0001

Estimated autoregressive parameter (lag 1)=0.57, $t=6.4$, $p<0.001$

Time series analyses of ambulance attendances: Rest of NSW

In order to ascertain what was happening to ambulance attendance at opioid overdose in other areas in which the MSIC was not operating a number of times series analyses were conducted using control areas. One of these was for the Rest of NSW, i.e. in postcodes other than 2011 and 2010. Figure 3.2 shows the number of monthly ambulance attendances to opioid overdose in the Rest of NSW over the period May 1995 through October 2002.

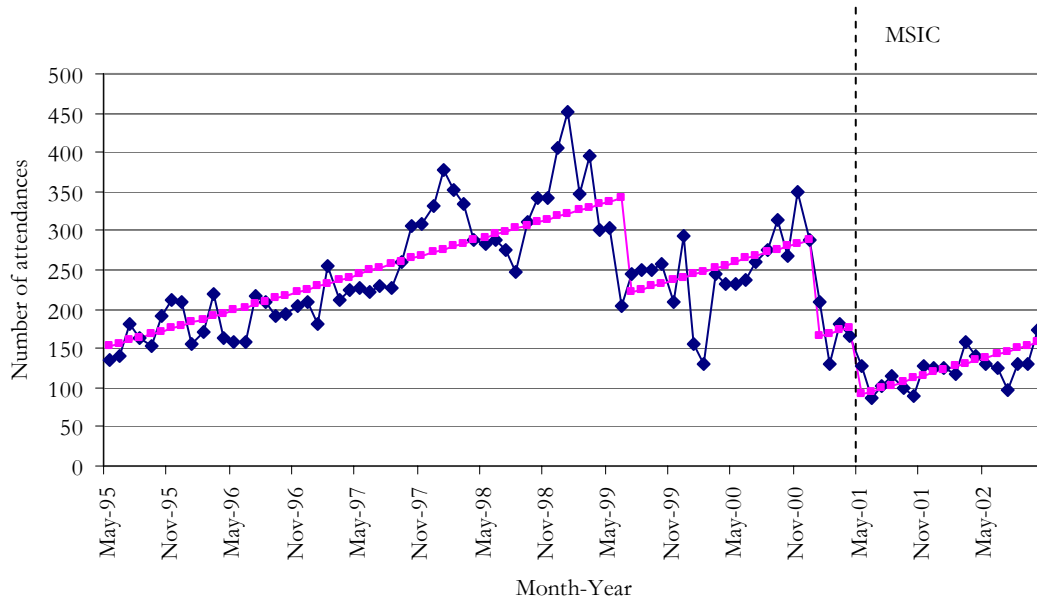


Figure 3.2: Rest of NSW: Time series of ambulance attendances

A feature of Figure 3.2 is that prior to both the heroin shortage and the MSIC, the level of the series appears to have dropped substantively after May 1999. On the basis of information contained in the NSW Ambulance Service reports of 1999/2000 and 2000/2001 the likely reasons for this appear to be both a change in the recording system and also industrial action. Given this, it was necessary in the modelling to include an extra term to incorporate this decrease and thereby more accurately quantify the impact of the heroin shortage and the MSIC.

Table 3.3 shows results from a model incorporating terms for both the heroin shortage and the MSIC on the level of ambulance attendances in the rest of the State, as well as the previous reduction which had occurred after July 1999.

Table 3.3: Rest of NSW: Ambulance attendances to opioid overdose

Term	Coefficient	Standard Error	t	p value
Intercept	148.2	15.4	9.6	<0.0001
Underlying Trend	3.9	0.5	7.6	<0.0001
July 1999 (change in level)	-123.9	22.7	-5.5	<0.0001
January 2001 (change in level)	-125.9	27.9	-4.5	<0.0001
May 2001 (change in level)	-89.1	27.8	-3.2	=0.002

Estimated autoregressive parameter (lag 1)=0.33, t=3.2 p<0.001

The model showed that over the whole study period there was a significant underlying trend in over dose incidents of an extra 3.9 per month. However after July 1999, there was a significant reduction in the level of the series of 124 less recorded ambulance attendances per month. After the onset of the heroin shortage in January 2001 there was a further significant drop of 126 incidents per month. At the time the MSIC opened in Kings Cross in May 2001 there was a further significant drop in the number of ambulance attendances of 89 less per month. It is likely that the decline apparent throughout the rest of NSW after May 2001 reflects a sustained decrease associated with the heroin shortage, which appears to have had an effect right throughout NSW and thereby makes the use of ambulance attendance data to assess the impact of a localised intervention such as the MSIC in Kings Cross problematic. The model shown in Table 3.3 accounted for 79% of the total variance.

Time series analyses of ambulance attendance: Cabramatta area (postcode 2166)

Interrupted times series analyses were also conducted over the same period for the Cabramatta postcode area (2166) as a control site for Kings Cross, given that this is an area of Sydney which also had a large heroin user population. Figure 3.3 shows monthly ambulance attendances to suspected opioid overdose in the Cabramatta area over the period May 1995 through October 2002.

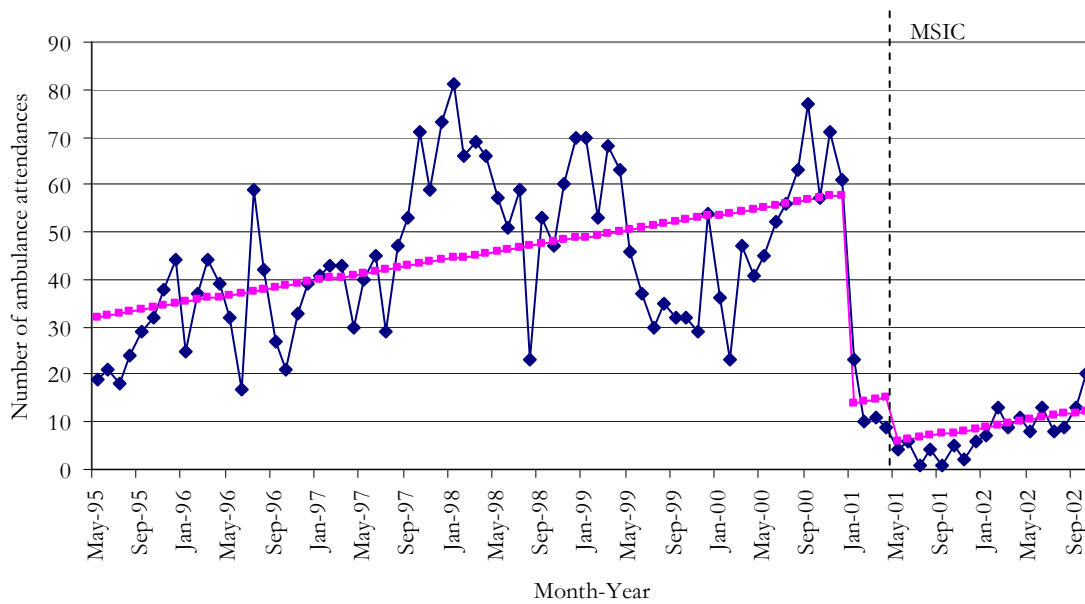


Figure 3.3: Cabramatta: Times series of ambulance attendances

The results of the model assessing the change in the series associated both with the heroin shortage and when the MSIC opened in Kings Cross are shown in Table 3.4.

Table 3.4: Cabramatta: Changes in ambulance attendances

Term	Coefficient	Standard Error	T	P value
Intercept	31.8	5.8	5.5	<0.0001
Underlying Trend	0.4	0.1	2.7	=0.008
January 2001 (change in level)	-44.2	9.1	-4.9	<0.0001
May 2001 (change in level)	-9.6	9.1	-1.1	=0.29

Estimated autoregressive parameter (lag 1)=0.57, t=6.5, p<0.001

The findings from this model were very similar to those which were found for Kings Cross (Table 3.1). There was an underlying increasing trend for an extra 0.4 overdoses per month over the entire study period. The onset of the heroin shortage in January 2001 was associated with a reduction in the level of the series of 44 less overdose incidents, while at the same time the MSIC opened in Kings Cross there was an apparent reduction in the level of the series of around 10 less incidents per month however this was not statistically significant. This model accounted for 76% of the total variance.

Percentage of ambulance attendances occurring during MSIC opening hours in the Kings Cross area (postcodes 2010 & 2011)

Table 3.5 shows the percentage of overdose incidents in the Kings Cross area (postcodes 2010 & 2011) which occurred during MSIC opening hours for the period May 2001 through October 2002 after the MSIC had commenced operations. This is contrasted with the corresponding times during the period May 1999 through October 2000 prior to the commencement of the MSIC. The influence of the heroin shortage is again apparent as while during May 1999 through October 2000 there were 1,059 overdose call outs, this had reduced to 431 in corresponding period in 2001/2002. There was a small change in the proportion of incidents which occurred during opening hours from 33.5% to 29.9%, however this was not a statistically significant difference. Sub-analysis of these data for the postcode area 2011 separately showed no different pattern of results.

Table 3.5: Kings Cross area: Ambulance attendances during MSIC hours

	Total number of ambulance attendances for overdose	Number of attendances during MSIC opening hours	Percent of attendances in MSIC opening hours	Statistical significance
Pre MSIC (May 1999 – October 2000)	1,059	355	33.5%	$\chi^2_1=1.8$, p=0.18
Post MSIC (May 2001 – October 2002)	431	129	29.9%	No significant change

Table 3.6 shows the corresponding data for the rest of NSW. Again, the impact of the heroin shortage is apparent with the number of ambulance attendances reducing from 4,287 in the 1999/2000 period to 2,178 in the 2001/2002 period. There was a negligible reduction in the percentage of incidents which occurred during MSIC opening hours from 49% to 48%.

Table 3.6: Rest of NSW: Ambulance attendances during MSIC hours

	Total number of ambulance attendances for heroin overdose	Number of attendances during MSIC opening hours	Percent of attendances in MSIC opening hours	Statistical significance
Pre MSIC (May 1999 – October 2000)	4,287	2,088	48.7%	$\chi^2_1=0.4$, p=0.5
Post MSIC (May 2001 – October 2002)	2,178	1,042	47.8%	No significant change

To remind the reader, these analyses were to determine whether there was a reduction in ambulance attendances when the MSIC was open compared to when it was closed. In order to test whether the minor reduction in the percentage of overdoses in Kings Cross was significantly greater than in the Rest of NSW, a logistic regression was conducted to test for an interaction between time (pre and post MSIC opening in May 2001) and the location (Table 3.7). This analysis showed that there was no significant difference between Kings Cross and the rest of NSW in the proportion of ambulance attendances to overdose events which occurred during MSIC opening hours.

Table 3.7: Test of interaction between Area and Time for percentage of overdoses occurring during MSIC hours

Term	Coefficient (logit)	Standard Error	Significance
Area (Kings Cross v Rest)	-0.63	0.07	$\chi^2_1=77.4$, p<0.0001
Time (Post v Pre)	-0.03	0.05	$\chi^2_1=0.4$, p=0.5
Area x Time Interaction	-0.13	0.13	$\chi^2_1=0.9$, p=0.33

Table 3.8 shows the change in the percent of ambulance attendances to opioid overdose in the Cabramatta area before and after the commencement of the MSIC in Kings Cross. While there appeared to be an increase in the proportion of the incidents, this was not found to be a statistically significant difference.

Table 3.8: Cabramatta: Ambulance attendances during MSIC hours

	Total number of ambulance attendances for heroin overdose	Number of attendances during MSIC opening hours	Percent of attendances in MSIC opening hours	Statistical significance
Pre MSIC (May 1999 – October 2000)	782	416	53.2%	$\chi^2_1=0.3, p=0.6$
Post MSIC (May 2001 – October 2002)	140	78	55.7%	No significant change

3.3.2 Impact of MSIC on opioid poisoning hospital presentations

Figure 3.4 shows the monthly totals of opioid presentations at St. Vincent’s and Sydney Hospitals over the period July 1996 through October 2002.

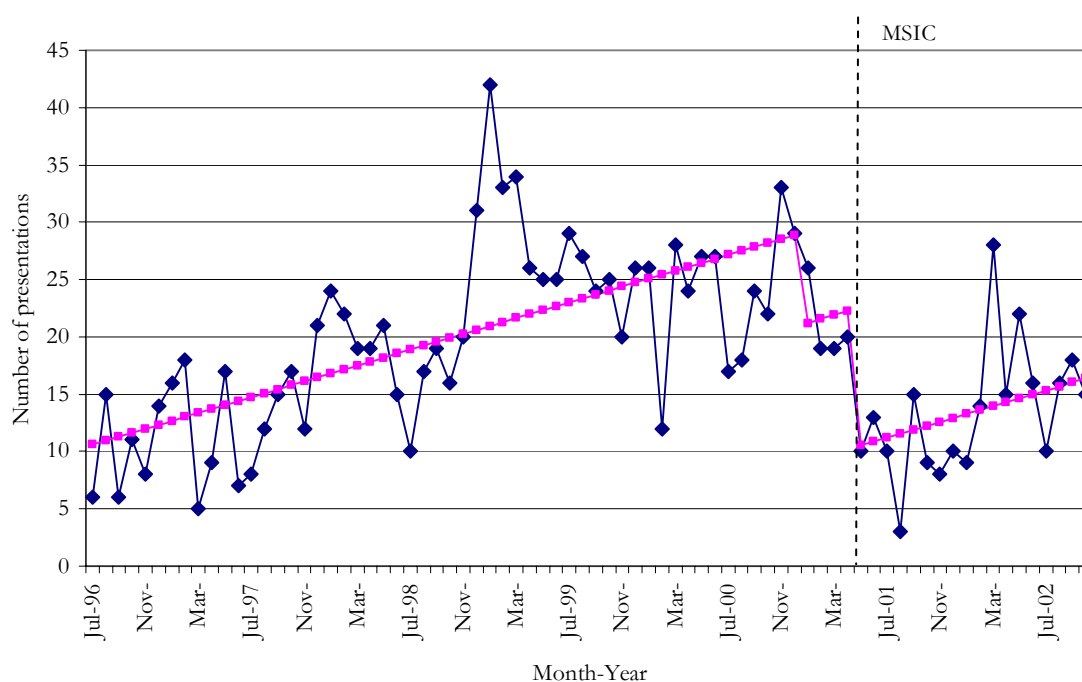


Figure 3.4: Opioid poisoning presentations at St Vincent’s and Sydney Hospitals

A similar interrupted times series approach to that used for the ambulance attendance data was adopted to assess the impact of the MSIC on opioid presentations at St Vincent’s and Sydney Hospital. Table 3.9 shows the results of the model containing terms for underlying trend, change in the level of the series associated with the heroin shortage and change in level associated with the operation of the MSIC.

Table 3.9: Opioid poisoning presentations at Hospitals and the heroin shortage (Jan '01) and opening of MSIC (May '01)

Term	Coefficient	Standard Error	t	p value
Intercept	10.3	2.3	4.5	<0.0001
Underlying Trend	0.3	0.1	4.8	<0.0001
January 2001 (change in level)	-8.0	4.1	-1.9	=0.06
May 2001 (change in level)	-12.1	4.1	-3.0	=0.004

Estimated autoregressive parameter (lag 1)=0.38, t=3.4, p<0.001

The model showed that over the whole study period the underlying trend was for an increase in opioid poisoning presentations of an extra 0.3 presentations' per month. The onset of the heroin shortage in January 2001 was associated with a reduction in the level of the series of 8 less presentations on average. This reduction was not however statistically significant at the conventional 5% level (p=0.06). However after the MSIC commenced operation in May 2001, the level of the series significantly reduced by an average of 12 fewer presentations per month (p=.004). This model accounted for 56% of the total variance.

3.3.3 Overdose deaths

Figure 3.5 shows the monthly totals of morphine positive cases detected by DAL for the postcodes 2011 and 2010 from January 1995 to October 2002. It was found that there was an initial decline in the number of heroin-related deaths in the Kings Cross area after January 2001 (rate ratio= 0.51), though this effect was not significant at the 5% level (p=0.1). After May 2001 there was a continued significant reduction in the number of deaths in the Kings Cross area (rate ratio=0.37, p=0.03).

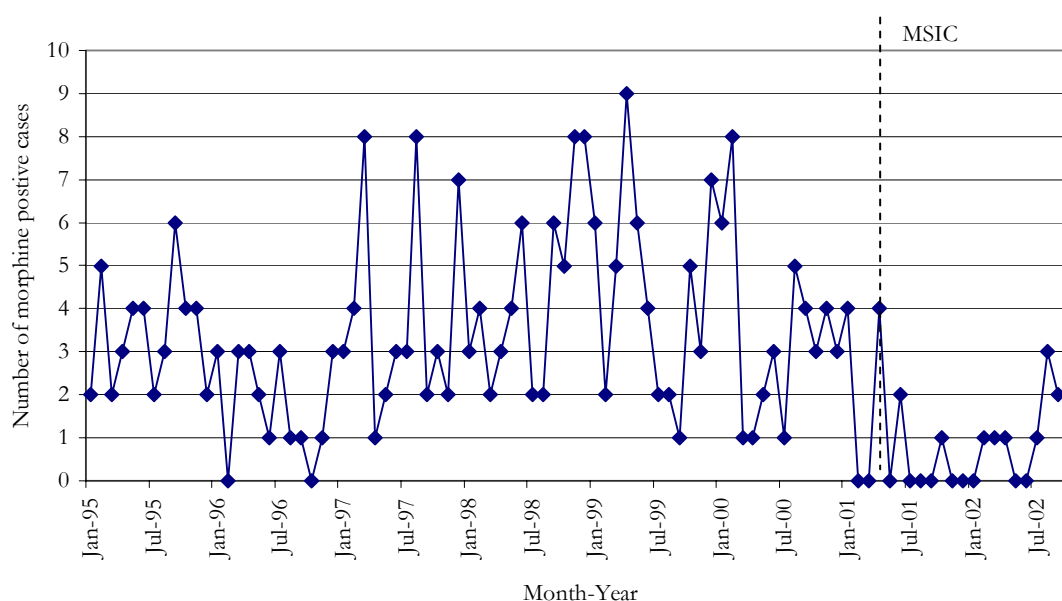


Figure 3.5: Kings Cross area: Deaths where morphine detected (Jan 95-Oct 02)

Figure 3.6 shows the monthly totals of morphine positive cases detected by DAL for the rest of NSW postcodes from January 1995 to October 2002. Both linear regression based and ARIMA modelling approaches were applied to the deaths for the Rest of NSW. Both these approaches found that there was a significant reduction in the number of deaths throughout the Rest of NSW after January 2001 (change in level of around 20 less deaths). There was however no further significant reduction in deaths after May 2001.

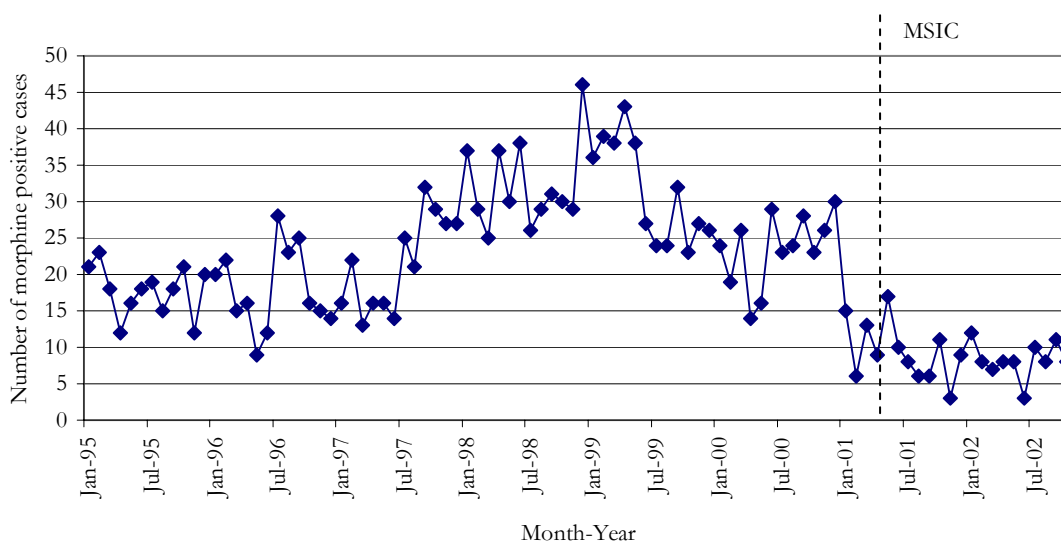


Figure 3.6: Rest of NSW: Deaths where morphine detected (Jan 95-Oct 02)

Fig 3.7 shows monthly totals of morphine positive cases detected by DAL for the Cabramatta postcode (2166) from January 1995 to October 2002. Again, given the more discreet nature of this count data it was necessary to apply Poisson based time series analyses. It was found that there was no significant decline in the number of heroin-related deaths in Cabramatta after May 2001 after controlling from the change in the level of the series after January 2001. Removing this term resulted in a model showing that the likelihood of deaths in the Cabramatta area was significantly reduced after January 2001 (rate ratio=0.23, $p < 0.001$).

These separate analyses of the DAL data perhaps show a more promising potential impact of the MSIC in that a greater reduction was found after May 2001 in the Kings Cross area which was not apparent for either the Rest of NSW or for Cabramatta. In order to test whether this was actually the case, a more direct, combined poisson regression analysis was conducted using death counts for the three series of Kings Cross, Cabramatta and the Rest of the NSW (other than these two areas) simultaneously. This approach (conducted with the assistance of Professor William Dunsmuir, School of Mathematics, University of NSW) incorporated a more flexible “spline approach” to the underlying trend component and tested whether the effect of the heroin shortage from January 2001 differed in magnitude across the three areas. It was found that the effect of the shortage did not differ across the three areas and this common effect was estimated as resulting in a significant 52% reduction in deaths after January 2001 ($p < 0.001$).

This model also tested whether there was a further significant reduction in the Kings Cross area from May 2001 after the opening of the MSIC and it was found that there was in fact no further significant reduction over and above the effect of the heroin shortage ($p=0.17$). A similar analysis was undertaken defining the Kings Cross area as postcode 2011 only and confirmed no significant further reduction in deaths after May 2001 controlling for the effect of the heroin shortage ($p=0.5$).

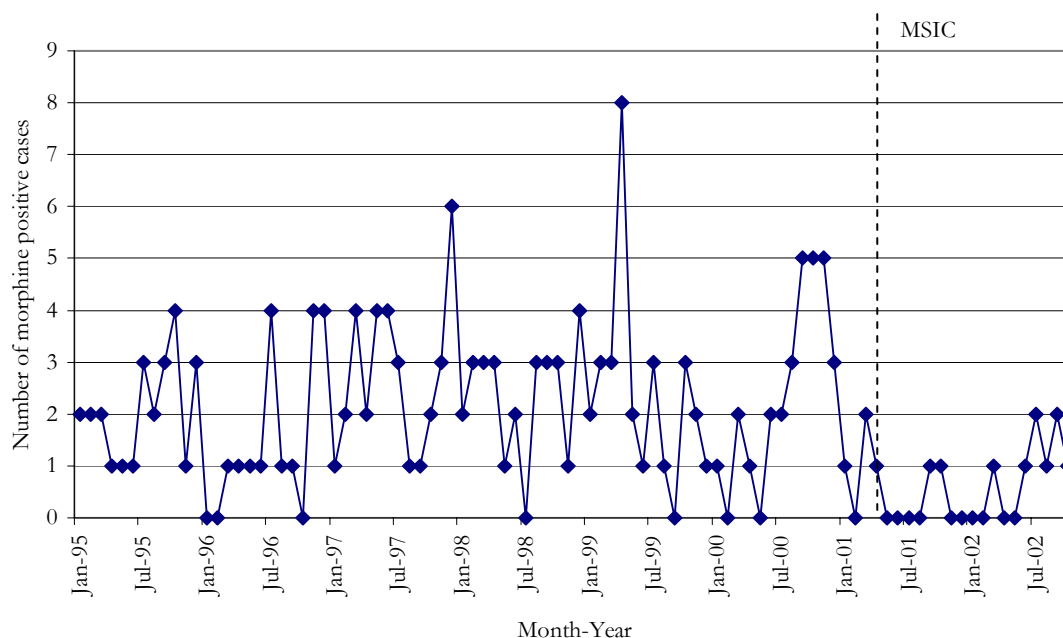


Figure 3.7: Cabramatta: Deaths where morphine detected (Jan 95-Oct 02)

3.3.4 Estimating the potential of the MSIC to prevent opioid overdose deaths

The foregoing analysis provided no evidence of any effect of the MSIC on fatal opioid overdoses or ambulance/emergency service utilisation in the Kings Cross area. The lack of any detectable effect on fatal opioid overdoses and ambulance/emergency services at a community level may well have been due to the reduction in heroin supply. Nevertheless, it is possible to estimate the number of opioid related deaths that could have hypothetically been prevented by the operation of the MSIC.

In estimating the potential of the MSIC to prevent opioid related deaths it is noted that:

- the MSIC can only prevent deaths during its hours of operation, of eight to ten (8 - 10) hours per day, or approximately one third of each day (Chapter 2);
- approximately thirty percent (30%) of ambulance attendances at opioid overdoses in the Kings Cross area occurred during MSIC operating hours (Chapter 3); and that
- not all IDU who overdose in the Kings Cross area are MSIC clients, and MSIC clients also inject and overdose in other settings (Chapters 2 & 5).

Therefore the MSIC could, at most, have an impact on only a small proportion of the total overdose deaths occurring in the area. Assuming constant rates of overdose around the 24 hours per day (see earlier), of the approximately 50 heroin-related deaths occurring per annum in the Kings Cross area in the late 1990s, the MSIC could have hypothetically prevented only a proportion of approximately one third of these deaths (i.e., at most 17 deaths) as it is open approximately one third of the day. Moreover, the heroin injections which occur at the MSIC are a relatively small proportion of those which occur in the Kings Cross area:

- It has been estimated that in 1997, up to 74,000 injecting heroin users in Australia injected heroin on a regular basis (Hall et al., 2000). Approximately half of these users lived in NSW (estimated to be 35,400 in 1997).
- There were 1799 morphine-positive deaths in NSW between July 1996 and May 2001, and 215 (12%) of these deaths occurred within the Kings Cross area (Chapter 3). On this basis, it is estimated that approximately 12% of NSW heroin users were regularly in the Kings Cross area to inject prior to the operation of the MSIC, corresponding to more than four thousand heroin injectors. A confirmation of the plausibility of this estimate of the number of heroin users in the Kings Cross area comes from the fact that 12% of the total NSW NSP distribution in the same time period occurred in the Kings Cross area (Owen Westcott, personal communication).
- Approximately half of the 2080 (55%) MSIC clients reported heroin as their main drug injected in the month prior to registration. Using this and the previous estimate it is likely that half the IDU in the Kings Cross area are regular heroin injectors, and it is plausible that 2000 IDU are regularly injecting heroin in the Kings Cross area. Allowing for an average of at least three heroin injections per day per regular heroin users, there would be 6,000 injections of heroin in the Kings Cross area per day.
- The MSIC had an average of 106 injections per day across the 18-month evaluation period with a maximum of 206 visits per day. Assuming an ongoing capacity of 200 heroin injections per day, the MSIC only accommodates a very small proportion of the regular heroin (and other illicit drug) injections in the Kings Cross area.
- Based on the above stated assumptions and the available evidence, the MSIC could only ever have prevented only a very small number of heroin-related overdose deaths. Even allowing for the profile of the MSIC registrants, the proportion of deaths the MSIC may have been able to avert had there been no supply reduction would only ever be a low proportion (200/6000 injections of heroin or less than five percent) of the total number of heroin-related deaths.

The next section (Section 3.3.5) addresses the extent to which deaths may have been prevented by the management of heroin overdose at the MSIC. This estimate of deaths prevented does not take into account the management of other drug overdoses at MSIC (e.g. cocaine, benzodiazepines).

3.3.5 An estimate of deaths prevented by MSIC staff resuscitating clients who overdosed

There were 329 heroin related overdoses managed by the staff within the MSIC and 81 (25%) cases were managed using naloxone (Chapter 2). It is likely that a number of these overdoses would have been fatal had they occurred elsewhere. Based on assumptions described below, epidemiological data on the community-wide rate of ambulance naloxone administration and overall fatal heroin overdose were used to estimate the number of deaths averted by the management of heroin overdose at the MSIC.

From other studies, it is known that the number of deaths in the community from opioid-related overdose has a close relationship to the number of ambulance attendances to opioid overdose (Degenhardt et al., 2002). Between January 1997 and December 2000, there were approximately 642 ambulance attendances (per million of population) to suspected opioid overdose in which naloxone was administered for every one million head of population. In the same period, 52 individuals per one million head of population in NSW die of opioid overdose each year based on the Australian Bureau of Statistics data on opioid-related overdose deaths from January 1997 to December 2001.

Combining these two figures, the relative rate of death per ambulance attendance is 0.0812 or 8.12% of total NSW ambulance attendances. If we assume that all of the 329 cases of heroin overdose which occurred at MSIC had occurred in the community and had an ambulance called, approximately 27 deaths ($329 \times 0.0812 = 26.71$) may have been averted. This is likely to be an overestimate as many overdoses are known to occur in the community but do not have an ambulance attend. Darke et al. (1996) showed that an ambulance attends in 51% of non-fatal overdose events and Darke et al. (in press) reported an estimate of 4.1 fatal overdoses for every 100 non-fatal overdoses in the community, overall (i.e., 0.041 or 4.1%). Therefore, using this figure of 4.1%, approximately 13 deaths ($329 \times 0.041 = 13.49$) may have been averted in the 18-month trial period.

A more conservative and plausible estimate would be based on the number of MSIC heroin overdose cases requiring naloxone management, as the administration of naloxone is a good clinical marker of serious respiratory depression which left untreated could result in death. We note that the protocol for the administration of naloxone between the MSIC and the NSW Ambulance service differ such that the opportunity for early intervention at MSIC prevents the need for naloxone administration in some cases. This is compared with the time delay that occurs between logging of a call with the Ambulance Service and the dispatch and arrival of the ambulance (15 minutes and upwards). However, in the absence of any other reliable multiplier, using the figure of 81 cases there would have been six cases where death may have been prevented in the 18 month period ($81 \times 0.0812 = 6.58$).

Adjusting these estimates to a 12-month period yields a lower estimate of four (4) deaths prevented and an upper estimate of nine (9) deaths prevented per annum by the clinical intervention of the staff in the MSIC itself. The lower estimate is the more conservative and plausible, especially as there were only 17 documented drug related deaths in the Kings Cross area during the trial period, an average of 11 deaths per annum.

3.4 Discussion

3.4.1 Main findings

The heroin shortage which commenced around December 2000 (Day et al., 2003; Weatherburn et al., 2001) resulted in a major reduction in the number of opioid overdose events throughout NSW. The major reduction in opioid overdoses produced by the heroin shortage has made it difficult to assess the impact of the MSIC on the number of opioid overdose events in the Kings Cross area.

The statistical analyses showed no evidence of a MSIC-specific reduction on ambulance attendances or drug-related deaths in the Kings Cross area; the changes seen in the Kings Cross area were observed state-wide. Although the overall proportion of overdoses occurring in Kings Cross after the opening of the MSIC dropped substantially, the demonstrated impact of the heroin shortage in all of our other time series analyses cannot be attributed specifically to the operation of the MSIC.

Moreover, in an analysis of ambulance attendance data that was less affected by the heroin shortage, there was no alteration in the pattern of ambulance attendances when the MSIC was open each day compared to when it was closed each day. Thus, there is no reason to believe that the MSIC caused a reduction in ambulance attendances to opioid overdoses in the Kings Cross area.

Time series models of opioid poisoning presentations at St Vincent's and Sydney Hospitals showed a further reduction in the level of presentations after the commencement of the MSIC, over and above that initially associated with the heroin shortage after December 2000. It is likely, however, that this reduction also actually reflects the prolonged impact of the heroin shortage throughout 2001 and 2002 rather than reflecting an impact of the MSIC itself.

While there is no evidence that overdose deaths were prevented in the community, the MSIC did manage a large number of heroin overdoses and based on available epidemiological evidence and clinical information, it is likely that the MSIC prevented between four and nine deaths per year of operation, the lower estimate being the more conservative and plausible.

The MSIC also managed cocaine overdose or toxicity. While the focus of the foregoing analysis is on heroin overdose, it is important to note that cocaine use is associated with substantial morbidity and mortality. In the United States for example, approximately a half of drug overdose fatalities are cocaine-related. In particular, cocaine is strongly associated with severe coronary disease, heart failure and stroke. The substantial increase in cocaine use in NSW since 1998 raises concerns about the extent of cocaine-related morbidity and mortality in NSW. Work on cocaine-related deaths is currently being conducted in NSW by the National Drug and Alcohol Research Centre. Preliminary findings indicate extensive cocaine-related coronary disease amongst cocaine overdose fatalities (Shane Darke, personal communication).

3.4.2 Methodological limitations

In addition to the significant confounder introduced to the evaluation of the impact of the MSIC on overdose by the heroin shortage, there were a number of other methodological limitations to the analyses presented here. The analysis of opioid poisoning presentations was limited to the two study area hospitals and comparable state-wide data were not available to allow an analysis of whether the further reduction in presentations after the operation of the MSIC was observed outside the study area state wide.

Importantly, it should be noted that the analyses in this study include the start-up phase of the MSIC, and as such the first six months of service utilisation data are likely to under represent the capacity and impact of the MSIC. An area for future monitoring would be to assess what impact post shortage heroin availability and the increase the hours of operation of the MSIC has on the overdose incidents in the Kings Cross area. We also note that this study only considers the impact of the MSIC in relation to heroin related overdose and does not address the potential impact of the MSIC on other drug overdose mortality and morbidity. It was also not possible from the data available to comment in any quantitative or empirical way of the impact of the MSIC on heroin overdose related morbidity. This is an area worthy of future research.

3.4.3 Interpretation and implications

The prevention of heroin overdose deaths was a major argument put forward for the establishment of the MSIC. The expectation, however, that a single facility operating for a third of the day could prevent a large number of deaths was optimistic.

Initial analyses of ambulance attendances at opioid overdoses across the years 1995-2002 provided no evidence that MSIC had decreased opioid overdose events occurring in the community. There was, however, a large decrease in opioid overdose events attributable to a reduction in the availability of heroin which was sustained in the Kings Cross drug market throughout 2001. Secondary analyses of the number of overdose events occurring in the other major Sydney drug market, Cabramatta, and across the rest of NSW specifically showed that the heroin shortage did reduce the number of deaths occurring. There was a further reduction in the number of overdose events around the time the MSIC opened but the fact that the same trend occurred in Kings Cross and Cabramatta, one of which did and the other which did not have a MSIC, suggests a continuing effect of the heroin shortage rather than an effect of the MSIC.

Further analyses of the pattern of ambulance attendances at opioid overdoses through the 24 hours of each day also provided no evidence that MSIC had decreased opioid overdoses. If the MSIC were exerting a specific effect on overdose events in the community one would expect to see a reduction in overdose events when the MSIC was open for business (8 to 10 hours per day), and no such reduction when the MSIC was closed. The analysis of the effect of the MSIC on the pattern of ambulance attendances during the MSIC opening hours in the Kings Cross area showed no detectable impact on opioid overdoses.

The data suggests that the opening of the MSIC occurred at the same time as a reduction in opioid poisoning presentations at St Vincent's Hospital and Sydney Hospital. It is likely that the reduction in opioid poisoning presentations at St Vincent's and Sydney

Hospitals were part of the general trend associated with the heroin shortage (as was observed in the ambulance attendance time series in the rest of NSW and in Cabramatta).

Based on the management of 329 heroin overdoses in the MSIC itself, a quarter of which required management with naloxone, suggests some deaths were probably prevented in the MSIC. Using information about the relationship between ambulance attendance at suspected opioid overdose and the rate of death in the community, the MSIC may have prevented between four and nine deaths per year of operation in the trial period. The likelihood that many more than nine deaths per year could be prevented is small due to the relatively low base rate of death, the limited hours of MSIC operation, the concurrent substantial reduction in the availability of heroin and that MSIC accounted for only a small proportion of the estimated heroin injections in the area during the trial period.

The capacity and the ability of the MSIC to prevent more deaths is limited, by virtue of the fact that not all individuals who attend the MSIC to inject heroin and by virtue of the fact that there are probably thousands of injections of heroin in the Kings Cross area per day. A daily MSIC capacity to manage 200-300 injections is not likely to make impact on opioid overdose deaths in a location which has an average of many thousands of heroin injections per day, but it probably has a role in preventing a small number of deaths among IDU who overdose while using the MSIC.

Nonetheless, the MSIC is likely to play a role in the reduction of heroin and other CNS depressant drug overdose related morbidity. The early identification and intervention in heroin overdose allows for better management of hypoxia and the minimisation of brain and vital organ damage (Integrative Drogenhilfe, 1997; Warner-Smith et al., 2002). Ongoing contact with some clients also allows for targeted intervention with individuals identified as being at high risk of overdose. A substantial number of cocaine toxicity cases (e.g ischaemia, arrhythmias, cardiac arrest, hypertension, hyperthermia, psychosis and epileptic seizure activity) were also managed at MSIC. The MSIC also managed a handful of drug overdoses where overdosed individuals were brought from other locations. This highlights the potential for MSIC to play a role as a community based emergency treatment facility.

More broadly, the issue arises as to the likely impact of injecting centres on heroin-related deaths in other Australian settings. It is apparent that the potential impact of SICs on drug-related deaths may depend on a variety of factors, including the characteristics of the target population, local drug use patterns, coverage of the service and the distribution of deaths occurring outside the target population of the SIC, for example in private settings or amongst more socially integrated users (Kimber et al., 2003). A recent German evaluation of SICs in four cities, found a statistically significant relationship between the operation of SICs and reduction in drug-related deaths (Bundesministerium für Gesundheit und Soziale Sicherung, 2003) The SICs in these cities targeted street-based, long term heroin injections and in two of these cities, more than one SIC was operating. It seems that a necessary condition for SICs to impact on opioid overdose deaths is that they are located in an area that has high rates of heroin use and opioid overdose among street-based injectors.

In this study of the Sydney MSIC, there were 9.2 heroin overdoses per 1000 heroin injections in the MSIC, and this rate of overdose is likely to be higher than among heroin injectors generally. The MSIC clients seem to have been a high-risk group with a higher rate of heroin injections and of non-fatal overdose than heroin injectors who did not use

the MSIC, they were often injecting on the streets, and they may have taken more risks and used more heroin in the MSIC.

In view of the available evidence, it appears that the ability of the Sydney MSIC to impact at a community level on heroin-related overdose deaths was limited, but management of overdoses occurring in the MSIC is likely to have prevented a small number of deaths.

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CHAPTER 4: BLOOD BORNE VIRUSES

Key Findings

Notifications of cases of HIV, HBV and HCV infection

- There was a trend of increased notifications of cases of newly diagnosed sexually transmitted HIV infection in the Kings Cross postcode area during the time period when the MSIC was established, but no change in the small number of injecting-related infections.
- Notifications of HBV infection remained stable in the Kings Cross and Darlinghurst/Surry Hills postcode areas during the time period when the MSIC was established but increased annually in the rest of Sydney.
- Notifications of newly diagnosed HCV infection increased in the Darlinghurst/Surry Hills postcode area and the rest of Sydney during the time period when the MSIC was established, but remained stable in the Kings Cross postcode area.

HCV incidence

- HCV incidence was stable among injecting drug users tested at Kirketon Road Centre during the time period when the MSIC was established.

HIV and HCV prevalence

- Prevalence of HIV infection among injecting drug users in the Kings Cross NSP/MSIC survey was very low during the time period when the MSIC was established, except among male respondents reporting homosexual identity.
- There was a trend of increased HCV prevalence among injecting drug users surveyed in Kings Cross during the time period when the MSIC was established, consistent with national trends among this population.

4.1 INTRODUCTION

People who inject drugs are at risk of acquiring blood borne infections, such as HIV, hepatitis B virus (HBV) and hepatitis C virus (HCV), through blood contact with others when injecting. The most efficient mechanism for spread among injecting drug users is through re-use of a needle and syringe that has previously been used by someone with infection. HIV and HBV can also be acquired through unprotected sexual contact. Consequently, HIV and HBV can be spread from the sub-population of drug injectors to the general population. All three viruses can also be transmitted from mother to child.

Measurement of HIV and HCV infection is complicated by the typically long latent period from exposure to the virus to manifestation of disease. Antibody tests that are used to detect infection measure past exposure to the relevant virus. When a person is newly diagnosed with HIV or HCV infection, the testing physician tries to determine whether the infection was newly acquired or whether it was acquired sometime in the past. With HBV infection, serological diagnosis of newly acquired infection is possible. Determining the onset and duration of infection is important for clinical care and contact tracing of injecting or sexual partners, as well as providing a measure of new infections for public health surveillance. The best measure of whether the HIV or HCV infection was newly acquired is a recent previous negative test, one or two years before the first positive test.

Three measures can be used to assess the extent of blood borne viral infection in a population. First, Australian legislation requires that all cases of newly diagnosed HIV, HBV and HCV are reported to the relevant health department by the diagnosing physician. Therefore, it is possible to monitor notifications of newly diagnosed infections, and where additional evidence is available, notifications of newly acquired infections. Second, it is possible to measure the extent of infection in a particular population of interest. Testing a sample of IDUs for HIV, HBV or HCV antibody will provide an estimate of the sample's cumulative past exposure to infection or the prevalence of infection in the group. Prevalence measures the number of people with infection in the sample and provides an estimate of the burden of disease for planning future health service needs. Prevalence estimates do not provide an indication of when the infection was acquired and do not reflect current prevention initiatives. Third, it is possible to directly measure new cases or incidence of infection by studying people without infection but with known risk factors for infection such as drug injection or unprotected sexual activity. Study participants are followed over time and tested at intervals to determine whether they acquire infection throughout the study period.

There have been no published studies on the impact of SICs on BBV transmission rates (Fischer et al., 2002). However, significant reductions in BBV risk behaviour among clients at SICs have been reported in several studies (Jacob et al., 1999; Nejedly & Bürki, 1996; Ronco et al., 1996; Warner, 1997; Zurhold et al., 2001). Therefore, it is plausible that provision of safe injecting facilities will reduce transmission and subsequently prevalence of blood borne viruses in the long term. The precursors of change in BBV trends, that is, changes in HIV risk behaviours among IDUs in Kings Cross and those reporting use of the MSIC, are reported in the next Chapter.

In this Chapter, the three types of data typically used for monitoring blood borne viruses were used to determine the extent and trends in HIV, HBV and HCV infection in Kings Cross area from 1998 to 2002. Specifically:

1. the number of newly diagnosed HIV, HBV and HCV infections in the Kings Cross and Darlinghurst/Surry Hills postcode areas were compared to the number of cases reported from the rest of Sydney;
2. the incidence of HCV infection was measured among IDUs tested more than once for infection at a health service for drug users in Kings Cross; and
3. the prevalence of HIV and HCV infection was measured among IDUs surveyed in Kings Cross.

4.2 METHODS

4.2.1 Newly diagnosed HIV, HBV and HCV infections

Newly diagnosed HIV, HBV and HCV infections are legislated notifiable conditions in all State and Territory health jurisdictions in Australia. Cases of HIV infection are reportable by laboratories and medical practitioners, through the NSW health authorities to the national HIV surveillance centre on the first occasion of diagnosis in Australia. Cases of HBV and HCV infection are reportable by the diagnosing laboratories, medical practitioners, hospitals, or a combination of these sources through NSW health authorities to the NSW Notifiable Diseases Surveillance Database.

Newly acquired HIV infection was defined as newly diagnosed HIV infection with evidence of a previous negative or indeterminate HIV antibody test result, or diagnosis of HIV seroconversion illness, within one year of HIV diagnosis. Newly acquired HBV infections required both laboratory and clinical evidence of acute infection. Whereas diagnosis of newly acquired HCV infection was based on laboratory evidence of a previous negative antibody test, within two years of HCV diagnosis, or clinical evidence of acute infection.

Information on exposure category was available for HIV but not for HBV and HCV infection. Data were only available to the end of October 2002 for HBV and HCV notifications, therefore adjustment was made so that comparison could be made with previous years. Even though data on newly diagnosed HIV infection were available to the end of December 2002, data transfer occurred in February 2003 and so the latter months may be under-estimated due to reporting delay.

The number of cases of newly diagnosed HIV, HBV and HCV infection was reported from 1998 to 2002 according to geographic region of residence; Kings Cross (postcode area 2011), Darlinghurst/Surry Hills (postcode area 2010) and the rest of Sydney. Annual population rates were calculated using population estimates from the 2001 census. The number of cases notified from 1998 to 2002 was assessed for linear trend using Poisson regression modelling. Relative risk were also calculated and Poisson regression modelling used to assess any annual changes in the number of cases reported in subsequent years compared to 1998.

4.2.2 Incidence of HCV in Kings Cross

Incidence of HCV infection was determined among clients with a history of injecting drug use attending Kirkton Road Centre, a primary health care clinic in Kings Cross. All clients with a negative HCV test when first assessed at the centre and at least one subsequent HCV test from 1997 to 2002 were included in the analysis. Initial and repeat HCV testing was based on clinician and client assessment of risk for HCV infection. All clients with a history of injecting drug use are considered at risk for HCV infection. The time of HCV seroconversion was estimated as the midpoint between the last negative test and the first positive test.

Incidence of HCV infection was calculated using the person years method. Incidence rates were calculated over two calendar years because of the small number of person years of follow-up in recent years. Relative risk were calculated and change in incidence from 1997/98 to 1999/00 and 2001/02 was assessed using Poisson regression modelling to adjust for age.

4.2.3 Prevalence of HIV and HCV among IDUs in Kings Cross

All clients attending two needle and syringe programs in Kings Cross (KRC and K2) during one week in October from 1998 to 2002 and the MSIC in 2001 and 2002 were asked to complete a brief self-administered questionnaire and provide a finger prick blood sample for HIV and HCV testing. HIV infection was diagnosed on the basis of a repeatedly reactive EIA test with confirmation using the Western Blot technique. HCV infection was diagnosed on the basis of a repeatedly reactive EIA test.

Change in HIV and HCV prevalence was assessed using the non-parametric test for trend. The chi squared test was used to assess difference in HIV and HCV prevalence between respondents who had and had not used the MSIC.

4.3 RESULTS

4.3.1 Newly diagnosed blood borne viral infections

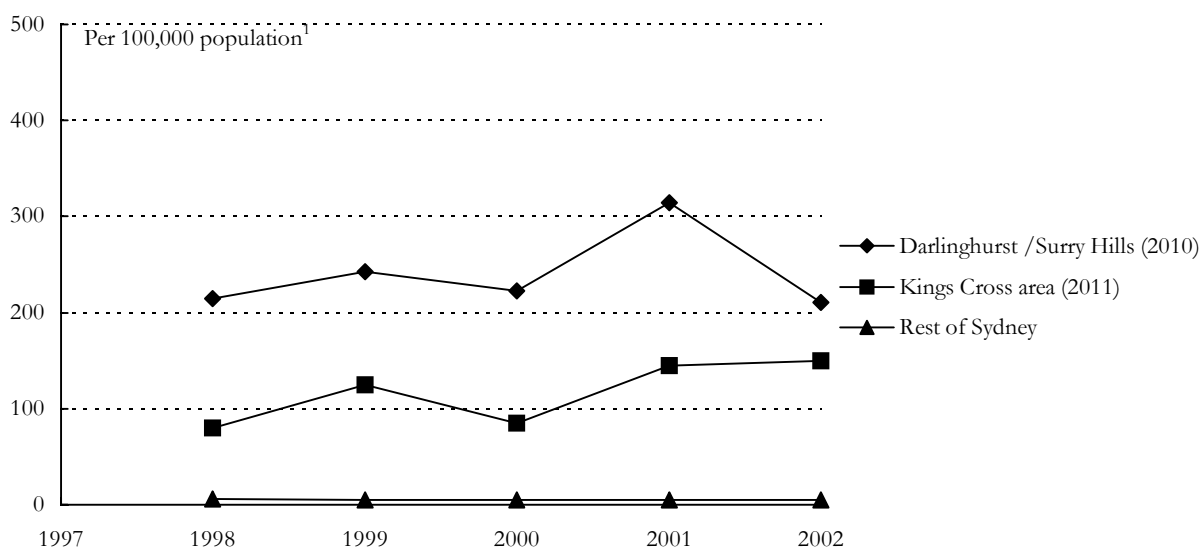
Notification of HIV infection

There were 16 cases of newly diagnosed HIV infection reported from the Kings Cross postcode area (2011) in 1998, equivalent to a population-based rate of 80 cases per 100,000 people. Subsequent to 1998, there was a significant linear trend of increased notification of newly diagnosed HIV infections reported each year from the Kings Cross postcode area to 2002 ($p=0.04$; Table 4.1). On average, notifications of HIV infection increased by 15% per year from 1998 to 2002. The number of reported cases was 1.8 times higher in 2001 (29 vs. 16, $p=0.06$) and 1.9 times higher in 2002 (30 vs. 16, $p=0.04$) than in 1998. A similar trend of linear increase was also reflected in the annual population rates (Figure 4.1).

Table 4.1: Number of cases of newly diagnosed HIV infections and the relative risks for the Kings Cross area (2011), Darlinghurst/Surry Hills (2010) and the rest of Sydney

Year	2011			2010			Rest of Sydney		
	No of cases	RR	p-value	No of cases	RR	p-value	No of cases	RR	p-value
1998	16	1.00	-	54	1.00	-	226	1.00	
1999	25	1.56	0.2	61	1.13	0.5	210	0.93	0.4
2000	17	1.06	0.9	56	1.04	0.8	208	0.92	0.4
2001	29	1.81	0.06	79	1.46	0.03	205	0.91	0.3
2002	30	1.88	0.04	53	0.98	0.9	214	0.95	0.6
Trend		1.15	0.04		1.03	0.5		0.99	0.5

The number of notifications of newly diagnosed HIV infection remained stable from 1998 to 2002 in the Darlinghurst/Surry Hills postcode area (54 vs. 53) and the rest of Sydney (226 vs. 214). Even though there was an underlying stable trend in the number of notified cases of HIV in Darlinghurst/Surry Hills area, the number of cases reported in 2001 was 1.5 times higher than in 1998 (79 vs. 54, $p=0.03$). Figure 4.1 also shows that the annual population rates of newly diagnosed HIV infections were higher in Darlinghurst/Surry Hills (2010) than in the Kings Cross area and the rest of Sydney in each year. When HIV notifications for the postcode areas 2011 and 2010 were combined, the results were consistent with that reported for the postcode area 2010 reflecting the larger number of cases reported from this area compared to the number of cases from the postcode area 2011 (data not shown).



1 = Population rates were based on the 2001 census.

Figure 4.1: Population rates of newly diagnosed HIV infections in Sydney by postcode area

Annual population rates of newly diagnosed HIV infection were higher among males than females in the three postcode-defined areas, both before and after the MSIC opened. For example, population rates among males and females were 267 and zero per 100,000 respectively in the Kings Cross postcode area, 524 and 10 per 100,000 in the Darlinghurst/Surry Hills area, and 9 and 1 per 100,000 in the rest of Sydney in 2001.

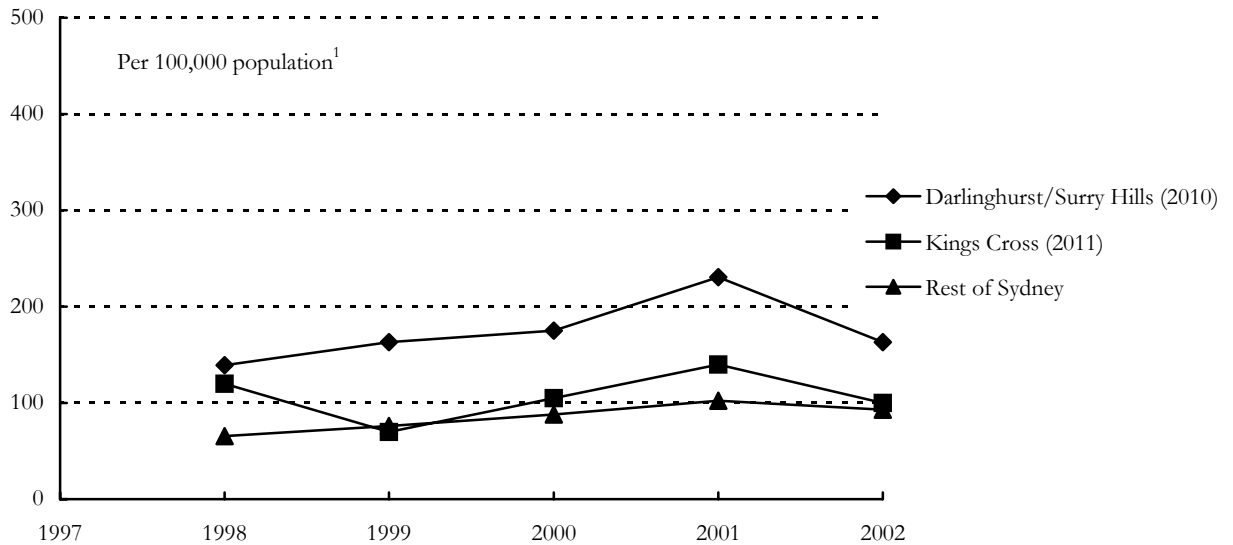
Very few HIV notifications among males were attributed to injecting drug use in 2001/02; zero in Kings Cross, 10 in Darlinghurst/Surry Hills and 28 from the rest of Sydney. The majority of cases were among males reporting male sexual contact; 98% from Kings Cross, 89% from Darlinghurst/Surry Hills and 80% from the rest of Sydney. (Other categories include heterosexual transmission and sex with someone from a high prevalence country, data not presented.) Nearly half the cases of newly diagnosed HIV infections from the Kings Cross (2011) and Darlinghurst/Surry Hills (2010) areas each year were classified as newly acquired infections. For example, in the year before the MSIC opened (2000) there were 8 (47%), 23 (41%) and 47 (23%) cases in the postcode areas of Kings Cross, Darlinghurst/Surry Hills and the rest of Sydney respectively and 13 (43%), 26 (49%) and 64 (30%) in the year after the MSIC opened (2002).

Notification of HBV infection

The number of notified cases of newly diagnosed HBV infection remained stable from 1998 to 2002 in the Kings Cross ($p=0.7$) and Darlinghurst/Surry Hills ($p=0.2$) postcode areas (Table 4.2). For the rest of Sydney, notification of newly diagnosed HBV infections increased on average by 10% each year ($p<0.001$). A similar linear trend was also reflected in the annual population rates (Figure 4.2). As with HIV infection, there was also a significant increase in notifications of HBV infection from the Darlinghurst/Surry Hills area in 2001 compared to 1998 (58 vs. 35, $p=0.02$). When HBV notifications for the postcode areas 2011 and 2010 were combined, the results were consistent with that reported for the postcode area 2010 reflecting the larger number of cases reported from this area compared to the number of cases from the postcode area 2011 (data not shown).

Table 4.2: Number of cases of newly diagnosed HBV infections and the relative risks for Kings Cross (2011), Darlinghurst/Surry Hills (2010) and the rest of Sydney

Year	2011			2010			Rest of Sydney		
	No of cases	RR	p-value	No of cases	RR	p-value	No of cases	RR	p-value
1998	24	1.00	-	35	1.00	-	2589	1.00	
1999	14	0.58	0.1	41	1.17	0.5	3013	1.16	<0.001
2000	21	0.88	0.7	44	1.26	0.3	3484	1.35	<0.001
2001	28	1.17	0.6	58	1.66	0.02	4046	1.56	<0.001
2002	20	0.83	0.5	41	1.17	0.5	3672	1.42	<0.001
Trend		1.03	0.7		1.07	0.2		1.1	<0.001



1 = Population rates were based on the 2001 census. Notifications in 2002 were based on adjusted available data to 30 October.

Figure 4.2: Population rate of newly diagnosed HBV infections in Sydney by postcode area

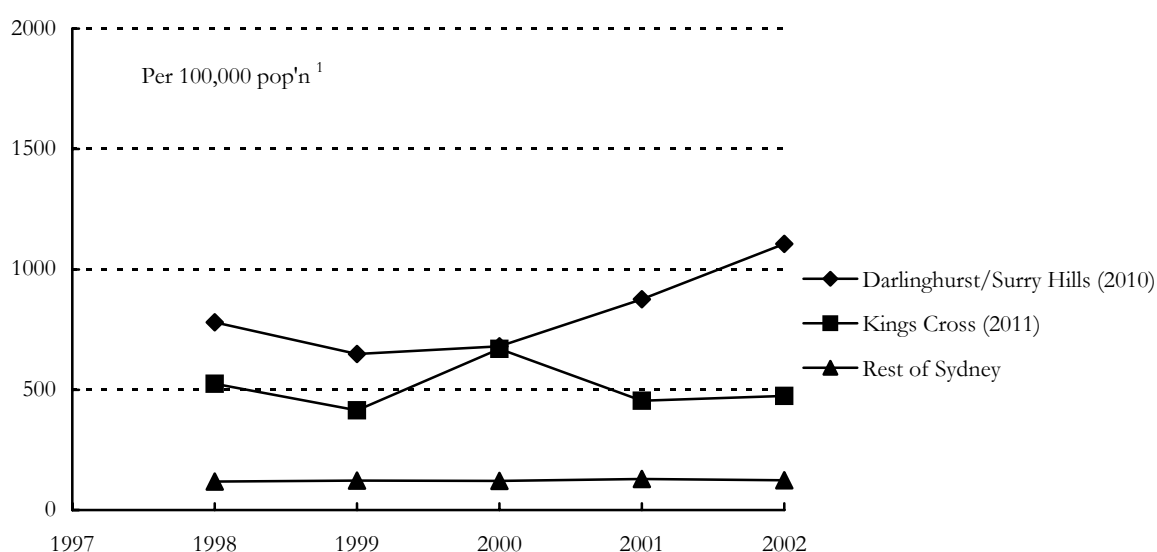
Annual population rates of newly diagnosed HBV were also higher among males than females in the three areas and in each year. For example, population rates among males and females were 166 and 109 per 100,000 respectively in the Kings Cross area, 296 and 136 per 100,000 in the Darlinghurst/Surry Hills area, and 112 and 92 per 100,000 in the rest of Sydney in 2001. Very few of the newly diagnosed HBV infections in Kings Cross, Darlinghurst/Surry Hills and the rest of Sydney were classified as acute or newly acquired in the year before (2000: 4 or 19%, 3 or 7%, and 53 or 1.5%, respectively) or after the MSIC opened (2002: 2 or 10%, 6 or 15%, and 38 or 1%).

Notification of HCV infection

There was a significant linear trend of increased notifications of newly diagnosed HCV infection reported each year in the Darlinghurst/Surry Hills postcode area (196 to 278, $p < 0.001$) and the rest of Sydney (4,659 to 4,882, $p = 0.001$) from 1998 to 2002 (Table 4.3). On average, notifications increased by 11% per year in Darlinghurst/Surry Hills and 2% per year for the rest of Sydney. In the Kings Cross postcode area the number of HCV notifications and the annual population rate remained stable throughout the study period ($p = 0.7$; Figure 4.3). As with HIV and HBV notifications, when HCV notifications for the postcode areas 2011 and 2010 were combined, the results were consistent with that reported for the postcode area 2010 reflecting the larger number of cases reported from this area compared to the number of cases from the postcode area 2011 (data not shown).

Table 4.3: Number of cases of newly diagnosed HCV infections and the relative risks for Kings Cross (2011), Darlinghurst/Surry Hills (2010) and the rest of Sydney

Year	2011			2010			Rest of Sydney		
	No of cases	RR	p-value	No of cases	RR	p-value	No of cases	RR	p-value
1998	105	1.00	-	196	1.00	-	4659	1.00	
1999	83	0.79	0.1	163	0.83	0.08	4834	1.04	0.07
2000	134	1.28	0.06	171	0.87	0.2	4759	1.02	0.3
2001	91	0.87	0.3	220	1.12	0.2	5111	1.1	<0.001
2002	95	0.90	0.5	278	1.42	<0.001	4882	1.05	0.02
Trend		0.99	0.7		1.11	<0.001		1.02	0.001



1 = Population rates were based on the 2001 census. Notifications in 2002 were based on adjusted available data to 30 October.

Figure 4.3: Population rate of newly diagnosed HCV infections in Sydney by postcode area

In each year, the population rate of newly diagnosed HCV infections was much higher in the Darlinghurst/Surry Hills postcode area, than in the Kings Cross postcode area and the rest of Sydney. Population rates of newly diagnosed HCV were higher among males than females in the three areas and in each year. For example, population rates among males and females were 460 and 448 per 100,000 respectively in the Kings Cross area, 1049 and 604 per 100,000 in the Darlinghurst/Surry Hills area, and 162 and 97 per 100,000 for the rest of Sydney in 2001. Very few of the newly diagnosed HCV infections from each location, that is, the Kings Cross and the Darlinghurst/Surry Hills postcode areas and the rest of Sydney, were classified as newly acquired in the year before (2000: 29 or 22%, 5 or 3%, and 100 or 2%, respectively) or after (6 or 6%, 10 or 4%, and 60 or 1%) the MSIC opened.

4.3.2 Incidence of HCV infection among drug injectors at Kirkton Road Centre

The incidence of HCV infection among injecting drug users tested at Kirkton Road Centre remained stable in the two years calendar periods from 1997/98 to 1999/00 and 2001/02 (Table 4.4). However, there was a slight, non-statistically significant decrease in 1999/00 compared to 1997/98 and 2001/02. A similar pattern of increased then decreased incidence was also detected among clients aged less than 25 years.

Table 4.4: Incidence of HCV infection among injecting drug users at Kirkton Road Centre by age group

Year / Age group	Person years at risk	Number newly diagnosed	Incidence per 100 person years	95% CI
1997-1998				
<25 years	87.0	27	31.0	21.3-45.3
25-29 years	84.8	12	14.1	8.0-24.9
30+ years	54.0	8	14.8	7.4-29.6
Total	225.8	47	20.8	15.6-27.7
1999-2000				
<25 years	53.3	10	18.8	10.1-34.8
25-29 years	51.7	8	15.5	7.7-30.9
30+ years	51.3	6	11.7	5.3-26.0
Total	156.3	24	15.3	10.3-22.9
2001-2002				
<25 years	19.4	8	41.2	20.6-82.5
25-29 years	18.3	2	10.9	2.7-43.8
30+ years	22.9	2	8.7	2.2-34.9
Total	60.6	12	19.8	11.3-34.9

HCV incidence among clients aged less than twenty five years was double the rate found among clients aged twenty five to twenty nine years or more than thirty years (Table 4.5). HCV incidence was stable throughout the study period with similar rates found in the two-year period before (1999/00) and after (2001/02) the MSIC opened compared to 1997/98 using Poisson regression modelling to adjust for age (RR: 0.8 and 1.1 vs. 1.0).

Table 4.5: Relative risk analysis for change in HCV incidence among injecting drug users at Kirkton Road Centre

	Relative risk	95 % Confidence Intervals	p value
Year			
1997/98	1.0		
1999/00	0.8	0.5 – 1.3	0.3
2001/02	1.1	0.6 – 2.0	0.8
Age group			
< 25 years	2.2	1.3 – 4.0	0.006
25 – 29 years	1.1	0.6 – 2.2	0.7
30+ years	1.0		

4.3.3 Prevalence of HIV and HCV infections among drug injectors in Kings Cross

A survey of injecting drug users at KRC and K2 from 1998 to 2002 and at the MSIC in 2001 and 2002 was carried out during one week in October each year. The surveys recruited 90 to 120, and 65 to 130 respondents each year at KRC and K2 and 67 and 106 at the MSIC in 2001 and 2002 respectively (Table 4.6). Among respondents recruited from the NSPs, 45% (2001) and 55% (2002) reported that they had used the MSIC. In total, there were 152 and 199 respondents who had used the MSIC for injection.

Table 4.6: Number (response rate) of respondents for NSP/MSIC surveys

Year of survey	KRC N° (%) respondents	K2 N° (%) respondents	MSIC N° (%) respondents
1998	90 (31%)	65 (21%)	---
1999	120 (38%)	130 (33%)	---
2000	105 (51%)	126 (31%)	---
2001	102 (45%)	91 (29%)	67 (88%)
2002	101 (49%)	80 (21%)	106 (97%)

Prevalence of HIV infection among IDUs in the NSP/MSIC surveys

Annual HIV prevalence was low, ranging from 1.6% to 4.2% (trend $p=0.1$), except among male respondents reporting homosexual identity (Figure 4.4). HIV prevalence was also low among respondents reporting less than three years of drug injection, with only one case reported in 1998 (5%) and 2001 (3%, Table 4.7). Furthermore, there were no cases of HIV detected among respondents aged less than 25 years (Table 4.7). HIV prevalence was also lower among respondents reporting use of the MSIC than among respondents who reported that they had not used the MSIC in both 2001 (0% vs. 4.4%, $p=0.01$) and 2002 (3.1% vs. 6.5%, $p=0.2$).

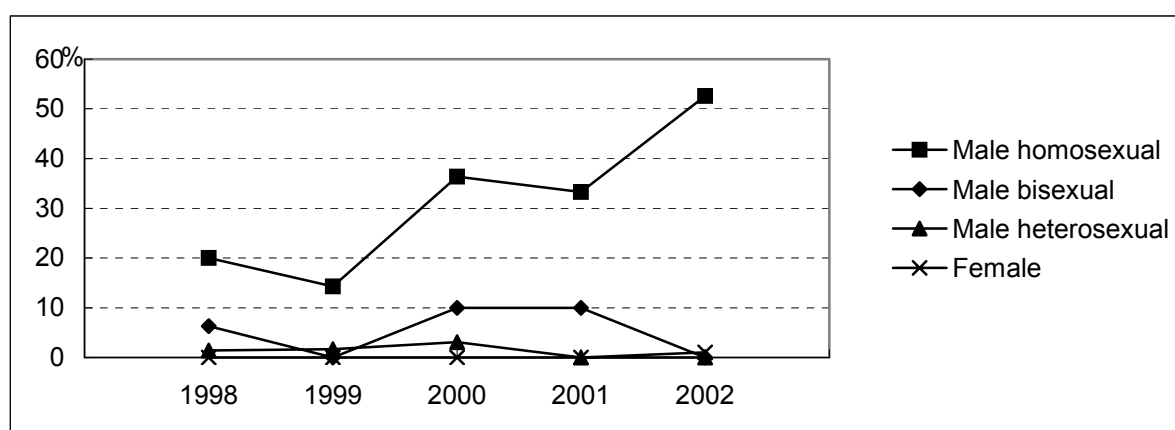


Figure 4.4: HIV prevalence among IDUs in the Kings Cross NSP/MSIC survey by sex and sexual identity

Table 4.7: Prevalence of HIV infection among IDUs in the NSP/MSIC surveys by demographic characteristics

Year of survey	1998		1999		2000		2001		2002	
	N° tested with HIV	N° (%)	N° tested with HIV	N° (%)	N° tested with HIV	N° (%)	N° tested with HIV	N° (%)	N° tested with HIV	N° (%)
Total	150	3 (2.0)	244	4 (1.6)	228	8 (3.5)	242	4 (1.7)	283	12 (4.2)
Sex										
Male	93	3 (3.2)	159	4 (2.5)	125	8 (6.4)	144	4 (2.8)	173	10 (5.8)
Female	53	0 (0.0)	82	0 (0.0)	101	0 (0.0)	89	0 (0.0)	105	1 (1.0)
Other ¹	4	0 (0.0)	3	0 (0.0)	2	0 (0.0)	9	0 (0.0)	5	1 (20.0)
Sexual identity among male										
Homosexual	5	1 (20.0)	14	2 (14.3)	11	4 (36.4)	9	3 (33.3)	19	10 (52.6)
Bisexual	16	1 (6.3)	16	0 (0.0)	10	1 (10.0)	10	1 (10.0)	16	0 (0.0)
Heterosexual	71	1 (1.4)	116	2 (1.7)	96	3 (3.1)	112	0 (0.0)	135	0 (0.0)
Not reported	1	0 (0.0)	13	0 (0.0)	8	0 (0.0)	13	0 (0.0)	3	0 (0.0)
Duration of drug injection										
<3 years	20	1 (5.0)	29	0 (0.0)	29	0 (0.0)	34	1 (2.9)	23	0 (0.0)
3-5 years	22	0 (0.0)	37	1 (2.7)	36	3 (8.3)	50	0 (0.0)	39	1 (2.6)
6-10 years	41	0 (0.0)	59	1 (1.7)	60	1 (1.7)	53	1 (1.9)	64	4 (6.3)
11 + years	64	2 (3.1)	112	2 (1.8)	98	4 (4.1)	102	2 (2.0)	150	7 (4.7)
Not reported	3	0 (0.0)	7	0 (0.0)	5	0 (0.0)	3	0 (0.0)	7	0 (0.0)
Age group										
<25 years	51	0 (0.0)	57	0 (0.0)	60	0 (0.0)	58	0 (0.0)	66	0 (0.0)
25-34 years	56	3 (5.4)	119	3 (2.5)	98	5 (5.1)	105	2 (1.9)	114	10 (8.8)
35 + years	42	0 (0.0)	68	1 (1.5)	70	3 (4.3)	78	2 (2.6)	103	2 (1.9)
Not reported	1	0 (0.0)	0	---	0	---	1	0 (0.0)	0	0 (0.0)

1 = Other includes people whose sex was reported as transgender and people whose sex was not reported.

Prevalence of HCV infection among IDUs in the NSP/MSIC surveys

In contrast to HIV infection, HCV prevalence was high, increasing from 61%-64% (1998 to 2000) to 71% (2001 and 2002, trend $p=0.007$: Figure 4.5, Table 4.8). HCV prevalence was also fairly high among respondents aged less than 25 years, increasing from 39% (1998) to 57%-62% (2000 to 2002, trend $p=0.002$). Among respondents reporting less than three years of drug injection, HCV prevalence ranged from 31% to 44% in the last four years of the study period (trend $p=0.1$).

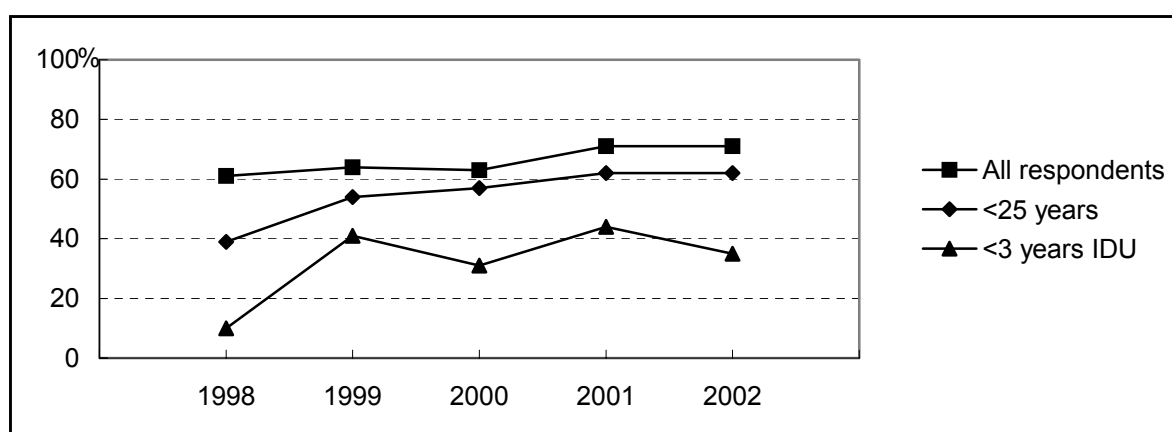


Figure 4.5: HCV prevalence among IDUs in Kings Cross

There was also a trend of increased HCV prevalence from 1998 to 2002 among respondents reporting heroin (trend $p<0.001$), and from 1999 among respondents reporting amphetamine, as the type of drug last injected (trend $p=0.02$). A high but stable rate was reported among cocaine injectors (67% to 73%). HCV prevalence was higher among respondents reporting use of the MSIC than among respondents who reported that they had not used the MSIC in both 2001 (76% vs. 62%, $p=0.03$) and 2002 (79% vs. 47%, $p<0.001$).

Table 4.8: Prevalence of HCV infection among IDUs in the NSP/MSIC surveys by demographic characteristics

Year of survey	1998		1999		2000		2001		2002	
	N ^o tested	N ^o (%) with HCV	N ^o tested	N ^o (%) with HCV	N ^o tested	N ^o (%) with HCV	N ^o tested	N ^o (%) with HCV	N ^o tested	N ^o (%) with HCV
Total	150	97 (61)	244	156 (64)	228	144 (63)	249	176 (71)	284	203 (71)
Sex										
Male	93	53 (57)	159	99 (62)	125	82 (66)	148	103 (70)	174	120 (69)
Female	53	36 (68)	82	54 (66)	101	60 (59)	92	67 (73)	105	78 (74)
Other ¹	4	2 (50)	3	3 (100)	2	2 (100)	9	6 (67)	5	5 (100)
Age group										
<25 years	51	20 (39)	57	31 (54)	60	34 (57)	60	37 (62)	66	41 (62)
25-34 years	56	34 (61)	119	67 (56)	98	53 (54)	108	73 (68)	114	72 (63)
35 + years	42	37 (88)	68	58 (85)	70	57 (81)	80	65 (81)	104	90 (87)
Not reported	1	0 (0)	0	---	0	---	1	1 (100)	0	---
Duration of drug injection										
<3 years	20	2 (10)	29	12 (41)	29	9 (31)	34	15 (44)	23	8 (35)
3-5 years	22	8 (36)	37	14 (38)	36	18 (50)	50	34 (68)	39	21 (54)
6-10 years	41	26 (64)	59	33 (56)	60	35 (58)	56	38 (68)	64	42 (66)
11 + years	64	54 (84)	112	92 (82)	98	79 (81)	104	86 (83)	150	128 (85)
Not reported	3	1 (33)	7	5 (71)	5	3 (60)	5	3 (60)	8	4 (50)
Type of drug last injected										
Amphetamine	8	4 (50)	24	5 (21)	26	8 (31)	28	17 (61)	57	30 (53)
Cocaine	37	27 (73)	43	29 (67)	32	23 (72)	104	72 (69)	35	23 (66)
Heroin	89	48 (54)	155	107 (69)	142	93 (65)	91	69 (76)	150	120 (80)
Other opiates	6	5 (83)	4	3 (75)	2	1 (50)	0	---	8	7 (88)
More than one	9	6 (67)	15	12 (80)	16	12 (75)	9	7 (78)	19	16 (84)
Other/missing	1	1 (100)	3	0 (0)	10	7 (70)	17	11 (65)	15	7 (47)

1 = Other includes people whose sex was reported as transgender and people whose sex was not reported.

4.4 DISCUSSION

Main Findings

There was a steady trend of increased notifications of newly diagnosed HIV infection from the Kings Cross postcode area from 1998 to 2002. However, subsequent to the MSIC opening there were no cases in females, and none of the cases among males were attributed to injecting drug use. Prevalence of HIV infection among injecting drug users surveyed in Kings Cross was low throughout the study period, except among male respondents reporting homosexual identity. Notifications of HBV infection remained stable in the Kings Cross and Darlinghurst/Surry Hills postcode areas throughout the study period but increased annually in the rest of Sydney. Notifications of newly diagnosed HCV infection increased annually in Darlinghurst/Surry Hills and the rest of Sydney before and after the MSIC opened, but remained stable in the Kings Cross postcode area. HCV incidence also remained stable among injecting drug users tested at Kirkton Road Centre. However, there was a trend of increased HCV prevalence among injectors surveyed in Kings Cross from 1998 to 2002.

Limitations

Very few people with HIV or HCV infection have symptoms of disease within ten or more years of acquiring infection. Consequently, case reporting reflects new diagnoses of infection and patterns of voluntary testing rather than new infections (Kaldor & McDonald, 2003). In addition, people may be reluctant to acknowledge that they acquired their infection through injecting illegal drugs. To overcome the limitations associated with newly diagnosed infections, HCV incidence was estimated among IDUs tested more than once for HCV infection at the Kirkton Road Centre in Kings Cross and HIV and HCV prevalence were determined in a series of surveys among IDUs in Kings Cross.

There are also several methodological issues associated with the incidence and prevalence studies that need to be considered when interpreting the results. Decisions by clinicians and clients for repeat testing are usually based on perceptions of risk behaviour. Therefore, it is likely that clients at higher risk of HIV and HCV seroconversion were included in the study, over-estimating HCV incidence. In addition, the number of person years of time available for follow-up was small in recent years. Therefore it was necessary to calculate HCV incidence for two calendar year periods rather than annually.

The prevalence studies were limited by low response at the NSPs. It is also conceivable that HIV or HCV infection status influenced participation in the survey. For example, people with HCV might be more likely to participate because of the services provided by the NSPs and the MSIC or because they have an interest in blood borne viral infection because they have one. Alternatively, people with HCV might be reluctant to provide a blood sample in a non-clinical setting because of concerns about inadvertent spread of infection. It is not possible to determine whether people with HIV or HCV were more or less likely to participate in the surveys. If such a bias occurred it is unlikely that the direction changed from 2000 to 2001 and 2002. However, the extent to which the magnitude of the bias may have changed over the three surveys is not known.

Interpretation and implications

The findings from the studies of HIV infection in this Chapter were consistent with the general pattern of HIV transmission in Australia (NCHECR, 2002). Prevalence and incidence of HIV infection in Australia is low, particularly among injecting drug users, with the main route of HIV transmission being through sexual contact between men. Geographically, the HIV epidemic in New South Wales has also been concentrated in Eastern and Central Sydney (Li et al., 1996), reflecting the concentration of people identifying as homosexual in the area. Consistent with the demographic characteristics of the population, notifications of HIV infection were higher in the Darlinghurst/Surry Hills and Kings Cross postcode areas than in the rest of Sydney. Even though there was a trend of increased HIV notifications from the Kings Cross postcode area throughout the study period, nearly all of the newly diagnosed cases were among men who reported sex with men. Furthermore, HIV prevalence was low in the NSP/MSIC survey of injecting drug users except among those reporting homosexual identity.

Similarly, the studies of HBV and HCV were also consistent with the general pattern of HBV and HCV infection and transmission in Australia. In contrast to HIV and HBV infection, the main route of transmission for HCV infection is through blood contact and the population most affected in Australia as in other countries is people who inject drugs (Dore et al., 2003). Both prevalence and incidence of HCV infection have remained high among injecting drug users in Australia since the late 1980s (NCHECR,

2002). Notifications of newly diagnosed HCV infection were higher in the Darlinghurst/Surry Hills and Kings Cross postcode areas than in the rest of Sydney, consistent with the high levels of injecting drug use in the area. There was also a significant trend of increased HCV notifications from the Darlinghurst/Surry Hills postcode area and the rest of Sydney throughout the study period, consistent with estimates and projections of the HCV epidemic in Australia (Law et al., 2002).

Unlike the Darlinghurst/Surry Hills postcode area and the rest of Sydney, the rate of notification of newly diagnosed cases of HCV infection remained stable in the Kings Cross postcode area throughout the study period. The incidence of HCV infection among injecting drug users tested at the Kirkton Road Centre also remained stable throughout the study period, although there was a marginal decrease in 1999/00. HCV incidence in the Kirkton Road study was similar to national rates reported among injecting drug users in 1995/01 (18 per 100 person years), and in 1999/00 (17 per 100 person years, Zhou et al., 2003). Only one other Sydney area health service has recently studied HCV transmission among IDUs; HCV incidence among IDUs in South Western Sydney was 42 per 100 person years in 1999/02, more than twice the rate reported among injecting drug users tested at the Kirkton Road Centre (Maher et al., 2002).

Prevalence of HCV was high among IDUs surveyed in Kings Cross, even among young injectors and those fairly new to injecting. While it is not possible to classify all infections among people with short injecting histories as new infection, it is highly likely that seropositive results among new injectors reflects recent transmission. Nationally, there has been a significant linear trend of increased HCV prevalence among heroin injectors reporting less than three years of drug injection since 1999 and among new amphetamine injectors since 2001 (Buddle et al., 2002). Prevalence of HCV is typically much higher among heroin than amphetamine injectors in Australia. Therefore, it is possible that the increased HCV prevalence among amphetamine injectors in recent years reflects movement of previous heroin injectors to amphetamine in response to the decreased availability of heroin. It is also possible that changes in injecting networks from heroin to amphetamine and/or cocaine and increased injection of cocaine increased HCV transmission. Cocaine injection has been associated with high rates of HIV risk behaviour and high rates of HIV, HBV and HCV transmission (Hankins et al., 2002).

Consistent with the national data, HCV prevalence was higher among heroin injectors in the Kings Cross NSP/MSIC survey from 1999 to 2002 than 1998 and among amphetamine injectors in 2001 and 2002 compared to 1998 to 2000. HCV prevalence was also significantly higher among injecting drug users surveyed in Kings Cross who reported use of the MSIC. It is likely that high prevalence of HCV among this group reflects the client base and target population of the MSIC, that is older people who have been injecting for longer periods of time and those with high levels of dependence and injecting risk behaviours (Chapters 2 and 5). Similarly, the low prevalence of HIV among MSIC attenders reflects the low numbers of homosexual males who use the service (Chapter 5). Despite the higher prevalence of HCV infection among respondents reporting use of the MSIC, the data suggest that HCV incidence and prevalence remained stable among injecting drug users in Kings Cross in 2001 and 2002. There was also no discernable increase in HIV or HBV infections among injecting drug users.

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CHAPTER 5: CLIENT HEALTH AND REFERRAL UPTAKE

Key Findings

Injecting related health

- Injecting drug users in the Kings Cross area had a high level of injecting-related health problems, with those attending the MSIC more likely to report abscesses/skin infections or thrombosis of the vein than those who did not attend.
- Over time there was a small decrease in the frequency of injecting-related problems among MSIC clients.
- Nearly half the MSIC clients reported that their injecting practices had become less risky since using the MSIC.
- The MSIC client group generally reported higher rates of injection in public places than other injectors.
- The frequency of public injection among MSIC clients decreased during the trial period.

Use of health services

- Injecting drug users in the Kings Cross area reported high levels of testing for blood borne viruses and previous treatment for drug dependence.
- The MSIC client group were more likely than other injectors to report that they had started treatment for drug dependence.

Uptake of referral

- Around half the 1385 referrals were made in writing and, of these, 20% were confirmed to have resulted in the client making contact with the specified agency.
- The MSIC provided referrals to treatment for drug dependence for 11% of clients. The more frequent attenders at the MSIC were more likely to be referred for treatment and take up the referral.

5.1 INTRODUCTION

One of the key arguments in favour of the establishment of the MSIC was that it would provide a *gateway* or link to drug treatment, other health care and social-welfare services by referral of clients to relevant community agencies (Parliament of NSW, 1999). In addition, the core services provided at the MSIC, such as vein care and injecting health, assessment, education and counselling about drug use, basic medical care and assessment, general health promotion and welfare advice (Chapter Two), would contribute to improvements in client health, particularly injecting-related health.

The available evidence suggests that SICs contribute to stabilisation or improvements in clients' health and social situation. Clients from several European SICs reported changes in drug use behaviour since using SICs such as greater awareness and practice of hygienic use, taking more time to use, less stressful use, using less, being more in control of drug use, using only when at the SIC, and entering drug treatment (Jacob et al., 1999; Linsen et al., 2000; Zurhold et al., 2001). Attainment of stable living arrangements was a significant predictor of cessation of injecting centre attendance in one study (Kressig et al., 1996). SICs were also perceived by clients to provide "honest offers" of assistance compared with other drug counselling centres (Jacob et al., 1999). Furthermore, the Sydney MSIC was also reported by staff to provide opportunities for an "honest" therapeutic relationship with clients (Chapter 2).

Help-seeking by drug users is influenced by several factors including (i) the severity of problematic drug use (ii) individual characteristics, environmental circumstances and socio-cultural context; and (iii) availability and characteristics of treatment services and policies (Hartnoll, 1992). In addition, as with the general population and health-care utilisation, compliance with referral among drug users seeking treatment is not necessarily assured (Hser, et al., 1997).

There have been no studies of referral outcome from supervised injecting centres reported to date. However, North American studies of referral of drug users from NSP and community health settings to drug treatment have reported successful referral outcome rates ranging from 14% to 70% (Brooner et al., 1998; Heimer, 1997; Hser et al., 1997; Kuo et al., 2003). Characteristics associated with successful referral included legal pressure, lower levels of psychological distress and family or social problems, and prior favourable treatment experience (Booth et al., 1998; Hser et al., 1997).

Supervised injecting centres are uniquely placed to identify problematic drug injection and to monitor injecting behaviours as staff directly observe the episode of injection (de Jong & Weber, 1999; Dolan et al., 2000). Potential injecting-related problems such as bruising or abscesses from incorrect technique, repeatedly using the same vein and site for each injection or an unhygienic technique can be identified early. The Sydney MSIC staff also highlighted the potential health gains to be achieved from the application of lessons learned from incorrect and potentially dangerous injecting techniques of clients to the wider population of injectors (Chapter 2).

Two sources of data were used to assess the impact of the MSIC on client health and referral outcome: 1) Annually repeated cross-sectional surveys of injecting drug users in Kings Cross from 2000 to 2002 were used to assess any change in drug use patterns and injecting practices, injecting-related health, and uptake of testing for blood borne viruses and treatment/therapy for drug problems before and after MSIC opened; and 2) A study

of all MSIC clients provided with written referral to other drug agencies was used as an indicator of referral uptake, and to identify any factors that might predict clients' attendance, at the services to which they were referred.

5.2 Methods

5.2.1 IDU survey

Annually repeated cross-sectional surveys have been carried out among IDUs at the two fixed site NSPs in Kings Cross, Kirkton Road Centre and K2, since 1995, as part of the Australian NSP survey (MacDonald et al., 1997 & 2000). The routine NSP survey questionnaire was expanded for the October 2000 survey to include additional questions relevant to the MSIC evaluation. IDUs were surveyed at Kirkton Road Centre and K2 in October 2000, 2001 and 2002 using the expanded MSIC/NSP questionnaire. Survey participants were also recruited from the MSIC in October 2001 and 2002.

All clients attending the survey sites during the designated survey week each year were asked to complete the questionnaire and provide a finger-prick blood sample for HIV and HCV antibody testing. Participants were not remunerated financially but were provided with a gift pack. Ethical approval for the surveys was obtained from relevant ethics committees associated with the investigators and with participating recruitment sites. Verbal rather than signed consent was obtained to ensure anonymity of participants.

Age and sex were recorded for all clients attending the services during the survey week. Whether the attendance was for the first time during the survey week was also recorded in order to ensure that only one attendance per client was included in measuring the response rate.

Survey participants completed a questionnaire with consistent demographic, drug use and behavioural questions to the NSP survey. Questions about injecting behaviour generally asked about the month before the survey to provide a snapshot over time. The injecting behaviours of interest were frequency of injection, use of new syringes, re-use of someone else's syringe or other equipment used for injection, and place of injection in the month before survey. Questions were also included on change in injecting technique and frequency of injection since using the MSIC, injecting related problems and body sites used for injection in the previous month, and uptake of treatment for drug use in the previous year.

Participants who reported use of the MSIC were also asked for their MSIC number. Data on frequency of attendance at the MSIC was then obtained from MSIC records and participants categorised according to intensity of MSIC usage.

Data were analysed using the Stata computer package (Stata Corporation 1985-2000). Changes in categorical variables were assessed using the χ^2 test for linear trend. Kruskal-Wallis or Mann-Whitney tests were used to assess change in discrete variables. Changes in demographic and behavioural characteristics over time (2000 to 2002) were assessed using χ^2 test for linear trend, and between MSIC and non-MSIC users using χ^2 test. Associations between demographic and behavioural variables and syringe use were

analysed using the χ^2 test. Change in prevalence of daily or more frequent drug injection was also assessed using multivariate logistic regression analysis to control for differences in other drug use characteristics between surveys.

5.2.2 Referral cards

Three sources of data were originally proposed to measure referral outcome: (i) Referral cards (ii) MSIC brokerage model utilisation (iii) NSW minimum data set (MSIC Evaluation, 2001). We report only on the referral card study as it was the only data source collected consistently across the evaluation period. The MSIC brokerage model was rarely used because there were sufficient places available for treatment referral and the NSW Minimum Data Set was not implemented until the end of the MSIC Evaluation period.

Measures

All referrals were recorded in the MSIC activity database (described in 2.2.1). When a written referral was provided, it was recorded separately in the database as 'letter sent' and a referral card was completed and included with the letter. A separate database entry was also completed to indicate whether the referral was to the Kirkton Road Centre (KRC).

The referral card comprised a postage paid postcard addressed to the MSIC Evaluation Research Coordinator. Printed on the reverse side was type of referral, the name of MSIC clinician making the referral, the name of the referred agency, and a brief explanation of the nature of the study, which requested the referred agency to return the postage paid card. The data and the client's MSIC number were also written on the card, allowing the returned card to be matched to the MSIC database.

Statistical analysis

The number and type of written referrals were retrieved from the MSIC database to provide the numerator for the number of returned referral cards and number of referrals to KRC.

Multivariate logistic regression was used to determine client characteristics independently associated with successful referral outcome. Backwards elimination of variables was used to select the most appropriate model. Data analyses were conducted using SPSS for Windows (Version 11).

5.3 RESULTS

Survey trends are presented first for all participants, and then according to whether participants reported use of the MSIC. Sample sizes were 231 (2000), 260 (2001) and 287 (2002). Annual MSIC/NSP survey response was 51%, 45% and 49% at KRC, 31%, 29% and 21% at K2, and 88% and 97% at MSIC.

Reporting of MSIC use by participants recruited at KRC and K2 increased from 45% (n=87) to 55% (n=99) in the twelve-months between surveys. There were also 67 (2001) and 106 (2002) participants surveyed at the MSIC, giving a sample size of 152 (2001) and 199 (2002) for participants reporting use of the MSIC (2 and 6 participants respectively were surveyed during their first time at the MSIC).

Information on MSIC utilisation was obtained for 64% of the 351 participants who reported previous use of the MSIC. The distribution of demographic characteristics, such as sex, age, duration of drug injection and type of drugs injected, was similar for participants with and without information on MSIC utilisation. The median number of visits as a function of duration of attendance for participants categorised as low intensity was 0.5 (range: 0.02-1.2) and 2.3 (range: 1.2-11.5) for those categorised as high intensity MSIC users.

5.3.1 Sample characteristics

The sample consisted of approximately 60:40, male to female ratio for NSP/MSIC survey participants from 2000 to 2002 and participants reporting use of the MSIC in 2001 and 2002 (Table 5.1). The median age of participants was 29 in 2000, increasing to 30 in 2001 and 2002 ($p=0.04$). Participants reporting use of the MSIC (MSIC users) were significantly older than non-MSIC users (median age: 31 vs. 29 years, $p=0.05$).

Social benefits were the main source of income reported most frequently by NSP/MSIC survey participants from 2000 to 2002 (33%, 38% and 41%, trend $p=0.07$). Workforce employment was the second most frequently reported source of income (26%, 19% and 26%, $p=0.5$). MSIC users were more likely than non-MSIC users to report social benefits (43% vs. 29%, $p=0.001$) and less likely to report workforce employment (18% vs. 33%, $p<0.001$).

Sex work was reported as the main source of income by 12% or 13% of participants from 2000 to 2002 (trend $p=0.8$) and by MSIC and non-MSIC users in 2001 (13% vs. 12%, $p=0.9$). In 2002, reporting of sex work as the main source of income remained stable among MSIC users (10%) but increased to 19% among non-MSIC users ($p=0.03$).

Half the participants in each year reported that they lived in their own or rental accommodation (50%, 48%, and 57%, trend $p=0.2$). Reporting of homelessness decreased from 17% and 20% in 2000 and 2001 respectively to 10% in 2002 (trend $p=0.01$). Reporting of homelessness also decreased from 2001 to 2002 among MSIC (22% vs. 12%, $p=0.01$) and non-MSIC users (17% vs. 4%, $p=0.007$), although MSIC users were more likely than non-MSIC users to report homelessness in 2002 ($p=0.05$).

Nearly half the sample in all three surveys reported a history of imprisonment (52%, 45% and 48% respectively, $p=0.4$), and one in five reported imprisonment in the calendar year before survey (21%, 22% and 20% respectively, trend $p=0.6$). In both years, MSIC users were more likely than non-MSIC users to report history of imprisonment (51% vs. 37%, $p=0.02$ and 55% vs. 30%, $p=0.001$ respectively) and imprisonment in the calendar year before survey (26% vs. 17%, $p=0.07$ and 23% vs. 12%, $p=0.04$).

Table 5.1: Demographic characteristics by year of survey and MSIC use

Year of survey	All participants			MSIC users		Non-MSIC users	
	2000	2001	2002	2001	2002	2001	2002
No respondents	231	260	287	152	199	102	78
Sex (%)							
Male	55	60	62	60	64	61	55
Female	44	36	36	38	34	33	45
Transgender	<1	2	1	1	2	3	0
Not reported	<1	2	<1	1	<1	2	0
Aboriginal and Torres Strait Islander (%)							
Yes	12	14	10	16	13	4	13
No	84	80	85	79	82	94	82
Not reported	4	6	5	5	2	2	5
Main source of income (%)							
Dealing	5	4	2	5	2	2	2
Sex work	12	12	13	12	9	13	19
Social benefits	33	38	41	40	46	34	26
Workforce	26	19	26	13	22	29	38
Employed							
More than one type	18	15	12	16	12	15	12
Other	4	9	6	11	7	5	3
Not reported	2	3	1	3	2	3	0
Homeless (%)							
Yes	17	20	10	22	12	17	4
No	82	79	89	77	87	82	95
Not reported	1	1	1	1	1	1	1
Imprisonment history (%)							
Yes, last year	21	22	20	26	23	17	11
Yes, before last year	31	23	28	25	32	20	19
Never in prison	47	53	50	47	44	64	67
Not reported	1	2	2	2	1	0	3

5.3.2 Injecting drug use

Median duration of drug injection was 9 and 8 years respectively in 2000 and 2001, increasing to 11 years in 2002 ($p=0.001$). Median duration of drug injection also increased among participants reporting use of the MSIC from 2001 to 2002 (9 to 12 years, $p<0.001$) but not among non-MSIC users (8 and 9 years, $p=0.6$). MSIC users reported significantly longer duration of drug injection than non-MSIC users (median: 11 vs. 9 years, $p=0.001$).

Heroin was most frequently reported as the type of drug last injected in each year (Figure 5.1). Nonetheless, reporting of heroin as the last drug injected decreased significantly from 2000 (62%) to 2001 (35%, $p<0.001$) and then increased in 2002 (53%, $p<0.001$). However, the increased reporting of heroin in 2002 was still significantly lower than levels reported in 2000 ($p=0.04$). At the same time reporting of cocaine increased, then decreased, significantly (3% to 29%, $p<0.001$; to 5%, $p<0.001$). Reporting of

amphetamine was similar in 2000 (12%) and 2001 (13%), but then increased significantly in 2002 (19%, $p=0.02$).

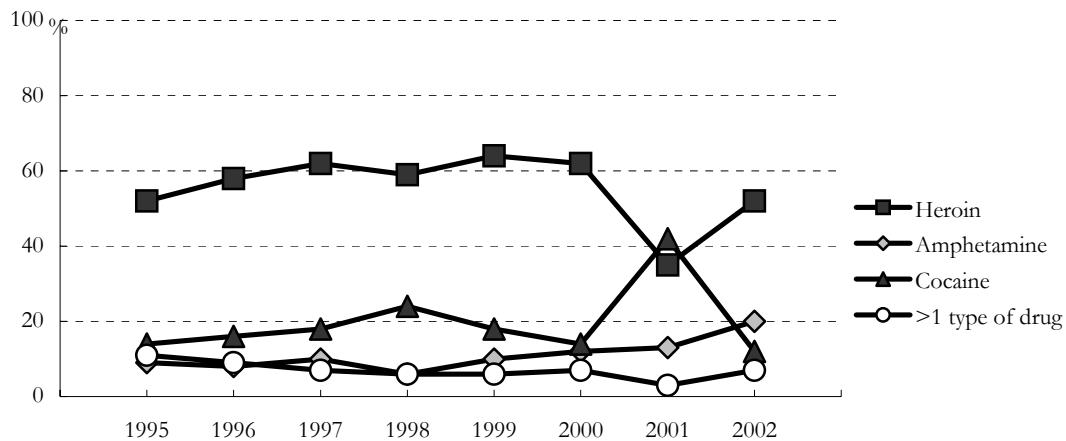


Figure 5.1: Type of drug last injected among IDUs in Kings Cross, by year of survey

The same pattern of increased injection of heroin and amphetamine, and decreased injection of cocaine in 2001 and 2002 was reported from MSIC users (Table 5.2). MSIC users were significantly more likely than non-MSIC users to report heroin as the type of drug last injected in both 2001 (41% vs. 28%, $p=0.02$) and 2002 (59% vs. 38%, $p=0.002$) and less likely to report amphetamine (6% vs. 22%, $p<0.001$ and 14% vs. 32%, $p=0.001$). MSIC users were also more likely than non-MSIC users to report cocaine as the type of drug last injected in 2001 (33% vs. 21%, $p=0.05$), with low rates reported by both groups in 2002 (6% vs. 3%, $p=0.2$).

Table 5.2: Type of drug last injected by year of survey and MSIC usage

Year of survey	All participants			MSIC users		Non-MSIC users	
	2000	2001	2002	2001	2002	2001	2002
No respondents	231	260	287	152	199	102	78
Type of drug last injected (%)							
Heroin	62	35	53	41	59	28	38
Amphetamine	12	13	19	6	14	22	32
Cocaine	3	29	5	33	6	21	3
Methadone	1	0	2	0	2	0	1
Morphine	0	<1	1	1	2	0	0
Steroid	0	<1	1	0	0	1	3
Benzo	0	2	1	1	<1	1	1
Heroin + Cocaine	11	11	6	13	6	10	6
Cocaine+ other	0	2	1	2	<1	2	3
More than one	7	3	7	1	8	7	6
Other	1	1	1	0	1	3	3
Not reported	3	3	3	2	2	5	4

The majority of participants in each year reported at least daily drug injection in the month before survey, however, the proportion reporting daily injection decreased significantly from 2000 to 2001 and 2002 (71%, 55% and 57%, trend $p=0.002$). The proportion of participants reporting daily or more frequent injection in the month before survey also decreased from 2000 to 2001 and 2002 among participants reporting heroin as the type of drug last injected (84%, 65% and 71%, trend $p=0.02$).

Among participants reporting amphetamine injection, there was a non-significant increase in the proportion reporting daily injection (34%, 42% and 41%, trend $p=0.6$; Figure 5.2). Reporting of daily injection was 46% and 37% lower in 2001 ($p=0.003$) and 2002 ($p=0.02$) than 2000 after adjusting for the influence of different types of drugs injected, age and sex using multivariate logistic regression analysis (Adj. OR: 0.54, 95% CI 0.36-0.81, $p=0.003$; Adj. OR: 0.63, 95% CI 0.63, 0.43-0.93, $p=0.02$).

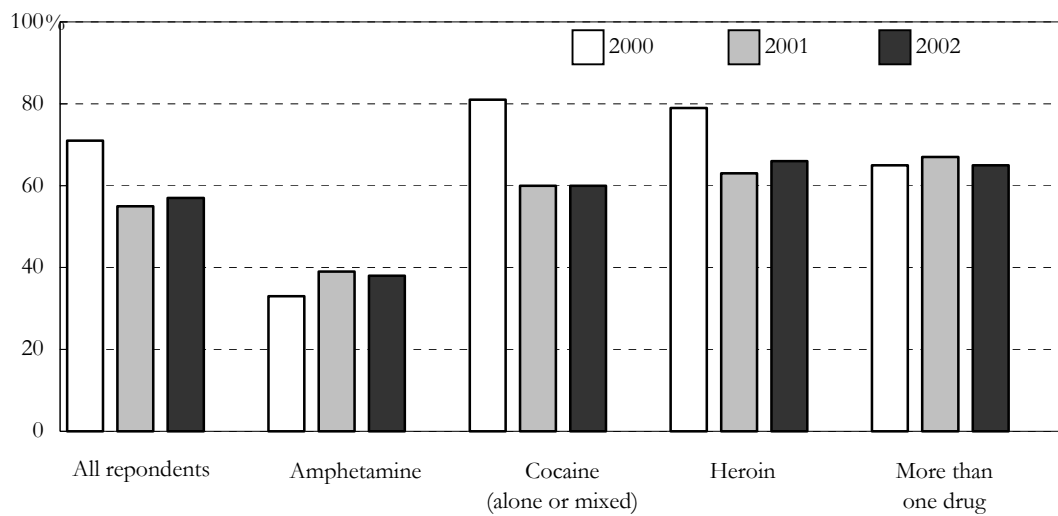


Figure 5.2: Reporting of daily or more frequent injection in the previous month by type of drug last injected among IDUs in Kings Cross

Almost two-thirds of MSIC users reported at least daily injection in the past month in 2001 (65%) and 2002 (63%, $p=0.2$). MSIC users were significantly more likely than non-MSIC users to report at least daily injection in both years (65% vs. 40%, $p<0.001$ and 63% vs. 45%, $p=0.005$). Among heroin injectors, MSIC users were also significantly more likely than non-MSIC users to report daily or more frequent injection in the past month (73% vs. 55%, $p=0.009$; Table 5.3).

MSIC users were twice as likely as non-MSIC users to report daily or more frequent injection after adjustment for the influence of different types of drugs injected, age and sex using multivariate logistic regression modelling (Adj. OR 2.2, 1.46-3.22, $p<0.001$). High intensity MSIC users were also more likely to report daily or more frequent injection than low intensity users (73% vs. 52%, $p=0.007$).

Table 5.3: Reporting of daily or more frequent injection in the previous month by type of drug last injected and MSIC usage

	MSIC user	Non-MSIC user	p value
N° respondents	351	180	
Daily or more injection	225 (64%)	76 (42%)	<0.001
Type of drug last injected			
Amphetamine	15 (42%)	17 (39%)	0.8
Cocaine (alone or mixed)	61 (66%)	21 (53%)	0.1
Heroin	126 (73%)	30 (55%)	0.009
More than one drug	12 (80%)	7 (58%)	0.2

One-quarter of MSIC users in 2001 (26%) and one third in 2002 (31%) reported that their frequency of injection had changed since using the MSIC ($p=0.6$); 10% (2001) and 9% (2002) reported increased frequency, and 16% (2001) and 22% (2002) reported decreased frequency of injection. Cocaine (49%), then heroin (42%), injection were the most frequently reported types of drug last injected by participants reporting increased frequency of injection. Heroin (53%) then cocaine (24%), were the most frequently reported drugs among participants reporting decreased injection.

5.3.3 Injecting practices

Use of new needles/syringes in the previous month

Most participants reported that they used new needles/syringes for all injections in the month before survey, with the proportion increasing from 2000 (64%) to 2001 (75%) and 2002 (79%, trend $p<0.001$). Increased reporting of new needles/syringes for all injections was consistently reported among male (65%, 74% and 80%, trend $p=0.001$) and female participants (63%, 74% and 76%, trend $p=0.004$) and among participants aged less than 25 years (64%, 75%, and 75%, trend $p=0.2$) or older (64%, 75% and 80%, trend $p=0.002$).

Reporting of use of new needles/syringes for all injections in the month before survey also increased among participants reporting daily or more frequent injection (59%, 69%, 78%, $p<0.001$) and those reporting heroin as the type of drug last injected from 2000 to 2001 and 2002 (58%, 82%, 78%, trend $p<0.001$). Stable but high rates were reported among cocaine (71%, 71% and 73%, trend $p=0.9$) and amphetamine (77%, 74%, 84%, $p=0.3$) injectors.

Both MSIC and non-MSIC users reported similar rates of new needle/syringe use in the month before survey (79% and 74%, $p=0.2$). Reporting of use of new needles/syringes increased slightly among MSIC users from 2001 to 2002 although the difference was not statistically significant (75% to 82%, $p=0.1$).

Reuse of other people's needles/syringes in the previous month

Reporting of reuse of someone else's needle/syringe in the month before survey remained stable from 2000 to 2002 (19%, 16% and 18%, trend $p=0.7$). Reporting of reuse of someone else's syringe in the previous month increased significantly among participants reporting amphetamine as the type of drug last injected (4%, 7% and 24%, trend $p=0.007$) but remained stable among those reporting heroin (24%, 17% and 18%, trend $p=0.2$).

Rates of reuse of someone else's syringe in the previous month were the same for both MSIC and non-MSIC users (17%). The same rates of reuse of one, or more than one other person's syringe were also reported by MSIC and non-MSIC users (6% and 11% respectively for both groups).

Sharing of injecting equipment other than syringes

Around one third of participants reported sharing spoons (35%, 30% and 29%, trend $p=0.2$) and 17%, 14% and 11% reported sharing filters (trend $p=0.1$). Sharing the drug solution was reported by 10%, 13% and 14% of participants from 2000 to 2002 (trend $p=0.3$) and sharing tourniquets by 12%, 17% and 15% (trend $p=0.5$).

Similar rates of sharing spoons in the previous month were reported by both MSIC and non-MSIC users (31% and 28%). MSIC users were less likely than non-MSIC users to report sharing of water (18% vs. 24%), filters (11% vs. 16%), the drug mix solution (11% vs. 17%) or tourniquets (15% vs. 18%), although the differences were not statistically significant. Among MSIC users, reported sharing of spoons (29% and 32%), filters (11% and 11%), the drug mix solution (10% and 13%) or tourniquets (14% and 16%) were similar in 2001 and 2002.

Place of injection in the previous month

Most participants reported that they had injected at home at least once in the month before survey (75%, 71% and 72%, $p=0.4$; Figure 5.3). Almost half the participants reported injection at the MSIC in the previous month. Reporting of injection on the street in the month before survey decreased from 2000 and 2001 to 2002 (47% and 48% to 40%, trend $p=0.06$). Reporting of injection in a public toilet or squat in the previous month also decreased (39% and 36% to 29%, trend $p=0.01$ or 17% and 13% to 10%, trend $p=0.02$). However, reporting of injection in commercial shooting galleries such as sex venues or hotels increased from 2000 to 2001 and 2002 (17% to 30% and 26%, trend $p=0.02$).

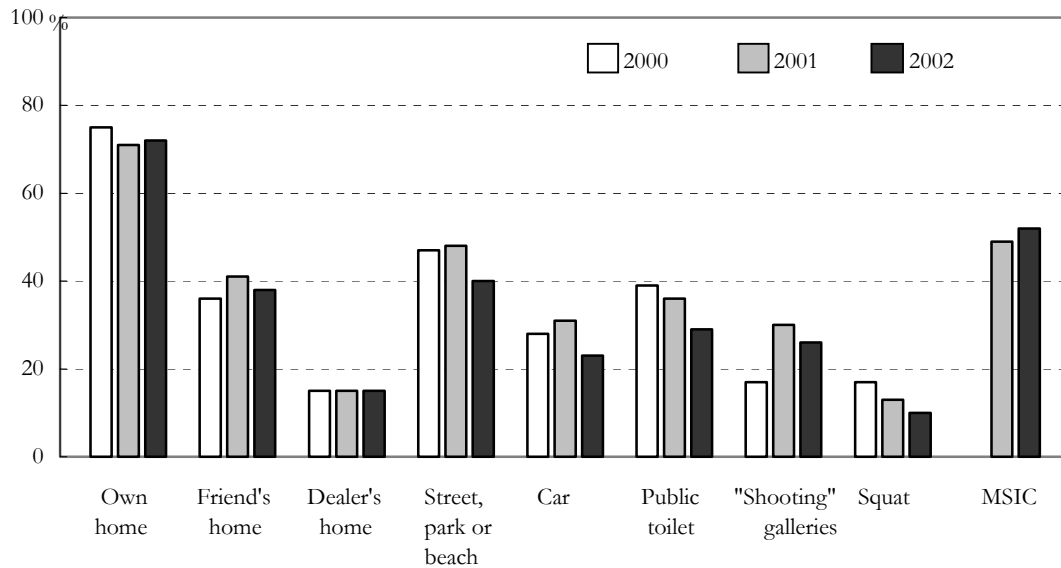


Figure 5.3: Place of injection in the previous month among IDUs in Kings Cross

MSIC users were more likely than non-MSIC users to report injection in the past month on the street (52% vs. 29%, $p < 0.001$), in a public toilet (37% vs. 26% $p = 0.02$), a squat (13% vs. 8%, $p = 0.08$) or at commercial shooting galleries (37% vs. 11%, $p < 0.001$) in the previous month. High intensity MSIC users were also more likely than low intensity users to report injection on the streets or in cars (66% vs. 52%, $p = 0.01$).

Among MSIC users, reporting of injection on the street (57% vs. 46%, $p = 0.04$) or public toilet (40% to 33%, $p = 0.06$) decreased from 2001 to 2002 and reporting of injection in a squat remained stable (13% in both years). Daily or almost daily use of commercial shooting galleries was reported by 16% and 14% of MSIC users in 2001 and 2002.

5.3.4 Injecting related health

Nearly half the participants in 2000 and 2001 (47% each year) and half the MSIC users in 2001 (49%) reported problems related to injecting in the past month. One in five reported only one problem (23%, 20% and 17%). Slightly lower rates were reported in 2002 overall and among MSIC users (40%, $p = 0.1$ and 43%, $p = 0.4$).

The types of injecting-related problem reported most frequently by both MSIC and non-MSIC users were soft tissue injury from multiple attempts to access veins (30% and 27%), scarring or bruising of veins (21% and 23%) and swelling of hands or feet (14% and 11%, Table 5.4). The types of injecting-related problems reported by both MSIC users and non-MSIC users were similar except that MSIC users were more likely than non-MSIC users to report abscesses or skin infections (14% vs. 6%, $p = 0.005$) and thrombosis of the vein (9% vs. 4%, $p = 0.06$). The types of injecting-related problems reported by MSIC users were also similar in 2001 and 2002 except for decreased reporting of scarring or bruising (27% vs. 16%, $p = 0.02$).

Table 5.4: Reporting of injecting related problems by year of survey and MSIC usage

	All participants			MSIC users		Non-MSIC users	
	2000	2001	2002	2001	2002	2001	2002
N° injected last month	217	244	261	146	186	93	68
Injecting related problems (%) ¹							
Any problem	47	47	40	49	43	43	36
Abscesses	12	11	11	12	16	10	0
Endocarditis	1	0	2	0	3	0	0
Swelling hands/feet	12	14	13	13	16	13	9
Multiple attempts	26	32	27	34	28	29	25
Overdose	6	5	4	5	4	5	4
Scarring or bruising	19	25	18	27	16	22	25
Septicaemia	2	2	2	3	3	1	0
Thrombosis	7	8	7	10	8	3	6
Other problems	6	5	4	3	4	5	3

1 = More than one option could be selected so percentages add up to more than 100.

Changes in injecting technique since use of the MSIC were reported by 41% of MSIC users in both surveys (Table 5.5). The top three most frequently reported types of change were improved control (38% and 35%), less vein damage (25% and 16%), and less blood (17% and 13%) with each injection. “Don’t inject outdoors anymore” was ranked fourth, and reported by 14% and 13% of participants.

Table 5.5: Type of changes in injecting technique since using the MSIC

Type of technique changes ¹	2001	2002
	N = 152	N = 199
Any change in injecting technique	41%	41%
Don’t inject outdoors any more	14%	13%
Improved control when injecting	38%	35%
Inject pills less often	2%	6%
Leaning to take care of veins	2%	2%
Less blood around when injecting	17%	13%
Less vein damage	25%	16%
More hygienic	6%	2%
Safer	5%	2%

1 = More than one option could be selected so percentages add up to more than 100.

The most frequently reported body site of injection was the cubital fossa of the arm for both MSIC and non-MSIC users (Table 5.6). MSIC users were more likely than non-MSIC users to report injecting into veins in their hands (21% vs. 14%, $p=0.08$), groin (5% vs. 1%, $p=0.01$) and neck (6% vs. 1%, $p=0.02$).

Table 5.6: Body sites used for injection in the previous month by MSIC and non-MSIC users and year of survey

Body sites used for injection last month ¹	MSIC user		Non-MSIC user	
	2001	2002	2000	2001
	N = 146	N = 186	N = 93	N = 68
Arm/mainline	70%	73%	74%	74%
Arm other	29%	35%	25%	25%
Hands	21%	21%	14%	15%
Feet	13%	12%	9%	4%
Groin	5%	5%	1%	0%
Leg	6%	9%	10%	6%
Neck	5%	6%	2%	0%

1 = More than one option could be selected so percentages add up to more than 100.

Around half the participants in each survey reported that they had previously overdosed (54%, 50% and 45%, trend $p=0.04$). MSIC users were more likely than non-MSIC users to report history of previous overdose (53% vs. 38%, $p=0.001$). MSIC users were also more likely to report overdose in the twelve months before survey (19% vs. 9%, $p=0.003$).

Reporting of overdose in the year before survey decreased significantly from 2000 (23%) to 2001 (16%) and 2002 (15%, trend $p=0.02$). At the same time, the median number of overdoses per person reported in that year decreased from two (2000) to one (2001 and 2002, $p=0.01$). Most (54, 42 and 43) participants reporting overdose in the previous year, reported that they had used heroin at the time of their last overdose (89%, 86%, and 79%), either only heroin (59%, 67%, and 51%) or in combination with another drug (30%, 19% and 28%).

The most frequently reported places where the last overdose occurred were on the street (41%, 38%, and 30%) or at their own, a friend's or dealer's home (33%, 26% and 21%). One person in 2001 and 2002 reported that their last overdose was at the MSIC. Most participants reported ambulance attendance (70%, 83% and 63%), around two thirds reported that they had received Narcan (67%, 64% and 67%) and just less than one third reported hospital attendance (24%, 21% and 30%) after their last overdose.

5.3.5 Health service use

Testing for HIV and HCV infection and vaccination for HBV

Just over three-quarters of participants reported being tested for HIV and HCV infection in the year before survey in the three surveys (78%, 80% and 75% for HIV test, trend $p=0.5$; 81%, 77% and 77% for HCV test, trend $p=0.3$). Very few reported that they had never been tested for HIV and HCV (6%, 5% and 6% for HIV test, trend $p=0.9$; 7%, 5%, and 4% for HCV test, trend $p=0.2$). Around three-quarters of MSIC and non-MSIC users also reported HIV and HCV testing in the previous twelve months in both years (80% vs. 72%, $p=0.2$; 80% vs. 77%, $p=0.6$).

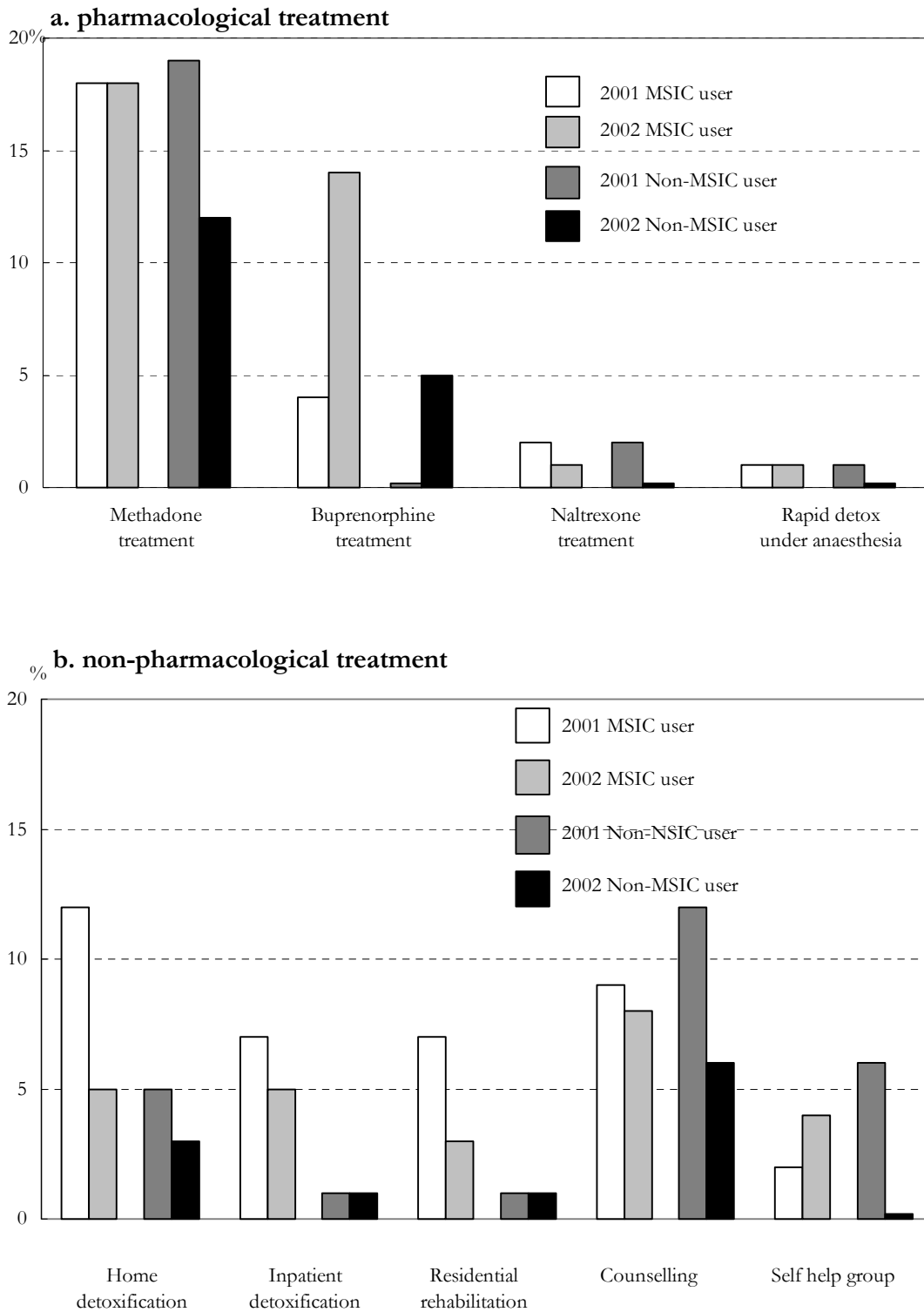


Figure 5.4: Self-reported uptake of drug treatment in the previous year by type of treatment, MSIC usage and year of survey

Around half the participants reported previous HBV vaccination in each year (51%, 55% and 54%, trend $p=0.2$). Higher rates of HBV vaccination were reported from MSIC than non-MSIC users in 2001 (61% vs. 48%, $p=0.04$) but not in 2002 (53% vs. 59%, $p=0.4$). Among participants without history of previous HBV infection, HBV vaccination in the past 12-month was reported by 43%, 41% and 35% of participants (trend $p=0.2$) and 38% and 37% of MSIC users.

Treatment/therapy for drug problems

Around two thirds of participants reported previous treatment/therapy for their drug use (63%, 71% and 66%, $p=0.6$). Around half reported previous methadone treatment (52%, 49%, and 53%, $p=0.8$). MSIC users were significantly more likely than non-MSIC users to report history of treatment/therapy for drug use in 2001 and 2002 (76% vs. 64%, $p=0.03$ and 75% vs. 50%, $p<0.001$).

Forty percent of participants reported that they started treatment/therapy for drug use in the year before survey in 2000; decreasing to one-third in 2001 and 2002 (34% and 32% trend $p=0.05$). Around one-third of MSIC and non-MSIC users also reported starting treatment/therapy in the year before survey in 2001 (36% vs. 31%, $p=0.5$). However, in 2002 MSIC users were significantly more likely than non-MSIC users to report that they started drug treatment in the previous year (38% vs. 21%, $p=0.006$).

Methadone maintenance was the most frequently reported type of drug treatment started in the year before survey by both MSIC and non-MSIC users in 2001 (18% vs. 19%; Figure 5.4a). Reporting of recent buprenorphine treatment increased from 2001 to 2002 among MSIC and non-MSIC users (4% to 14%, $p=0.001$ and 0% to 5%, $p=0.02$). MSIC users were significantly more likely than non-MSIC users to report recent buprenorphine treatment ($p=0.04$ in both years).

5.3.6 Referral uptake

A total of 1,385 verbal and written referrals were provided to 577 (15%) MSIC clients during the evaluation period (Chapter 2).

Six hundred and thirty four (46%) referrals were written referrals and included in the referral uptake study. A total of 129 (20%) referral cards were returned (Table 5.7). The referral category with the highest proportion of returned cards was health care referrals (27%) followed by social welfare referrals (20%) and drug treatment referrals (17%). The type of drug treatment referral with the most returned referral cards was methadone maintenance treatment (24%) followed by detoxification programs (19%). Fifty four percent of returned referral cards were returned from the Kirkton Road Centre.

Table 5.7: Type of referral by the number of cards provided and returned

Referral type	All referrals	Referral card provided	Referral card returned	Percent returned (%)
Drug treatment				
Buprenorphine maintenance	179	100	12	12
Detoxification program	134	48	9	19
Methadone maintenance	125	88	21	24
Drug and alcohol counselling	107	51	5	10

Residential rehabilitation	43	12	2	17
Other	13	1	0	0
<i>Sub total</i>	601	300	49	16
Health care				
Medical consultation	313 ¹	181	52	29
Health education	86	3	0	0
BBV/STD testing	40	12	0	0
<i>Sub total</i>	439	196	52	27
Social welfare				
Social welfare assistance	227	93	22	24
Other counselling	63	24	2	8
Other	55	21	4	20
<i>Sub total</i>	345	138	28	20
Total	1,385	634	129	20%

1 = Included nine (3%) emergency cases

Three hundred and twenty four MSIC clients (9%) received at least one written referral (0.3% of clients received more than one referral) to drug treatment (n=197), healthcare (n=140) or social welfare services (n=105).

Forty two percent of MSIC clients who visited on more than ten occasions received a MSIC referral, and at least 9% of these frequently attending clients attended the referred agency (Table 5.8). Clients who visited the MSIC on more than 10 occasions were almost 18 times more likely to have confirmed referral uptake than those who attended less frequently (OR 17.7, CI 10.1-30.9, p<.001).

Table 5.8: Frequency of MSIC attendance and referral

Number of client visits to MSIC	N	Number of clients who received any referrals	Number clients who received written referrals	Number referral cards returned
1-5 visits	2,223	87(4%)	32(1%)	11(0.5%)
5-10 visits	552	86 (16%)	42(8%)	10 (2%)
>10 visits	973	404 (42%)	250 (26%)	92 (9%)
Total	3,748 ¹	577 (15%)	324 (9%)	113 (3%)

1 = Excludes 62 clients who registered but did not use the MSIC.

A larger proportion of clients who had been in drug treatment in the recent past were referred to drug treatment (13%) than clients who had never been in treatment (7%) or who had not been in treatment recently (9%). One in 20 MSIC clients received a written drug treatment referral (Table 5.9) and irrespective of their drug treatment status at registration, 1% of MSIC clients were confirmed attenders at the referred drug treatment agency.

Table 5.9: Prior drug treatment experience of clients and MSIC drug treatment referral and referral uptake

Drug Treatment status at MSIC registration	N	Clients with any referral to drug treatment	Clients with written referrals to drug treatment	Number referral cards returned
Never in treatment	1,331	96 (7%)	54 (4%)	11 (1%)
Not in treatment in past 12-months	1,456	128 (9%)	73 (5%)	17 (1%)
In treatment in the past 12-months	961	124 (13%)	70 (7%)	8 (1%)
Total	3,748¹	348 (11%)	197 (5%)	36 (1%)

1 = Excludes 62 clients who registered but did not use the MSIC.

5.4 Discussion

5.4.1 Main findings

Nearly half the IDUs surveyed in Kings Cross reported injecting-related problems in the month before survey with participants reporting use of the MSIC more likely to report abscesses/skin infections or thrombosis of the vein than those who reported that they had not used the MSIC. However, participants who reported use of the MSIC reported less scarring and bruising of veins in 2002 compared to 2001. In addition, nearly half the MSIC users reported improved injecting practices, such as less vein damage and soft tissue injury and less blood with injection since using the MSIC. Less public injection in the month before survey was also reported by MSIC users. High rates of use of new needles and syringes for injection, testing for blood borne viruses and previous treatment for drug use were reported by survey participants before and after the MSIC opened and by MSIC and non-MSIC users. Participants reporting use of the MSIC were also more likely than non-MSIC users to report starting treatment for drug use in the twelve months before the 2002 survey.

Confirmation of subsequent attendance by MSIC clients at the drug treatment, health or social welfare referral agencies was received on at least one in five occasions of written referral and the most frequently attended referrals were for medical consultations, methadone maintenance treatment, and social welfare assistance. The more frequently clients attended the MSIC the more likely they were to receive referrals; two in five clients with more than ten visits to the MSIC received referral to other services. The rate of confirmed uptake of referral was also higher among frequent than non-frequent attenders, with confirmed attendance at the referred agency being provided for one in ten clients with more than ten MSIC visits. Almost one third of written referrals to drug treatment were provided for treatment naïve clients.

5.4.2 Limitations

There are several methodological limitations that need to be considered when interpreting the study findings. Participants self-selected to attend the survey sites and to be in the surveys, with participation rates around 30-50% among NSP participants. Around 20% of syringes distributed in the Kings Cross area are through pharmacies

(Chapter 6). Therefore, the findings cannot be assumed to be generalisable to all injectors in Kings Cross nor to all injectors at NSPs in Kings Cross. The survey relied on self-reported behavioural information that is subject to recall or social desirability biases. Restriction of behavioural information to the past month and using a self-completed questionnaire should have limited the extent of such bias (Bale et al., 1981; Darke et al., 1992). The studies were also limited by recruitment of current injectors, thereby excluding anyone who had stopped injecting drugs subsequent to their MSIC experience. Furthermore, IDU accounts of their current injecting-related problems were found to be consistent with clinician's findings in a study from Glasgow, suggesting that IDUs are able to self-diagnose injecting-related harms (Morrison et al., 1997).

It is likely that the referral card methodology may underestimate the rate of successful referral to drug treatment. Clients may have misplaced the referral letter and/or not have been required to present the referral letter to be assessed. It was also possible that some referral cards were not returned by the referred agency. Moreover, this study also does not account for the contribution of MSIC verbal referrals, which constituted over half of total MSIC referral activity, to referral uptake.

5.4.3 Interpretation and implications

The IDU surveys found that there were significant changes in the patterns of drug use among IDUs in Kings Cross from 2000 to 2002. The proportion of participants reporting daily or more frequent injection in the month before each survey decreased from October 2000 to October 2001 and 2002, mainly among heroin and cocaine injectors. The surveys also found that there were changes in the types of drugs injected, consistent with the reduced supply of heroin in Australia from the end of 2000 (Day et al., 2003; Topp et al., 2003). That is, reporting of heroin as the type of drug last injected decreased, and reporting of cocaine or amphetamine injection increased. Frequency of injection among heroin injectors also decreased.

The proportion of MSIC participants reporting daily or more frequent injection in the month before survey remained stable from 2001 to 2002. However, one in ten MSIC participants reported increased, and two in ten reported decreased, frequency of injection since using the MSIC. Most of the people reporting increased frequency of injection also reported cocaine injection while most of the participants reporting decreased frequency reported heroin injection.

Reducing the number of injections improves the integrity of veins, reduces dependency on drugs, reduces the potential for blood contact during injection, and improves general health. However, increased injection of cocaine and amphetamine can reduce vein integrity and increase the potential for transmission of blood borne viruses (Hankins et al., 2002). Use of new syringes for each injection reduces local vein damage as well as reducing transmission of blood borne infections. High rates of use of new syringe for injections were reported among MSIC users. Use of new needles and syringes for all injections in the month before survey also increased among IDUs in Kings Cross from 2000 to 2002. At the same time reporting of re-use of someone else's used syringe in the previous month remained stable among most sub-groups of participants but increased significantly among those reporting amphetamine injection.

MSIC participants were more likely than non-MSIC users to report daily or more frequent injection, heroin or cocaine injection, and more frequent injection of heroin. Participants who reported use of the MSIC were also older, reported longer duration of

drug injection, and were more likely to report that they were homeless, receiving social benefits, and that they had been in prison, ever or in the calendar year before survey. Several studies have reported high HCV seroprevalence among prison entrants and prisoners, largely as a result of injecting drug use (Crofts et al., 1995; Butler et al., 1997).

Reporting of public injection, that is, injection on the street or in public toilets decreased among IDUs in Kings Cross from 2000 to 2002, but reporting of the use of illegal shooting galleries increased. Even though MSIC users were more likely than non-MSIC users to report public injection in both surveys, reporting of public injection in the month before survey also decreased significantly among MSIC users from 2001 to 2002. Reduction in public injection in Kings Cross was one of the objectives in establishing the MSIC. Public injection is not only confronting to the public, but also provides a more risky injection for IDU. There was no change in reported use of commercial injecting rooms among MSIC users but use of commercial rooms increased in Kings cross from 2000 to 2001 and 2002. It is possible that MSIC clients moved from street injection to indoor injection when the MSIC was not open because of increased awareness of the harms of street injection.

Higher rates of overdose, more frequent injection, and more vascular problems have been previously reported among IDUs who inject in public places (Klee & Morris, 1999). Public injection is also conducted under unsanitary conditions (Maher, 1998). It is likely that fear of detection may exacerbate high-risk injecting episodes. In a previous Australian study, public injectors were more likely to report lumps or swelling in injection sites, having accidentally hit an artery, and prominent scarring or bruising in injection sites (Darke et al., 2001). Frequent public injectors were also more likely to report heroin overdose in the preceding 6 months.

Around half the participants in each group reported injecting related problems in the month before survey. The types of injecting related problems were similar for MSIC and non-MSIC users, such as vein and soft tissue injury from multiple attempts for each injection and subsequent scarring or bruising of veins. MSIC users were more likely than non-MSIC users to report abscesses and skin infections and thrombosis of veins. Soft tissue infections such as abscesses, infected ulcers and cellulitis, are common medical complications of injecting drug use. Around one third of IDUs examined in California in 1997 had soft tissue infections (Binswanger et al., 2000). Furthermore, around one third of the medical services provided to clients at the MSIC were for wound infections (Chapter 2).

Early identification and treatment can prevent hospitalisation and operating room procedures. There is little information on health care utilization for IDUs with soft tissue infections in Australia, however a recent study from California found that 40% of IDUs presenting to an emergency department for soft tissue infections associated with injecting drug use required hospitalization, median 2 days (Takahashi et al., 2002). MSIC users reported less scarring and bruising around venous puncture sites in 2002 than 2001. Four in ten MSIC users specifically reported improved injecting practices such as improved control, less vein damage and less blood with injection since using the MSIC.

Almost all the participants reported that they had been previously tested for HIV and HCV infection. Recent testing for HIV or HCV infection increases awareness of infection status and the potential risk for infection or re-infection. IDUs can minimise opportunities for transmission of infection or reinfection, and access treatment and other

health promotion services. Around half the participants reported previous vaccination against HBV infection, with more than one-third of MSIC users reporting HBV vaccination within the past twelve months. Also high rates of treatment, although decreased from 2000 to 2002. However, MSIC users were more likely than non-MSIC users to report starting treatment for drug use, in particular treatment with buprenorphine, in the twelve months before survey.

Clients who were frequent attenders at MSIC were more likely to attend the referred agency than clients who were not frequent attenders. This is consistent with frequently attending clients not only having a greater number of occasions to be referred but also for MSIC staff to develop therapeutic rapport with client and engage in appropriate referral. Over half of the successful MSIC referrals were to KRC. The geographical proximity of KRC to MSIC, the familiarity of KRC to many MSIC clients (Chapter 2); and the employment or secondment of several staff from KRC to MSIC during the first 18-months of operation are likely to have facilitated the referral pathway from MSIC to KRC.

In conclusion these studies suggest that operation of the MSIC in Kings Cross was associated with improvement in clients' health and injection practices and provided linkage with drug treatment, social welfare, and other health services, including testing for blood borne virus infections. Reporting of injection in public places decreased among IDUs in Kings Cross since the MSIC opened. Furthermore, IDUs with problematic injecting-related profiles were more likely to report injection at the MSIC, suggesting that the MSIC is reaching the target population.

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CHAPTER 6: PUBLIC AMENITY

Key Findings

Community telephone interviews

- Kings Cross area local resident and business respondents reported sighting fewer episodes of public injection and syringes discarded in public places in 2002 compared to 2000.

Counts of syringes discarded in public places in the Kings Cross area

- Syringe counts in Kings Cross were generally lower after the MSIC opened than before.
- There was a gradual increase in syringe counts in the period after the MSIC was established that may have reflected a return in the availability of heroin.

6.1 INTRODUCTION

Kings Cross and its “red light” district have attracted people who inject illicit drugs since the mid 1960s. During the 1990s the sale of heroin and cocaine and the visibility of drug use increased considerably in Kings Cross (Wood, 1997). One of the reasons for the establishment of the MSIC was to reduce public injection and consequently reduce needles/syringes discarded in public places and improve public amenity.

Even though all needles/syringes discarded in public places do not necessarily reflect episodes of public injection, high levels of discarded syringes are generally found in places where people congregate to inject drugs. Consequently, levels of syringes discarded in public places can function as a surrogate measure of public drug injection.

The purpose of this Chapter was to determine the impact of the MSIC on public amenity. Surveys of Kings Cross businesses and residents were used to identify community perceptions of public nuisance from high levels of illicit drug use in particular public injection and syringes discarded in public places before and after the MSIC opened. Comparison was also made with levels of public injection and discarded syringes reported by NSW residents. In addition to the community surveys, periodic counts of discarded syringes were used to determine any change in the level of syringes discarded in public places. The specific MSIC Evaluation indicators addressed were:

1. Community perception of public injection;
2. Community perception of discarded syringes; and
3. Counts of syringes discarded in public places.

6.2 METHODS

Two approaches were used to determine the impact of the MSIC on public amenity in Kings Cross: 1) community telephone surveys; and 2) syringe counts.

6.2.1 Community telephone surveys

Cross-sectional telephone interviews were carried out with Kings Cross businesses and residents, and NSW residents before and after the MSIC opened in May 2001. The Kings Cross surveys were carried out in October 2000 and 2002, and the NSW surveys in August/September 2000 and 2002.

The demographic characteristics of businesses and residents are described in Chapter 8. Public amenity was measured by asking Kings Cross respondents their opinion of public annoyances from illicit drug use and their experience of being asked to buy drugs while on the streets of Kings Cross. All three groups were asked about their recent experience, past 24 hours and past month, of witnessing public injection and syringes discarded in public places. Up to four attributes were recorded for each opinion solicited. Any differences between 2000 and 2002 were assessed using the chi square test.

6.2.2 Publicly discarded syringes and syringes distributed in the Kings Cross area

The level of syringes discarded in public places in the Kings Cross area was measured using three sources of data: KRC Clean-up Team; NCHECR researchers; and South Sydney Council. The purpose was to determine whether there was any change in the level of syringes discarded in public places before and after the MSIC opened in May 2001. Syringes distributed through the major NSP and pharmacies services in the Kings cross area were also used to assess the impact of the reduced availability of heroin in the Kings Cross area.

Syringe counts by KRC Clean-up Team

KRC provides a Needle Clean-up Team that collects discarded needles/syringes in Eastern Sydney, and Darlinghurst, Kings Cross and Woolloomooloo on weekdays. The Needle Clean-up Team collects syringes along a defined route of “hot spots” as well as in response to reports from community members or other services (Table 6.1). The majority of hot spots are located within a 500m radius of the MSIC. Syringe counts routinely recorded by KRC Clean-up Team from August 1999 to December 2002 were used to assess any change in the level of publicly discarded syringes before and after the MSIC opened.

Table 6.1: “Hot spots” in Kings Cross according to KRC Clean-Up Team sector of collection

Sector one: Green park, Farrell Avenue (park and fire exit steps next to Palasade Units), Rosebank Street, Kirkton Road, Premier Lane and St. Peter’s Church grounds, Clapham Place (off Forbes street), Earl Street and Earl Place, Hughes Place (behind Wayside Chapel), Tusculum Lane, and the garden beds in Orwell Street.

Sector two: the top of the naval car park in Victoria Road, Hordern Stairs, Brougham Street, Hills Stairs, Bulter’s Stairs, Hourigan Lane, Daffodil Park in McElphone Street, the two car parks under the railway lines, Wulla Mulla Park in Cathedral Street and Bossley Terrace in Woolloomooloo.

Sector three: Kellett Place, Kellett Way, the large water drain in Barncleuth Square, the park above the car park on the corner of Ward and Elizabeth Bay Road and Mansion Lane.

Sector four: Penny’s Lane, Surry Lane, Caldwell Stairs, the park and the Orb carpark in Nimrod Street, Royston Street, opposite St. Vincent’s Hospital in Burton Street, and the stairs down to Barcom Avenue and through to Boundary Street.

Sector five: Crown Lane behind the Hard Rock Café, Riley Street Private Carpark, Vincentian Village (corner of Yurong and Stanley Street plus Francis Lane), Holdsworth Lane, off West Street in little Paddington, Heffron Hall, and corner of Burton and Riley Streets (Darlinghurst).

The average daily number of syringes collected per month was calculated and used for the analysis because the number of days of collection varied among the five sectors in each month. Linear regression modelling was used to assess change in the level of average daily syringes collected per month before and after the MSIC opened in May 2001.

The change in level and trend of the number of syringes collected per month from January 2001 was also included in the model because of the concurrent heroin shortage and the impact on levels of drug injection. There were very few data points between January 2001 and May 2001 and the trend post-heroin shortage and post-MSIC opening were highly correlated. Therefore, it was not possible to include a term to test for a change in trend at the onset of the heroin shortage and the opening of the MSIC. Several modelling options were assessed. The model with the best fit was used and included the following terms:

1. an underlying trend parameter to control for any trend in the data series before the onset of the heroin shortage (January 2001);
2. a change in level term at the onset of the heroin shortage;
3. a change in trend term from the onset of the heroin shortage; and
4. a change in level term at the time the MSIC opened (May 2001).

The overall change in the average daily number of syringes collected per month before and after MSIC opened was also assessed using negative binomial regression modelling to adjust for variation in the syringe counts between Sectors.

Syringe counts by researchers

Discarded syringes were counted by researchers each week from July to August in 2000, 2001 and 2002 in collaboration with the KRC Needle Clean-up Team. Twenty sites were randomly selected from the areas classified as hot spots for Sectors 1 to 4 (Table 6.1). Five sites (one street, three lanes and one stairwell) were also randomly selected from a list of all streets, lanes, parks and stairs in the Kings Cross area within 500 metres of the MSIC not classified as hot spots. A syringe was included in the count if the barrel was intact.

Syringe counts were categorised according to the type of location, i.e. lanes, stairs and parks, or streets and avenues, and by distance from the MSIC, less than 250 metres or 250 to 500 metres. Change in the average weekly syringe counts from before (2000) to after (2001 and 2002 combined) the MSIC opened were assessed using the Student's t test. The Student's t test was also used to assess any changes between 2000 and 2001, and 2001 and 2002. Binomial regression modelling was used to assess the change before and after the MSIC opened to adjust for any differences between the types of location and distance from the MSIC.

Needles and syringes discarded in streets and parks in Kings Cross were collected by South Sydney Council as part of their routine cleaning of public areas. The number of syringes collected by Council street sweepers during July and August in 2000, 2001 and 2002 in the Kings Cross commercial district was recorded and used to assess any change before and after the MSIC opened. The streets included Bayswater Road, Darlinghurst Road (from Bayswater Road to Maclay Street), Fitzroy Gardens, Kellett Street, Maclay Street (from Darlinghurst Road to Greenknowe Avenue), and Victoria Street (from Darlinghurst Road to Hughes Street).

Change in the average weekly syringe counts from before (2000) to after (2001 and 2002 combined) the MSIC opened were assessed using the Student's t test. The Student's t test was also used to assess any changes between 2000 and 2001, and 2000 and 2002. Binomial regression modelling was used to assess the change before and after the MSIC opened to adjust for differences between the recording sites.

Syringes distributed in the Kings Cross area

Four sources of data were used to describe the level of syringe distribution to injecting drug users in the Kings Cross area:

- 1) NSP distribution through K2;
- 2) NSP distribution through the KRC outreach service
- 3) NSP distribution through the KRC fixed site service; and
- 4) Pharmacy distribution in Darlinghurst, Kings Cross, and Potts Point.

Linear regression modelling was used to assess change in the level of syringes distributed per month before and after the MSIC opened in May 2001. As with the analysis for the counts of publicly discarded syringes, the change in level and trend of the number of syringes distributed per month from January 2001 was also included in the model to account for any impact from the concurrent reduced heroin availability. Several modelling options were assessed for each data source. The model with the best fit was used and included the following terms:

- 1) an underlying trend parameter to control for any trend in the data series before the onset of the heroin shortage (January 2001);
- 2) a change in level term at the onset of the heroin shortage;
- 3) a change in trend term from the onset of the heroin shortage; and
- 4) a change in level term at the time the MSIC opened (May 2001).

It was also necessary to include additional terms to adjust for seasonality in the models used for the data from K2 and the KRC outreach services.

6.3 Results

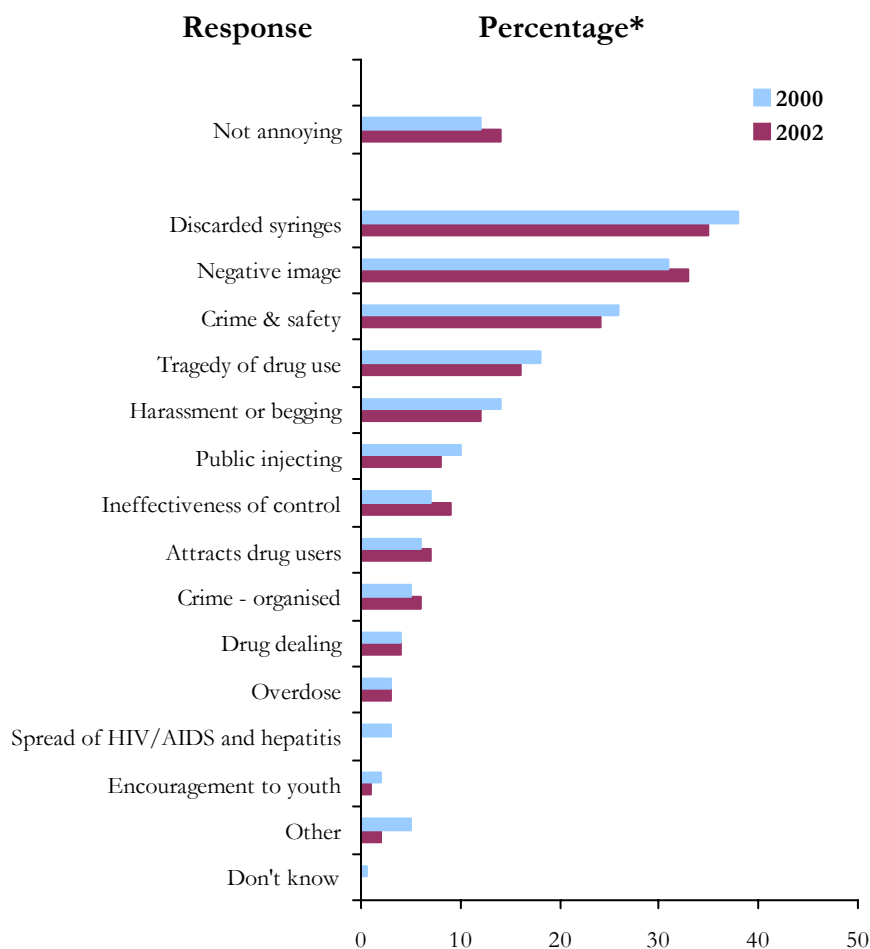
Telephone interviews were carried out with 515 (75%) and 540 (78%) residents from Kings Cross, 209 (85%) and 207 (87%) businesses in Kings Cross and 1018 (72%) and 1070 (75%) residents from throughout NSW.

6.3.1 Public nuisance from illicit drug use in Kings Cross

Local residents

Most of the 515 and 540 local resident respondents provided an opinion on at least one public annoyance from high levels of illicit drug use in 2000 (87%) and 2002 (86%) respectively. Two in five resident respondents identified more than one annoyance (39% and 41%). The top three types of public annoyance most frequently reported by local resident respondents were discarded syringes (38% and 35%, $p=0.2$), negative image to the area (31% and 33%, $p=0.5$), and crime and personal safety (26% and 24%, $p=0.4$; Figure 6.1). The proportion of respondents reporting public injection as a public annoyance was similar in 2000 and 2002 (10% and 8%, $p=0.4$).

“What if any, are the most annoying things for you about the level of drug use in the Kings Cross area?”



*Percentages add up to more than 100 as up to four responses could be nominated.

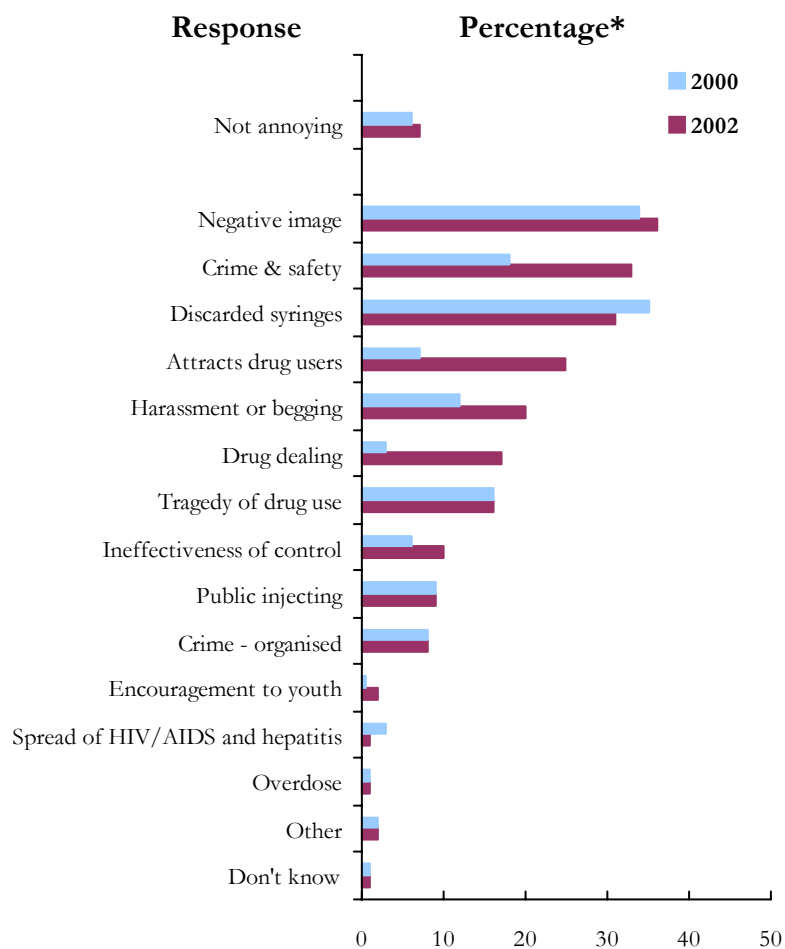
Figure 6.1: The types of public annoyance attributed to high local levels of drug use reported by Kings Cross resident respondents

Local businesses

Most of the 209 and 207 local business respondents surveyed in 2000 (93%) and 2002 (92%) respectively provided an opinion on at least one public annoyance from high levels of illicit drug use in Kings Cross. Reporting of more than one annoyance increased from 2000 to 2002 (40% to 63%, $p < 0.001$).

The top three types of public annoyance reported by business respondents in both 2000 and 2002 were similar to those reported by resident respondents, i.e. negative image to the area (34% and 36%, $p = 0.7$), crime and personal safety (18% to 33%, $p < 0.001$), and syringes discarded in public places (35% and 31%, $p = 0.4$; Figure 6.1). Reporting of public injection as a public annoyance remained the same in 2000 and 2002 (9%).

“What if any, are the most annoying things for you about the level of drug use in the Kings Cross area?”



*Percentages add up to more than 100 as up to four responses could be nominated.

Figure 6.2: The types of public annoyance attributed to high local levels of drug use reported by Kings Cross business respondents

6.3.2 Approaches to buy drugs in Kings Cross

Local residents

Just less than half of the local resident respondents reported ever being asked to buy drugs while on the streets of Kings Cross (44% in both surveys, Table 6.2). Similar proportions of resident respondents in 2000 and 2002 reported being asked to buy drugs in the 24 hours before interview (8% and 9%) or in the past month (28% and 29%, inclusive). Marijuana was the type of drug that local resident respondents were most frequently offered in the past month (51% to 56%, $p=0.1$).

Table 6.2: Percentage of King Cross resident and business respondents' estimate of approaches to buy drugs and the type of drug last offered for sale

	Resident respondents			Business respondents		
	2000	2002	p	2000	2002	P
Last time offered drugs for purchase						
	n=515	n=540		n=209	n=207	
Never	56%	56%		54%	51%	
Last 24 hours	8%	9%		14%	11%	
Last week	11%	10%		9%	13%	
Last month	9%	9%		10%	10%	
Last year	13%	12%		12%	12%	
More than a year ago	3%	4%	0.7	1%	3%	0.3
Don't know	0%	<1%		<1%	0%	
Type of drugs last offered in past month						
	n=142	n=155		n=68	n=69	
Marijuana	51%	56%		43%	57%	
Heroin	6%	4%		10%	4%	
Cocaine	3%	3%		0%	1%	
Speed	1%	2%		1%	1%	
Ecstasy	1%	3%		1%	0%	
Anything/everything	14%	20%		18%	5%	
Multiple drugs	8%	5%		13%	9%	
Other/unspecified	5%	1%		7%	1%	
Don't know	11%	6%	0.1	7%	22%	0.02

Local businesses

Similarly, just less than half the local business respondents in 2000 (46%) and 2002 (49%, $p=0.4$; Table 6.2) reported that they had been asked to buy drugs while on the streets of Kings Cross. Similar proportions in both years reported being asked to buy drugs in the 24 hours before interview (14% and 11% respectively, $p=0.3$) or in the past month (33% and 34%, inclusive).

Among respondents who reported being approached to buy drugs in the past month, marijuana was the drug they most frequently reported being offered, with increased reporting from 2000 to 2002 (43% to 57%, $p=0.09$). Reporting of being offered heroin or multiple types of drugs decreased from 2000 to 2002 (10% to 4%, $p=0.2$ and 13% to 9%, $p=0.02$ respectively).

6.3.3 Community perception of public injection

Local residents

Similar proportions of local residents in 2000 (60%) and 2002 (61%) reported having ever seen public injection. Very few respondents in 2000 and 2002 reported having seen

public injection in the past 24 hours (3% and 2%, $p=0.5$). Around one-third reported having seen public injection in the past month in 2000 and 2002 (33% and 28%, $p=0.1$). However, the median estimated number of observed public injections reported in the past month decreased significantly from 2000 (3, range 1 - 88) to 2002 (2, range 1 - 30, $p=0.03$).

Local businesses

Almost two-thirds of the business respondents in both 2000 (62%) and 2002 (65%) reported having seen public injection in the Kings Cross area ($p=0.4$). The proportion of business respondents who reported having witnessed public injection in the past 24 hours or in the past month decreased slightly from 2000 to 2002 (7% to 5%, $p=0.3$ and 38% to 32%, $p=0.2$ respectively). However, the median estimated number of public injections observed in the past month was similar in 2000 (3, range 1 to 120) and 2002 (4, range 1 to 90, $p=0.4$).

NSW residents

In contrast to Kings Cross respondents, only 9% of NSW respondents reported having seen public injection in both surveys. Only one respondent in each survey reported having seen public injection in the past 24 hours. The proportion of NSW respondents who reported having seen public injection in the past month decreased significantly from 2000 to 2002 (4% to 2%, $p=0.007$). However, the median estimated number of public injections reported in the past month was similar in 2000 (1, range 1 - 12) and 2002 (1, range 1 - 12, $p=0.6$).

6.3.4 Community perception of discarded syringes

Local residents

Most of the 515 and 540 local resident respondents in 2000 (84%) and 2002 (86%) respectively reported having seen syringes discarded in local streets or parks ($p=0.5$). The proportion of respondents who reported having seen discarded syringes in the past 24 hours (27% to 18%, $p<0.001$) or in the past month (67% to 58%, $p=0.005$) decreased significantly from 2000 to 2002. The median estimated number of discarded syringes seen in the month before interview also decreased from 2000 (8, range 1 - 360) to 2002 (5, range 1 - 600, $p=0.007$).

Local businesses

Similar to resident respondents, most of the 209 and 207 business respondents in 2000 (90%) and 2002 (87%) respectively reported having seen syringes discarded in local streets or parks ($p=0.4$). The proportion of respondents who reported having seen discarded syringes in the past 24 hours (34% to 27%, $p=0.1$) or in the past month (72% to 64%, $p=0.06$) decreased slightly from 2000 to 2002. The median estimated number of discarded syringes seen in the past month was 12 in both 2000 (range, 1-600) and 2002 (range, 1-800, $p=0.9$).

NSW residents

In contrast to Kings Cross respondents, less than half the NSW respondents (40%) in both surveys reported having seen syringes discarded in local public places. Very few respondents reported having seen discarded syringes in the past 24 hours (2% and 1%, respectively, $p=0.9$), and 16% and 11% of the respondents reported having seen discarded syringes in the past month ($p=0.002$). The median estimated number of

discarded syringes seen in the month before interview was similar in 2000 (2, range 1 to 248) and 2002 (2, range 1 to 450, $p=0.1$).

6.3.5 Counts of publicly discarded syringes

Syringes counted by the KRC Clean-Up Team

There was a statistically significant linear trend of decreased syringes recorded each month by the KRC Clean-up Team from August 1999 to January 2001, the estimated time of the onset of the reduced availability of heroin ($p=0.004$; Figure 6.3, Table 6.3). At the onset of the reduced availability of heroin, there was a non-significant increase in the average daily number of syringes collected (by 12 syringes, $p=0.3$). The trend in the average number of syringes collected per month also changed direction, increasing on average by 4 syringes per month ($p=0.001$).

The trend of a gradual small increase in the syringes collected per month continued subsequent to the MSIC opening in May 2001. However, there was a statistically significant decrease in the level of syringes collected per month at the time the MSIC opened (by 34 syringes, $p=0.01$).

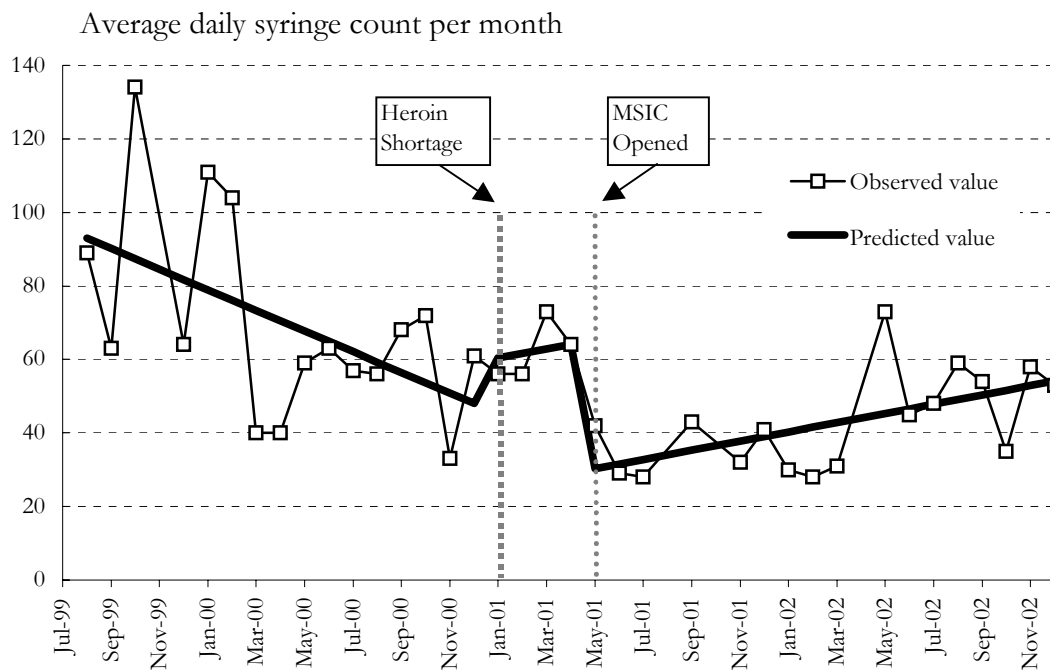


Figure 6.3: Observed and predicted average daily number of syringes collected by KRC Clean-up Team per month before and after the MSIC opened, August 1999 to November 2002

Table 6.3: Linear regression model estimating change in level and trend of the average daily number of syringes collected per month before and after the MSIC opened in May 2001, August 1999 to November 2002

Variable	Coefficient	Std. Error	t	p-value
Constant	93	8.8	10.65	<0.001
Underlying trend	-2.8	0.9	-3.07	0.004
Jan 01-May 01				
Change in level	12	12.3	1.01	0.3
Change in trend	4.1	1.2	3.48	0.001
After May 01				
Change in level	-34	13.0	-2.60	0.01

R-square=0.43

Durbin-Watson=1.81

Overall, the average daily number of syringes collected per month after the MSIC opened was 28% lower than the average number of syringes collected per month before the MSIC opened using negative binomial regression modelling to adjust for differences in levels between Sectors (RR = 0.72, $p=0.008$; Table 6.4). The average daily number of syringes collected per month was significantly higher in Sector 1 than in Sectors 2 to 5 (Sector 2, $p=0.001$; Sectors 3 to 5, $p<0.001$).

Table 6.4: Change in the average daily number of syringes collected per month before and after MSIC opened using negative binomial regression modelling, August 1999 to November 2002

Variable	RR	Std. Error	z	p-value
Months since Aug99	0.99	0.005	-1.7	0.09
After MSIC opened	0.72	0.09	-2.7	0.008
Sector 1	Reference sector			
Sector 2	0.75	0.07	-3.2	0.001
Sector 3	0.55	0.05	-6.4	<0.001
Sector 4	0.62	0.06	-5.1	<0.001
Sector 5	0.68	0.06	-4.3	<0.001

Syringes counted by researchers

The average weekly number of syringes counted by researchers from all selected sites in Kings Cross increased from July 2000 (29) to July 2001 (43, $p=0.07$), three months after the MSIC opened, and then decreased twelve months later in 2002 (28, $p=0.02$).

A similar pattern of increased then decreased number of counted syringes per week was reported for all types of locations except from street locations beyond 250 metres distance of the MSIC (Figure 6.5). In street sites located 250 to 500 metres from the MSIC, there was a sustained decrease in the average weekly number of syringes collected per site from 2000 to 2001 and 2002 (7 to 4 and 3, $p=0.003$).

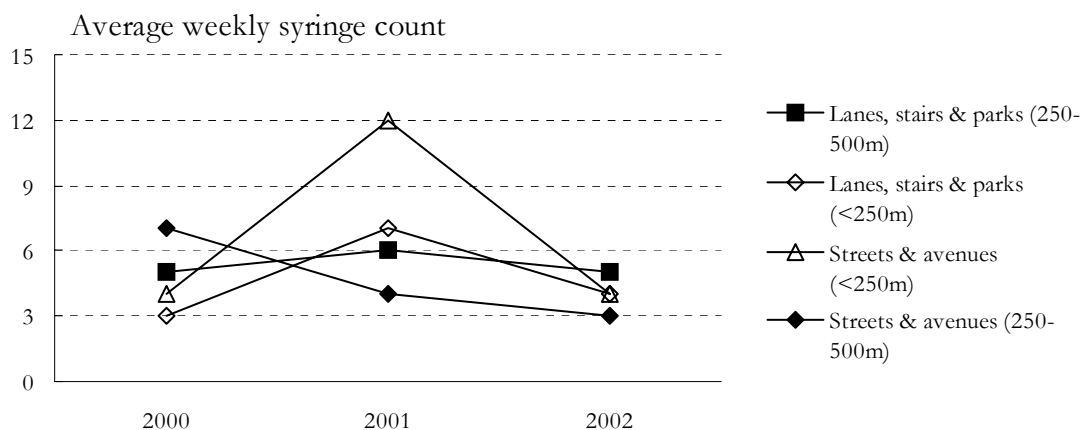


Figure 6.4: Average weekly syringe count per site by researchers according to location and distance from the MSIC

Overall, the average number of syringes counted per week was 1.5 times higher three months after the MSIC opened in July 2001 than in July 2000 using negative binomial regression modelling to adjust for differences between types of location ($p=0.03$; Table 6.5). However, the average weekly count was similar in July 2000 and July 2002 (Adj. OR 0.9, $p=0.6$).

Table 6.5: Change in the average weekly number of syringes counted by researchers before and after the MSIC opened using negative binomial regression modelling, July 2000, 2001 and 2002

Variable	RR	95% CI	p value
Model 1:			
2000	(Reference year)		
2001	1.5	1.1-1.9	0.01
2002	0.8	0.6-1.1	0.1
Streets & avenues (<250m)	(Reference location)		
Streets & avenues (250-500m)	1.2	0.9-1.6	0.3
Lanes, stairs & parks (<250m)	1.2	0.9-1.6	0.2
Lanes, stairs & parks (250-500m)	1.0	0.7-1.3	0.8
Model 2:			
2000	(Reference year)		
2001 and 2002 combined	1.0	0.8-1.3	0.9
Streets & avenues (<250m)	(Reference location)		
Streets & avenues (250-500m)	1.2	0.9-1.6	0.3
Lanes, stairs & parks (<250m)	1.3	0.9-1.7	0.1
Lanes, stairs & parks (250-500m)	1.0	0.7-1.3	0.7

Syringes counted by the South Sydney Council

The average number of syringes recorded per week from all locations by South Sydney Council was similar in July 2001, three months after the MSIC opened to counts

recorded in July 2000 (49 vs. 48, $p=0.7$). Twelve months later in July 2002, the average weekly number of syringes had decreased and was significantly lower than in July 2000, before the MSIC opened (48 vs. 40, $p=0.02$).

A pattern of increased then decreased syringes counted per week was found at Fitzroy Gardens (61 vs. 81 vs. 24), with a significant decrease from 2000 to 2002 ($p<0.001$; Figure 6.5). The average number of syringes counted per week from Victoria Street decreased from 2000 (71) to 2001 (49) and 2002 (40), with a significant decrease from before to after the MSIC opened (71 vs. 44, $p=0.005$). On Bayswater Road, the average number of syringes counted per week increased from before to after the MSIC opened (23 vs. 36, $p<0.001$).

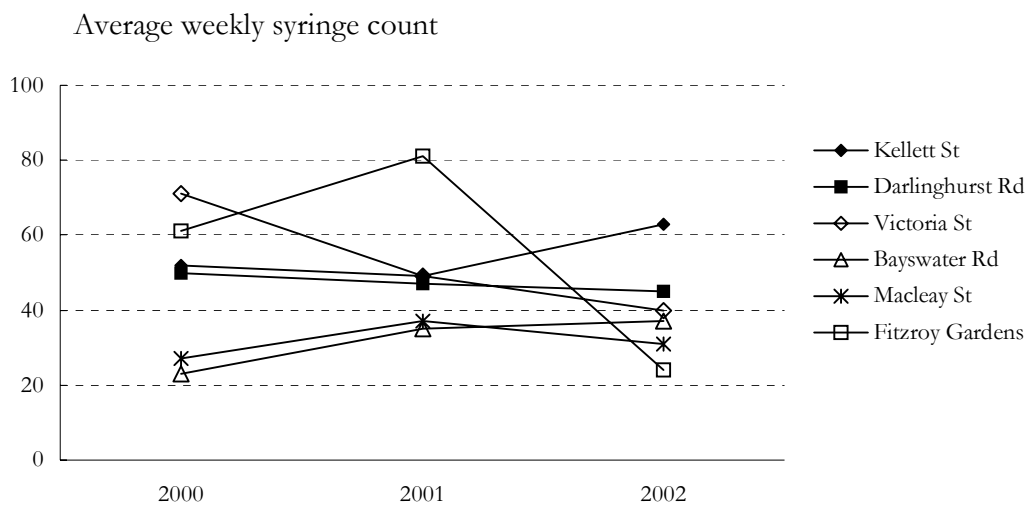


Figure 6.5: Average weekly syringe count by South Sydney Council according to location, July 2000, 2001 and 2002

Overall, the average weekly syringe count remained stable during the study period using negative binomial regression modelling to adjust for differences between locations (Table 6.6). Syringe counts were significantly lower in Macleay Street and Bayswater Road compared to Darlinghurst Road.

Table 6.6: Change in the average weekly number of syringes counted by South Sydney Council before and after MSIC opened using negative binomial regression modelling, August 1999 to November 2002

Variable	RR	95% CI	p value
Model 1:			
2000	(Reference year)		
2001	1.0	0.9-1.3	0.4
2002	0.9	0.8-1.0	0.1
Darlinghurst Rd	(Reference location)		
Bayswater Rd	0.7	0.5-0.8	<0.001
Fitzroy Gardens	1.1	0.9-1.4	0.4
Kellett St	1.2	0.9-1.4	0.2
Macleay St	0.7	0.5-0.8	<0.001
Victoria St	1.1	0.9-1.4	0.3
Model 2:			
2000	(Reference year)		
2001 and 2002 combined	1.0	0.8-1.1	0.6
Darlinghurst Rd	(Reference location)		
Bayswater Rd	0.7	0.5-0.8	<0.001
Fitzroy Gardens	1.1	0.9-1.4	0.3
Kellett St	1.2	0.9-1.4	0.2
Macleay St	0.7	0.5-0.8	<0.001
Victoria St	1.1	0.9-1.4	0.3

6.3.6 Syringe provision in the Kings Cross area

Syringes were provided to injecting drug users in the Kings Cross area through public NSP and pharmacy services. The Kirkton Road Centre (KRC) provided the main source of syringes for NSP services in Kings Cross. KRC NSP services included a fixed site service at the Centre, K2 and a mobile outreach service. There were also four pharmacies with large syringe distribution rates; two in Darlinghurst, one in Kings Cross and one in Potts Point. The total number of syringes distributed per month from the major NSP and pharmacy services in the Kings Cross/Darlinghurst area ranged from around 85,000 to 120,000 between January 1999 and the MSIC opening in May 2001. After the MSIC opened the total number of syringes distributed per month ranged from around 70,000 to 112,000 (Figure 6.6).

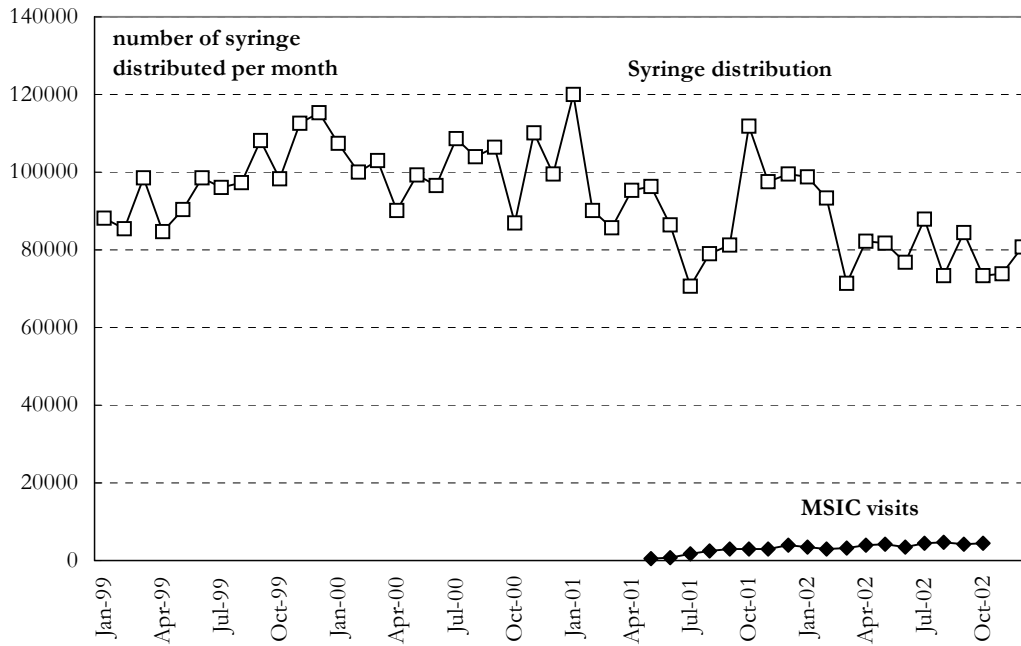


Figure 6.6: Syringe distribution from major NSP and pharmacy services in the Kings Cross/Darlinghurst area and MSIC visits, January 1999 – December 2002

The number of syringes provided by K2 and the KRC outreach service showed an increase during the summer months using time series analysis. After adjusting for the seasonal effects, there was an underlying trend of increase in the number of syringes distributed per month from January 1999 to January 2001 for both K2 ($p=0.03$) and the outreach service ($p<0.001$; Table 6.7). At the onset of the heroin shortage the trend in the number of syringes distributed per month changed direction, decreasing on average by 913 syringes per month from K2 ($p<0.001$) and by 604 syringes per month from the outreach service ($p<0.001$). After May 2001, there was a further significant decrease in the level of syringes distributed per month from K2 ($p=0.001$) and a marginal increase in the level of syringes distributed per month from the outreach service ($p=0.07$).

There was no seasonal effect detected in the number of syringes distributed from KRC or pharmacies in the Kings Cross/Darlinghurst area from January 1999 to December 2002. There was also an underlying trend of marginal increase in the number of syringes distributed per month from January 1999 to January 2001 from KRC ($p=0.07$), but the underlying trend for this period remained stable from pharmacies ($p=0.9$). At the onset of the heroin shortage, the level of syringes distributed from KRC decreased significantly ($p=0.05$) and there was no further change after the MSIC opened in May 2001 ($p=0.9$). The number of syringes distributed from pharmacies remained stable throughout the study period.

Table 6.7: Linear regression model estimating change in level and trend of the syringes distributed per month from major NSPs and pharmacies in the Kings Cross/Darlinghurst area, January 1999 – December 2002

Variable	Coefficient	Std. Error	t	p value
K2				
Constant	44687	3334	13.40	<0.001
Underling trend	238	107	2.23	0.03
Jan 01				
Change in level	-330	2489	-0.13	0.9
Change in trend	-913	169	-5.40	<0.001
May 01				
Change in level	-9033	2626	-3.44	0.001
Outreach service				
Constant	6544	1239	5.28	<0.001
Underling trend	166	41	4.06	<0.001
Jan 01				
Change in level	-1582	948	-1.67	0.1
Change in trend	-604	65	-9.32	<0.001
May 01				
Change in level	1841	977	1.89	0.07
KRC				
Constant	11634	1500	7.75	<0.001
Underling trend	93	50	1.88	0.07
Jan 01				
Change in level	-2220	1075	-2.06	0.05
Change in trend	-32	65	-0.49	0.6
May 01				
Change in level	77	1164	0.07	0.9
Pharmacies				
Constant	21417	2150	9.96	<0.001
Underling trend	13	90	0.15	0.9
Jan 01				
Change in level	-3176	4157	-0.76	0.4
Change in trend	73	216	0.34	0.7
May 01				
Change in level	-2094	4648	-0.45	0.6

6.4 Discussion

Main findings

Syringe counts in Kings Cross by the Needle Clean-Up Team, researchers and the Council were generally lower after the MSIC opened than before, although increased levels were recorded at some sites, and there was a subsequent trend of gradual increase detected. There was also a significant decrease in the number of syringes distributed per month through the main NSP services in Kings Cross. However, there was only marginal decrease overall when pharmacy distribution was also taken into consideration. The proportion of local residents who reported that they had seen syringes discarded in public places in the month before interview and the estimated number of times that syringes were seen also decreased significantly from 2000 to 2002. Furthermore, the proportion of local residents who reported that they had seen public injection in the month before interview and the estimated number of sightings of public injection in the past month decreased significantly.

Limitations

All of the measures used to monitor levels of discarded syringes have some limitations. The number of days that syringes were collected by the Needle Clean-Up Team varied each month. To overcome this limitation, average daily syringe counts per month rather than daily counts were used for analysis. The localities used for public injection also vary over time. Consequently, the routine Clean-Up Team collection route might not reflect current hot spots at a given time. Random selection of collection areas from localities not identified as hot spots, as well as random selection from the Clean-Up Team's route, was included in the researcher's route to account for variation over time.

It is also possible that the levels of discarded syringes and public injection reported by local businesses and residents were subject to recall or social desirability biases. Recall bias was minimised by asking about the number of syringes seen in the recent past. It is likely that levels of discarded syringes and public injection reported by businesses or residents with strong views about the centre were over- or under-estimated. However, the large sample size should minimise the impact of any extreme estimates. Perception of levels of discarded syringes can also be influenced by sightings of other debris associated with injection such as syringe packets, alcohol swabs and water for injection.

Interpretation and implications

It was not possible to determine whether the decrease in discarded syringes was due to the prolonged reduction in the availability of heroin that commenced several months before the MSIC opened rather than any reduction in public injection due to the MSIC. Certainly, the number of syringes distributed in the area decreased only marginally after the MSIC opened and the number of injections and syringes distributed by the MSIC were relatively small in comparison to the number of syringes distributed through the major NSP and pharmacy outlets in the Kings Cross area (Chapter 2). The level of syringes recorded by the Clean-Up Team decreased significantly after the MSIC opened following a non-significant increase at the onset of the heroin shortage. However, it is possible that the reduction in the supply of heroin did not reach its nadir in Kings Cross until a few months into the shortage, that is, at the same time as the MSIC opened.

It is also possible that the change in trend around the time of the heroin shortage reflected an increased frequency of injection associated with a shift from injection of heroin to cocaine and amphetamine. Because of the short half-life of cocaine, frequency

of injection is usually significantly higher for cocaine compared to heroin (Chapter 5). It is also possible that the number of people trying to purchase heroin in Kings Cross, Sydney's largest heroin market, increased during the period of shortage, therefore increasing the number of injections that occurred around Kings Cross compared to other parts of Sydney.

Syringe counts by both researchers and the South Sydney Council also showed an overall decrease from July 2000 to July 2002. However, there was a slight increase in the researcher's syringe counts from July 2000 to July 2001, three months after the MSIC opened. Counts recorded by researchers at streets located more than 250 metres from the MSIC and by the South Sydney Council in Victoria Street and Fitzroy Gardens decreased significantly in both post-MSIC periods while counts by the Council in Bayswater Road increased.

Local residents' reports of seeing syringes discarded in public places or witnessing public injection in the month before interview decreased significantly from 2000 to 2002. The estimated number of sightings of public injection and discarded syringes in the past month also decreased significantly. However, there was only a marginal decrease in the proportion of local business respondents who reported witnessing public injection or syringes in public places in the past month and the estimated number of syringes and episodes of injection seen in the past month remained stable.

The level of discarded syringes and public injection was much higher in Kings Cross than in other areas of NSW. In addition, syringes discarded in public places were among the top three public nuisances associated with illicit drug use reported by Kings Cross respondents in both 2000 and 2002. Kings Cross is disproportionately affected by high levels of drug use accounting for 84% of the syringes distributed by public NSPs in South Eastern Sydney and 10% of the syringes distributed in NSW in 2002 (NSW Health, 2003). Furthermore, almost half the Kings Cross respondents reported that they had been asked to buy drugs while on the streets of Kings Cross, with around one in ten being approached in the past month.

Even though the number of syringes discarded on the streets of Kings Cross subsequent to the establishment of the MSIC decreased marginally, it is difficult to discount the contribution of the reduced availability of heroin. It was also not possible to determine whether fewer syringes on the street reflect a reduction in episodes of injection in public places. Certainly, local residents reported sighting significantly less episodes of public injection as well as less syringes discarded in public places.

Acknowledgements

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CHAPTER 7: CRIME AND DRUG-RELATED LOITERING

Key Findings

Theft and robbery incidents

- There was no evidence that the MSIC increased the number of theft and robbery incidents in Kings Cross. There was a downward trend in these incidents from early in 2001 that was likely to be due to the reduction in heroin availability in Australia.
- The trend in theft and robbery apparent in Kings Cross was also reflected in recorded crime rates for the rest of Sydney. This result provides further evidence that the change in these offences in Kings Cross was due to factors that affected crime in the whole of Sydney, rather than being related to the opening of the MSIC.

Loitering

- The available evidence does not suggest that there was a large increase in drug related loitering in Kings Cross following the opening of the MSIC.
- Drug-related loitering at the front of the MSIC began to decline after it opened. There was a very small but sustained increase in drug-related loitering at the back of the MSIC after it opened. Overall, however, the likelihood of observing a drug-related loiterer at the back of the MSIC was low.
- The level of 'total' loitering increased initially at the front of the MSIC by approximately 1.2 persons per occasion of observation, but began to decline thereafter. There was a very small but sustained increase in total loitering at the back of the MSIC after it opened.
- Qualitative interviews with community key-informants and police focus groups confirmed that the MSIC had minimal effect on drug-related activity in the local area. There was some indication of an increase in drug-related activity and loitering at the Kings Cross train station, which was attributed by some informants to the MSIC.

7.1 Introduction

Debate over the likely effect of the MSIC on criminal activity has centred on three types of offences: (1) crimes committed to fund the purchase of illicit drugs; (2) illicit drug transactions; and (3) use of illicit drugs in public. One of the arguments against the establishment of the MSIC was that it would have a 'honey pot effect' whereby increased numbers of illicit drug users and dealers would congregate around the MSIC, resulting in an increase in public drug transactions and drug use in the vicinity of the MSIC.

Concerns were also raised that an increase in the number of drug users coming to Kings Cross to use the MSIC would be associated with an increase in income-generating crime in the local area. Opponents of the MSIC argued that an increase in drug users, drug-related activities and income-generating crime would reduce the public amenity of the area and, in turn, have an adverse effect on local business because people would be deterred from coming into the area.

In response to these concerns the New South Wales Bureau of Crime Statistics and Research undertook to examine the impact of the MSIC on crime. The two main questions being investigated in this component of the MSIC evaluation were:

- Was there a significant increase in acquisitive crime (namely theft and robbery incidents) in the Kings Cross region associated with the MSIC?
- Was there an increase in drug-transactions associated with the MSIC?

A multi-component study, utilizing both quantitative and qualitative data, was undertaken to explore these questions.

7.2 Method

7.2.1 Data sources

This study draws upon data from multiple sources to examine the research questions. The examination of trends in acquisitive crime is relatively straightforward as a high proportion of these types of incidents are reported to the police (Freeman, 1998). Furthermore, it is reasonable to assume that, within a specific geographic area, the level of reporting of an offence type from year to year will not change substantially. As such, recorded crime data provide a fairly reliable basis on which to examine trends in acquisitive crime.

The acquisitive crime data for this study were extracted from the NSW Police Computerised Operational Policing System (COPS) and have been classified into two categories:

- robbery: including armed robbery, unarmed robbery, and demand money with menaces incidents per month, from January 1999 to September 2002; and
- theft: including break and enter, motor vehicle theft, steal from motor vehicle, steal from person, steal from retail store, steal from dwelling, other theft and fraud incidents per month, from January 1999 to September 2002.

Data were obtained for recorded criminal incidents occurring within the Kings Cross Local Area Command (LAC) and recorded criminal incidents occurring in the rest of Sydney for comparative purposes.

Monitoring changes in the frequency of drug offences, such as buying and selling illicit drugs and use of illicit drugs, is more difficult. Arrest data routinely gathered by police do not provide a useful basis on which to judge whether the establishment of the MSIC had any effect on the number of drug users and dealers congregating in the immediate vicinity of the MSIC. This is because recorded drug offences may rise either as a result of an increase in drug use and trafficking, or because these activities become more visible, or because the police are more aggressively enforcing drug laws. For the purpose of this study, then, it was necessary to create special measures to gauge trends in the level of drug transactions in the vicinity of the MSIC.

The proxy measures for drug-related activity used in this study were:

- mean number of total and ‘drug-related’ loiterers observed within an area bounded by two businesses either side of the front of the MSIC, by week, from 15th October 2000 to 31st October 2002; and
- mean number of total and ‘drug-related’ loiterers observed within an area bounded by two businesses either side of the back of the MSIC, by week, from 15th October 2000 to 31st October 2002.

Although the study was primarily concerned with ‘drug-related’ activity, the identification of such activity necessarily requires a degree of subjectivity. To allay concerns regarding the accuracy of identifying ‘drug-related’ loitering, a count of total loitering in the immediate vicinity of the MSIC was included along with counts of individuals deemed by experienced observers to be drug dealers or users. During the pre-intervention data collection phase counts were conducted by the staff of a local needle exchange service, while post-intervention counts were collected by a trained researcher who was commissioned specifically for this task.³

To maximise the objectivity and reliability of the data, a set of definitions and counting rules for loitering were established. Loitering was defined as being: ‘to stand, sit or linger in the defined area of data collection’ during the time it took for the counter to walk past the defined count area. As already noted, the identification of ‘drug-related’ loitering required judgement from the counters, all of whom were familiar with local drug users and drug-related activity in the Kings Cross area. Persons were considered to be ‘drug-related’ loiterers if they met one or more of the following criteria:

- loiterer openly offers the counter, or another person in the area, illicit drugs (e.g. ‘smoko’, ‘gear’, ‘coke’, ‘want to score’, ‘are you right?’);

³Spot checkers were employed to assess inter-rater reliability. On average, spot checks were conducted two times each week. Valid spot checks were conducted on 175 (12%) of the 1442 counts. Kappa values of 0.75 for total loiterers at the front of the MSIC, 0.66 for drug-related loiterers at the front of the MSIC, 0.69 for total loiterers at the back of the MSIC, and 0.60 for drug-related loiterers at the back of the MSIC suggest that inter-rater reliability was fair-to-good (Fleiss, 1981).

- loiterer was known to be involved in illicit drug use from a previous assessment at that site or another site; or
- counter was more certain than not that the loiterer was in the area for drug-related purposes.

Certain groups were not included in the loitering counts because it was highly unlikely that they were frequenting the area to purchase or use drugs. Those excluded were:

- people who had the obvious appearance of a tourist (e.g. carrying a camera or large backpack, or using the currency exchange);
- people clearly over 65 years of age; and
- children under ten years of age.

As loitering in the immediate vicinity of the MSIC might increase simply because of an increase in the overall number of people in Kings Cross, a measure of pedestrian flow in King Cross was also constructed to investigate this possibility. The measure used was:

- mean number of pedestrians observed within a specified 500 metre length of the northern side of Darlinghurst Road, by week, from 15th October 2000 to 31st October 2002.

Pedestrian counts were of all pedestrians, including people standing outside shops or buying from street vendors, who passed the counter, either from the front, or from behind. A hand-held counter was used for this purpose.

All counts were made twice-daily, at random times, during a standard 'walk' along a pre-determined route in Kings Cross. Walks were conducted at a casual pace; taking approximately 15 seconds to walk past the front of the MSIC, 15 seconds to walk past the back of the MSIC, and four minutes to walk down Darlinghurst Road. Fifty-one per cent of the post-opening counts were made during MSIC opening hours.

The initial study design included two comparison sites in order to determine if there was an increase in loitering in the broader King Cross area during the study period. This approach was taken because an increase in loitering in the immediate vicinity of the MSIC could be due to an increase in loitering in Kings Cross generally, rather than being specifically associated with the MSIC. Two major drug-dealing sites in Kings Cross (identified by police and health workers) were selected as comparison sites. However, interventions aimed at reducing drug-related activities were conducted during the study period in both sites, rendering them both unsuitable for use as comparison sites in the final analysis. One site underwent a major refurbishment prior to the opening of the MSIC, significantly interrupting drug-related activities conducted at the site during the period of refurbishment. The second site was the target of ongoing police operations to disrupt drug-related activity, commencing prior to the opening of the MSIC and continuing several months past the opening of the MSIC.

Qualitative research was conducted to test the validity of the proxy measure, and to identify any potential public amenity issues arising from drug-related activities associated with the MSIC that could not be identified by the quantitative data. This qualitative research involved:

- semi-structured, face-to-face interviews with a range of community members who lived and/or worked in Kings Cross, conducted one month prior to the opening of the MSIC, and three, six and twelve months after the MSIC commenced operation; and
- a police focus group three, six and twelve months after the MSIC commenced operation.

Rather than attempting to interview a representative or random sample of Kings Cross community members (many of whom reside or work considerable distances from the MSIC), a panel of informants in positions to directly observe changes resulting from the MSIC were identified. Community key-informants consisted of: five local health workers (including a needle exchange worker; an outreach worker; a clinical services workers and two ambulance officers); two council street cleaners; two City Rail staff members; four local business owners/employees; four local residents; two patrons of local businesses; and two drug users who frequented the area. Potential interviewees were required to have direct experience of the MSIC, regularly pass the MSIC site, live near the MSIC, frequent an establishment within approximately 500 metres of the MSIC, or work within 500 metres of the MSIC.

The recruitment of health workers, street cleaners, and train station staff was undertaken by approaching the management of the relevant services for a list of employees working in jobs which would enable them to observe changes in the vicinity of the MSIC. Where more than one staff member held the relevant position, a key-informant was randomly selected. Business owners and employees were recruited by approaching the two businesses on either side of the MSIC and requesting a list of managers and employees willing to participate in key-informant interviews. Random selections of two managers and two employees were conducted to select the key-informants. Several businesses in the general vicinity of the MSIC provided a list of patrons/clients who were suitable and willing to participate in the study, with the key-informants randomly selected from the list. Local health service workers were asked to identify drug users for selection as key-informants. Efforts were made to select local drug users in order to facilitate follow-up interviews. A letterbox drop of households close to the MSIC was conducted to identify local residents who were willing to participate in the study. Efforts were made to select a diverse group of residents, differing in age, gender, parental status and attitude towards the MSIC.

The average age of the community key-informants was 39 years, ranging from 22 to 57 years of age. Five of the 21 community key-informants were female. The community key-informants had been living, working or patronising businesses in Kings Cross an average of eight years, ranging from one year to 34 years prior to the first community key-informant interview.

Community key-informants were asked about positive and negative changes that they had directly observed and attributed to the MSIC. As open-ended questions were used to elicit this information, respondents were not required to provide comments on every aspect of drug-related offending and public amenity reported in this study. Detailed notes were taken during the interview and typed up the same day. The interviewer took care to accurately record key-informants' comments, however responses cannot be considered as having been recorded verbatim.

As local police were in an ideal position to identify any changes to criminal activity resulting from the opening of the MSIC, officers from various units within the Kings Cross LAC, including the Drug Unit, Beat Police, Duty Officers, Licensing Accord Officers, Intelligence Officers and Crime Management Unit, were recruited to form a police discussion-group.

The first discussion-group consisted of seven officers; the second group consisted of six officers; and third consisted of five officers. All of the officers participating in the second discussion-group had participated in the first discussion-group. However, due to job transfers, only one officer in the third discussion-group had participated in the previous discussion-groups. At each discussion-group session, officers were presented with the results of the loitering counts and summaries of the community key-informant interviews to initiate discussion.

As with the community key-informant interviews, the discussions with police were not tape-recorded. Quotations in this report are from notes taken during the discussion-groups. The discussion-group notes were forwarded to the police for verification of accuracy, and amended where necessary.

7.2.2 Quantitative analysis

Where possible, the impact of the MSIC on crime and loitering was analysed using a piecewise linear regression type approach.⁴ This approach was adopted for the analyses of recorded robbery and theft offences, and total and 'drug-related' loitering at the front of the MSIC.

In order to assess the impact the MSIC may have had on a particular data series, it was necessary to test for the possibility that the MSIC was associated with a change in the *level* of the series (a structural shift in the series), or a change in the *trend* of the series (a change in the slope of the series), or both. However, when conducting these analyses, it was necessary, where possible, to isolate the effect of the MSIC from any other factors known to influence changes in the data series being examined.

One key factor likely to affect the data series in this study was the heroin shortage that occurred in Sydney during the study period. Evidence of a decrease in the availability,

⁴ The method of ordinary least squares (OLS) based regression was adopted in order to specifically model the underlying time trend in each data series before and after the opening of the MSIC. OLS regression modelling can only be applied to a time series that is either stationary or, if a time trend is incorporated, to a series that is trend stationary. The Augmented Dickey-Fuller (ADF) test for a unit root was applied to each series prior to modelling as a guide to check that the assumption of trend stationarity that underpins the OLS model was appropriate. The ADF test was applied as an alternative to differencing the series.

For each data series in our analysis, the ADF test incorporating terms for intercept and trend was applied. In each case, the data could not be tested over the full time period because of the interruption to the trend (structural break) at the time of the heroin shortage. The outcomes of the ADF indicated that the OLS method was appropriate for each of the data series. Note, however, that given the limited data points in the series and the low power properties of the ADF test (Enders, 1995) the interpretation of the ADF test should be viewed with some caution.

and increase in the price, of heroin in Sydney during early 2001 has been provided by Day et al. (2003) and Weatherburn et al. (2003). While the exact timing of the onset of the heroin shortage is uncertain, it appears to have reached a peak early in 2001 (Darke, et al., 2002), approximately four months before the MSIC opened. An examination of recorded crime trends in Cabramatta (a large heroin market in Sydney) provided evidence of a short-term increase in the rate of break and enter and robbery incidents early in 2001, suggesting that some drug users may have initially increased their offending in order to raise funds to purchase heroin during this time (Weatherburn et al., 2003). Given this finding, it was necessary to attempt to disentangle the effect the heroin shortage on trends in acquisitive crime from changes resulting from the MSIC in the time series being analysed in this study.

In determining the most appropriate model for each data series, several modelling options were examined to investigate the impact of the MSIC. However, for each of the data series examined using the linear regression approach, an initial model containing the following terms was fitted:

- an underlying trend parameter to control for any trend in the series prior to the opening of the MSIC;
- a change in level term at the time the MSIC opened; and
- a change in trend term from the time the MSIC opened.

The initial models for the acquisitive crime data series were modified to control for the effect of the heroin shortage on the series by adding a term to test for a change in the level of the series at January 2001. Where the model indicated that there was a significant change in the level of the series after the onset of the heroin shortage, a term to test for a change in the trend of the series from January 2001 was also added to the model. Due to limited data points between the onset of the heroin shortage and the opening of the MSIC, it was not possible to include a term to test for a change in the trend at the time of the heroin shortage and another to test for a change in the trend following the opening of the MSIC, due to collinearity problems which arise from including such highly correlated terms. Accordingly, the term testing for a change in trend of the series at time the MSIC opened was removed from the model if the change in trend term at the time the heroin shortage commenced was significant. Therefore, only one term relating to the MSIC was included in the final acquisitive crime models.

The final regression models for acquisitive crime in Kings Cross LAC included:

- an underlying trend parameter to control for any underlying trend in the series prior to the onset of the heroin shortage;
- a change in level term at the time the MSIC opened;
- a change in level term at the onset of the heroin shortage; and
- a change in trend term from the onset of the heroin shortage.

For comparative purposes, the final regression model for the acquisitive crime data series, excluding the non-significant change in level term at the time the MSIC opened, was compared with the same model for acquisitive crime in the rest of Sydney.

When modelling total and 'drug-related' loiterers at the front of the MSIC it was not possible to control for the effect of the heroin shortage due to the limited length of the

series prior to the onset of the heroin shortage. Therefore, both the change in level term and change in trend term at the time the MSIC commenced operation were examined. In the final loitering models, where a significant change in the series at the time the MSIC opened was detected by one term in the model, non-significant terms relating to the MSIC were removed.

Where a significant change in the series was detected, an estimate of the change to the series was provided. The amount by which a level of a series changes is estimated by the coefficient of the change in level term, while the rate by which the trend of the series changes is calculated by adding the coefficient of the underlying trend term with the coefficient of the change in trend term.

The residual series for each regression model was tested for serial correlation by calculating the Durbin-Watson statistic and examining the autocorrelation function and partial autocorrelation plots. Where residuals from ordinary least squares models were serially correlated, linear regression models with autocorrelated errors were fitted in EViews using non-linear regression techniques (Quantitative Micro Software, 2000). Seasonal effects were not incorporated into the models as no seasonal component was identified in the autocorrelation function plots.

Linear regression analyses could not be applied to the counts of loiterers at the back of the MSIC due to the high number of zero values in these time series. The Mann-Whitney U test was used to test for a change in the mean number of total and 'drug-related' loiterers from the pre-intervention to the post-intervention period. A Kendall's rank order correlation test was used to test for any change to the number of pedestrians counted on Darlinghurst Road over the study period.

7.3 Results

7.3.1 Recorded crime

The recorded crime data series for robbery and theft offences are presented as monthly data, for the period January 1999 to September 2002. These data series consist of 28 data points prior to the opening of the MSIC and 17 post-intervention data points.

Robbery offences

The data series for robbery incidents in Kings Cross LAC is shown in Figure 7.1, with robbery incidents in the rest of Sydney included for comparative purposes. A visual inspection of Figure 7.1 shows a peak in robbery incidents in both Kings Cross LAC and the rest of Sydney in early 2001, after the onset of the heroin shortage but prior to the opening of the MSIC, and a general downward trend to both series in the last 12 months of the data collection period.

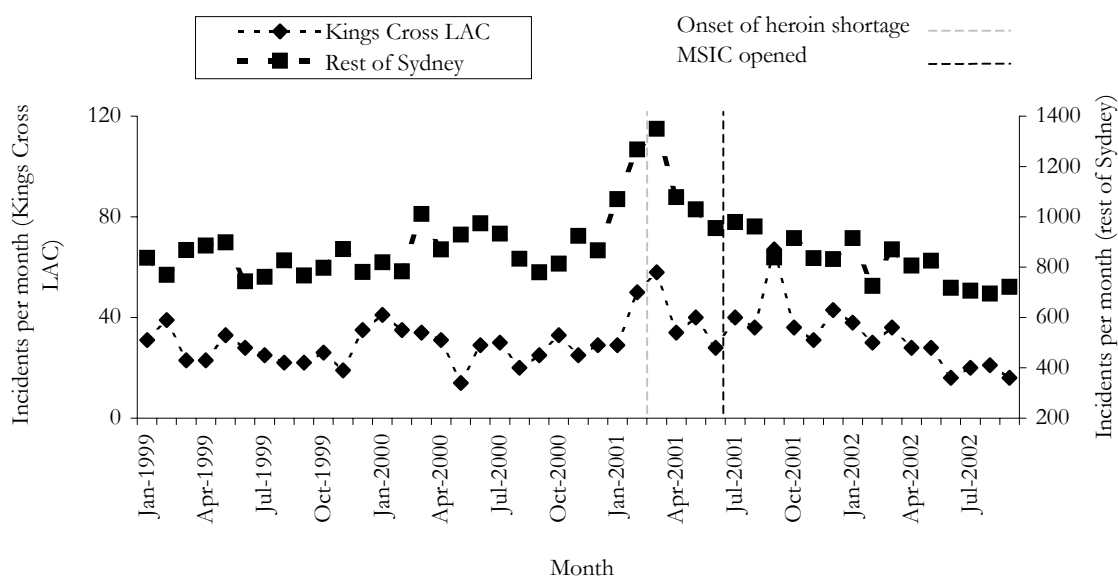


Figure 7.1: Number of robbery incidents in Kings Cross LAC and in the rest of Sydney, January 1999 to September 2002

The final regression model for robbery offences in Kings Cross LAC is shown in Table 7.1. The model suggests that there was an initial significant increase in the level of robbery incidents at the onset of the heroin shortage, which was accompanied by a downward trend in the series, but no significant change to robbery incidents at the time of the opening of the MSIC. It is estimated that there was a significant increase in the level of the series in January 2001, by 19.4 robbery incidents, and a significant downward change to the trend in the series from January 2001, with an estimated decrease of 1.5 robbery incidents per month.⁵

Table 7.1: Linear regression for robbery incidents in Kings Cross LAC

Variable	Coefficient	SE	t	p-value
Constant	28.85	3.62	8.0	0.000
Underlying trend	-0.07	0.25	-0.3	0.790
Level change May 2001	5.92	6.52	0.9	0.369
Level change January 2001	19.36	5.58	3.5	0.001
Trend change from January 2001	-1.46	0.49	-3.0	0.005

Note: R-Squared=0.38, Durbin-Watson =1.97

⁵ The change in trend coefficient estimates the size of the *change* in slope from the pre-existing trend in the series rather than the *actual* post-intervention slope of the series. To calculate the slope of the post-intervention series it is necessary to add the underlying trend coefficient to the trend change coefficient.

The data series for robbery incidents in the rest of Sydney was modelled and compared with an equivalent model for the Kings Cross LAC data series to investigate whether the changes to the data series in King Cross LAC were also experienced in the rest of Sydney (see Appendix Table 1). The models for both regions show similar results, with the models indicating a significant increase in robbery incidents in January 2001 in both data series, followed by significant downward trends in both data series. These models provide evidence that the increase in the level of robbery incidents in early 2001 was not unique to Kings Cross LAC, and therefore unlikely to be associated with the MSIC.

Theft offences

The number of theft incidents in Kings Cross LAC and the rest of Sydney are plotted in Figure 7.2. An inspection of Figure 7.2 indicates broadly similar trends in theft incidents in Kings Cross LAC and the rest of Sydney over the study period, with theft incidents increasing gradually until early 2001, followed by a decline in theft incidents towards the end of the study period.

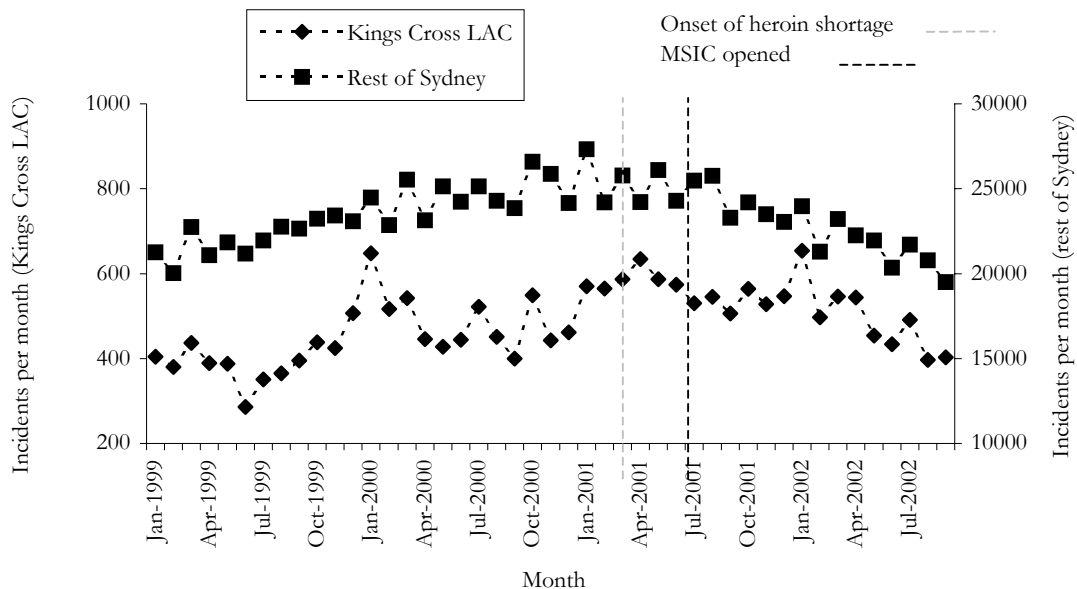


Figure 7.2: Number of theft incidents in the Kings Cross LAC and in the rest of Sydney, January 1999 to September 2002

The final regression model for theft offences in Kings Cross LAC is presented in Table 7.2. Consistent with the findings for robbery offences, the model for theft offences shows no significant upward or downward change in the level of the series at the time the MSIC opened. The model indicates that there was a significant upward underlying trend to the data series prior to the heroin shortage, a significant increase to the level of the series at the time of the heroin shortage and a significant decline to the trend of the series following the heroin shortage. The model estimates that there was an increase of 5.5 theft incidents per month prior to the heroin shortage, an increase in the level of the series by 114.6 theft incidents at January 2001, and a significant decrease in the trend of the series by 8.5 theft incidents per month from January 2001.

Table 7.2: Linear regression for theft incidents in Kings Cross LAC

Variable	Coefficient	SE	t	p-value
Constant	371.97	40.91	9.1	0.000
Underlying trend	5.50	2.71	2.0	0.050
Level change May 2001	6.59	55.60	0.1	0.906
Level change January 2001	114.64	49.71	2.3	0.027
Trend change from January 2001	-14.00	4.75	-2.9	0.005

Note: Estimated autoregressive parameter (lag 1) = 0.323, SE=0.158, t=2.05, p=0.048
R-Squared=0.57, Durbin-Watson=2.06

For comparative purposes, equivalent linear regression models of theft incidents in Kings Cross LAC and the rest of Sydney were fitted (see Appendix Table 2). The model for Kings Cross LAC was consistent with that for the rest of Sydney, with both models indicating an underlying upward trend prior to the onset of the heroin shortage, a significant increase in the level of the series at January 2001, and a significant downward trend in the series from January 2001. Again, this finding supports the conclusion that the increase in acquisitive crime in Kings Cross LAC in early 2001 was not associated with the MSIC.

7.3.2 Counts of loiterers in Kings Cross

Loitering counts from October 15th 2000 to October 31st 2002 are presented. Weeks commenced on Sundays, and the post-intervention counts began on May 6th 2002. This gave 29 weeks of baseline counts and 78 weeks of post-intervention counts. Loitering counts are reported as the mean number of loiterers per observation period, for each week of the study period. Means were calculated by averaging over total counts conducted each week.

Front of the MSIC

Averaged over all count episodes, there were 0.79 ‘drug-related’ loiterers at the front of the MSIC per occasion of observation and 1.66 total loiterers per occasion of observation.

The data series for the mean number of ‘drug-related’ and total loiterers per count outside the front of the MSIC are presented, by week, in Figure 7.3. From a visual inspection of the data it appears that there was a general increase in ‘drug-related’ loiterers from November 2000 until around the time the MSIC opened. Following the opening of the MSIC, the increasing trend in ‘drug-related’ loitering looks to have abated and appears to be declining slightly over the rest of 2001. Total loitering outside the MSIC appears to have increased from December 2000 to August 2001, and subsequently declined toward the end of the data series.

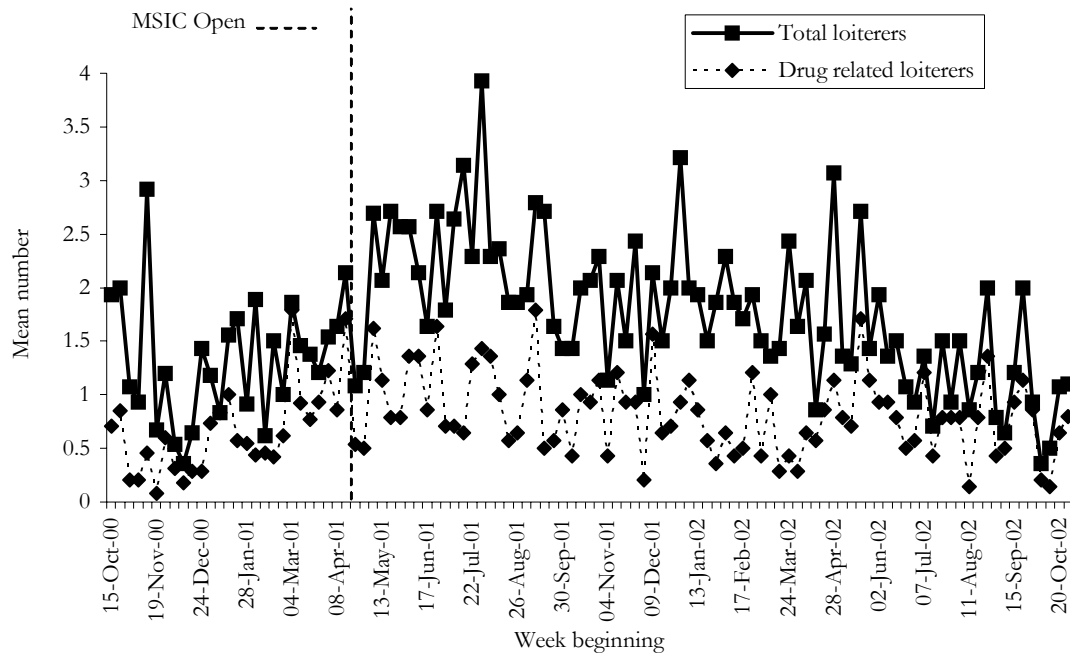


Figure 7.3: Mean number of total and 'drug related' loiterers per count at front of MSIC, by week, 15 October 2000 to 31 October 2002

The regression model for 'drug-related' loiterers is presented in Table 7.3. The change in level term was not significant indicating that there was no significant increase or decrease in the number of 'drug-related' loiterers at the front of the MSIC immediately after it opened. This term was dropped from the final model. The model presented in Table 7.3 shows that there was a significant upward underlying trend in the number of 'drug-related' loiterers at the front of the MSIC prior to it opening. This increasing trend is estimated to be 0.03 'drug-related' loiterers per week. The significant change in trend term from May 2001 indicates that the increase in drug-related loiterers seen in the underlying trend of the series began to ease across each time point after the MSIC opened. The model suggests that the post-opening series for drug-related loitering at the front of the MSIC was neither increasing nor decreasing after it opened.

Table 7.3: Linear regression for 'drug-related' loiterers at the front of the MSIC

Variable	Coefficient	SE	t	p-value
Constant	0.27	0.13	2.2	0.032
Underlying trend	0.03	0.01	4.8	0.000
Trend from May 2001	-0.03	0.01	-4.8	0.000

The regression model for total loitering outside the front of the MSIC, presented in Table 7.4, shows a significant increase in the number of loiterers at the front of the MSIC immediately after it opened, estimated at an increase of 1.2 persons. However, the model also indicates that there was a significant downward trend in the series from May 2001, at an estimated rate of 0.02 persons per week.

Table 7.4: Linear regression for total loiterers at the front of the MSIC

Variable	Coefficient	SE	t	p-value
Constant	1.26	0.21	6.1	0.000
Underlying trend	0.00	0.01	0.4	0.730
Level May 2001	1.20	0.23	5.1	0.000
Trend change from May 2001	-0.02	0.01	-2.0	0.053

Note: R-Square=0.40, Durbin-Watson=2.13

The analysis of the data for total loitering at the front of the MSIC includes counts of a security guard periodically posted at the front of the MSIC after it opened. As the presence of the security guard was not anticipated at the time of the study's design, security guards were not excluded from the strict definition of 'loiterer' adopted for the study. While it was not possible to determine all occasions on which the MSIC security guard had been counted as a loiterer, the data were adjusted to exclude the security guard when their presence was noted, and the adjusted data was reanalysed. The regression model for the adjusted data produced very similar results to that obtained with data including counts of the security guard (see Appendix Table 3).

Back of the MSIC

Very few loiterers were counted at the rear of the MSIC. Averaged over all count episodes, there were 0.15 'drug-related' loiterers at the back of the MSIC per occasion of observation and 0.54 total loiterers per occasion of observation.

Figure 7.4 presents the mean number of 'drug-related' loiterers at the back of the MSIC per count for each month of the study period. The mean number of 'drug-related' loiterers per count for each six month-period of the study is also presented. Figure 7.4 suggests that there was some increase in the number of 'drug-related' loiterers at the back of the MSIC, and that this increase coincided with the opening of the MSIC and was sustained throughout the rest of the study period. A Mann-Whitney test confirmed that there was a statistically significant increase from 0.09 to 0.17 'drug-related' loiterers per occasion of observation following the opening of the MSIC ($z = -3.1, p \leq 0.01$).

It is important to note, however, that the likelihood of observing any 'drug-related' loiterers at the back of the MSIC on a count episode was relatively slight. During the post-intervention period there were one or more 'drug-related' loiterers observed at the back of the MSIC during 9 per cent of counts. This is, however, an increase from the pre-opening counts, where one or more drug-related loiterers were observed at the back of the MSIC on 5 per cent of all counts.

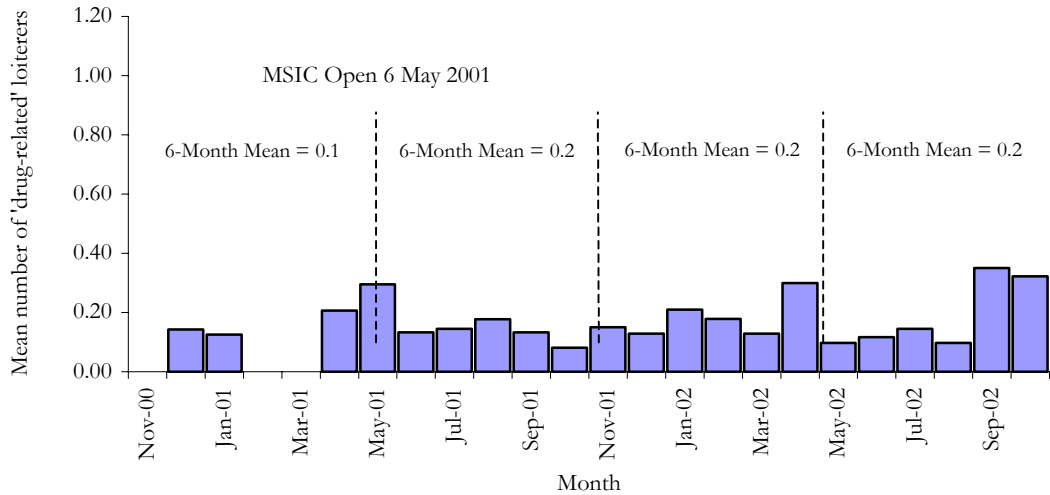


Figure 7.4: Mean number of 'drug related' loiterers per count at back of MSIC, by month, November 2000 to October 2002

The mean number of total loiterers per count at the back of the MSIC, is presented by month in Figure 7.5, along with the mean number of total loiterer per count in each six-month period of the study. As with 'drug-related' loiterers, there appears to have been an increase in total loitering after the MSIC opened, which was sustained throughout the study period. Analysis of the mean number of loiterers per count, by week, using a Mann-Whitney test, indicates that there was a significant increase in loitering at the back of the MSIC following the opening of the MSIC ($Z = -4.6, p < 0.01$), from 0.27 to 0.64 persons per occasion of observation. Again, however, it is important to keep in mind that no loiterers were observed at the back of the MSIC on the majority of count episodes. One or more loiterers were observed at the rear of the MSIC on 27 per cent of the post-intervention counting episodes, an increase from 12 per cent prior to the MSIC commencing operation.

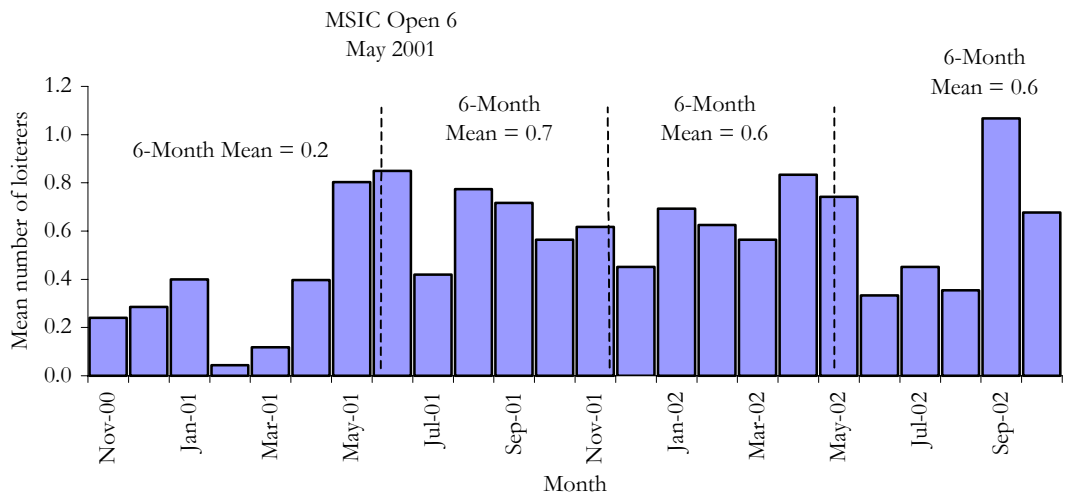


Figure 7.5: Mean number of 'total' loiterers per count at back of MSIC, by month, November 2000 to October 2002

Pedestrian counts on Darlinghurst Road

The mean number of pedestrians observed on Darlinghurst Road per occasion of observation, by week is shown in Figure 7.6. The data suggests that pedestrian flow on Darlinghurst Road was fairly stable or increasing from October 2000 to February 2002, but began to decrease quite rapidly after February 2002. A Kendall's test indicates that there was a significant decrease in pedestrian numbers over the entire data collection period ($t = -.18, p = 0.01$), however, Figure 7.6 shows that the decline in pedestrians did not start until early 2002. The reasons for this decline in pedestrian flow are not clear, but given that most of this decrease appears to have occurred nine months after the MSIC opened, it is unlikely to be related to the opening of the MSIC.

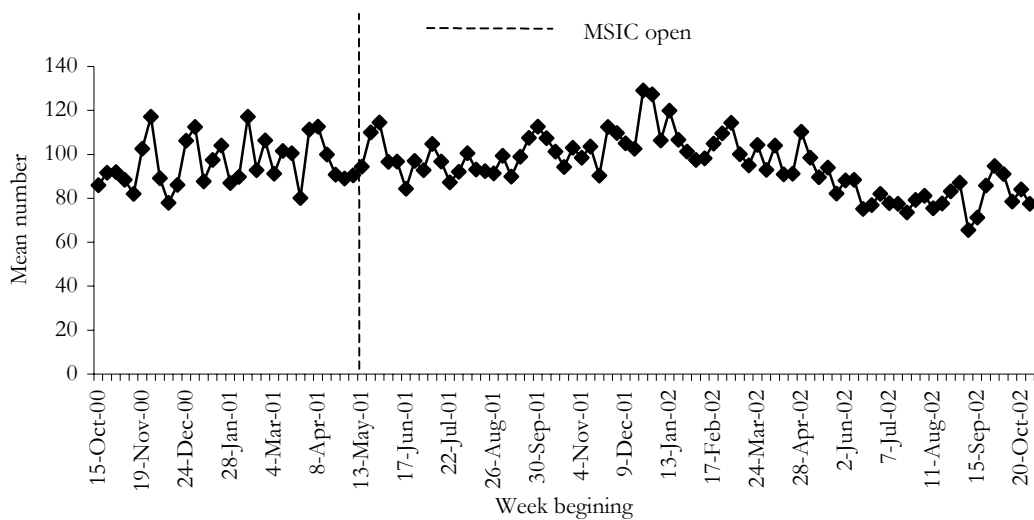


Figure 7.6: Mean number of pedestrians per count on Darlinghurst Road, by week, 15 October 2000 to 31 October 2002

7.3.3 Key-informant interviews

One community key-informant interview was conducted prior to the MSIC commencing operation in order to obtain baseline data of community key-informants' experiences of discarded needles, public injecting, harassment by IDU (injecting drug users), and crime. Data from all three follow-up community key-informant interviews and the police focus groups were categorised into common themes relating to drug offences, drug-related offences, and public amenity issues stemming from these two types of offences.

Pre MSIC opening

A large proportion of the interviewees had observed discarded needles in the Kings Cross region in the three months prior to the interview. Areas identified as common locations for seeing discarded needles included laneways, back streets, parking lots, parks, and Kings Cross train station. The two streets between which the MSIC site is situated (Darlinghurst Road and Kellett Street) were identified as areas where discarded needles had been seen; however none of the informants indicated seeing discarded needles directly at the front or rear of the proposed MSIC site in the three months prior to the baseline interview.

The majority of the community key-informants reported seeing public injecting in the previous three months. Key-informants reported observing this behaviour generally off the main streets of Kings Cross, in secluded back streets and laneways. Interviewees did not report any sightings of public injecting at the front or back of the proposed MSIC site.

Few interviewees reported being harassed by IDU, and those who did described the behaviour as 'begging', public intoxication or being asked if they wanted drugs. Key-informants identified the main areas for harassment as Darlinghurst Road (through the main thoroughfare of Kings Cross), outside fast-food restaurants and at the entrance to Kings Cross train station.

None of the interviewees was the victim of a property crime or violent crime in the three months preceding the baseline interview.

Post MSIC opening

Discarded needles and public injecting

In general, the responses from community key-informant interviews and police discussion-groups indicated a perception that, while discarded needles remained a public amenity issue in the broader Kings Cross region, there may have been a reduction in the number of discarded needles observed in the direct vicinity of the MSIC since it opened. Over the course of the three follow-up interviews, several interviewees, including the street cleaners, residents, health workers, a local business owner and police, provided reports of a reduction in the number of discarded needles close to the MSIC.

'We haven't really come across as many needles as in the previous year. I don't know if it's due to the MSIC. But, I suspect it may be having an impact since it's cleaner nearby while other areas like in the laneways and near the police station or fountain haven't changed.'

(Street cleaner, six-month interview)

However many respondents who noticed a reduction in discarded needles were reluctant to attribute this change solely to the MSIC, citing an increase in police presence in the area and the reduction in the availability of heroin as possible factors associated with the reduction in discarded needles.

'There are less needles in the area but I don't know how much of that is due to less gear [heroin] in the area.' (Health worker, six-month interview)

Few respondents commented specifically on public injecting. The majority of respondents who addressed this topic reported a reduction in sightings of IDU injecting in public. A range of respondents reported this finding, including health workers, residents and city rail workers.

'I occasionally would run into someone shooting up [injecting] around the train station but I haven't noticed it much lately. I think the MSIC may have something to do with that.'

(City Rail worker, six-month interview)

Other respondents commented on continued sightings of public injecting in the back streets and laneways of Kings Cross, unable to detect any positive or negative changes in relation to public injecting since the MSIC opened.

‘I can’t say it has had any changes for the positive or the negative. You see people go in but it is hard for me to see any effect. I still see people inject on Brougham Street and the needles around.’ (Resident, twelve-month interview)

Drug dealing

Drug dealing did not emerge as a specific issue associated with the opening of the MSIC until the six-month interviews. Even then, few community key-informants raised it as an issue. Two business owners/employees and a City Rail worker commented on an increase in the level of drug dealing in the area since the MSIC opened.

‘We have a few more problems with drug activity out the front of the train station. You can tell some of them are drug-related. They run back and forth between the MSIC and the Tudor Hotel. You catch on that’s what it’s about. I’m pretty sure about it now. (City Rail worker, six-month interview)

Conversely, one business owner/employee reported a decrease in drug dealing, but was unsure the degree to which the MSIC was associated with this change.

‘Seems like less needles than I used to see and I don't notice dealers like before. It could be a combination of police and other factors.’ (Business owner/employee, six-month interview)

Comments made during the police focus groups indicated that the MSIC had very little impact on drug dealing in Kings Cross. Police stated that any changes to drug dealing since the MSIC had opened were more likely to be a response to police activity than attributable to the MSIC.

‘What’s happening is a displacement effect. Our operations have concentrated on activity at Springfield Mall and then moved down to the area around McDonalds. The dealing activity tends to move to a different area in response to our operations. The train station is a convenient location because it’s central to the area. There is access to stairs to duck down and out the back if the police come through. Plus there is also access to the pubs nearby to go in and out.’ (Police, six-month discussion-group)

Acquisitive Crime

As with the interviews conducted prior to the opening of the MSIC, no key-informant reported being a victim of a theft or robbery in a public place at any of the follow-up interviews. Police did not associate the MSIC with any change in the level of property theft in the area. They commented that any changes in the frequency of these types of

offences since the MSIC opened were associated with seasonal variation. This standpoint was maintained at each of the follow-up police discussion-groups.

‘We’ve seen an increase in the number of thefts. Reports indicate they’ve doubled in the past two months. We can’t really attribute it back to the MSIC. The key offenders have been Bankstown groups. Nothing has been related to the MSIC. Most times it’s a product of the season. People come into the Cross and drink. They walk the streets drunk and they get jumped on because they are easy prey’. (Police six-month discussion group)

Violence and personal safety

A range of community key-informants, including all four business owners/employees, both street cleaners, a City Rail worker and a resident, reported fights in the general vicinity of the MSIC. While none of the community key-informants reported being personally assaulted in the vicinity of the MSIC, several commented at the six-month and twelve-month interviews that they now felt unsafe in the area.

‘Fights and people hanging around Kellett Street make people feel unsafe now.’ (Business owner/employee, six-month interview)

‘There have been fights. It makes me uncomfortable.’ (Resident, twelve-month interview)

Police were aware of an increase in assaults in the local area but did not attribute any of the change to the MSIC. Any increase in assaults was considered to be associated with expected seasonal variation.

‘Our stats for assaults generally go up at this time of the year. It’s a product of the season with more people out during the warmer weather. They’ve been drinking in the area and there’s more trouble. We haven’t seen anything from the direct vicinity of the MSIC though. Definitely nothing attributed to the MSIC.’ (Police, six-month discussion-group)

Presenting a different perspective, some key-informants commented on an increase in personal safety since the opening of the MSIC. In particular, it was noted that a reduction in drug overdoses resulted in a safer working environment for ambulance officers. The reduction in overdoses was attributed, at least partly, to the MSIC. One IDU commented that the MSIC has led to improved safety for IDU.

‘There's less attendance to overdoses than before. Could be due to supply as well. It's safer for workers too.’ (Health worker, six-month interview)

‘...you don't have the risk of getting bashed if you get bad gear or overdose. Makes it safer than having police or other people watching.’ (IDU twelve-month interview)

Loitering

Interviews conducted three months after the opening of the MSIC elicited very few mentions of loitering. Subsequent interviews at six and twelve months revealed a concern among community key-informants of an increase in loitering outside the front and back of the MSIC and the Darlington Road entrance to Kings Cross train station (opposite the MSIC). Persons making these observations included all four business owners, both business patrons, both street cleaners, both City Rail workers, two local residents and a health worker. At least some of this loitering was considered by key-informants to be related to IDU and the MSIC.

‘Seems to be a lot more drunks and dodgy types at the train station. I’ve seen a few people out the back [of the MSIC] near the Icebox. I’m not positive, but I think it could be [due to] the MSIC.’ (Resident, six-month interview)

‘People are hanging around the front and back [of the MSIC]. Some are homeless or sex workers but it's putting business people off.’ (Street cleaner, twelve-month interview)

‘We've got problems at the entrance [of the train station] with people just hanging around. We've got members of the public complaining about drug users, homeless and drunks hanging around the entrance on Darlington Road.’ (City Rail worker, twelve-month interview)

At the six-month focus group, police expressed scepticism about the possibility that loitering in the vicinity of the MSIC and at the entrance to the train station was associated with the MSIC. Other factors, such as budget accommodation, were thought to contribute to the presence of IDU in the area.

‘The community doesn’t always realise that many of the IDU that are hanging around the streets are there because they live in the cheap hotels nearby. That’s why you see them in those areas.’ (Police, six-month discussion-group)

By the twelve-month discussion-group the response of the police toward the increase in loiterers at the train station had changed somewhat. The police who participated in the twelve-month discussion-group commented that they had received complaints from the public and the City Rail staff about the increase in the number of people loitering at the train station. They noted that, while other factors, such as police operations, would have contributed to the increase in loitering outside the train station, there was a notable correlation between the loitering and the MSIC opening times. The increase in loitering at the train station was considered to be a displacement of existing users and dealers from other locations in the area rather than due to new groups of users coming into the area.

‘Their numbers are going up there at the train station. They see it as a social thing while waiting to get in [the MSIC]. It’s a natural progression from them getting into the routine of the MSIC’s operation like what occurs when a methadone unit opens. The train station never featured as a meeting place before. It used to be Springfield Mall and Roslyn Street.’ (Police twelve-month interview)

‘We’re tasking now to the lead up of the opening hours [of the MSIC]. It’s a morning tasking due to more congregating near the train station. We have to move them along. Hours of closing we don’t really need to task because they don’t hang around.’ (Police twelve-month interview)

7.4 Discussion

7.4.1 Main findings

A number of conclusions are suggested by the results of this study. Firstly, there is no evidence of the MSIC having any positive or negative effect on acquisitive crime. Analysis of recorded crime data from January 1999 to September 2002 failed to show evidence of an increase in robbery or theft offences in Kings Cross associated with the opening of the MSIC. The regression models indicate a significant downward trend in both robbery and theft offences from early in 2001.

Further analysis of the recorded crime data provided evidence of significant increases in the levels of acquisitive crime *prior* to the MSIC commencing operation. The timing of these increases coincides with reports of a heroin shortage in Sydney, pointing to the possibility that heroin users increased their rate of acquisitive crime to meet the demand of a higher priced heroin market in the early stages of the shortage. However, the initial increases in the level of acquisitive crimes at the onset of the heroin shortage were soon followed by downward trends in acquisitive crimes. This pattern was found in both Kings Cross LAC and the rest of Sydney. The consistency between the recorded crime trends for Kings Cross LAC and the rest of Sydney provide further evidence that changes in acquisitive crime trends in Kings Cross LAC were not related to the MSIC, but were associated with a factor that affected acquisitive crime across Sydney more generally.

The analysis of the loitering counts at the front of the MSIC suggests that there was no significant increase in ‘drug-related’ loitering associated with the opening of the MSIC, but there was an increase in total loitering of approximately one additional person per occasion of observation at the time the MSIC opened. After the MSIC opened, however, there was a significant downward trend in total loitering. Similarly, the pre-existing trend of an increase in drug-related loitering at the front of the MSIC was abated when the centre opened.

A different pattern of loitering trends was seen for the back of the MSIC. The results indicate a statistically significant but very small increase in the number of ‘drug-related’ loiterers at the rear of the MSIC in the post-intervention period, from 0.09 to 0.17 ‘drug-related’ loiterers per occasion of observation. Similarly, the number of total loiterers outside the back of the MSIC was greater in the post intervention period than prior to

the opening of the MSIC, increasing from 0.27 to 0.64 total loiterers per occasion of observation. The data also suggest that the increase occurred around the time the MSIC commenced operation and was sustained throughout the post-intervention period. However, the number of loiterers at the back of the MSIC remained low in absolute terms, and it remained uncommon for the counter to observe a loiterer at the back of the MSIC throughout the study period.

The reasons for the initial increase in total loitering at the front of the MSIC at the time the MSIC opened, and subsequent abatement in total and 'drug-related' loitering are not clear. One possible contributor to the increase in loiterers at the time the MSIC opened is the security guard posted at the front of the MSIC. The security guard may have influenced the count of loiterers in two ways: indirectly through people (e.g. MSIC staff, members of the public) stopping to talk to the security guard at the time a count was conducted, and directly through the inclusion of the security guard as a loiterer. Key-informant interviews confirm that, in the first six months of the MSIC opening, people were frequently seen outside the MSIC talking to the security guard. However the indirect influence of the security guard is not quantifiable. The direct effect of the security guard on the increase in the count of loiterers is considered limited as the security guard was only present during approximately 14 per cent of counting episodes in the post-intervention period. Even after attempts were made to remove the security guard from the count of loiterers at the front of the MSIC, it appears that there was an increase in total loitering by approximately one additional person per occasion of observation at the time the MSIC opened.

Public curiosity and interest in the site when it first opened may have been another contributing factor to the increase in total loitering in front of the MSIC at the time it opened. Despite the use of specific counting rules, it is also possible that the change from using staff of a local needle exchange as counters, to using a designated person to conduct counts in the post-intervention period, resulted in slight counting differences that contributed to the increase in the level of the series following the opening of the MSIC.

Furthermore, the presence of a security guard may have contributed to the change in trends for total and 'drug-related' loitering at the front of the MSIC following the opening of the centre. People may have felt reluctant to linger in the area while a security guard was present, and some IDU may have been verbally moved on or ushered inside the MSIC by the guard. The change trend for 'drug-related' loitering may also reflect an increase in familiarity with MSIC procedures overtime as IDU gained experience using the MSIC. The decrease in total loitering might also be explained by a more general decline in either foot traffic or loitering in the main street of Kings Cross, and counts of pedestrian flow on Darlinghurst Road provide some confirmation of this hypothesis.

The increase in total and 'drug-related' loitering at the back of the MSIC was very small in absolute terms and may have been due in part to MSIC security and clinical staff. It should also be cautioned that the Mann-Whitney test does not control for any underlying trend in the data. However, a visual inspection of the data, coupled with the fact that there were one or more loiterers at the back of the MSIC more frequently after the centre opened, does suggest that there may have been a small increase in loitering at the back of the MSIC after it commenced operation.

The key-informant interviews provide general support for the conclusions drawn from the results of the quantitative analysis. The predominant finding from the key-informant interviews was the lack of change to the area associated with the operation of the MSIC. Reports of discarded needles and public injecting in the broader Kings Cross region remained largely unchanged from those provided prior to the MSIC opening, however there was some suggestion by a range of key-informants of a reduction in discarded needles in the immediate vicinity of the MSIC.

Focus groups with local police confirm the findings of the quantitative analysis of crime data, that there has not been any increase in acquisitive crime associated with the MSIC. While an increase in drug transactions immediately outside the front or rear of the MSIC did not emerge as an issue in the key-informant interviews, there was concern regarding drug-related behaviour and loitering at the entrance to the train station, located directly across the road from the MSIC. A range of key-informants observed an increase in the number of people congregating outside the train station. While not all the loiterers appeared to be IDU, drug-related activities by some of the loiterers were observed. It is difficult to determine the degree to which the increase in IDU and drug-related activities outside the train station was associated with the MSIC. The police discussion group members cautioned that a combination of factors is likely to have contributed to the increase in drug-related activity and loitering in this location. These factors include the design of the train station with two entrances/exits that facilitated evasion from police, a displacement effect from police operations that targeted sites further up Darlinghurst Road that had previously been used for drug-related activities, and the presence of telephones and street seating facilitating drug transactions and socialising. Nevertheless, it is impossible to dismiss the suggestion that the loitering at the train station is at least partially related to the MSIC, given the comments by police at the final focus group, that IDU congregate outside the train station while waiting for the MSIC to open.

In drawing any conclusions on the impact of the MSIC on drug-related crime and drug-transactions, it is important to acknowledge the limitations of the study. The main limitation to the study was the onset of an unprecedented reduction in the availability of heroin in Australia's largest heroin market, Sydney, commencing several months prior to the opening of the MSIC. Evidence suggests that there was a substantial reduction in heroin use and expenditure, and a change in drug use patterns in response to the heroin shortage (Weatherburn et al., 2003; Day et al., 2003). Furthermore, it appears that the heroin shortage had the effect of increasing acquisitive crime immediately following the shortage, and contributed to a reduction in the rate of acquisitive crime in the longer-term. Such substantial changes to the illicit drug market in such close proximity in time to the opening of the MSIC make it difficult to assess changes to drug-offences and drug-related crime due to the MSIC.

Other extraneous factors during the study period, including the renovation of known drug-dealing sites and police operations targeting known drug-dealing areas, were identified as having an influence on drug-related transactions and loitering in the Kings Cross area. While these sites were rejected as control sites for the study, it was not possible to distinguish the effect that these interventions may have had on drug-related activities in Kings Cross from the effect of the MSIC.

The counts of loiterers at the front and back of the MSIC are also very limited in what they can convey about drug-related activity in the Kings Cross area as a whole. At best, from this data we can only determine what happened to total and drug-related loitering in

an area bounded by two businesses on either side, at the front and at the back, of the MSIC. The possibility exists that there was an increase in drug-related activity in Kings Cross that was not picked up by the data presented here. This problem was highlighted to some degree by comments made by police about an increase in loitering outside the Kings Cross train station, an area not covered by the loitering counts. While the key-informant data provide a valuable supplement to the quantitative data, it must be understood that the responses provided by the key-informants cannot be considered to be representative of all local persons or free from personal biases. Key-informants had a wide range of views towards the MSIC, and these views are likely to have affected the key-informants' sensitivity to, and the salience of, various behaviours and events. The mere fact that key-informants were participating in the study is also likely to have affected their degree of scrutiny of the local area.

7.4.2 Interpretation and implications

In summary, the establishment of the MSIC has not led to an increase in drug-related crime and does not seem to have led to a substantial influx of illicit drug dealers or users to the Kings Cross area. However, while the Kings Cross MSIC has been able to operate with minimal impact on crime in the surrounding locality, it cannot be assumed that the establishment of a MSIC in other locations would have similar results. The absence of any major escalation in the number of drug-related activities in Kings Cross may be due, at least in part, to the active drug law enforcement undertaken by police in the region. King Cross Police undertook operations actively targeting drug dealing in public both before and after the opening of the MSIC. This attention by police to drug-related activities in Kings Cross generally may have limited the potential for drug dealing associated with the MSIC to emerge.

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CHAPTER 8: EVALUATION OF COMMUNITY ATTITUDES TO THE MSIC

Key Findings

Agreement with the establishment of the MSIC

- Levels of agreement with the establishment of the MSIC in Kings Cross were high among local resident and business respondents surveyed in a telephone poll before the MSIC opened (68% and 58% respectively).
- Levels of agreement with the establishment of the MSIC in Kings Cross increased when the survey was repeated towards the end of the evaluation period with 78% of Kings Cross resident and 63% of NSW business respondents reporting agreement.
- The proportion of local resident respondents reporting disagreement with establishment of MSICs also decreased significantly from 2000 to 2002 for both Kings Cross (26% to 17%), and for other areas of New South Wales associated with high levels of drug use (21% to 14%).
- One-third of the Kings Cross business and half the Kings Cross resident respondents did not know the location of the Sydney MSIC in 2002, suggesting that at least for those people the MSIC had a low impact.
- Kings Cross business and resident respondents who knew the MSIC location were more likely to agree than disagree with the establishment of a MSIC in Kings Cross.
- One-third of local residents and one-quarter of local businesses reported that they found no disadvantages with the MSIC in 2002.

8.1 INTRODUCTION

Strategies based on the harm reduction approach, in particular Needle and Syringe Programs (NSPs) and expanded drug treatment services, were implemented in Australia in the late-1980s to prevent transmission of HIV infection among illicit drug injectors (Commonwealth of Australia, 1989). Prevalence of HIV infection has subsequently remained low among this population in Australia (NCHECR, 2002). Harm reduction policies also form the basis of HIV prevention in most developed countries (Drucker et al., 1998). The proposal to establish a MSIC in Kings Cross in 1999 was also consistent with a harm reduction approach.

However, the drugs commonly used for injection at the MSIC remain illegal. Consequently, like NSPs, the provision of MSICs is not universally accepted. Objectors to NSPs tend to fall into two categories; those who object to NSPs generally and those who object to NSPs in their local area (Elliott & Gruer, 1994). Concerns raised by opponents of MSICs were similar to those raised by opponents of NSPs; i.e, that they encourage or at least condone drug use, and act as a focal point for people who may also engage in crime or antisocial activities and consequently will increase crime in their local area.

The objective of this Chapter was to describe community attitudes towards supervised injecting centres before the MSIC opened in Kings Cross and any changes in opinion subsequent to opening. Opinions were also sought on selected drug policy initiatives other than supervised injecting centres. Specifically, the following MSIC Evaluation indicators were assessed:

1. Agreement with supervised injecting centres;
2. Opinion of location of supervised injecting centres; and
3. Opinion of the advantages and disadvantages of supervised injecting centres.

8.2 METHODS

Telephone interviews were carried out with three sub-groups: businesses located in Kings Cross; residents in Kings Cross; and residents in New South Wales. The baseline surveys were carried out in August and September 2000 for the NSW residents' survey and October 2000 for businesses and residents in Kings Cross; seven to nine months before the MSIC opened and 15 and 17 months after the decision was announced approving the establishment of the MSIC in Kings Cross. The follow-up surveys were carried out two years later in 2002 in the same months respectively, 15 and 17 months after the MSIC opened in Darlinghurst Rd, Kings Cross.

Telephone numbers for businesses were randomly selected from the electronic business telephone database (postcode area 2011). Telephone numbers for the resident surveys were generated randomly by the NSW Department of Health. Telephone numbers for Kings Cross residents included residences in the Kings Cross postcode area and the north side of Oxford Street in the Darlinghurst area.

Trained interviewers conducted the telephone interviews using the CATI system (Hunter Valley Research Foundation). The questionnaire required ten minutes, on average, to complete. Information was obtained on respondents' opinion of the Kings Cross MSIC, the location of supervised injecting centers in general, the advantages and disadvantages of MSICs and agreement with other selected drug policy initiatives.

Public opinion on MSIC was assessed by asking respondents whether they agreed or disagreed with supervised injecting centres and whether they thought that a SIC would reduce overdose, public injection, and publicly discarded syringes. Respondents were also asked whether MSICs would encourage drug injection, attract drug users to the area, make people think it was legal to inject heroin and make drug law enforcement difficult.

Up to four responses were recorded for questions that sought respondents' opinions. Any difference in opinion before and after the MSIC opened was assessed using the chi squared statistical test for difference between proportions.

8.3 RESULTS

Telephone interviews were carried out with 515 and 540 residents from the Kings Cross/North Darlinghurst area, 209 and 207 businesses located within the Kings Cross postcode area, and 1018 and 1070 residents from throughout NSW in 2000 and 2002. Survey response was high (75% and 78%, 85% and 87%, and 72% and 75%, respectively).

8.3.1 Sample characteristics

One third of the businesses were located in Kings Cross with 19% in both years being located within 100 metres of the MSIC (Table 8.1). In contrast to businesses, only 6% and 4% respectively of local resident respondents lived in the suburb of Kings Cross, reflecting the relatively non-residential nature of Kings Cross itself. The majority of local resident respondents lived in Elizabeth Bay (21% and 19%), North Darlinghurst (21% and 27%), and Potts Point (27% and 23%).

Table 8.1: Location of business or residence for Kings Cross respondents and duration of working/living in Kings Cross

Characteristics	Businesses			Residences		
	% 2000 n=209	% 2002 n=207	p-value	% 2000 n=515	% 2002 n=540	p-value
Suburb						
East Sydney	0	0		5	4	
Elizabeth Bay	6	7		21	19	
Kings Cross	34	34		6	4	
North Darlinghurst	0	0		21	27	
Potts Point	23	23		27	23	
Rushcutters Bay	12	11		7	9	
Woolloomooloo	24	25		12	13	
Not reported	1	0	0.2	1	1	0.1
Distance from Kings Cross railway station						
100 metres or less	19	19		7	3	
100 to 250 metres	18	20		17	13	
250-500 metres	28	22		30	29	
500-750 metres	11	17		15	21	
750 m to 2 kilometres	24	22		30	34	
Don't know/ Not reported	<1	0	0.3	1	1	0.001
Duration of working or living in the Kings Cross environs						
Less than 6 months	14	8		10	8	
7 to 12 months	10	7		11	11	
13 months to 24 months	12	10		13	14	
25 months to 5 years	19	23		24	24	
5 to 10 years	12	17		15	19	
10 to 20 years	20	20		13	14	
More than 20 years	12	15		13	9	
Not reported	1	<1	0.2	1	1	0.2

Interviews were carried out with senior staff at similar types of businesses in both 2000 and 2002 ($p=0.5$, Table 8.2). Most businesses (48% and 43%) provided services to other business or individuals, for example real estate, legal or architectural services. The majority of interviews were carried out with the Manager (71% and 77%) or Owner (12% and 10%) of the business.

Table 8.2: Types of businesses interviewed and position of interviewees

Characteristics	% 2000 n=209	% 2002 n=207	p-value
Types of Businesses			
Backpacker and other accommodation	8	5	
Business services	48	43	
Clubs/hotels and adult products services	8	10	
Health and community services	5	8	
Restaurants/cafes	11	9	
Shops	19	22	
Other (eg. schools)	1	3	0.5
Position in business			
Manager	71	77	
Owner	12	10	
Professional	6	4	
Receptionist/Secretary	9	8	
Other	2	0	
Not reported	-	1	0.2

Resident respondents from Kings Cross were younger than resident respondents from NSW, with 46% and 48% of Kings Cross residents aged between 25 to 39 years compared to 28% and 29% of NSW respondents (Table 8.3). Kings Cross residents were also more likely to report tertiary education (68% and 70% vs. 38% and 41%) and full time employment (68% and 66% vs. 42% and 47%) than the NSW respondents and less likely to report children (26% and 26% vs. 73% and 74%). NSW respondents were significantly more likely to report retirement from the workforce in 2000 than in 2002 (21% vs. 14%, $p<0.001$).

Table 8.3: Demographic characteristics of Kings Cross and NSW resident respondents

Characteristics	Kings Cross			NSW		
	%2000 n=515	%2002 n=540	p- value	%2000 n=1018	%2002 n=1070	p- value
Sex						
Male	49	54		43	43	
Female	51	46	0.1	57	57	0.9
Age group (years)						
18-19	1	1		3	3	
20-24	7	5		6	7	
25-39	46	48		28	29	
40-54	25	26		32	31	
55-64	9	9		12	14	
65+	11	11		18	16	
Not reported	1	<1	0.9	1	<1	0.5
Education level						
Did not complete HSC	11	13		44	42	
Completed HSC	20	16		18	17	
Tertiary diploma or degree	68	70		38	41	
Not reported	1	1	0.2	<1	<1	0.4
Current employment status						
Employed full-time	68	66		42	47	
Employed part-time	10	11		16	14	
Not in workforce	12	14		21	25	
Retired	10	9		21	14	
Not reported	<1	<1	0.8	<1	0	<0.001
Parent or guardian of any children						
Yes	26	26		73	74	
No	74	74		27	26	
Not reported	<1	<1	0.9	<1	<1	0.5

8.3.2 History of drug injection and likelihood of MSIC use

Only a small proportion of resident respondents from Kings Cross or NSW, 3% and 1% respectively in both surveys, reported that they had ever injected drugs. Around one-third of Kings Cross resident respondents in 2000 (32%) and 2002 (30%) reported knowing of family, friends, relatives or work colleagues who had injected illicit drugs ($p=0.3$).

A small proportion of resident respondents from Kings Cross or NSW also reported that they would be more likely to inject heroin if they had access to a supervised injecting centre; 4% (2000) and zero (2002) for Kings Cross ($p<0.001$) and 5% (2000) and 3% (2002) for NSW respondents ($p=0.01$). Only two of the 28 NSW respondents in 2002 who reported that they would be more likely to inject heroin also reported a history of injecting drug use. The most frequently reported reason for potential use of the MSIC was safety (Table 8.4).

Table 8.4: Number (percentage) of Kings Cross and NSW residents reporting that they would use the MSIC and the reason for use

Characteristics	Kings Cross		NSW	
	2000 n=515	2002 n=540	2000 n=1018	2002 n=1070
Would use a SIC	19 (4%)	0 (0%)	47 (5%)	28 (3%)
Reason for MSIC use				
Safety	12 (2%)	-	19 (2%)	18 (2%)
Hypothetical	5 (1%)	-	2 (<1%)	8 (1%)
Not IDU	2 (1%)	-	0 (0%)	1 (<1%)
Anti-drugs	0 (0%)	-	1 (<1%)	1 (<1%)
Not asked the reason ¹	-	-	25 (3%)	-

1 = Most of the first 25 NSW resident respondents who reported that they would be more likely to inject heroin if they had access to a SIC were aged over 50 years, therefore a question was added to determine whether people responding in the affirmative would actually commence drug injection.

8.3.3 Knowledge of the MSIC

Most of the local resident respondents interviewed in 2000 (93%) and 2002 (94%) reported that they had heard of supervised injecting centres. One-third identified the correct intended location of the Sydney MSIC in the 2000 survey, with a further 22% identifying the location as Kings Cross (Table 8.5). Around half the respondents interviewed towards the end of the Evaluation period identified the correct location (52%). Reporting of not knowing the location decreased from 37% to 16% ($p < 0.001$).

Most of the local business respondents interviewed in 2000 (94%), and nearly all of the business respondents interviewed in 2002 (99%, $p = 0.004$) also reported that they had heard of supervised injecting centres. Just over one-third identified the correct intended location of the Sydney MSIC in 2000 (36%), increasing to two-thirds in 2002. The proportion reporting that they did not know the location decreased from 40% to 5% ($p < 0.001$).

As with the two local groups, most of the NSW resident respondents reported that they had heard of supervised injecting centres, increasing from 85% (2000) to 88% (2002, $p = 0.02$). One-third identified the intended location of the MSIC as Kings Cross in 2000 (34%), increasing to 56% in 2002. Reporting of not knowing the location decreased from 61% to 31% ($p < 0.001$).

Table 8.5: Knowledge of the location of the Kings Cross MSIC

Location of MSIC	Local residents		Local businesses		NSW residents	
	% 2000 n=515	% 2002 n=540	% 2000 n=209	% 2002 n=207	% 2000 n=1018	% 2002 n=1070
66 Darlinghurst Road	34	52	36	65	Na	na
Kings Cross	22	25	10	27	34	56
Other in Kings Cross	3	2	4	1	-	-
Darlinghurst	3	4	10	2	-	-
Sydney	1	1	-	-	6	13
Don't know	37	16	40	5	61	31

8.3.4 Agreement or disagreement with MSICs

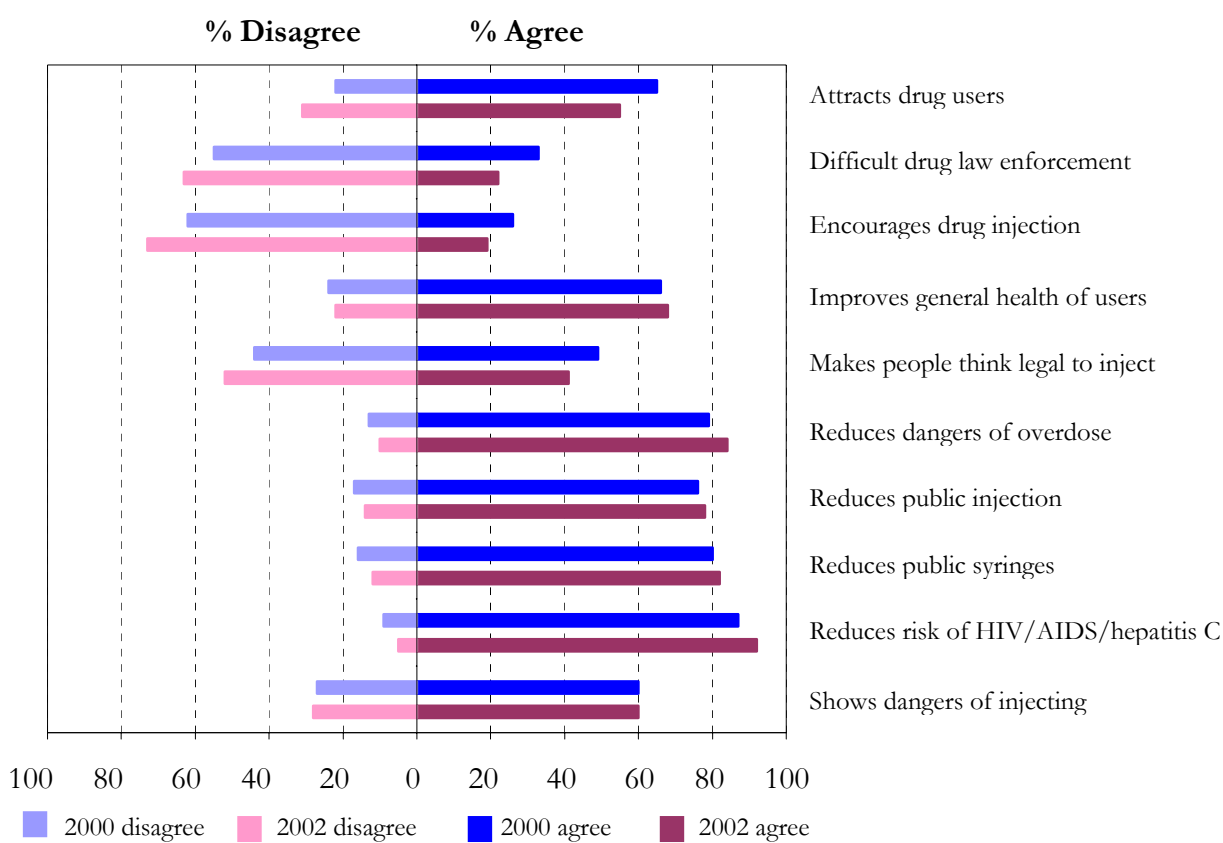
Local residents

Around two-thirds of the local resident respondents agreed with the establishment of a medically supervised injecting centre in Kings Cross in 2000, increasing to 78% in 2002 ($p < 0.001$). At the same time, levels of disagreement decreased significantly from 2000 to 2002 for establishment in both Kings Cross (26% to 17%, $p < 0.001$), or in other areas of high drug use (21% to 14%, $p = 0.003$). Similar patterns and levels of agreement and disagreement were reported among local resident respondents who knew where the MSIC was located, with residence located within 500 metres of the MSIC and with more than two years of residence in Kings Cross (Table 8.6).

Table 8.6: Percentage agreement of Kings Cross resident respondents' with establishment of MSICs

Agree/disagree with MSIC:	In Kings Cross			In other localities		
	% 2000	% 2002	p-value	% 2000	% 2002	p-value
All respondents						
	n=515	n=540		n=515	n=540	
Agree	68	78		71	80	
Disagree	26	17		21	14	
Neither agree nor disagree	4	4		4	4	
Don't know	2	1	<0.001	4	2	0.003
Respondents who knew the MSIC location						
	n=177	n=283		n=177	n=283	
Agree	67	78		67	80	
Disagree	29	16		25	14	
Neither agree nor disagree	3	5		5	5	
Don't know	1	1	0.01	3	1	0.01
Residence within 500 metres of MSIC						
	n=276	n=237		n=276	n=237	
Agree	69	82		73	82	
Disagree	26	13		20	14	
Neither agree nor disagree	4	5		4	4	
Don't know	2	2	0.002	3	<1	0.03
More than 2 years residence in Kings Cross						
	n=339	n=359		n=339	n=359	
Agree	66	76		70	79	
Disagree	28	18		23	15	
Neither agree nor disagree	4	4		4	5	
Don't know	0	0.3	0.02	0	1	0.01

There was high and increased agreement among local resident respondents in 2000 and 2002 that MSICs reduce the risk of HIV/AIDS or hepatitis C (87% to 92%, $p=0.004$), reduce publicly discarded syringes (80% to 82%, $p=0.01$), and reduce dangers associated with overdose (79% to 84%, $p=0.06$; Figure 8.1). There was high disagreement that MSICs encourage drug injection (62% to 73%, $p=0.001$) and make drug law enforcement difficult (55% to 63%, $p<0.001$). Around 50:50% disagreed and agreed in both years that MSICs encourage people to think that it's legal to inject heroin (44:49% to 52:41%, $p=0.006$).



*Percentages do not add up to 100 because the percentage of respondents who neither disagreed nor agreed were not included in the Figure.

Figure 8.1: Kings Cross resident respondents' agreement with selected statements on the impact of the MSIC

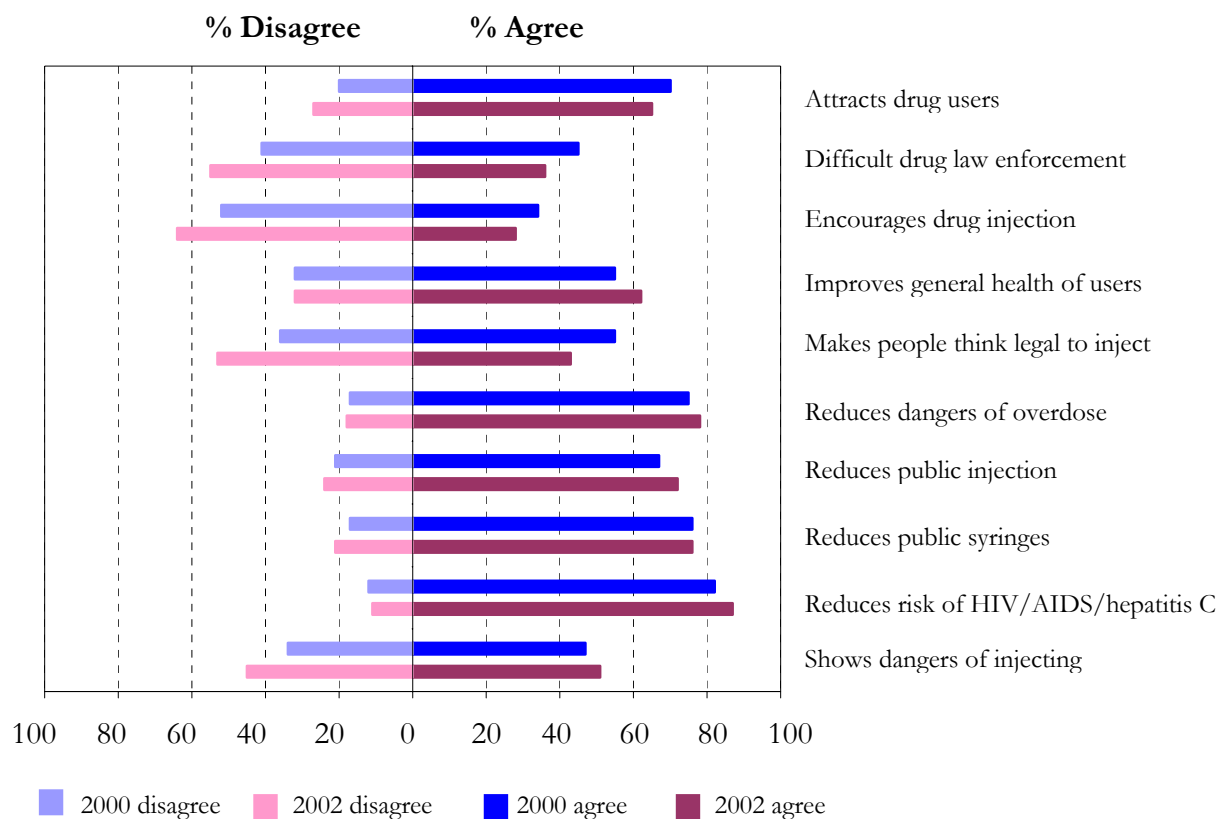
Local businesses

More than half and almost two-thirds of the local business respondents agreed with the establishment of a MSIC in Kings Cross in 2000 and 2002 respectively (p=0.5). Around one third disagreed (37% and 32%). Similar proportions also agreed and disagreed with establishment in other areas of high drug use (59% and 67% vs. 30% and 28%, p=0.2). Furthermore, similar levels of agreement and disagreement were reported among business respondents who knew where the MSIC was located, and businesses located within 500 metres of the MSIC or with more than two years of operation in Kings Cross (Table 8.7).

Table 8.7: Business respondents' agreement with the establishment of a MSIC

Agree/disagree with MSIC:	In Kings Cross			In other localities		
	% 2000	% 2002	p-value	% 2000	% 2002	p-value
All respondents						
	n=209	n=207		n=209	n=207	
Agree	58	63		59	67	
Disagree	37	32		30	28	
Neither agree nor disagree	3	3		5	2	
Don't know	2	2	0.5	6	3	0.2
Respondents who knew the MSIC location						
	n=76	n=135		n=76	n=135	
Agree	54	59		57	67	
Disagree	41	38		37	28	
Neither agree nor disagree	3	2		1	2	
Don't know	2	1	0.9	5	3	0.4
Businesses located within 500 metres of the MSIC						
	n=135	n=126		n=135	n=126	
Agree	56	55		60	62	
Disagree	39	41		33	33	
Neither agree nor disagree	3	2		4	2	
Don't know	2	2	1.0	3	3	0.9
Located more than 2 years in Kings Cross						
	n=130	n=154		n=130	n=154	
Agree	56	62		58	66	
Disagree	38	34		31	28	
Neither agree nor disagree	3	1		5	2	
Don't know	3	3	0.6	6	4	0.3

There was high agreement among business respondents in 2000 and 2002 that MSICs reduce dangers of overdose (75% and 78%, $p=0.1$), reduce publicly discarded syringes (76% each), and reduce public injection (67% to 72%, $p=0.01$; Figure 8.2). Business respondents were more likely to disagree than agree that MSICs encourage drug injection in both surveys (52% vs. 32% and 64% vs. 28%), with levels of disagreement increasing in 2002 ($p=0.05$). Around half agreed in both years that MSICs show the dangers of injecting drug use (47% to 51%, $p<0.001$), and encourage people to think it's legal to inject heroin (55% to 43 %, $p=0.001$).



*Percentages do not add up to 100 because the percentage of respondents who neither disagreed nor agreed were not included in the Figure.

Figure 8.2: Kings Cross business respondents' agreement with selected statements on the impact of the MSIC

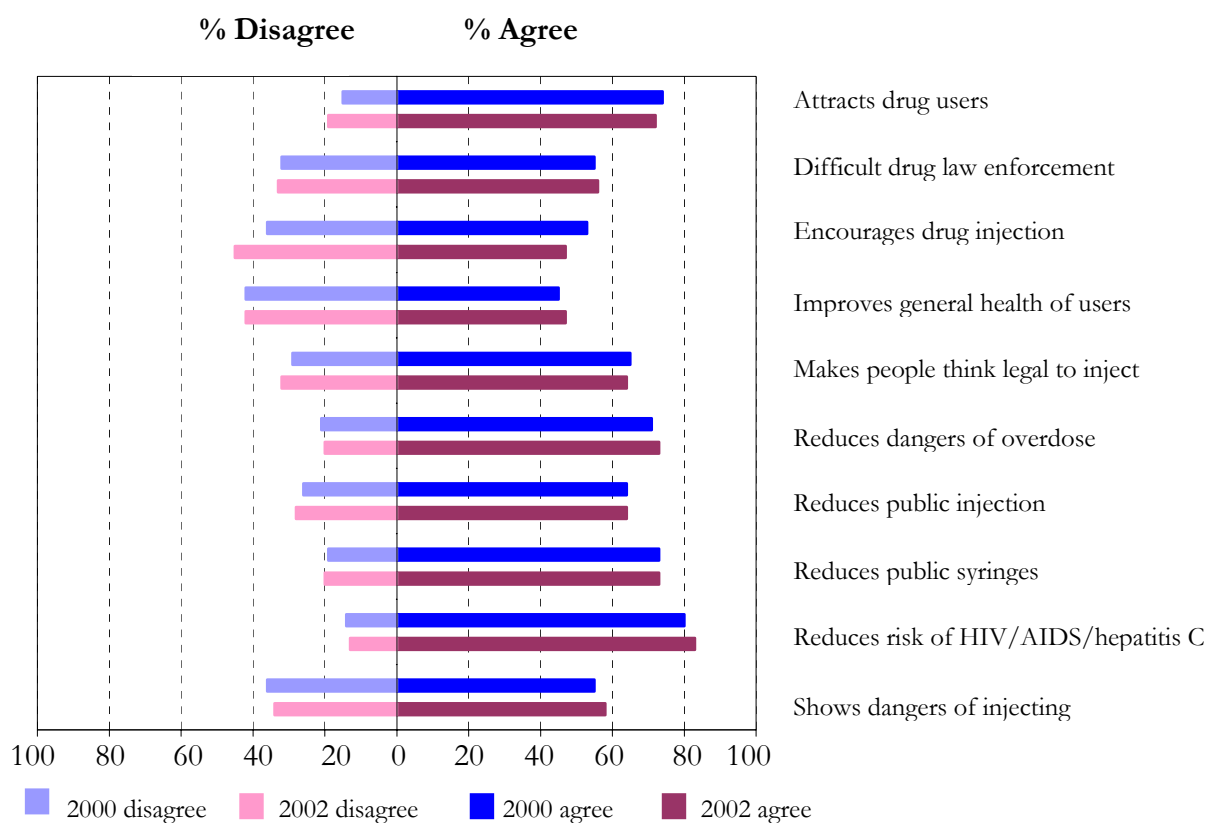
NSW residents

More than half the 1018 and 1070 NSW resident respondents agreed with establishment of a MSIC in Kings Cross (59%) or other areas of high drug use (51%) in 2000, increasing to 62% and 55% respectively in 2002 ($p=0.001$ and $p<0.001$). Around one-third of NSW respondents disagreed with establishment of a MSIC in Kings Cross (33% and 29%) or in other areas (39% and 37%, Table 8.8).

There was high agreement among NSW resident respondents in 2000 and 2002 that MSICs reduce the risk of HIV/AIDS or hepatitis C (80% to 83%, $p=0.05$), attract drug users (74% to 72%, $p=0.005$), and reduce dangers of overdose (71% to 73%, $p=0.05$), and publicly discarded syringes (73% each, Figure 8.3).

Table 8.8: NSW respondents' agreement with location of MSICs

Agree/disagree with MSIC:	In Kings Cross			In other localities		
	% 2000	% 2002	p-value	% 2000	% 2002	p-value
All respondents						
	n=1018	n=1070		n=1018	n=1070	
Agree	59	62		51	55	
Disagree	33	29		39	37	
Neither agree nor disagree	5	8		6	7	
Don't know	3	1	0.001	4	1	<0.001
Respondents who knew the MSIC location						
	n=341	n=596		n=341	n=596	
Agree	58	65		49	58	
Disagree	36	28		42	36	
Neither agree nor disagree	4	6		6	5	
Don't know	2	1	0.02	3	1	0.03



*Percentages do not add up to 100 because the percentage of respondents who neither disagreed nor agreed were not included in the Figure.

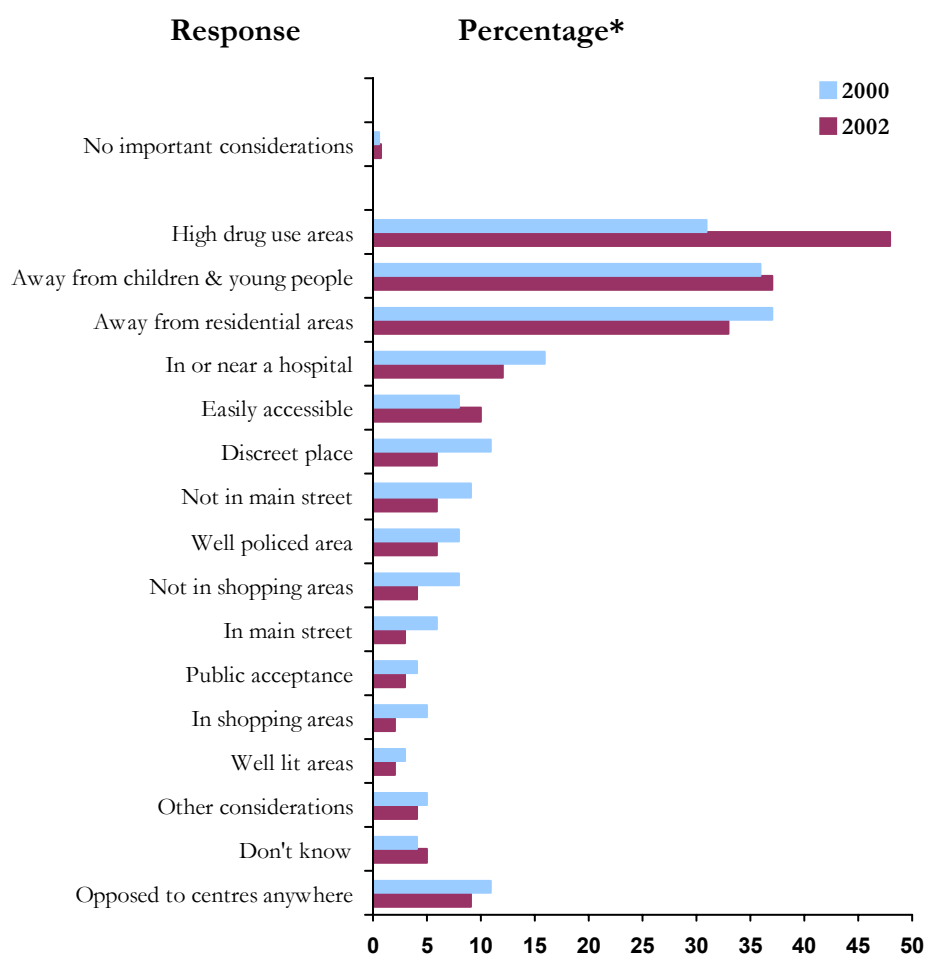
Figure 8.3: NSW resident respondents' agreement with selected statements on the impact of the MSIC

8.3.5 Location of MSICs

Local residents

Nearly all the local resident respondents reported at least one consideration to be taken into account for the location of MSICs in 2000 and 2002 (95% and 94%). The most frequently reported types of location considerations reported by local resident respondents were establishment of MSICs in areas of high drug use (31% to 49%, $p < 0.001$), away from residential areas (37% to 33%, $p = 0.3$), and away from children and young people (36% to 37%, $p = 0.5$, Figure 8.4).

“In your opinion, what are the most important considerations, if any, in deciding the location of the MSIC?”



* Percentages sum to more than 100 as up to four responses could be nominated.

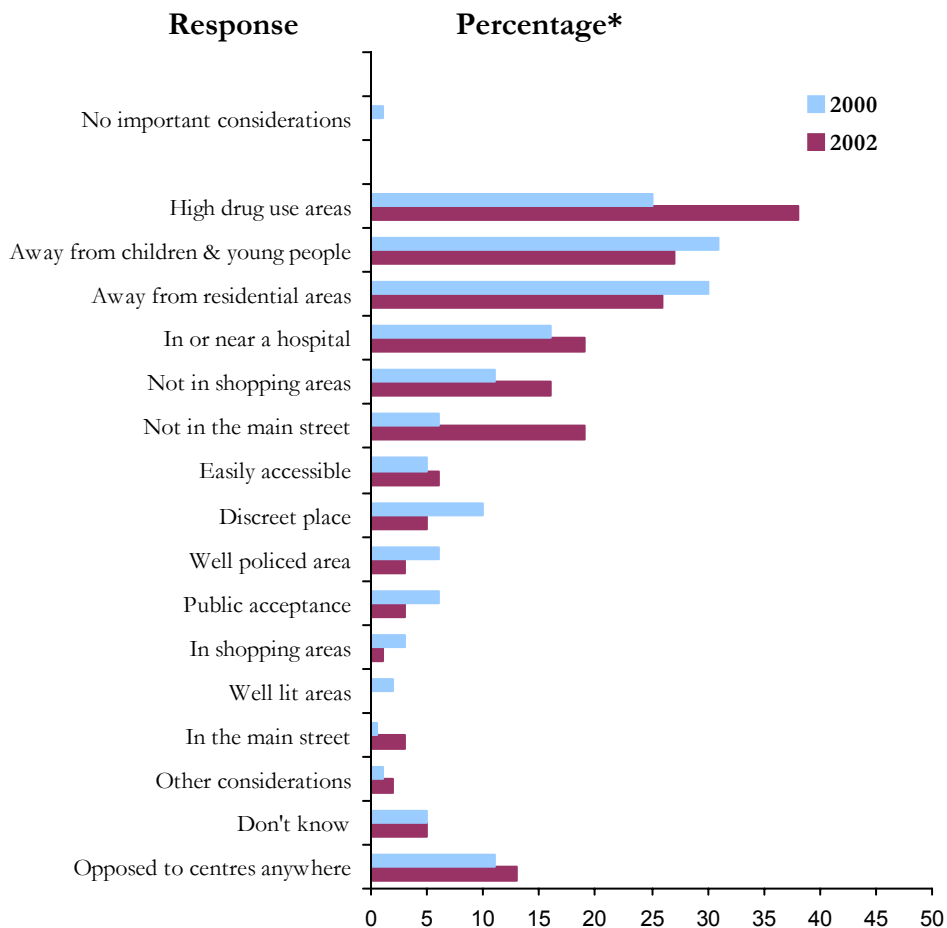
Figure 8.4: Kings Cross resident respondents' opinion on locations for MSICs

Only 11% (2000) and 9% (2002) reported that they were opposed to any location for MSICs ($p=0.3$). Away from shopping areas was reported by only 8% and 4% of local resident respondents as a location consideration for MSICs in 2000 and 2002 ($p=0.004$). There were also very few respondents who suggested location in shopping areas (5% to 2%, $p=0.003$) or the main street (6% to 3%, $p=0.02$).

Local businesses

Most local business respondents also identified at least one consideration to be taken into account with regard to location of MSICs in 2000 and 2002 (93% and 96%, $p<0.001$). As with local resident respondents, the top three most frequently reported considerations by business respondents were establishment of MSICs in locations away from children and young people (31% to 27%, $p=0.4$), in areas of high drug use (25% to 38%, $p=0.004$), and away from residential areas (30% to 26%, $p=0.3$, Figure 8.5). Only 11% (2000) and 13% (2002) reported that they were opposed to any location for MSICs ($p=0.4$).

“In your opinion, what are the most important considerations, if any, in deciding the location of the MSIC?”



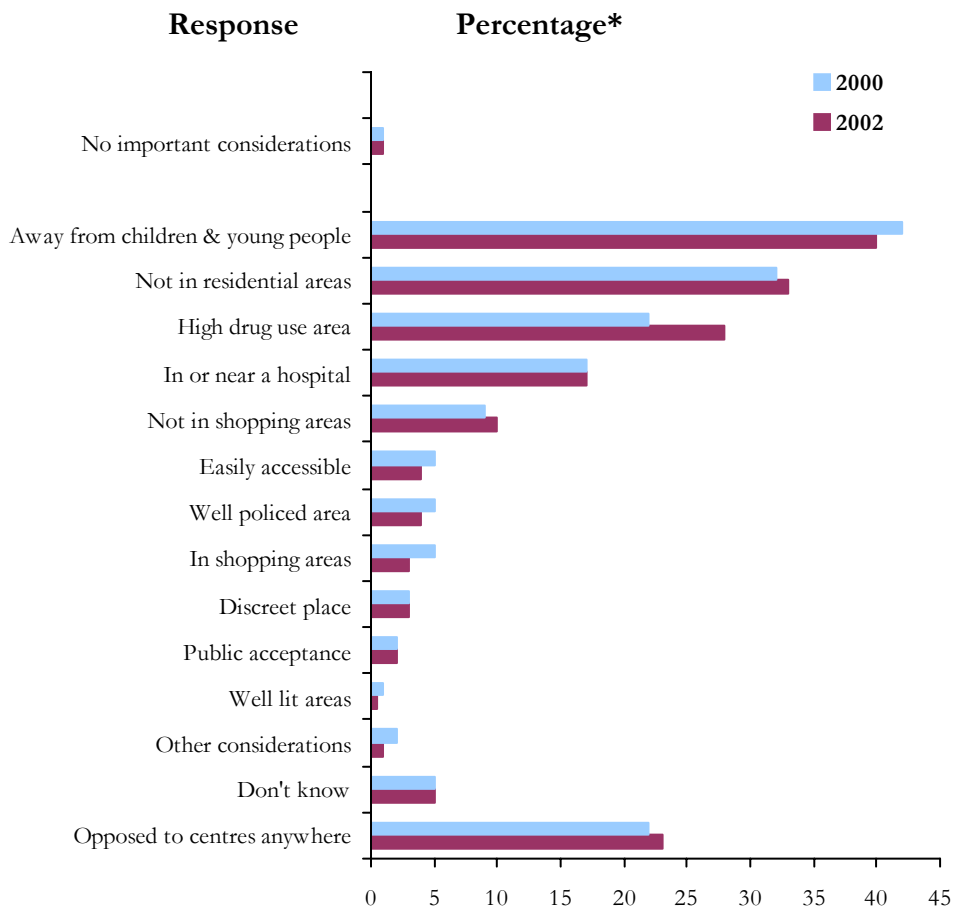
*Percentages sum to more than 100 as up to four responses could be nominated.

Figure 8.5: Kings Cross business respondents' opinion on locations for MSICs

NSW residents

Similar to the two local groups, most NSW resident respondents in 2000 (94%) and 2002 (95%) listed at least one consideration for location of MSICs ($p=0.3$). The types of location considerations nominated within the top three most frequently reported considerations by NSW respondents were establishment of MSICs away from children or young people (42% to 40%, $p=0.7$), not in residential streets or areas (32% to 33%, $p=0.6$), and in areas of high drug use (22% to 28%, $p=0.01$; Figure 8.6). Almost one-quarter in each year reported that they were opposed to any location for MSICs (22% and 23%, $p=0.7$). Away from shopping areas was reported by 9% and 10% of NSW respondents as a location consideration for MSICs in 2000 and 2002.

“In your opinion what are the most important considerations, if any, in deciding the location of the MSIC?”



*Percentages sum to more than 100 as up to four responses could be nominated.

Figure 8.6: NSW resident respondents' opinion on locations for MSICs

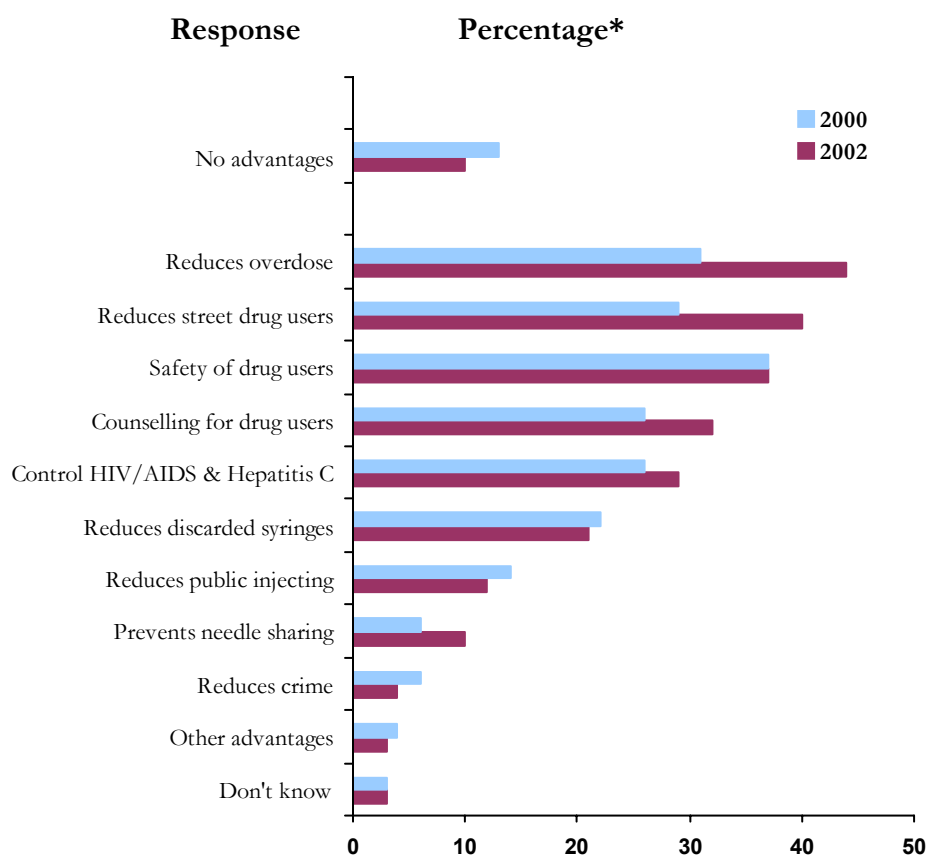
8.3.6 Opinions on the advantages and disadvantages of MSICs

Local residents

An opinion on at least one advantage of MSICs was provided by 85% of local resident respondents in the 2000 survey, increasing to 87% in 2002 ($p=0.008$). The number of advantages nominated by each respondent also increased from 2000 to 2002, with 66% to 74% of respondents nominating two to four advantages.

The types of advantages nominated within the top five most frequently reported advantages were that MSICs reduce the risk of overdose (31% to 44%, $p<0.001$), are safer for drug users (37% each), reduce street based drug users (29% to 40%, $p<0.001$), provide help and counselling to drug users (26% to 32%, $p=0.04$), and help control the spread of HIV/AIDS and hepatitis C (26% and 29%, $p=0.4$; Figure 8.7).

“In your opinion, what, if any, are the advantages of MSICs?”



*Percentages sum to more than 100 as up to four responses could be nominated.

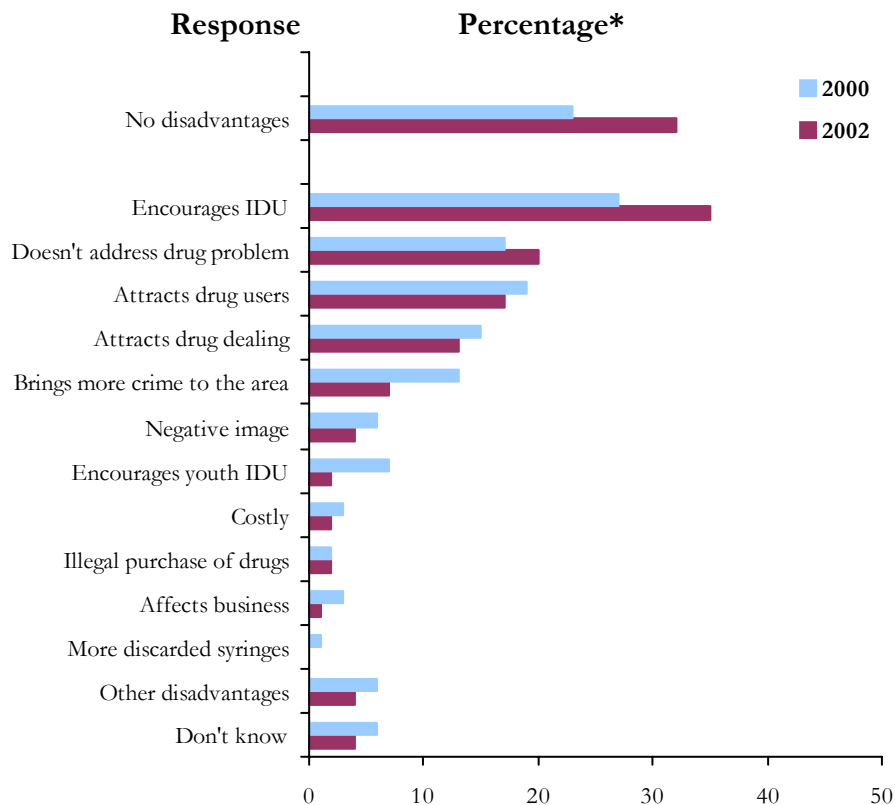
Figure 8.7: Advantages attributed to MSICs reported by Kings Cross residents

Almost three-quarters of the local resident respondents provided an opinion on at least one disadvantage of MSIC in 2000 (71%), and only two thirds reported disadvantages in 2002 (68%). The proportion of local resident respondents nominating two to four responses also decreased from 2000 to 2002 (36% to 33%, $p=0.5$).

The most frequently nominated disadvantage of MSICs reported by local resident respondents in both 2000 and 2002 was that MSICs encourage or condone injecting drug use, reported by about one third of respondents in both surveys (27% to 35%, $p=0.005$). There were also seven and two percent of respondents in both surveys who specified that MSICs would encourage injecting drug use among youth (Figure 8.8).

The other types of disadvantages nominated within the top five most frequently reported responses by local resident respondents in both 2000 and 2002 were that MSICs do not address the problems of drug use (17% and 20%, $p=0.4$), attract drug users (19% and 17%, $p=0.3$) drug dealing (15% and 13%, $p=0.3$), and crime to the area (13% to 7%, $p<0.001$). Very few reported more discarded syringes (1% and 0%, $p=0.05$). Very few also reported that MSICs affect business with the proportion decreasing from 2000 to 2002 (3% and 1%, $p=0.08$).

“In your opinion, what, if any, are the disadvantages of MSICs?”



*Percentages sum to more than 100 as up to four responses could be nominated.

Figure 8.8: Disadvantages attributed to MSIC by Kings Cross residents

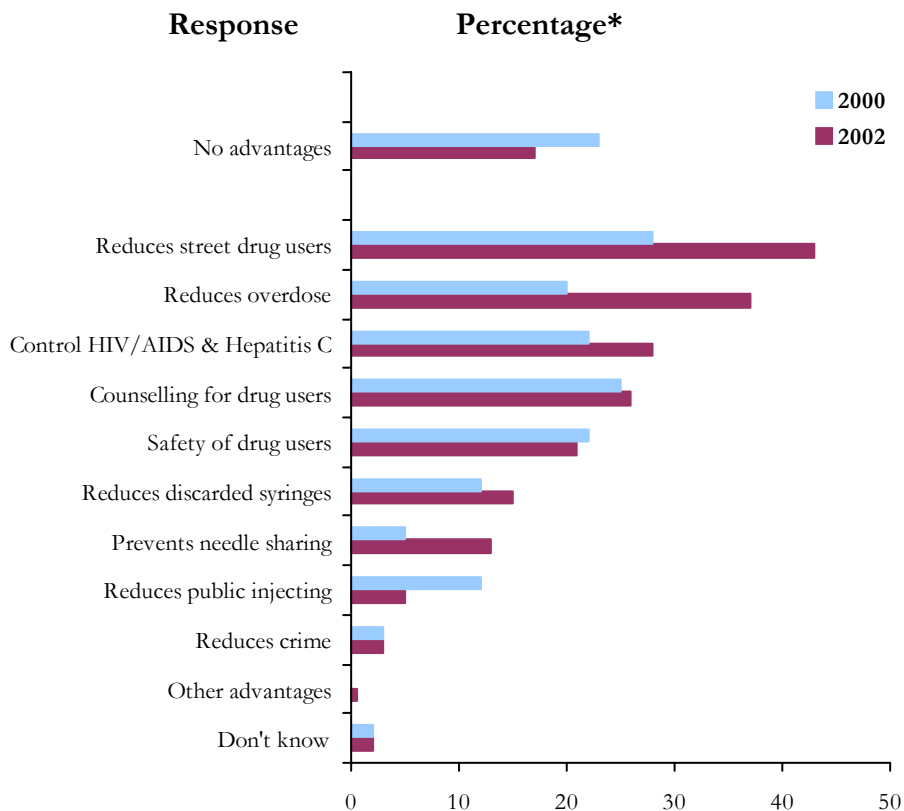
Local Business

Most local business respondents provided an opinion on at least one advantage of MSICs, with the proportion increasing from 75% (2000) to 81% (2002, $p=0.02$). The number of advantages nominated by each respondent also increased from 2000 to 2002, with 46% and 62% of respondents respectively nominating two to four advantages.

The most frequently reported advantage identified in both surveys was that MSICs reduce the number of street-based drug users, increasing from 28% of respondents in 2000 to 43% in 2002 ($p=0.001$). Other types of advantages nominated within the top five most frequently reported advantages were that MSICs reduce the risk of overdose (20% to 37%, $p<0.001$ respectively), provide help and counselling to drug users (25% and 26%, $p=0.9$), help control the spread of HIV/AIDS and hepatitis C (22% and 28%, $p=0.1$), and are safer for drug users (22% and 21%, $p=0.8$, Figure 8.9).

Reporting that MSICs reduce public injection as an advantage of MSIC decreased from 12% (2000) to 5% (2002, $p=0.01$). Reporting of reduced discarded syringes as an advantage of MSIC was reported by 12% and 15% respectively.

“In your opinion, what, if any, are the advantages of MSICs?”



*Percentages sum to more than 100 as up to four responses could be nominated.

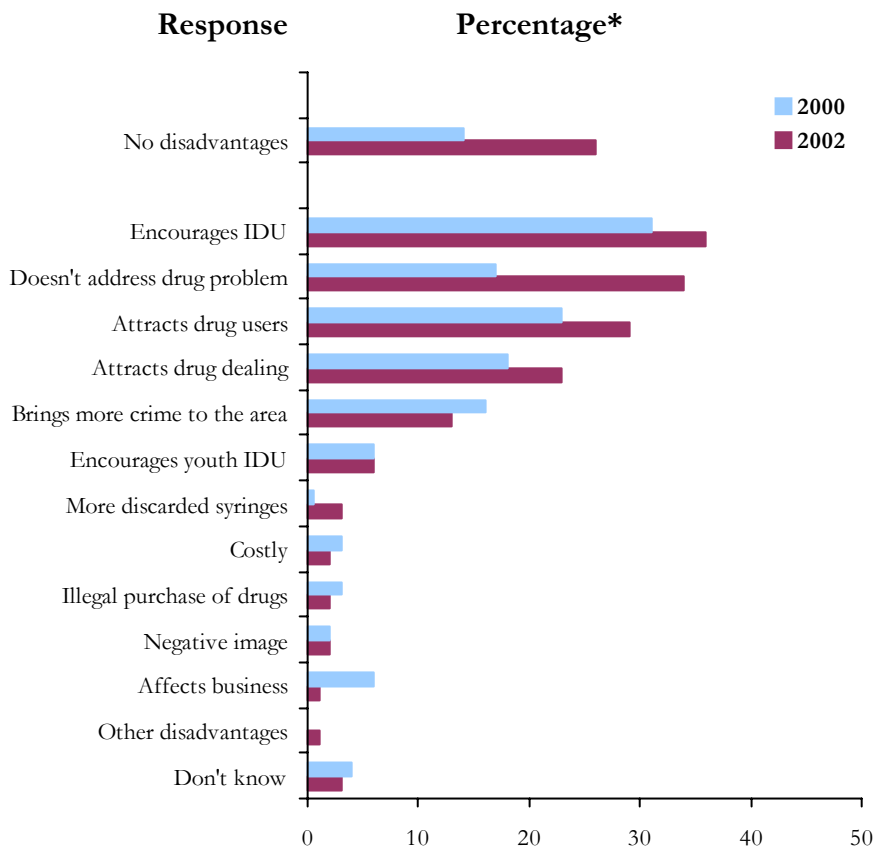
Figure 8.9: Advantages attributed to MSICs by Kings Cross business respondents

Most business respondents provided an opinion on at least one disadvantage of MSICs, with the proportion decreasing from 86% (2000) to 74% (2002, $p=0.005$). The number of disadvantages nominated by each respondent increased from 2000 to 2002, with 32% to 47% of respondents nominating two to four disadvantages.

The most frequently nominated disadvantage of MSICs reported by business respondents was that they encourage or condone injecting drug use (Figure 8.10), reported by about one third of respondents in both surveys (31% and 36%). There were also six percent of respondents in both surveys who specified that MSICs would encourage injecting drug use among youth.

The other types of disadvantages nominated within the top five most frequently reported responses by business respondents in both 2000 and 2002 were that MSICs do not address the problem of drug use (17% to 34%, $p<0.001$), and attract drug users (23% and 29%, $p=0.2$), drug dealing (18% and 23%, $p=0.2$), and crime to the area (16% and 13%, $p=0.3$). Very few reported more discarded syringes (0.5% and 3%, $p=0.1$). Very few also reported that MSICs affect business with the proportion decreasing from 2000 to 2002 (6% to 1%, $p=0.004$).

“In your opinion, what, if any, are the disadvantages of MSICs?”



*Percentages sum more than 100 as up to four responses could be nominated.

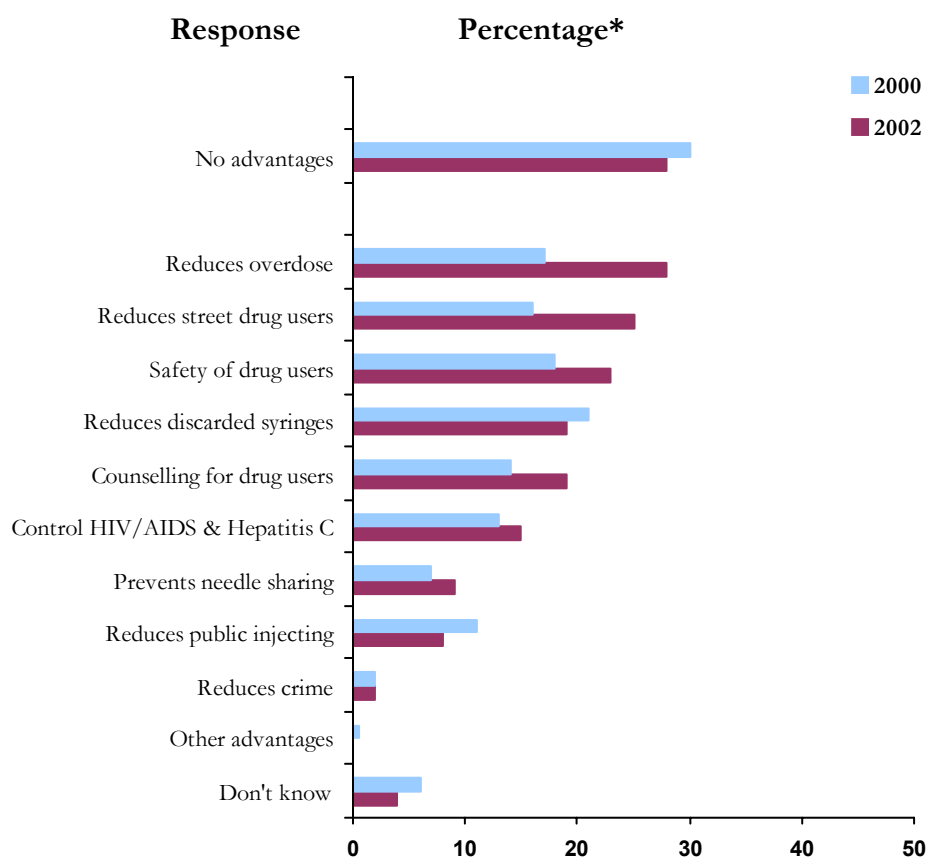
Figure 8.10: Disadvantages attributed to MSICs reported by Kings Cross business respondents

NSW residents

Similar proportions of NSW respondents provided an opinion on at least one advantage of MSICs in 2000 (66%) and 2002 (67%); almost one third of respondents reported no advantages (30% and 28%). The proportion of respondents reporting more than one advantage increased from 2000 to 2002 (41% to 47%, $p < 0.001$).

Consistent with the two local groups, the types of advantages nominated within the top five most frequently reported advantages by NSW respondents were that MSICs reduce the risk of overdose (17% to 28%, $p < 0.001$), reduce syringes discarded in public (21% and 19%, $p = 0.08$), are safer for drug users (18% to 23%, $p = 0.003$), reduce street drug users (16% to 25%, $p < 0.001$), and provide help and counselling to drug users (14% to 19%, $p = 0.005$; Figure 8.11). Reporting that MSICs reduce public injection decreased from 2000 to 2002 (11% to 8%, $p = 0.02$).

“In your opinion, what, if any, are the advantages of the MSIC?”



*Percentages sum more than 100 as up to four responses could be nominated.

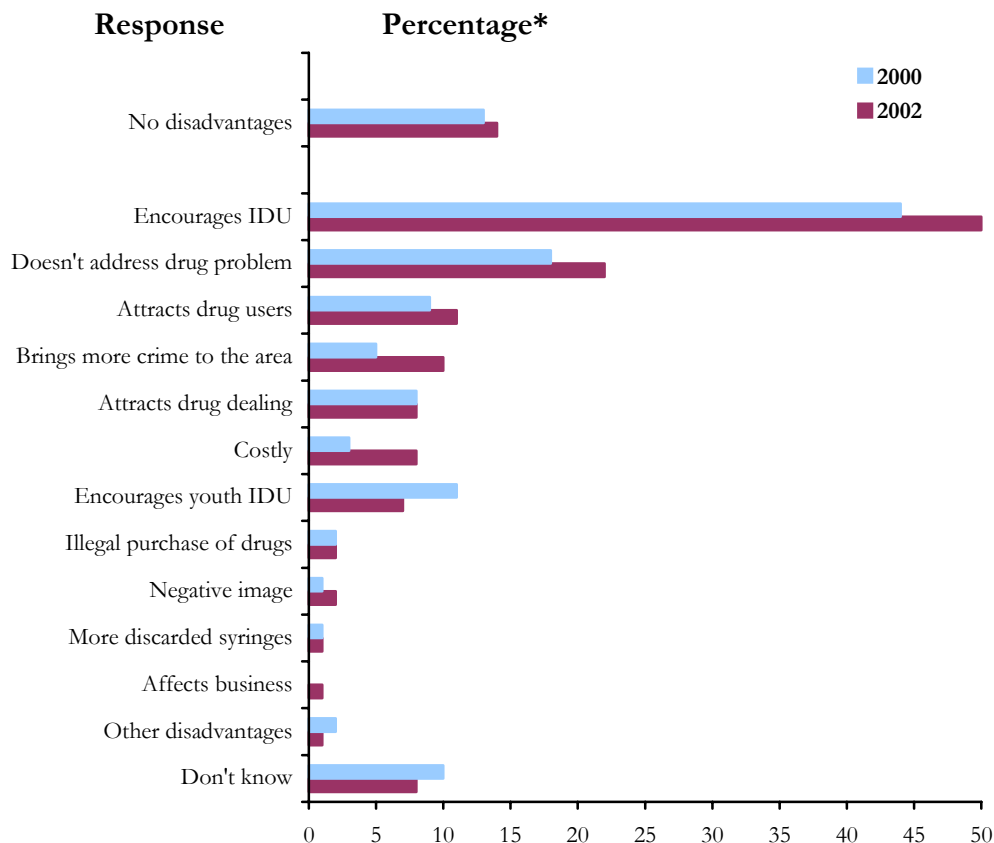
Figure 8.11: Advantages attributed to MSIC reported by NSW resident respondents

Most of the NSW resident respondents provided an opinion on at least one disadvantage of MSIC in both surveys (76% and 78%). The proportion of NSW respondents who nominated two to four disadvantages increased from 2000 to 2002 (24% to 36%, $p < 0.001$).

The most frequently nominated disadvantage of MSICs reported by NSW resident respondents in both 2000 and 2002 was that MSICs encourage or condone injecting drug use, reported by about half of the respondents in both surveys (IDU (44% to 50%, $p = 0.02$). There were also eleven and seven percent of respondents in both surveys who specified that MSICs would encourage injecting drug use among youth.

The other types of disadvantages nominated within the top five most frequently reported responses by NSW respondents in both 2000 and 2002 were that MSICs do not address the problems of drug use (18% to 22%, $p = 0.02$), attract drug users (9% to 11%, $p = 0.05$), drug dealing (8 each), and crime to the area (5 to 10%, $p < 0.001$; Figure 8.12). Less than one percent reported that MSICs increase syringes discarded in public (1% each) or that MSICs affect business (0% to 1%, $p < 0.001$) at both time points.

“In your opinion, what, if any, are the disadvantages of the MSIC?”



*Percentages sum more than 100 as up to four responses could be nominated.

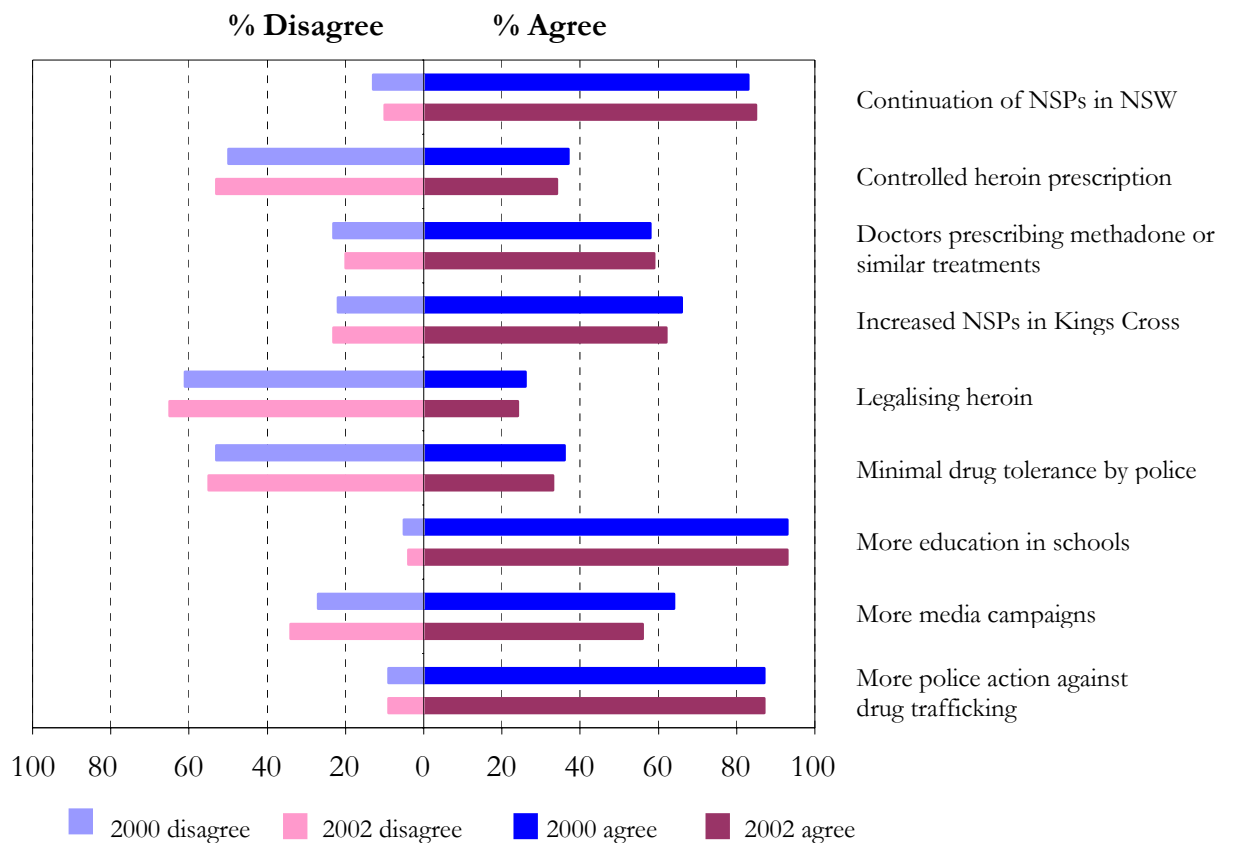
Figure 8.12: Disadvantages attributed to MSIC reported by NSW resident respondents

8.3.7 Agreement with selected other drug control strategies

Local residents

The type of drug control strategies with high levels of agreement from local resident respondents in 2000 and 2002 were education in schools (93% each), police action against drug trafficking (87% each), and NSP services in NSW (83% to 85%, $p=0.4$; Figure 8.13).

The type of drug control strategy with high disagreement was legalising heroin (61% to 65%, $p=0.5$). Resident respondents were also more likely to disagree with police tolerating small amounts of drugs (53% vs. 36% and 55% vs. 33%, $p=0.8$), and the controlled prescription of heroin (50% vs. 37% and 53% vs. 34%, $p=0.4$).



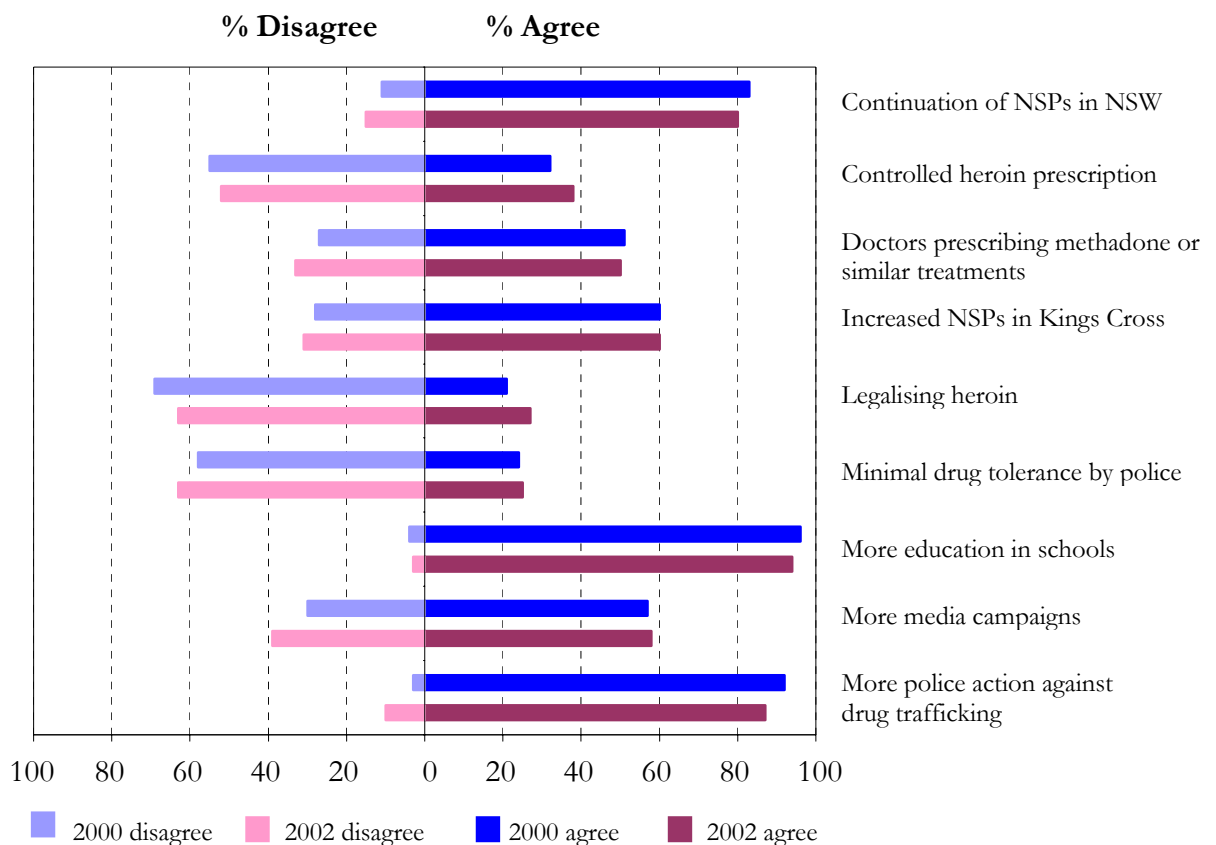
*Percentages do not sum to 100 because the percentage of respondents who neither disagreed nor agreed were not included in the Figure.

Figure 8.13: Kings Cross resident respondents' agreement with drug control strategies

Local businesses

Consistent with the responses from local residents, the type of drug control strategies with high agreement among local business respondents in 2000 and 2002 were education in schools (96% and 94%, $p=0.6$), police action against drug trafficking (92% to 87%, $p=0.001$), and NSP services in NSW (83% and 80%, $p=0.4$; Figure 8.14).

The type of drug control strategies with high disagreement were legalising heroin (69% and 63%, $p=0.3$), and police tolerating small amounts of drugs (58% to 63%, $p=0.03$). Respondents were also more likely to disagree than agree with controlled prescription of heroin (55% vs. 32% to 52% vs. 38%, $p=0.07$).



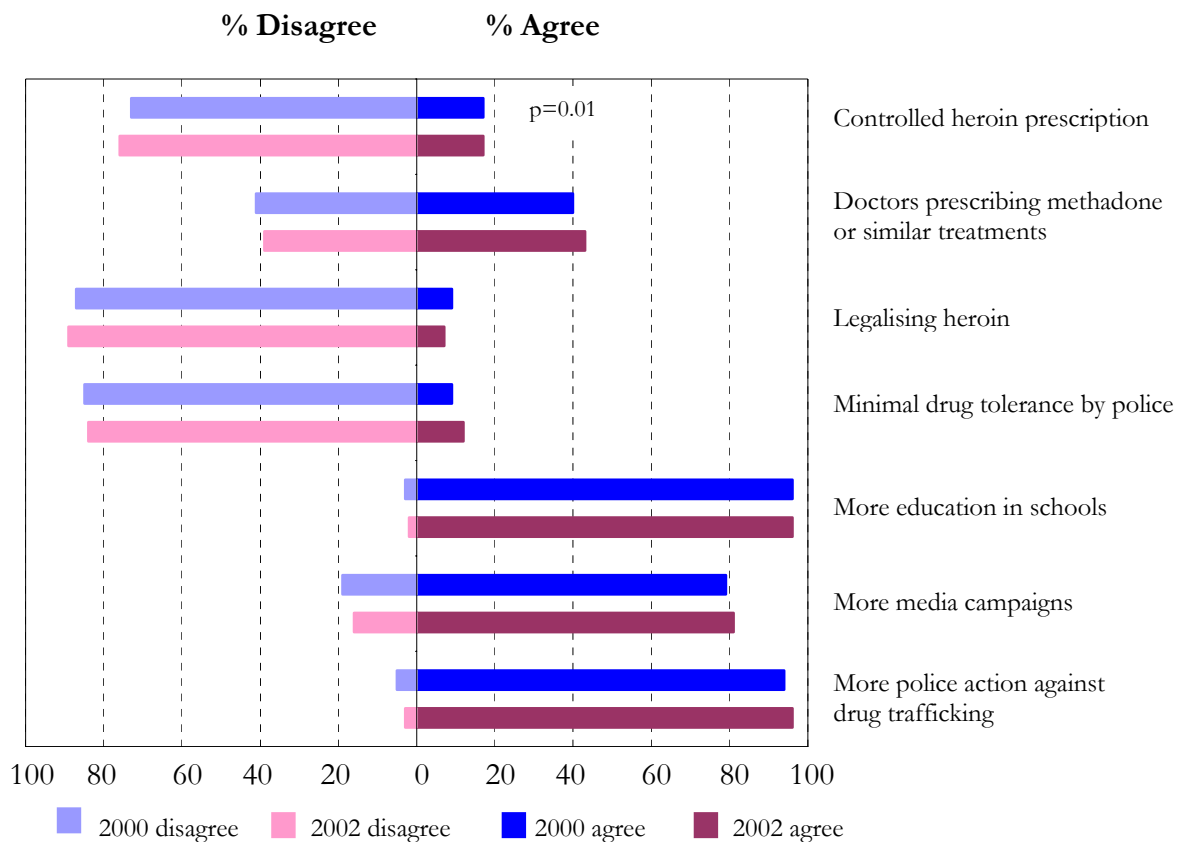
*Percentages do not sum to 100 because the percentage of respondents who neither disagreed nor agreed were not included in the Figure.

Figure 8.14: Kings Cross business respondents' agreement with selected drug control strategies

NSW residents

The type of drug control strategies with high agreement among NSW resident respondents in 2000 and 2002 were education in schools (96% each), police action against drug trafficking (94% and 96%, $p=0.06$), and media campaigns (79% and 81%, $p=0.3$; Figure 8.15).

The type of drug control strategies with high disagreement were police tolerating small amounts of drugs (85% and 84%, $p=0.4$), legalising heroin (87% and 89%, $p=0.4$) and controlled prescription of heroin (73% to 76%, $p=0.01$).



*Percentages do not sum to 100 because the percentage of respondents who neither disagreed nor agreed were not included in the Figure.

Figure 8.15: NSW resident respondents' agreement with selected drug control strategies

8.4 DISCUSSION

Main Findings

All groups of respondents (local residents, local businesses, and NSW residents) were more likely to agree than disagree with the establishment of a MSIC in Kings Cross. In particular, business and resident respondents who could identify the location of the MSIC were more likely to agree than disagree with the establishment of the MSIC.

Around one-third of all groups disagreed with the establishment of SICs in Kings Cross or in other areas of high drug use in 2000. However, the level of disagreement decreased significantly in 2002 among local resident respondents and among those who knew the location of the MSIC. Almost 80% of the local resident and 60% of business respondents agreed with establishment of a MSIC in Kings Cross in 2002. Similar levels of support for a supervised injecting centre were also reported in previous surveys (MacDonald et al., 1999; ANOP Research Services Pty. Ltd., 2000).

Limitations

There are several limitations to these types of surveys that need to be considered when interpreting the survey results. Residents without a land-line telephone were excluded from the sample frame. It is also possible that the levels of agreement or disagreement reported by local businesses and residents in favour of or opposed to the service were over-estimated. In addition, it is possible that respondents were influenced by media coverage of issues around the MSIC. However, the high response and large sample size should minimise the impact of any such biases.

Interpretation and implications

Health services for people who inject drugs can be subject to considerable community concern and media and political attention. Most respondents in these surveys had heard of MSICs, although only two-thirds of the business and half the local resident respondents knew the actual location of the Kings Cross MSIC in 2002. It is possible that this finding reflects the discreet nature of MSIC service provision. In addition, only one percent of businesses reported in 2002 that they thought MSIC affected businesses.

The types of location considerations nominated within the top three considerations by all respondents and at both times were establishment of SICs in areas of high drug use, in locations away from children and young people, and away from residential areas. Around one in ten Kings Cross business and resident respondents and one-quarter of NSW respondents reported that they were opposed to any location for SICs. Even though the proportion of local residents and businesses reporting opposition to SICs was low, with needle and syringe provision for illicit drug injection, pressure from small groups has prevented NSPs from operating, often in areas of high drug use (Elliot & Gruer, 1994).

The most frequently provided opinions on the types of disadvantages of MSICs identified in both surveys by the three groups were that they encourage or condone injecting drug use and do not address problems of drug use. However, local respondents were more likely to disagree than agree that MSICs encourage drug injection. Respondents were also more likely to provide an opinion of advantages than disadvantages of MSICs with the proportion reporting advantages and the proportion reporting that there were no disadvantages increasing from 2000 to 2002. Advantages generally related to public health gains.

There was high agreement among the three groups of respondents in 2000 and 2002 that MSICs reduce the dangers of overdose, publicly discarded syringes, public injection and the risk of HIV/AIDS or hepatitis C. National surveys of public opinion towards drug policies in 1995 also found that sharing needles was the primary concern for the community rather than heroin use per se (Makkai & McAlister, 1998).

Community attitudes to the medically supervised injecting centres and the establishment of such a centre in Kings Cross were generally supportive. Furthermore, support increased significantly among local resident respondents and marginally among business respondents after the service was established.

Acknowledgements

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1. National Centre for HIV Epidemiology and Clinical Research, University of NSW and
2. National Drug and Alcohol Research Centre, University of NSW.

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CHAPTER 9: ECONOMIC EVALUATION

Key Findings

Cost of MSIC operation and visits

- Financial cost evaluation of current operation of the Kings Cross Medically Supervised Injecting Centre (MSIC) shows that the set-up costs were \$1,334,041; the initial year's operating costs were \$1,995,784; and the budgeted costs for 12 months until 30.06.03 were \$2,420,214.
- The cost per client visit was \$63.01 in the initial year of operation, and the cost per client visit was projected to be \$37.23 assuming increased client throughput and efficiencies in the 2002/2003 year.

Economic evaluation

- As a method of valuing deaths averted and based on a number of assumptions, the economic evaluation of current operation of the Kings Cross Medically Supervised Injecting Centre (MSIC) suggests that the benefit/cost ratio was 0.72 (lower estimate) and could range up to 1.19 (higher estimate).
- As a method of valuing deaths averted and based on a number of assumptions, the economic evaluation of future operation of the Kings Cross MSIC, working at a higher capacity and implementing efficiency-based cost-savings, suggests that the benefit/cost ratios could range from 1.20 (lower estimate) to 1.97 (higher estimate).
- The analysis indicates that the potential rate of return of the MSIC to the community in terms of the valuation of deaths averted is comparable to some other widely accepted public health measures.

9.1 Introduction

This report provides an economic evaluation of the operations of the Kings Cross MSIC. Such an exercise involves the identification and, where possible, the valuation of all the costs of setting-up and operating the facility and all the resulting benefits and costs to the whole community, which includes the MSIC clients.

Specifically, the purpose of the economic evaluation is to provide the relevant authorities with information on the basis of which three questions can be answered:

- What is the actual cost of the MSIC service?
- Is there economic justification for the continued operation of the Kings Cross MSIC?
- Is there economic justification for the establishment of new MSICs?

It is appropriate to evaluate both costs and benefits of MSIC operations over one single year (whether an actual year of operation or a projected year) because both costs and benefits, expressed in real terms, are unlikely to vary markedly from year to year.

Comprehensive data have been collected on the MSIC's set-up costs and operating costs in the early period of operation. These are actual costs which have been incurred. They do not represent the costs of the Centre operating at long-term efficiency levels (for example, at close to full capacity and utilising management lessons learned from its initial operations). In terms of evaluation of the MSIC operating under long-term normal conditions, the appropriate comparison is with costs at full operating efficiency, rather than in the start-up phase.

9.2 Methods and Results

There are two major approaches available for economic evaluation, namely cost-effectiveness analysis (CEA) and cost-benefit analysis (CBA).

To avoid possible difficulties in interpretation, this study has selected only paid and unpaid production attributable to the estimated lives saved. A conservative approach has been taken with regard to the use of tangible production benefits of MSIC clients, as the value of unpaid and paid production is likely to be on average lower than that of the general population. The value of lost output estimated here can be applied to the labour force participation and productivity assumptions of the defined group stratified by age and gender. In CEA a single public policy objective is set (for example, a given reduction in heroin-attributable mortality) and various alternative ways of achieving this single objective are analysed to determine which is the lowest cost. CEA does not facilitate the determination of the detailed objectives of public policy since it does not indicate the rates of return accruing to alternative policies. It simply indicates what would be the least costly means of achieving an objective which has already been predetermined.

The selection of CBA as the appropriate economic evaluation tool involves a series of other choices, which are necessarily arbitrary, but are based on well developed economic conventions. The societal perspective used in CBA requires establishing a valuation for a statistical life, i.e. it uses an agreed value of any one life, and not the lives of any particular group of people, as all lives are considered of equal value. CBA is a much more complex and flexible tool of economic evaluation. By examining both the costs and benefits of alternative policies it permits rational choices to be made between different policies. It can readily cope with evaluating policies with multiple objectives or with completely different outcomes. In addition its analysis is undertaken from a societal point of view. It asks the question “Are the benefits accruing to the community from implementation of a particular policy or project greater than its costs?” In a policy environment in which resource constraints exist, it permits the ranking of various expenditures, as long as they have all been subject to cost-benefit analysis undertaken on a consistent basis.

Economic evaluation of the MSIC involves evaluation, from a societal perspective, of a project which has multiple potential objectives, or outputs. These include: reduction of drug-attributable mortality; reduction of drug-attributable morbidity; and improvement of public amenity. CEA would be an inadequate tool for the purposes of this economic evaluation. Accordingly, CBA is the tool adopted here.

9.2.1 MSIC operating and set-up costs

Comprehensive costings data on the operations of the MSIC have been collected for the purposes of this evaluation, with estimates of both set-up and operating costs of the Kings Cross facility. Operating costs were calculated for:

- the first 12 months of operation;
- the actual 12 months operation to 30 June 2002; and
- the budgeted 12 months operation to 30 June 2003.

Tables 9.1 to 9.3 provide summaries of the costs data. Detailed cost information is presented in Appendices 2 to 4. Appendix 2 details MSIC set-up costs incurred prior to opening. Appendix 3 details MSIC set-up costs incurred since opening and Appendix 4 presents detailed MSIC operating costs.

Table 9.1: Summary of MSIC set-up costs

	Staff costs	Property costs	General expenses	Other costs	Total costs
	\$	\$	\$	\$	\$
Sisters of Charity ¹				45,939	45,939
Prior to opening	272,428	726,129	218,554		1,217,111
Subsequent to opening				70,991	70,991
Total	272,428	726,129	218,554	116,930	1,334,041

¹ = The Sisters of Charity was the original proposed licence holder. The details of the costs are presented in the Appendices.

Table 9.1 presents a summary of the set-up costs of the MSIC. Considerable work (for example, in evaluation, policy formulation and responding to legal proceedings) was required on behalf of a number of individuals and agencies before the MSIC could be established. It is extremely difficult to place a value on these types of costs and, accordingly, they are not included in Table 9.1.

Table 9.2 presents operating costs for the first full year of operation of the MSIC. No evidence was found that the MSIC's operating costs fluctuate significantly over different time periods, except insofar as variable costs change according to the number of client visits.

Table 9.2: Summary of operating costs, May 2001 to April 2002

	12 Month Cost
	\$
Staff Costs	883,234
Property Costs	440,403
General Expenses	272,147
Insurance	400,000
Total	1,995,784

Table 9.3 presents estimates of the cost of client visits. Three levels of activity have been chosen as follows:

- Actual client visits during the first 12 months of operation – 31,675
- Actual visits in the 12 months to 30 June 2002 - 38,147
- Forecast level of client visits in the 12 months to 30 June 2003 – 65,000

The average daily number of client visits to the MSIC has been rising steadily over its period of operation and during the 18 month trial period this figure had exceeded 200 per day on occasion. The forecast number of visits for the financial year 2002-03 is 65,000 (approximately 180 per day).

Table 9.3: Operating cost per client visit

Activity level	Yearly cost	Cost per visit, actual client visits (31,675)	Cost per visit, current client visits (38,147)	Cost per visit, Forecast client visits (65,000)
	\$	\$	\$	\$
First 12 months of operation	\$1,995,780	\$63.01	\$52.32	\$30.70
12 months to 30 June 2002	\$2,130,449	\$67.26	\$55.85	\$32.78
Budgeted for the 12 months to 30 June 2003	\$2,420,214	\$76.41	\$63.44	\$37.23

In relation to the Kings Cross MSIC, set-up costs have already been incurred and cannot be recovered. They are “sunk costs”. Further, these costs would not be repeated if operation of the MSIC were extended beyond the original trial period. Thus, evaluation of a proposal to extend the life of the Kings Cross facility should compare only the benefits of this facility with the operating costs, ignoring set-up costs. On the other hand, evaluation of the possibility of setting-up further MSICs should also take into account set-up costs. The two sets of costs are required for different purposes. An assumption is also made about greater efficiency in future operations, as an acknowledgment that lessons learned from the first year of operation are likely to indicate structural improvements which would lead to greater efficiency.

For the purposes of the present exercise, costs are presented here both including and excluding set-up costs, and on two bases:

- the 12 months to 30 June 2002 taking into account of costs in normal operation (including normal operating hours and a normal number of client visits); and
- budgeted for the 12 months to 30 June 2003 but adjusted for possible improvements in operational efficiency and adjusting for increasing the number of client visits.

Possible efficiency improvements specific to the operations of the Kings Cross MSIC include that the set-up costs of an MSIC at another location should be lower because it almost certainly would not lie idle for so long prior to commencing operation. Some specific set-up costs incurred by the Kings Cross MSIC may be fully or partially avoidable in the establishment of a subsequent MSIC. These include, public relations consultancy fees, costs of policy formulation and legislative drafting, leasehold improvement costs, and costs of administrative functions, including accounting fees. The revised 2002-03 budget also takes into account some cost increases, including in rent and award rates.

In the subsequent calculation of costs for a new, efficiently operating, MSIC it is assumed that public relations consultancy fees would be one half of those incurred at the Kings Cross MSIC but that leasehold improvement costs would be the same.

The costings report commissioned for this evaluation, together with operational experience, make it clear that reductions in operating costs of the MSIC are also feasible. The following cost offsets, some of which are potential and some of which are immediately able to be implemented, merit consideration:

- a full-time medical director may not be needed in the normal operation of an MSIC, as opposed to during the start-up phase of the first MSIC;
- the use by the MSIC of a motor vehicle could be discontinued, eliminating this expense will disappear, including the cost of car space rental;
- needle removal costs could fall as a result of the way needles are disposed of;
- security costs could fall, as a result of the engagement of a new security company, so that total security costs will remain steady in spite of extended opening hours;
- a needle syringe program could be incorporated into the MSIC;
- and managerial experience gained at the Kings Cross MSIC may well yield additional benefits in terms of improved operating efficiency of any future MSICs.

Table 9.4 below presents cost estimates on various bases and according to current (2001-02) and forecast client visits. Set-up costs are assumed to be amortised over a ten year period. The table includes a number of rows, and for ease of interpretation it is pointed out that “Current operation” indicates actual operating and set-up costs for 2001-02, based on 38,147 client visits. The “Future operation” refers to the budgeted 2002-03 operating costs adjusted for operational improvements and a lack of set-up costs, and allowing for 65,000 client visits.

“Future operation including NES” indicates budgeted 2002-03 operating costs adjusted for operational improvements, a lack of set-up costs, and the inclusion of savings resulting from a transfer of the Needle Syringe Program, 65,000 client visits. The “Future operation of a new location” indicates budgeted 2002-03 operating and set-up costs, and exclusion of savings from a transfer of the Needle Syringe Program, 65,000 client visits.

Table 9.4: MSIC operating and set-up costs

	Operating cost	Amortised set-up cost	Total cost	Less NSP savings	Total less NSP savings	Average cost per visit
	\$ p.a.	\$p.a.	\$ p.a.	\$ p.a.	\$ p.a.	\$
Current operation of the MSIC	\$2,130,449	\$95,816	\$2,226,265	n.a.	\$2,226,265	\$58.36
Future MSIC operation	\$2,336,513	n.a.	\$2,336,513	n.a.	\$2,336,513	\$35.95
Future operation, including NSP	\$2,336,513	n.a.	\$2,336,513	\$183,667	\$2,152,846	\$33.12
Future operation at a new location	\$2,336,513	\$98,690	\$2,435,203	n.a.	\$2,435,203	\$37.46

Note: n.a. indicates “not applicable”.

The average cost per client visit at the Kings Cross MSIC during 2001-02 was estimated to be \$58.36. The average cost per client visit in the future (2002-03) operation of this facility is estimated to be \$33.12 if the amalgamation with the Needle Syringe Program takes place and \$35.95 if the amalgamation does not occur. The average cost per client visit for a new facility is estimated to be \$37.46. The average cost per client visit for a new facility is higher than that for future operation of the existing Kings Cross facility because set up costs are relevant in relation to a new facility, but not relevant to a decision concerning continuation of operation of the existing facility.

To put these estimates in a health service provision context, one reasonable comparison would be with the current Australian Medical Association recommended rate for a medium length (15 minute) medical consultation of \$55. Another comparison is the cost of provision for methadone maintenance treatment at \$10.58 per day per client through specialist methadone clinics, where clients spend an average 1.05 minutes at the dosing counter (Mattick et al., 2002). Clients of the MSIC spent an average of 12 minutes in the Injecting Room and 28 minutes overall in the MSIC (see Chapter 2).

9.2.2 MSIC benefits

This section of the report considers possible benefits to the community of the operation of the MSIC, the extent to which they are measurable, and methods of valuation.

Measurement of economic benefits accruing to the community as a result of the operations of the Kings Cross MSIC can only be made by comparison with an alternative hypothetical situation in which the MSIC did not exist. Under this counterfactual situation all drug users would inject in alternative locations, including public places. Some users would overdose and a proportion of these would receive medical treatment, mainly from the ambulance service. As set out in Chapter 3, overdose incidents occurred on the MSIC premises and these are assumed for this analysis to be substitutes for incidents which otherwise would have occurred elsewhere.

Table 9.5: Potential benefits from operation of an MSIC

Deaths averted:
<ul style="list-style-type: none">• Future paid production• Future unpaid production• Quality of life
Drug overdose-related morbidity prevented:
<ul style="list-style-type: none">• Future paid production• Future unpaid production• Health care services• Disability and other pensions• Quality of life
Health care services saved as a result of:
<ul style="list-style-type: none">• Needle Syringe Programs provided by the MSIC• Overdoses treated at MSIC• Overdoses prevented by MSIC advisory services• Reduced needle stick injuries
Increased referrals to other health care facilities for treatable conditions
Reduced ambulance attendances resulting from street overdoses
Reduced police attendances resulting from street overdoses
Kings Cross street amenity: discarded needles, public injecting, loitering, drug dealing, other crime, pedestrian flows

The benefits of the MSIC take two forms, as set out below.

- First, benefits accruing to the community fully in the year of operation under review. Examples in this category are the costs of ambulance and police callouts which are avoided as a result of the services offered by the MSIC. These benefits are not likely to vary significantly from year to year. Thus the use of their current value is appropriate and no discounting is necessary.

- Second, benefits accruing to the community over both the year of operation and into the future. Examples in this category are the productivity into the future of MSIC clients whose lives have been saved, and the value of future health services saved as a result of the avoidance of the transmission of HIV and hepatitis C. In these cases it is necessary to identify the present value of the future time stream of benefits, applying an appropriate discount rate. Table 9.5 presents possible benefits of the MSIC, and these benefits are individually considered in some detail.

9.2.3 Deaths averted

Chapter 3 presents an estimate of the annual number of deaths averted as a result of the operations of the MSIC. Specifically, the estimate of four deaths averted (see Chapter 3) is used for the subsequent calculations in this economic evaluation.

The treatment of overdoses at the MSIC is not the only mechanism by which the operations of the MSIC may prevent drug-attributable deaths. The provision to MSIC clients of safe injecting information, specifically relating to overdose risk and appropriate intervention may contribute to a reduction in client risk of overdose both in the MSIC and elsewhere. There appears to be no way of quantifying and costing these potentially prevented overdoses. Safe injecting information may also contribute the prevention of morbidity and mortality from other sources, for the example the transmission of HIV and HCV.

9.2.4 Valuation of deaths averted

The value of life can be estimated in a number of ways in economic analysis. Here, the value is estimated using the possible earnings of the MSIC clients. The assumptions made do not necessarily imply that the MSIC clients will earn at the level stated or be employed at the rate set out. The estimates are to use a standard economic approach to valuing life.

MSIC clients are of workforce age. That is, they are below the age at which persons would qualify for receipt of the age pension (65). Thus, it is assumed that premature deaths from drug overdoses could lead to losses to the MSIC clients themselves, and to the rest of the community, of three types:

- paid production forgone;
- unpaid production of household services forgone; and
- quality of life costs (for example, suffering, loss of life, and bereavement).

The first two types of loss are relatively straightforward to value. The methods used here correspond closely to those adopted by the Bureau of Transport Economics in its study of road crash costs in Australia (Bureau of Transport Economics, 2000). The third type of loss creates greater problems of valuation.

In relation to the calculation of all three types of costs, it is necessary firstly to calculate the number of deaths prevented. Calculations are made both for actual MSIC operations in 2001-02 and for the future operation of the MSIC, as defined above. In making these calculations it is necessary to make further assumptions, which are made explicit in the following description.

For all the calculations an appropriate discount rate must be chosen. The rate applied here is 5 per cent per annum, which is the rate most commonly used in government programs of this nature. For example, it was adopted by Health Outcomes International et al. (2002) in their report on return on needle and syringe programs in Australia and by Applied Economics 2003 in their review on returns on investment in public health. Calculations are undertaken on the assumption that output (whether paid or unpaid) will be produced until the age of 65. Estimates for a representative sample of the employed population would take into account age-specific employment rates to indicate what proportion of persons whose lives were saved would have been in the work force in each age group. However, it appears reasonable to assume that the present and potential future employment levels of the MSIC clientele are significantly lower in all age groups than for the general working population.

One approach to this problem is to undertake the calculations on the basis of the current employment status (differentiated by age group) of the MSIC clientele. However, this approach may be thought of as conservative, in that the employment status of MSIC clients could improve as a result of the operations of the MSIC, even though their status is unlikely to match that of the general population (see, for example, Vaillant, 1973; Oppenheimer and Sheehan, 1990; Ross *et al*, 2002). Indeed, the data indicate that the likely employment rates, even many years after first reaching treatment will be low, at most reaching 30% to 40%. Accordingly, to value life and the deaths averted, estimates can also be made on the basis of an assumption that the future employment status of MSIC clients whose death from overdose has been prevented lies half way between the current MSIC client employment status and the employment status of the general population. This is referred to in Table 9.6 as “MSIC Clients (Adjusted). The three set of rates are presented in Table 9.6 below.

Again, it is pointed out that this is a method of valuing life, and it is not intended to suggest that the earnings specified will ever be realised, or that MSIC clients overall will earn the average weekly wage, work until they are 65 years old, or be employed at high rates.

Table 9.6: Age-specific employment/population ratios, 2000-2001¹

Age	General population		MSIC clients ²		MSIC clients (adjusted)	
	Male	Female	Male	Female	Male	Female
15-19	0.490	0.510	0.297	0.310	0.394	0.410
20-24	0.767	0.720	0.355	0.333	0.561	0.527
25-34	0.893	0.667	0.431	0.322	0.662	0.494
35-44	0.870	0.681	0.367	0.287	0.618	0.484
45-54	0.834	0.679	0.321	0.261	0.577	0.470
55-59	0.686	0.465	0.457	0.310	0.572	0.387
59-64	0.445	0.212	0.297	0.141	0.371	0.177

1 = Sources: ABS, *Labour Force Australia*, 6203.0, and authors' calculations. 2 = The employment ratios of MSIC clients are derived by including all MSIC clients who reported working (whether part-time or full-time) as if they were working on a full-time basis for the purpose of the valuation of life.

9.2.6 Lost production in the workforce

This calculation produces estimates of the value of paid production which is gained as a result of prevented deaths. Following the Bureau of Transport Economics (2000), the value of production is taken to be average weekly total earnings, for both males and females in both full-time and part-time employment. Again following the Bureau of Transport Economics (2000), a two per cent per annum average growth rate in real earnings was assumed.

Again, it is noted that overall the MSIC client group is unlikely to be employed at high rates or earn the average weekly wage.

9.2.7 Lost production in the household

Although not counted in national accounts data, households make a very real, but unpaid, contribution to national output, in terms of such services as domestic activities, childcare, purchasing of goods and services, and volunteer and community work (see Australian Bureau of Statistics, 1997). Indeed, the ABS estimates that the value of unpaid work in the Australian economy in 1997 was the equivalent of almost one half of recorded gross domestic product.

ABS estimates of the value of unpaid work in 1997 are applied here, and updated to current values by the percentage increase in average weekly earnings over the period. It is conservatively assumed that the real value of household unpaid output would not change over the expected lives of the MSIC clients whose deaths were prevented.

However, in estimating the total value of household production the same problem arises as in the estimation of the value of paid production. The average performance of MSIC clients in the area of unpaid production is typically likely to be much lower than that of the general population. Accordingly, an adjustment to the values of unpaid production is made in exactly the same way as for paid production and, again, calculations are also undertaken on the assumption of some improvement in MSIC client levels in this area (though not sufficient to reach those of the general community).

9.2.8 Loss of quality of life

In addition to the tangible costs of lost production resulting from premature death due to overdose, there also exist major intangible costs such as reduced life expectancy, pain, suffering and bereavement. The most important characteristic of intangible costs is that, when they are reduced, there is no release of production or consumption resources for other uses. For example, any reduction in pain and suffering, while an important benefit, will permit no direct transfer of these benefits to any other person. An important implication of this characteristic is that there is no market in the benefits of cost reduction. The benefits cannot be bought and sold. Thus, it is extremely difficult to place a value on intangible costs and the temptation exists to ignore them.

On the other hand, to ignore these costs would imply that premature drug-attributable deaths impose no costs on society other than the tangible costs of lost production. If this were the case, health care resources devoted to improving the health and prolonging the lives of retirees would, from a community point of view, be wasted. Since the community clearly does not hold this view, intangible costs should be taken into account, at least implicitly, in the community's decisions about resource allocation,

Despite these arguments in favour of counting intangible costs, this cost-benefit analysis takes account only of the hypothetical production benefits deriving from the deaths prevented by the MSIC. However, it can be noted that the Bureau of Transport Economics (2000) estimated the value of the lost quality of life for each road accident fatality in 1996 to be \$319,030. It is to be expected that the value of a life lost in the present context would be of a similar order of magnitude.

9.2. The estimates

Table 9.7 provides a summary of the estimates of the hypothetical values of paid and unpaid output attributable to the estimated deaths averted. “General population” signifies that the estimates are based on the characteristics of the general population. “MSIC Clients” indicates the use of MSIC client characteristics. “MSIC Clients (Adjusted)” signifies a hypothetical estimate between that of the general population and of MSIC clients. As noted earlier, the analysis and estimates should be understood to represent a proxy measure of the value of life, rather than representing a true dollar return to the community.

Table 9.7: Estimates of the hypothetical value of life in terms of paid and unpaid production

	Current- general population	Future- general population	Current- MSIC clients	Future- MSIC clients	Current- MSIC clients (adjusted)	Future- MSIC clients (adjusted)
	\$'000 p.a.	\$'000 p.a.	\$'000 p.a.	\$'000 p.a.	\$'000 p.a.	\$'000 p.a.
Hypothetical paid production						
Male	1,732	3,011	795	1,381	1,263	2,196
Female	591	1,028	267	464	436	758
Total	2,324	4,038	1,062	1,845	1,700	2,954
Hypothetical unpaid production						
Male	610	1,039	285	486	448	763
Female	706	1,203	201	343	453	773
Total	1,316	2,242	486	829	901	1,535
Hypothetical paid and unpaid production						
Male	2,342	4,050	1,080	1,868	1,711	2,959
Female	1,297	2,231	468	806	889	1,530
Total	3,639	6,281	1,548	2,674	2,601	4,489

9.2.10 Reduction of overdose-related morbidity

Although it was noted in Chapter 3 that the MSIC has a role to play in the reduction of drug overdose-related morbidity, the evaluation was unable to make quantitative estimates of morbidity prevented as a result of the operations of the MSIC. Nevertheless, it is likely that these morbidities, had they not been prevented, would impose additional cost penalties on the community as a whole and that these avoided costs represent additional community benefits accruing as a result of the MSIC.

Since some of these morbidities would be likely to be permanent in nature, their avoidance would be likely to lead to lower health care expenditure, higher levels of paid and unpaid production, and lower public expenditure on social welfare payments, particularly disability payments.

9.2.11 Utilisation of health care services

Needle Syringe Programs provided by the MSIC

As part of its operations, the MSIC provides a Needle Syringe Program (30,271 needles and syringes dispensed on 3,545 occasions in 18 months of operation), as well as advice on injecting and vein care. The total distribution of needles and syringes by the MSIC over this period represented less than two per cent of the total quantity dispensed in the South Eastern Sydney Area Health Service during the same period. Although the Needle Syringe Program is relatively small scale, with the implication that benefits also are likely to be small, it is still appropriate to consider the nature and potential size of these benefits. It is possible to indicate the magnitude of rates of return to expenditures by reference to a recent comprehensive study of the return on needle and syringe programs (NSPs) in Australia, conducted for and published by the Commonwealth Department of Health and Ageing (Health Outcomes International *et al*, 2002). This study was based on the reduction in transmission of HIV and hepatitis C infection.

The report studied the financial impact of expenditures on NSPs by government only, and by government and consumers together. The report indicates that NSPs in Australia yield very high rates of return. It calculates, *inter alia*, the costs and the benefits (in terms of total HIV and HCV costs avoided) of NSPs (1991 to 2000 inclusive), ignoring any benefits which accrued subsequent to the investment period.

Table 9.8 summarises the results of this analysis (Health Outcomes International *et al*, 2002).

Table 9.8: Costs and benefits of investment in NSPs, 1991 to 2000 inclusive

	\$m
Program costs	
Total government NSP expenditures	130
Total government and consumer NSP expenditures	150
Program benefits	
Total costs avoided (HIV and HCV)	521
Program net benefits	
Net government savings (undiscounted)	391
Net government savings (discounted at 5 per cent)	255
Net total savings (undiscounted)	371
Net total savings (discounted at 5 per cent)	240

Source: Health Outcomes International (2002).

9.2.12 Overdoses managed at the MSIC

Analysis of overdose incidents in Chapter 3 shows the number of overdoses which occurred within the MSIC, all of which were effectively managed. Estimates have been made of the deaths prevented, but there are no data from which to estimate the extent and intensity of treatment which would have been provided to those people who would otherwise have been admitted to hospital, following overdose. In addition to effective intervention following overdose, there are also overdoses which are avoided directly due to the safe injecting practice instruction and environment. Again it has not been possible to assign health costs which have been averted due to the operation of the MSIC.

9.2.13 Needle stick injuries prevented

No direct data exist on the impact of the MSIC on the incidence of needle stick injuries resulting from needles discarded in public places. Given the evidence discussed below, that the MSIC itself (separate from the effects of the shortage in supply of heroin) has not had a clearly identifiable effect upon the number of discarded needles, there appears to be no reason to expect that the incidence of such injuries would have changed.

9.2.14 Referrals to other health care facilities for treatable conditions

An evaluation of referrals to health care facilities is presented in Chapter 5. While it is not possible to estimate how many of these health services would have been accessed without the MSIC referral, it can however be reasonably expected that not all services would have been utilised. It is also reasonable to assume that those referrals which were used resulted in the provision of necessary and effective treatment. Consequently it can be considered that MSIC referrals resulted in an enhanced public health outcome, although the available data do not enable quantification and costing.

9.2.15 Ambulance service cost offsets

If, as discussed above, overdose incidents occurring at the MSIC correspond to incidents which would otherwise have occurred elsewhere (a proportion of which would have been treated by ambulance officers) treatment of overdoses at the MSIC reduces the demand for ambulance services. Chapter 3 of this report provides an estimate of approximately 80 ambulance call-outs avoided in 2001-2 as a result of the operations of the MSIC. This figure was adopted for subsequent calculations. It has been estimated that ambulance costs in Victoria in 1998/9 averaged \$600 per overdose call out (Dietze et al, 2000). This figure has been adjusted to 2001/2 and 2002/3 prices by application of relevant price indices. Estimated ambulance cost savings are presented in Table 9.9.

Table 9.9: Estimated value of ambulance cost savings attributable to operation of the MSIC

	Current operation Kings Cross MSIC	Future operation Kings Cross MSIC
Overdose callouts prevented (number)	81	135
Total ambulance cost savings (\$)	52,926	93,366

9.2.16 Police service cost offsets

There appears to be virtually no information available on the NSW police costs of dealing with drug overdoses or their aftermaths. The *Report on Government Services* (Steering Committee, 2002, Chapter 8) categorises these services as part of “Community safety and support” and suggests that an appropriate indicator of police efficiency in response capability in this area of service provision might be the cost of response service divided by the weighted number of calls attended. “A challenge for police services, therefore, is the development of consistent methods for calculating the costs associated with specific activities” (Steering Committee, 2002, Chapter 8).

Police do not, in the normal course of events, attend drug overdose incidents but they are likely to be called when fatalities or near-fatalities occur. It was assumed that ten per cent of overdose incidents fall into this category, and that average police response costs for attendance at drug overdoses are 20 per cent of ambulance attendance costs. On this basis, police cost savings are estimated to be \$5,300 in current (2001-02) MSIC operations and \$9,300 in future (2002-03) operations.

9.2.17 Impact on the Kings Cross amenity

Prior to the opening of the MSIC there were predictions of both positive and negative effects upon the Kings Cross amenity. One of the arguments put forward against the establishment was that it would have a “honey pot effect”, whereby large numbers of drug users and dealers would congregate in the area, bringing an associated increase in crime, a decrease in public amenity, and a consequent impact on commercial activity. On the other hand, those who supported the establishment of the MSIC asserted that the MSIC would reduce public amenity disturbances by reducing public injection and intoxication.

The quantitative and qualitative assessments appear to indicate the following conclusions.

- **Discarded needles and syringes.** The numbers of discarded needles and syringes appear to have declined since the opening of the MSIC (See Chapter 6).
- **Public injecting.** Reporting of witnessing injection in public places decreased significantly among local resident respondents from 2000 to 2002 (See Chapter 6).
- **Loitering.** Quantitative evidence suggests that the number of loiterers in the vicinity of the MSIC was very low and there was no indication of an increase in drug-related loitering (See Chapter 7). There may even have been a decrease in such loitering, possibly as a result of the security guard posted outside the MSIC. Some evidence, on the other hand, suggested that there may have been an increase in drug-related loitering outside the front and back of the MSIC and at the Kings Cross railway station. In all, the evidence indicating either an increase or a decrease in loitering is not compelling.
- **Drug dealing.** Police evidence indicated that the MSIC had very little impact on drug dealing in Kings Cross. On the other hand, there appears to have been increased drug dealing activity at Kings Cross station, although it is difficult to determine whether this increase was causally linked to the operations of the MSIC (See Chapter 7).

- **Other crime.** Quantitative evidence indicates that the MSIC had no effect on either theft or violent crime. Some interviewees reported increased public disturbances, but others reported a higher level of safety (See Chapter 7).
- **Pedestrian flows.** The number of pedestrians on Darlinghurst Road was increasing over the whole period of measurement. Since it has not been suggested that the MSIC would alter non-drug-related pedestrian flows, it appears that pedestrian flows overall were unaffected by the operations of the MSIC. This suggests that there was limited impact on commercial trade in Kings Cross (See Chapter 7).
- **Summary.** It appears that the operations of the MSIC had no identifiable impact upon the following amenity or environmental aspects of the Kings Cross area: drug-related loitering; drug dealing; other crime; and pedestrian flows. There were reductions in discarded needles and reports of public injecting following the opening of the MSIC, but the possible impact of reduced heroin availability over the time period may have contributed substantially to these apparent changes.

9.2.18 Future cost increases resulting from the impact of the MSIC

To the extent that the operations of the MSIC can be assumed to prevent drug overdose deaths, the community may incur increased future costs which would otherwise not have been incurred. Drug users who survived would have imposed extra costs on the rest of the community. The main categories of such costs are:

- health;
- crime;
- housing;
- other consumption needs; and
- social security payments.

In relation to social security payments and, to a certain extent, crime costs, care should be taken to observe the distinction between pecuniary and real costs and so to avoid both double counting and the overstatement of these costs. Real costs are a subtraction from the community's welfare, that is a withdrawal from other uses (for example, lost output). Pecuniary costs are losses imposed on some individuals which are exactly matched by gains to others, so that the community as a whole is no better or worse off.

Most social security costs, and some crime costs, represent a redistribution of resources within the community, rather than a real resource cost. As an example, it would be double counting to include both the resource costs of providing consumption needs and the costs of social security payments which are used to pay for these consumption needs.

However, a more fundamental point should be considered in this context. Australian public health policy, which places great emphasis on the prevention of drug-attributable deaths (from the consumption of alcohol and tobacco, as well as from illicit drugs) is clearly based on the premise that the net benefits to the community resulting from the prevention of all premature deaths is positive, no matter to whom the death occurs. The social benefits of such prevention, in the eyes of policymakers, clearly at least match, and almost certainly exceed, the additional social costs which prevention causes.

9.2.19 Economic evaluation of the MSIC

Table 9.10 and the three subsequent tables present a summary of the costs and the hypothesised economic benefits of the MSIC as a method of valuing the resources and the lives saved. Analyses address: the MSIC as it operated in 2001-02; when the MSIC was operating at full efficiency and close to capacity (in terms of number of client visits); and an MSIC at a new location and having the characteristics of the Kings Cross MSIC operating at full efficiency and close to capacity. Table 9.10 presents a summary of all MSIC set-up and operating costs. Appendices 2, 3 and 4 present the detailed cost information upon which this Table is based.

Table 9.10: MSIC set-up and operating costs

	Current operation	Future operation	Future operation at a new location
Operating costs	\$2,130,000	\$2,337,000	\$2,337,000
Set-up costs (amortised)	\$96,000	n.a.	\$99,000
Total	\$2,226,000	\$2,337,000	\$2,435,000

In the first year of operation of the Kings Cross MSIC, total costs of \$2.2 million were incurred. These costs would rise to \$2.3 million per annum for subsequent operation of this MSIC and to \$2.4 million per annum for future MSICs operating in a manner similar to the Kings Cross MSIC.

This economic evaluation draws upon data presented in earlier chapters of the evaluation report (for example, on deaths averted and ambulance attendances prevented as a result of the operations of the MSIC). There are, however, other data, relating particularly to production benefits accruing to the community as a result of the saved lives, which are not provided in earlier chapters. The valuation of these benefits depends on predictions of the subsequent employment status of drug users whose deaths have been averted by the management of overdose in the MSIC. Again, this is a hypothetical value assigned using a standard health economic approach to value life, rather than a direct estimation of a dollar return to the government or the society.

In the subsequent analyses the sensitivity of the results of the economic evaluation to alternative assumptions is indicated. The results are presented on two bases: (1) that the future employment status of drug users whose lives have been saved remains the same as the status of current MSIC clients (assuming that all MSIC clients working at registration enter and remain in full-time work); (2) that their future employment status improves compared with current MSIC clients, but does not attain that of the rest of the Australian working age population. These two scenarios are referred to as “lower” and “upper” respectively. Table 9.11 and 9.12 present estimates calculated using these two methods respectively.

Table 9.13 brings together the costs and benefits to indicate the hypothetical annual net benefits and the benefit/cost ratios of the MSIC as a way of valuing life.

Table 9.11: Hypothetical benefits of the MSIC (lower benefit basis)

	Current operation	Future operation	Future operation at a new location
Value hypothetically assigned to deaths averted			
Paid	\$1,062,000	\$1,845,000	\$1,845,000
Unpaid	\$486,000	\$829,000	\$829,000
Hypothetical value of deaths averted	\$1,548,000	\$2,674,000	\$2,674,000
Ambulance offsets	\$53,000	\$93,000	\$93,000
Police offsets	\$5,000	\$9,000	\$9,000
Total quantifiable benefits	\$1,606,000	\$2,777,000	\$2,777,000

Table 9.12: Hypothetical benefits of the MSIC (higher benefit basis)

	Current operation	Future operation	Future operation at a new location
Value hypothetically assigned to deaths averted			
Paid	\$1,700,000	\$2,954,000	\$2,954,000
Unpaid	\$901,000	\$1,535,000	\$1,535,000
Hypothetical value of deaths averted	\$2,601,000	\$4,489,000	\$4,489,000
Ambulance offsets	\$53,000	\$93,000	\$93,000
Police offsets	\$11,000	\$19,000	\$19,000
Total quantifiable benefits	\$2,664,000	\$4,601,000	\$4,601,000

Table 9.13: Summary of costs and hypothetical benefits of the MSIC

	Current operation	Future operation	Future operation at a new location
Lower estimate of hypothetical benefits			
Net benefits	(\$620,000)	\$440,000	\$341,000
Benefit/cost ratio	0.72	1.19	1.14
Higher estimates of hypothetical benefits			
Net benefits	\$438,000	\$2,265,000	\$2,166,000
Benefit/cost ratio	1.20	1.97	1.89

In the above table “net benefits” represent hypothetical benefits less real costs. The figure in brackets represents negative benefits (that is, costs exceed benefits). Table 9.13 indicates that in the first year of operation of the Kings Cross MSIC. On a lower estimate basis, costs exceeded benefits by \$620,000 with the result that the benefit/cost ratio was 0.72. On a higher estimate basis, benefits exceeded costs by \$438,000 and the benefit/cost ratio was 1.20. However, an evaluation of future operation of the Kings Cross MSIC, working closer to operational capacity and implementing efficiency-based cost savings, shows that: net benefits range from \$440,000 (lower estimate) to \$2,265,000 (higher estimate); benefit/cost ratios range from 1.19 (lower) to 1.97 (higher). For a MSIC at another location both net benefits and benefit/cost ratios are slightly lower than these figures. It is noted that the higher estimates presume high rates of employment and earning of average weekly wages, and these are not likely to be realised. The dollar values applied are to provide a basis to value life rather than indicate a dollar return to the community.

The above results do not take into account the non-quantifiable benefits which have been identified, nor possible economies of scale that might be achieved by, for example, integration of a needle syringe program into the MSIC. Table 9.14 presents a summary of the types of MSIC benefits found to be not quantifiable.

Table 9.14: Other MSIC benefits found to be unquantifiable

Positive benefits
Prevention of drug overdose-related morbidity
Health resources saved as a result of overdoses treated at the MSIC
Health resources saved as a result of overdoses prevented by MSIC advisory services
MSIC client referrals to other health care facilities
Discarded needles
Public injecting
Zero or negligible benefits
Needle stick injuries
Drug-related loitering
Drug dealing
Other crime
Pedestrian flows

9.2.20 Comparator analysis

A comparator analysis was proposed in the original evaluation protocol (MSIC Evaluation, 2001). This is a consideration of whether the resources employed in the establishment and operation of the MSIC could yield a higher rate of return in other uses. These alternative uses could be in other drug programs, other areas of health or other sectors of the Australian economy.

The information available on evaluation of other drug-related programs is almost universally presented on a cost-effectiveness basis (see, for example, the National Evaluation of Pharmacotherapies for Opioid Dependence, NEPOD). As explained earlier, cost effectiveness information does not permit the analysis of programs with multiple objectives or outputs, nor does it permit the estimation of social rates of return.

Thus, studies such as the NEPOD report do not provide the basis for examining the opportunity cost of the resources employed in the MSIC. Apart from the needle and syringe program analysis of Health Outcomes International, there has apparently been no other similar cost benefit analysis of illicit drugs programs. A review has recently been published of returns on investment in some broad areas of public health (see Applied Economics, 2003). These areas include programs to reduce the incidence of HIV/AIDS, which are of direct relevance as a comparator for the MSIC.

Table 9.15: Comparison of returns on investment in public health with returns to the MSIC

Program to reduce:	Source and period of analysis	Total cost \$m	Gross benefit \$m	Net benefit \$m	Benefit/ cost ratio
Tobacco consumption	Collins and Lapsley (1999) 1987-2016 (1999 prices)	61.6	972.6	911.0	15.8
Tobacco consumption	Applied Economics (2003) 1971-2010 (2000 prices)	175.7	8,602.5	8,426.8	49.0
Coronary heart disease	Applied Economics (2003) 1971-2010 (2000 prices)	810.7	9,289.0	8,478.3	11.5
HIV/AIDS	Applied Economics (2003) 1984-2010 (2000 prices)	607.2	3,148.6	2,541.3	5.2
Measles	Applied Economics (2003) 1970-2003 (mid 1990s prices)	54.9	9,204.3	9,149.4	167.7
Hib	Applied Economics (2003) 1993-2003 (mid 1990s prices)	155.3	165.2	9.9	1.1
Road trauma	Applied Economics (2003) 1970-2010 (2000 prices)	11,304.0	19,967.0	8,663.0	1.8
MSIC	2002/3 (2002/3 prices)	2.3	4.6	2.3	1.19 - 1.97

Note: "Hib" denotes *haemophilus influenzae* type b disease.

Table 9.15 presents a summary of the Collins and Lapsley (1999) and Applied Economics (2003) results together with the MSIC results presented for comparison. Care should be taken to avoid drawing anything other than broad conclusions since the calculation methodologies of the two studies differ significantly.

It is notable that all the public health programs studied were estimated to yield benefit/cost ratios greater than unity so that, in the absence of budgetary constraints, investment in all these programs would be considered to be financially justified. The calculated benefit/cost ratio of the MSIC is below those of programs to reduce tobacco consumption, coronary heart disease, HIV/AIDS and measles, but comparable to those yielded by Hib and road trauma programs.

9.3 Conclusion

It should be noted, in interpreting the above results, that the quantitative evidence presented regarding MSIC costs is comprehensive. The hypothetical dollar benefits on the other hand are partial since it is not currently possible to place financial values on some of the potential benefits flowing from the operations of the MSIC. In addition, since the decision has been taken to value only tangible benefits, the intangible benefits of improved quality of life resulting from improved health and greater life expectancy have not been taken into account. Additionally, some future costs are not included.

Intangible costs and benefits have not been presented in this study, for the reasons discussed. Frequently used components of intangible calculations include pain and suffering, the loss of role performance, and the loss of social participation. While the relative value of these measures can be debated extensively, for the population as a whole or for any sub-group, they have not been estimated for this analysis. It is of course recognised that economic evaluation is only one component of an overall evaluation, which must consider and interpret all aspects of the trial objectives.

Furthermore, it was necessary to make a number of assumptions which underlie the analysis. These assumptions follow widely accepted health economics practice, and are explicitly acknowledged in the earlier discussion. Assumptions have generally been chosen which would tend to minimise the estimated benefits. The reader is reminded that the benefit/cost ratios are essentially a proxy measure to indicate the value of life saved, rather than representing a true return in dollars to the government or society.

Acknowledgements

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CHAPTER 10: CONCLUSIONS

The MSIC, a prominent initiative of the NSW Drug Summit, was one of a broad range of approaches supported by the NSW State Government to decrease the adverse social and health consequences of illicit drug use. The MSIC was supported for an 18-month trial period. The trial was to evaluate the validity of the principal arguments that a medically supervised injecting centre may “decrease overdose deaths, provide a gateway to treatment, reduce the problem of discarded needles and users injecting in public places”.

In addition to the establishment of the MSIC, the NSW Government supported the largest-scale and most comprehensive evaluation of an injecting centre to date internationally. The protocol developed to assess the functioning of the MSIC aimed to extensively assess many aspects of the functioning of the MSIC and its impact. While unforeseen events affected the process of the evaluation, this still remains the most comprehensive and detailed evaluation of this form of service reported to date.

It is noted that the establishment of the MSIC was accompanied by much advocacy around its possible positive and negative impacts and intense media, political and community scrutiny. With the conclusion of this Evaluation, we are now in a position to be informed by the available evidence to understand the role of MSIC in the NSW response to the harms of injecting drug use.

10.1 Conclusions from the results

Is it feasible to operate an injecting centre in Kings Cross?

Based on the results presented in Chapter 2, it appears that there were no significant barriers to access and considerable demand for MSIC services, with the registration of almost 4,000 injecting drug users across 18-months and over 55,000 supervised injections. The MSIC engaged its target client group, individuals who inject on a regular basis with histories of public injecting and drug overdose. MSIC provided over 13,000 occasions of other onsite clinical service delivery such as vein care and injecting advice and counseling, and nearly 1400 referrals for drug treatment, health care and social welfare assistance. During the trial period, MSIC staff effectively managed 409 drug overdoses without any fatalities. Staff reported some challenges in the work environment related to the nature of the service, but generally found a positive relationship with clients. Clients rated the care they received at MSIC to be of a good standard. These results, taken together, indicate that it is feasible to operate an injecting centre.

What was the impact on opioid overdose?

The evidence presented in Chapter 3 shows that while there was a large reduction in opioid overdose deaths and ambulance attendances to suspected opioid overdose during the operation of the MSIC, this reduction could not be attributed to the operation of the MSIC. The lack of any detectable community level MSIC effect on drug overdoses was associated with the co-occurrence of a marked shortage in the supply of heroin to Australian drug markets which resulted in a significant reduction in overdose deaths and events throughout NSW and Australia. However, analysis of overdoses attended by ambulances when the Centre was open and when it was closed showed no effect on ambulance attendances because of the operation of the MSIC.

However, the MSIC probably did reduce opioid overdoses amongst those who used the facility. Based on clinical and epidemiological data, it seems likely that approximately four deaths per annum were averted by the management of overdoses which may have been fatal had they occurred elsewhere. Taken together, it is concluded that the MSIC contributed to the management of drug overdose within the MSIC, but that it had no detectable community-level impact on overdose.

Was there a reduction in blood-borne viruses or risk behaviour?

The data presented in Chapter 4 shows there was no evidence of an increase or decrease in notifications of HIV, HCV, or HBV in the Kings Cross area attributable to MSIC. Given the low rate of HIV infection among injecting drug users in Australia, it was unlikely that the MSIC could have any effect on transmission of HIV infection among injecting drug users. There was a steady trend of increased notifications of newly diagnosed HIV infection from the Kings Cross postcode area from 1998 to 2002. However, subsequent to the MSIC opening there were no cases attributed to injecting drug use. Consistent with the general pattern of HIV transmission in Australia, HIV prevalence among injecting drug users in the Kings Cross NSP/MSIC survey was also low from 1998 to 2002, except among male respondents reporting homosexual identity.

Notifications of newly diagnosed HCV infection increased annually in the Darlinghurst/Surry Hills postcode area and the rest of Sydney before and after the MSIC opened, but remained stable in the Kings Cross postcode area. HCV incidence also remained stable among injecting drug users tested at Kirkton Road Centre. However, consistent with the generally increasing trend of HCV infection among injecting drug users in Australia, there was trend of increased HCV prevalence among injectors in the Kings Cross NSP/MSIC surveys from 1998 to 2001. Stable HCV prevalence was reported in 2001 and 2002.

Did the MSIC improve health and access to treatment services?

MSIC clients did experience improvements in injecting related health compared with other IDU in that they were less likely to report sharing of injecting equipment, public injection, and reported a reduction in injecting-related problems (Chapter 5).

Though MSIC clients had high rates of prior drug treatment experience, two thirds ever having been in drug treatment and one quarter in the 12 months prior to registration (Chapter 2), 600 referrals (300 written referrals) to drug treatment were made during the trial period. Not surprisingly, the rate of referral for drug dependence treatment increased the more frequently clients attended the MSIC; clients who attended frequently were more likely to be referred, and to attend a drug dependence treatment service. It is likely that the ability to engage infrequent attenders to the MSIC in a referral process was limited.

Of the written referrals, 36 clients were confirmed to have reached the referral agency, this being a conservative estimate of the actual number who did reach treatment. While the rate of confirmed referral uptake was low, at around 1% of all clients, the rate of confirmed referral uptake was three times higher among clients with more than 10 MSIC visits compared to less frequent attenders.

In interpreting these findings, it is noted that there is no benchmark for successful referral, and a projected rate of successful referral from MSIC to drug treatment was not specified prior to the MSIC opening. The rate of referral from the MSIC, however, falls

within the lower bounds of the range reported for IDU seeking drug treatment referrals in needle and syringe programs (NSP) and community health settings. We also note that there are many individual, socio-cultural and structural factors associated with drug treatment seeking behaviour and utilisation of available services, and that engaging a drug user in a drug treatment referral is just one aspect of facilitating behaviour change. Taken together we conclude that MSIC did act as a “gateway” to drug treatment for a small proportion of MSIC clients. However, it is not the only pathway for successful entry to drug treatment for MSIC clients as many have accessed such treatment before MSIC began operation.

Was public amenity improved by the MSIC?

Syringe counts in Kings Cross by the Needle Clean-Up Team, researchers and the Council were generally lower after the MSIC opened than before. The proportion of local residents who reported that they had seen syringes discarded in public places in the month before interview and the estimated number of times that syringes were seen also decreased significantly from 2000 to 2002. Furthermore, the proportion of local residents who reported that they had seen public injection in the month before interview and the estimated number of sightings of public injection in the past month decreased significantly.

The observed reductions in discarded needles and syringes and public injecting in Kings Cross, however, are also likely to be associated with the impact of the reduced supply of heroin on the level of injecting drug use in the Kings Cross area, independent of the impact of the MSIC, especially during 2001. On this basis, we conclude that the operation of the MSIC played a role in improving local amenity in the Kings Cross area, but the extent of this role in the context of the heroin shortage is difficult to quantify.

Did the MSIC result in drug-related loitering and crime?

The evidence presented in Chapter 7 shows that there was no increase in acquisitive crime, particularly robbery or theft in the Kings Cross area attributable to the MSIC. There was an overall decrease in crime attributable to the reduction in heroin supply. There was also no increase of any significance in drug-related loitering associated with MSIC (Chapter 7).

This latter result was consistent with expectations given the known profile of MSIC client characteristics (Chapter 2). From Chapter 2, it was shown three-quarters of MSIC clients had injected drugs in Kings Cross prior to the establishment of the MSIC and almost half reporting their main reason for being in Kings Cross on the day of MSIC registration was to purchase drugs. This self-report by the clients was also consistent with other evidence that many drug users in the Kings Cross area in the years preceding the operation of the MSIC and after the operation of the MSIC were not resident in the area.

These data highlight that most MSIC clients were already participants in the Kings Cross drug market prior the establishment of the MSIC and that many were already traveling to Kings Cross to purchase drugs. It is reasonable to conclude from the available evidence on criminal activity and loitering and client characteristics that there was not a substantial influx of illicit drug users or dealers into the Kings Cross area as a consequence of the MSIC.

What were the community attitudes towards the MSIC?

The local community was generally supportive of the establishment of a supervised injecting centre in Kings Cross before the service opened, with the level of support increasing after the service had been in operation for twelve months. Around three-quarters of local residents and two-thirds of local business agreed with the establishment of the MSIC when surveyed in 2002. The proportion of local resident respondents reporting disagreement with establishment of MSICs also decreased.

One-third of the Kings Cross business and half the Kings Cross resident respondents did not know the location of the Sydney MSIC in 2002 suggesting that, at least for those people, the MSIC had little impact. Kings Cross business and resident respondents who knew the MSIC location were also more likely to agree than disagree with the establishment of a MSIC in Kings Cross.

Health services for people who inject drugs can be subject to considerable community concern and media and political attention. In addition, residents and business from areas of high drug use often feel that they bear a disproportionate impact from the establishment of health services intended for people who inject drugs. Despite the high levels of public nuisance associated with a visible drug scene, one-third of local residents and one-quarter of local businesses reported that they found no disadvantages with the MSIC in 2002.

What were the financial costs of the MSIC?

The final component of the evaluation of the MSIC related to its financial costs. The total cost of the MSIC was approximately \$2 million to \$2.5 million per annum. This equated to a cost per client visit of between \$37 (projected) and \$63 (actual). A greater efficiency into the future may be achieved through some economies of scale, such as increases in client throughput, decreases in management costs and the amortization of the set-up costs. Whether such efficiencies would be realized could be established by a continued monitoring. There was evidence of a possible positive benefit/cost ratio into the future for the MSIC operation, based on the number of lives saved.

As for all investments, there is an opportunity cost to the operation of the MSIC. The money used to operate the MSIC could have been used to purchase other interventions, such as methadone maintenance treatment or expanded needle and syringe distribution. The annual MSIC operating costs would be sufficient to fund approximately 100 residential rehabilitation beds in non-government organizations offering residential drug dependence treatment (based on a daily cost of \$65.00). Whether the money could have been better spent on other areas is a matter for public debate. There is, however, an argument that having a range of services available for treatment for improving the health and social circumstances of drug users.

10.2 Limitations of the evaluation

Even if there had not been a reduction in supply of heroin, the problems in drawing conclusions from an evaluation of a single program are substantial. As highlighted in the original evaluation protocol before the trial commenced, the potential for confounding by independent events is ever present in program evaluation of observational data, and only randomized trials can fully overcome these problems. A methodologically rigorous randomized trial of a MSIC would require multiple sites (i.e., multiple injecting centers) and multiple comparison sites, and was not feasible or affordable.

The concurrent reduction in the supply of heroin which occurred immediately preceding and during the MSIC evaluation period was associated with a dramatic reduction in heroin use and related harms, which introduced a significant confounder in the interpretation of the impact of the MSIC on opioid overdose and public amenity. As a result, the evaluation has not been able to answer questions as confidently as it may have otherwise. In particular, there is a risk that an effect that may have been observed has been missed. The absence of an observed effect, however, should not be taken as evidence of the absence of an impact from the MSIC.

A further limitation of the evaluation design was that individual MSIC clients were not followed across time if they did not stay in contact with the MSIC. This follow-up was not undertaken in the MSIC evaluation largely due to privacy legislation in NSW and Australia and other logistical constraints at the time of the evaluation design.

10.3 Recommendations

If the MSIC continues to operate, continued monitoring of its operations will be required to better inform the policy decisions and understand the role of the MSIC if heroin supply returns to a high level. This monitoring should involve the process data, overdoses and deaths in the Kings Cross area and in NSW generally, needle counts in the local area, ongoing financial and cost-analyses and other monitoring as set out below.

It is recommended that if the MSIC continues as a service delivery model:

- indicators of drug availability in the Kings Cross area and NSW be used to guide the level of service provision;
- continued monitoring of the operation of the service occur (as set out in Chapter 2), including drugs injected, overdoses managed, morbidity averted, and referrals made to treatment;
- consideration should be given to monitoring and support of the referral process to ensure levels of referral to treatment are optimised;
- to better understand the impact of a MSIC on IDU health and well-being, an IDU cohort study should be considered;
- greater use should be made of the MSIC to gain a better understanding of overdose mechanisms and morbidity;
- there will be a need to monitor ambulance attendances to opioid overdoses and deaths from overdose;
- ongoing costs of the MSIC and levels community acceptance need to be monitored.

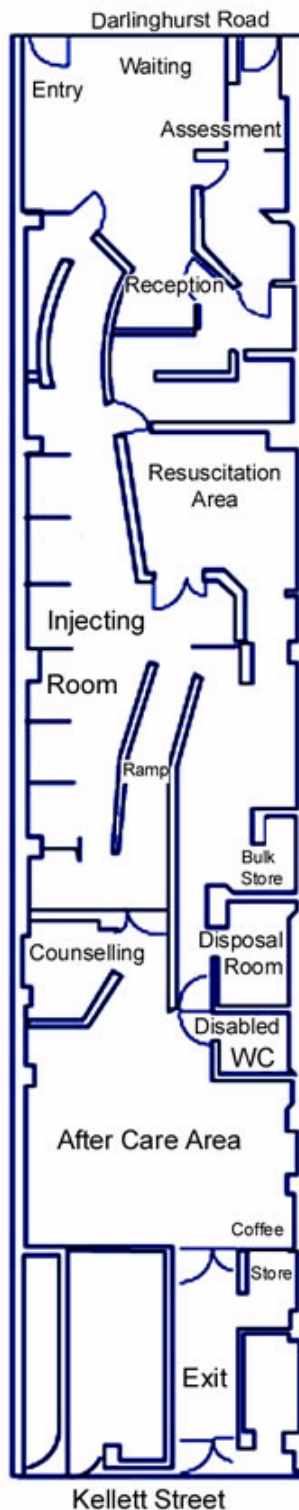
10.4 Summary findings

In summary, the evidence available from this Evaluation indicates that:

- operation of the MSIC in the King Cross area is feasible;
- the MSIC made service contact with its target population, including many who had no prior treatment for drug dependence;
- there was no detectable change in heroin overdoses at the community level;
- a small number of opioid overdoses managed at the MSIC may have been fatal had they occurred elsewhere;
- the MSIC made referrals for drug treatment, especially among frequent attenders;
- there was no increase in risk of blood borne virus transmission;
- there was no overall loss of public amenity;
- there was no increase in crime;
- the majority of the community accepted the MSIC initiative; and
- the MSIC has afforded an opportunity to improve knowledge that can guide public health responses to drug injecting and its harms.

APPENDICES

APPENDIX 1: MSIC SERVICE MODEL



The MSIC operates a one-way client flow system, with clients entering from *Darlinghurst Road* and exiting into *Kellett Street*.

Stage 1

The Reception and Assessment Area is where clients are assessed for eligibility to use the service.

Stage 2

The Injecting Room is a clinical environment with two trained staff, including a registered nurse, always on duty. It has eight open booths that can seat two people, allowing staff to supervise at all times. There are waste bins for used needles and a Resuscitation Area to manage drug overdoses. In the Injecting Room clients are given clean syringes, advised on safer injecting practices and provided with first aid and other clinical services.

Stage 3

The After Care Area is where the clients remain under observation until they are ready to leave. Counsellors and social welfare staff are on hand to link clients with other services including housing, legal, social welfare and drug treatment and rehabilitation options

Exit

Clients may leave the MSIC from the rear, into Kellett St. This door also allows unimpeded ambulance access to the centre.

Source: <http://www.sydneymsic.com/whatwedo.htm>

APPENDIX 2: MSIC INITIAL SET-UP COSTS

STAFF COSTS	\$
Salaries - administration	129,632
Salary and wages - medical	117,568
Salary and wages - nursing	3,052
Salary and wages - health education officers	8,095
Uniforms	920
Staff advertising	11,727
Total staff costs	272,428
PROPERTY COSTS	
Cleaning	1,684
Insurance, light/power/fuel/gas	4,043
Office rent	312,501
Car park rental	1,081
Leasehold improvements	400,722
Air conditioning costs	3,000
Pest control	600
Security	435
Alarm costs	2,063
Total property costs	726,129
GENERAL EXPENSES	
Advertising and promotion	14,815
Legal fees	11,013
Professional/consultancy fees	39,545
Conferences/seminars	564
Accounting fees	38,377
Other accounting charges	2,310
General expenses	569
Medical – other	10,413
Postage and courier	487
Printing and stationery	12,268
Equipment hire/repairs	29,711
Hospitality	1,125
Computer/EDP expenses	21,243
Computer lease costs	20,829
Telephone	4,042
Telephone – other	991
Motor vehicle expenses	9,230
Travel expenses - other	1,022
Total general expenses	218,554
TOTAL SET-UP COSTS	1,217,111

APPENDIX 3: MSIC SET-UP COSTS SINCE OPENING

Goods	\$
Glass break sensor – security	200.00
TV security stand	99.00
Install ceiling fans	1,879.90
Install security strikes and reader	2,434.08
Adjust alarm system	154.00
Production of MSIC video (for media)	1,149.50
Issuance of Compliance Certificate	550.00
Staff orientation training	1,584.00
Lounge staff room	2,163.00
Oxygen wall bracket	243.87
Oximeter	980.00
Injectable arm kit	1,792.00
Oxygen Bottle chock and regulator	488.10
Oxygen trolley	170.50
Medical Records cabinet and racks	1,702.96
Oxygen trolley	170.50
Medical Records cabinet and racks	1,702.96
Breathalyser	704.00
Resuscitation and ambulance bag	1,262.20
Overhead projector	399.00
Medical record filing racks	90.75
Medical records cabinet and racks	1,474.29
Filing cabinet	189.00
Fax machine x 2	967.57
Cards/letterhead	810.00
Laminator	649.00
Duress alarms x 10	226.90
Weighing scales	84.99
Bookshelf	136.00
Labelwriter	419.00
Light shade - injecting room	95.00
Notice boards x 2	228.00
Floor lamp	75.98
Microcassette Recorder	199.00
Mobile phone charger	50.00
Message Centres x 2	157.98
Flip chart	259.00
Computer backup tapes x 7	524.02
Taps client basin	365.75
Filing cabinet x 2	310.00
Desk	345.00
TV/Video x 2	961.99
Cupboard – after care	304.21
Photocopy machine	28,241.40
Paper shredders x 2	458.00
Computer workstation	164.00
Label maker	97.96
Answering machine	119.00

Key safe	81.97
Laser cube x 2	159.98
Computer and video card	2,359.50
Computer cabling	320.00
Computer ram	731.50
Computer and software	1,716.00
Computer modem	236.50
Computer and printer	1,479.50
Digital camera and software	995.50
Back up tapes - computer	808.74
Data base development	1,130.36
Mobile phone	379.00
E-mail connection	2,200.00
Domain name registration and hosting	558.80
TOTAL	70,990.71

APPENDIX 4: OPERATING COSTS 1 MAY 2001 TO 30 APRIL 2002

	May 2001 to June 2001	July 2001 to April 2002	12 months to 30 April 2002
STAFF COSTS	\$	\$	\$
Ministers	3,835	16,646	20,481
Salaries - administration	18,242	68,009	86,251
Salaries and wages - Medical	15,869	60,728	76,597
Salaries and wages - Nursing	38,293	327,372	365,665
Salaries and wages - Health Education Officers	38,747	290,753	329,500
Supervision	150	1,100	1,250
Staff advertising	(727)	2,014	1,287
Staff training	6	2,197	2,203
Total staff costs	114,415	768,819	883,234
PROPERTY COSTS			
Cleaning	10,558	51,754	62,312
Waste management	1,384	867	2,251
Sharpsafe	-	12,405	12,405
Public liability insurance	55,555	277,775	333,330
Workers Compensation and Property Insurance	11,111	55,555	66,666
Miscellaneous insurance	21	-	21
Light Power Fuel and Gas	2,727	9,146	11,873
Office rent	41,666	214,583	256,249
Car park rental	-	1,535	1,535
Leasehold improvements	(1,189)	2,286	1,097
Air-conditioning Costs	-	1,847	1,847
Pest control	-	824	824
Security	8,384	82,433	90,817
Alarm costs	(828)	-	(828)
Total property costs	129,389	711,010	840,399

	May 2001 to June 2001	July 2001 to April 2002	12 months to 30 April 2002
GENERAL EXPENSES			
Advertising and Promotion	3,484	606	4,090
Audit fees	1,000	500	1,500
Legal fees	32,875	17,446	50,321
Professional/consultancy fees	13,700	6,361	20,061
Conferences/seminars	373	160	533
Accounting fees	7,365	34,022	41,387
Other charges	458	2,290	2,748
Administration	662	2,215	2,877
General expenses	(550)	110	(440)
Medical stock - War Memorial Hospital	374	18,584	18,958
Medical stock – other	2,767	44,151	46,918
Pharmacy	3,380	4,890	8,270
Education expenses - clients	-	18	18
Brokerage fees	-	1,010	1,010
Postage and Courier	82	455	537
Printing and Stationery	4,571	24,787	29,358
Equipment hire/repairs	4,691	5,472	10,163
Hospitality	570	6,747	7,317
Repairs & maintenance equipment	-	39	39
Computer/EDP expenses	(5,057)	11,169	6,112
Computer lease costs	1,016	-	1,016
Newspapers and Periodicals	80	-	80
Telephone	1,636	6,889	8,525
Internet	-	2,685	2,685
Motor vehicle expenses	1,029	6,838	7,867
Travel expenses - other	89	108	197
Total general expenses	74,595	197,552	272,147
TOTAL COSTS	318,399	1,677,381	1,995,780