NACD
National Advisory Committee on Drugs

Prevalence of

Opiate Use in Ireland 2000 - 2001

A 3-Source Capture Recapture Study

Prevalence of Opiate Use in Ireland 2000 - 2001
A 3-Source Capture Recapture Study

A Report to the National Advisory Committee on Drugs

Sub-committee on Prevalence

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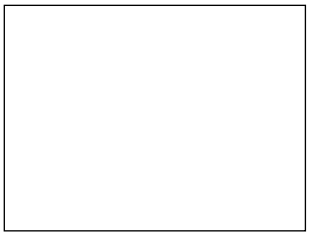

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Foreword – Minister of State

I am delighted to welcome this excellent report from the National Advisory Committee on Drugs (NACD) on the estimated prevalence of opiate misuse in Ireland.

The NACD was set up to address gaps in our knowledge of drug misuse in an Irish context. The results of their three-year work programme will significantly increase the amount of available research, which will, in turn, facilitate greater evidence-based policy-making in this difficult and complex area.

This latest report from the NACD, which estimates the number of opiate misusers in Ireland is a valuable update on the 1998 Comiskey report which was based on data for Dublin only. The latest report gives us data for Ireland, for Dublin and for the rest of Ireland excluding Dublin.

Although there are some encouraging signs in the report, I would like to reiterate the need to avoid any complacency. Drug misuse remains one of the major social problems facing Irish society today and the Government will continue to work in partnership with communities most affected by the problem. Implementing the 100 actions in the National Drug Strategy 2001 – 2008 and initiatives such as the Local and Regional Drugs Task Forces remain a priority for Government.

This study is one of a series that the NACD is carrying out that will ultimately lead to a more complete and reliable picture of the extent of drug misuse in Ireland. This study is a vital component of that work and I have no doubt that it will prove very important in framing future drugs policy in Ireland.

Noel Ahern T.D.
Minister of State with responsibility for the National Drug Strategy

Foreword – Chairperson NACD

One of the core tasks for the NACD is to advise the Government about the prevalence of problem drug taking in Ireland. Early work by the NACD soon led to the realisation that much of the data needed to produce an informed assessment of the extent of problem drug taking in this country, was not easily accessible. The NACD also came to recognise that when figures were available we lacked the means to convert those figures into a reliable, overall determination of the numbers using particular drugs. While many internationally validated methods of estimating drug use were available to us through the work of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), the NACD has had to commission a range of studies to provide robust Irish data that can be readily incorporated into the EMCDDA's harmonized five key indicators of problem drug use.

One of the key methodologies involves the use of the Capture-Recapture Method. The use of the word 'capture' which betrays the origins of the method in ecological studies, has unfortunate connotations in the context of trying to estimate the number of Irish people unfortunate enough to develop problems involving the use of opiates (mainly heroin). However, it is one of the internationally recognized methods of estimating prevalence of drug use and the concept of 'capture' in this context refers to the likelihood of an individual appearing in more than one data source. Developing reliable data sources alone has posed an enormous challenge to the researchers and all of those in hospitals, the treatment services and An Garda Síochána who have liaised with them. The present report, while representing a huge amount of painstaking work by Dr. Alan Kelly and his team, is but one (albeit huge) part of a jigsaw puzzle. The NACD hopes that this report, which covers all of the country, will provide everyone involved in responding to problem drug taking with invaluable reliable and objective information. The figures herein need to be incorporated with those on treatment demand from the National Drug Treatment Reporting System, with information from the NACD's forthcoming General Population Survey and the Network Analysis Study in order to fully comprehend the prevalence of drug use both nationally, regionally and locally.

The true value of all of these prevalence studies lies partly in the fact that they are grounded in standardized internationally recognized methodologies but mainly in their provision of benchmark figures which, when these studies are repeated at regular intervals, will allow analysis of trends in drug taking. The importance of being able to repeat these studies cannot be overestimated and in anticipation of that the NACD wishes to express its deep appreciation of the indispensable efforts of the Commissioner and members of An Garda Síochána. We also wish to acknowledge the efforts of the HIPE coordinators in all of the acute hospitals. We hope that the spirit of cooperation which has been created through this pivotal study will continue into the future.

Finally, on behalf of the NACD, I would like to thank Dr. Alan Kelly and his colleagues Marlen Carvalho and Conor Teljeur for their exhaustive and I have no doubt exhausting efforts to provide all of us with reliable, valid, robust information on the extent of opiate use in this country.

Dr. Desmond Corrigan
Chairperson
NACD

Acknowledgements

We would like to thank the Garda Commissioner Mr. Pat Byrne and Assistant Commissioner Mr. Tony Hickey for their co-operation in providing the necessary data from the Garda Study on Drugs, Crime and Related Criminal Activity. We would also wish to acknowledge the assistance of Dr. Joe Barry in obtaining data from the Central Drug Treatment List. To the CEOs of the 44 hospitals we contacted to obtain access to their Hospital Inpatient Enquiry (HIPE) database records we extend our appreciation and also to the many members of the various Hospital Ethics Committees for their understanding of the study requirements and without whose approval the HIPE data could not have been released. We wish to thank Dr. Jim Kiely, Chief Medical Officer, Department of Health and Children for his support and Mr. Hugh Magee, also of the Department of Health and Children who was, as always, of considerable assistance.

Finally, our grateful thanks to the members of the NACD Sub-committee on Prevalence, who provided invaluable guidance as the study progressed.

Summary

The tables below provide a concise summary of the findings of this study. They show the estimated prevalence of opiate use as numbers of individuals (males & females combined), and the corresponding rate per 1,000 population, for the years 2000 and 2001 for:

i) Ireland as a whole;

ii) Dublin; and

iii) the rest of Ireland excluding Dublin.

Ireland

Year	Age group	Estimated Number	Rate/1000 population
2000	15-64	14,158	5.6
2001	15-64	14,452	5.6

Dublin

Year	Age group	Estimated Number	Rate/1000 population
2000	15-64	12,268	15.9
2001	15-64	12,456	15.9

Rest of Ireland (excluding Dublin)

Year	Age group	Estimated Number	Rate/1000 population
2000	15-64	2,526	1.4
2001	15-64	2,225	1.2

The data in this publication provide a revision of the figures published in May 2003 in light of the final census figures as reported in "Population and Migration Estimates April 2002, CSO 'Bulletin', 5 September 2002".

Background

This is a report of the findings of a national 3-source capture-recapture study on the prevalence of opiate drug use in the population during the period 2000 to 2001. The Capture-Recapture Methodology (CRM) is the principal indirect method for estimating the prevalence of some partially *hidden* population such as opiate users. Clearly, given the nature of this population, a simple head-count is not feasible, as many opiate users have no contact with any service provider – hence the need to rely on a statistical model based on what we do know about this population.

While originally developed to estimate the numbers in various wildlife populations, for example, a given bird species, CRM has gained in popularity as a useful tool to provide statistically valid estimates in a wide variety of epidemiological studies. For example, CRM has been extensively used in similar population-based opiate prevalence studies, both abroad and in Ireland in the mid-1990s, and is the methodology recommended for this purpose by the EMCDDA, Lisbon.

The study was commissioned by the NACD following an open tendering process. This report updates a similar (though Dublin-only) study for the year 1996.[1] As such, this is the first study to provide national figures for Ireland as a whole and for certain regions.

The research began in mid-2002 and took more than a year to complete due in large measure to the need to acquire certain confidential data from a number of sources. This latter requirement necessitated that permission to hold such information on computer for the duration of the study had to be obtained from the Data Protection Commissioner and additionally, ethical approval was sought and obtained from various agencies as described below.

It is anticipated that the results presented here will inform national and regional planning for service provision by the relevant authorities.

1 Comiskey, C. (1998) *Estimating the prevalence of Opiate Drug Use in Dublin, Ireland*. A Report submitted to the Department of Health & Children, Dublin.

Data

The main parameters of the study, as determined by the NACD Prevalence Sub-committee, specified that three data sources were to be employed in the study, namely:

i) the Central Drug Treatment List;

ii) the national Garda Study on Drugs, Crime and Related Criminal Activity; and

iii) the Hospital In-patient Enquiry (HIPE) database.

Using these sources, statistically valid estimates of the prevalence of opiate drug use in the national population and by sub-region were required for the years 2000 and 2001.

In view of the sensitive nature of the data to be employed in the study, prior ethical approval was considered essential. A submission was made to the Ethics Committee of the Faculty of Public Health Medicine and also to the Data Protection Commission with suitable guarantees for the safeguarding and maintenance of data confidentiality in the study and in all reporting of findings. In due course, approval for the study was obtained from these bodies. Permission was then sought and granted to access the Central Drug Treatment List and the Garda data.[2]

In relation to the hospital data (HIPE), a large number of hospitals throughout the country potentially held relevant data on attendances by individual patients with a history of opiate use. Some 44-hospital managers were written to by the NACD requesting their co-operation and informing them that ethical approval was being sought from the relevant hospital Ethics Committee. Subsequently, individual applications were made to each hospital Ethics Committee where such existed, or, as in the case of the smaller county hospitals, to a central Ethics Committee serving several hospitals in a region.

2 One of us (AK) served on the Steering Committee for the Garda study.

Method

The recommended 3-source CRM determines a prevalence estimate based on identifying individuals who appear in one, two or all three lists of individuals within a given year. It may be helpful to visualise this in terms of the Venn diagram below (Figure 1). Individuals found to be in common between any pair of sources are represented in the Figure by:

T ∩ H (individuals common to both the Treatment list and HIPE list),

T ∩ G (individuals common to both the Treatment list and Garda list),

H ∩ G (individuals common to both the HIPE list and Garda list),

and individuals found in all three lists are represented by:

T ∩ H ∩ G (individuals common to the Treatment list, the HIPE list and the Garda list).

The remaining individuals are unique to each source, i.e. they appear only in one or other of the lists as:

T (appearing only in the Treatment list),

H (appearing only in the HIPE list) and

G (appearing only in the Garda list).

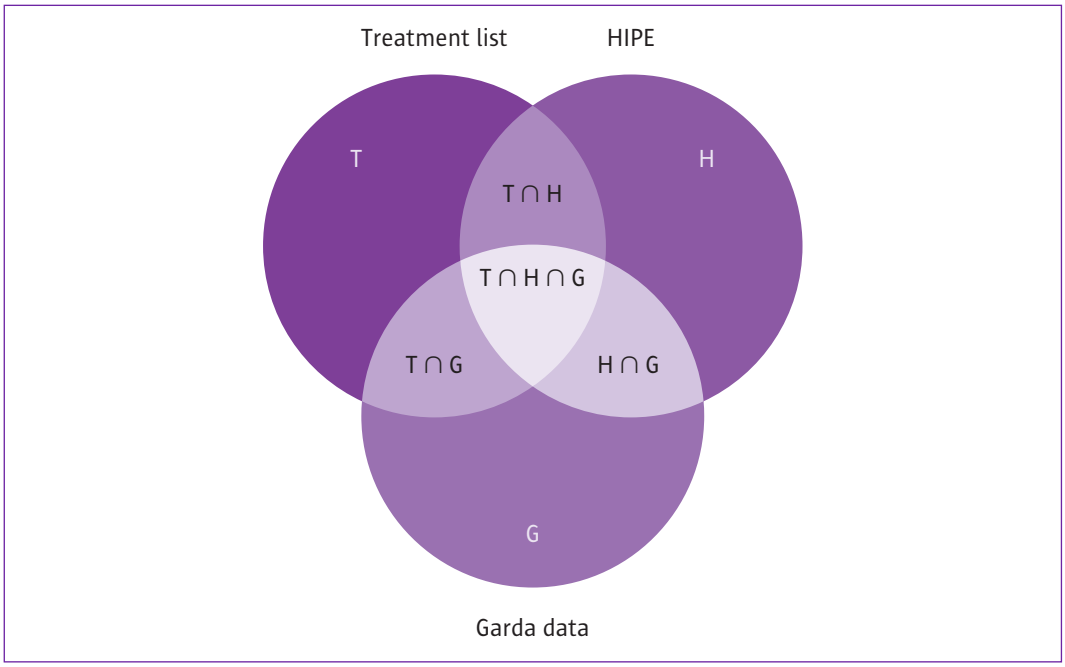
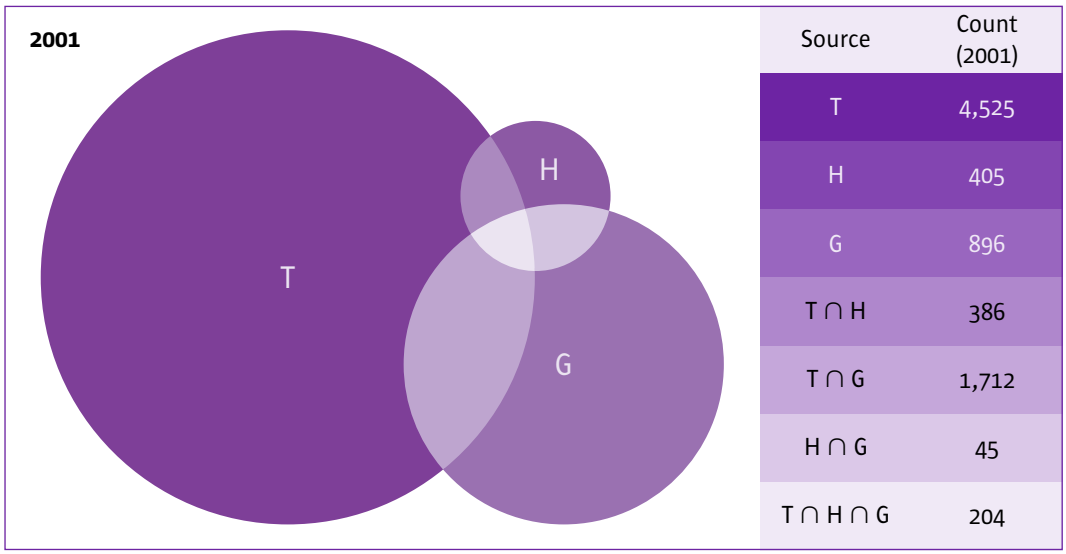


Figure 1: Illustration of both overlap and non-overlap of individuals common and unique, respectively, to the three data sources.T: Treatment list; H: HIPE list; G: Garda list; T ∩ H: individuals common to both the Treatment List and HIPE, similarly for T ∩ G and H ∩ G. T ∩ H ∩ G: individuals found in all three lists. The remaining individuals who appear uniquely in one or other list are indicated as T, H and G.

In all, seven numbers are needed for the statistical analysis. These are the number of individuals common to any pair of data lists (3 numbers) and to all three data lists (1 number) and the numbers of individuals who are unique to specific lists (3 numbers). The seven numbers are then used in a statistical modelling technique suited to capture-recapture modelling and known as *Log-linear Analysis*. A particular model is selected (based on certain objective performance criteria) from the various candidate models generated, based on the 7 numbers supplied. The preferred model provides an estimate of the total number (N) of individuals in the corresponding population of drug users - this is the required prevalence estimate. In view of the fact that this method supplies an estimate of the prevalence, a confidence interval (conventionally set to 95%) associated with the estimate is also required. This confidence interval provides a range of values within which - with a high degree of assurance - we believe the true prevalence value will lie.

Crucial to the success of the modelling exercise is the correct ascertainment of the 7 numbers referred to above. Determining these numbers is by no means a trivial matter. In order to accomplish this, it is important to have a reasonably unambiguous person identifier in the three data sets. In principle, it is believed that a person's initials, sex and full date of birth suffices to provide a reliable match. In practice, it must be recognised that data recording practices can and do give rise to errors in entering any or all of these details in routinely collected data intended for administrative purposes. Consequently, it was necessary to develop a specific algorithm to accomplish the required matching in a reliable manner.

The Venn diagram below (Figure 2) illustrates the distribution of numbers observed for the 15-64[3] age band during 2001 in terms of the overlap as well as the unique cases for the three sources. Please note that these figures are for illustrative purposes only as fitting a model to the combined 15-64 age band would result in a poorly fitting model that would be unreliable. Where numbers permit, models were fitted to various age bands and for males and females separately, as reported below.



Source	Count (2001)
T	4,525
H	405
G	896
T ∩ H	386
T ∩ G	1,712
H ∩ G	45
T ∩ H ∩ G	204

Figure 2: An illustrative example of what the Venn diagram would look like based on the 15-64 combined ages and for both males and females for 2001. The size of the individual circles represents the numbers contributed from the particular source. The table shows the corresponding figures using the notation introduced in Figure 1.

3 The 15-64 age band was chosen in accordance with the report formats of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA).

An alternative representation might be of help in understanding the statistical problem to be addressed by the modelling. The figure below shows the same information as in Figure 2. Here is shown a 3-way cross-tabulation of the data in terms of numbers of persons present or absent in the 7 combinations already noted, plus the final cell corresponding to the unknown number absent (i.e. missing) from all 3 lists. This is the number of hidden individuals we seek to determine via the model.

		Treatment			
		Present		Absent	
		HIPE			
		Present	Absent	Present	Absent
Garda	Present	204	1,712	45	1,896
	Absent	386	4,525	405	missing

Figure 3: A cross-tabulation of all individuals 15-64 years of age according to their presence in one, two or three lists. The number in the cell marked 'missing' is to be estimated by the model.

Data – A Comparative Analysis by Source

A comparative analysis of the demographic characteristics across the data sets is of particular interest in highlighting certain similarities and especially certain differences in the age/sex breakdown within the three sources. This analysis follows the removal of duplicate records within individual lists. For purposes of these analyses, two years data (2000 and 2001) have been consolidated to provide added stability in the percentages displayed.

The overall percentage of cases by each source is as follows:

- Garda list (32.8%),
- HIPE list (9.2%), and
- Treatment list (57.9%).

The Treatment list clearly contributes by far the largest percentage of persons, followed by the Garda list and finally by those in HIPE.

Distribution by Age Band and Person Sex

Table 1: Percentage of persons according to age band within source

		% by Source		
Age band	**%**	**Garda**	**HIPE**	**Treatment**
15-24	37.4	47.1	34.5	32.5
25-34	45.6	42.2	43.8	47.7
35-64	17.0	10.7	21.7	19.8

There is evidence of a very strong statistical association ($p<0.001$) between age group and source (Table 1). Note that the highest in-column percentage for the Garda source is in the 15-24 age band; while in the HIPE and Treatment lists it is in the next age band (25-34 years). In the Garda data, the percentages are almost equal in the first two age bands, with a sharp decline in the percentage in the 35-64 age band. The fall off in percentages is similar but more gradual in the HIPE and Treatment lists with a clear preference for the 25-34 year age band. Figure 4 (below) illustrates the distribution of males and females (for 2001 only) by age in the combined data from all three sources. The difference in frequencies at all ages is very evident, as is the tailing off of females much earlier in terms of age. The overall shape of both distributions is quite similar.

Person Sex by Source

Irrespective of source, the proportion of females was found to be only 29% overall.[4]

A tabulation of the percentage of males and females by source is provided in Table 2. Again, there is evidence of a very strong statistical association ($p<0.001$) between gender and source.

Table 2: Percentage of males and females within source

Gender	Garda	HIPE	Treatment
Female	19.1	46.2	31.8
Male	80.9	53.8	68.2

The Garda data are considerably at variance with both HIPE and the Treatment list with less than 20% females as compared with over 46% in HIPE and 32% in the Treatment list. An analysis of gender by source, while controlling for age group, will ascertain whether this association is similar across age bands; Table 3 explores this issue.

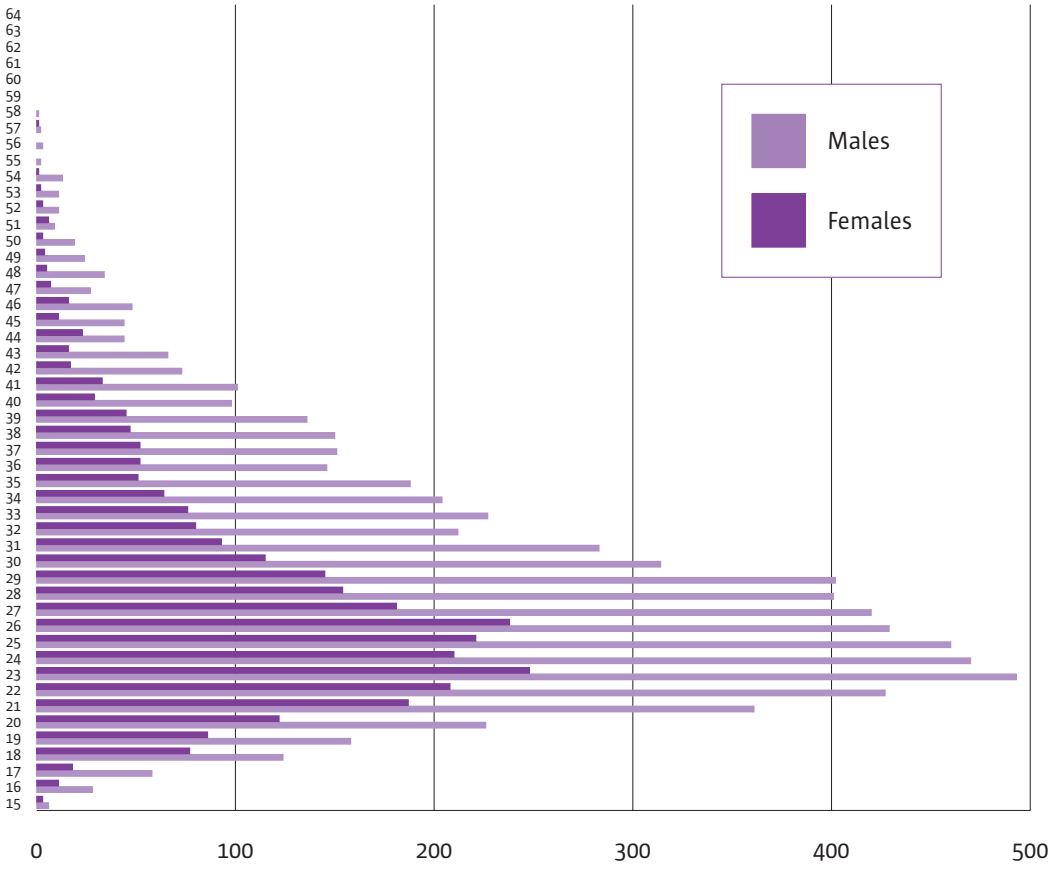


Figure 4: Frequency distributions by age of males and females (2001 only)

4 This percentage represents a sample weighted average of percentages in Table 2.

Person Sex by Source within Age Band

Table 3: Percentages by person sex within source for each of 3 age groups

Sex	Age 15-24 years			Age 25-34 years			Age 35-64 years		
	G	H	T	G	H	T	G	H	T
Female	21.4	56.2	41.8	18.2	44.9	30.7	13.2	33.0	23.0
Male	78.6	43.8	61.2	81.8	55.1	69.3	86.8	67.0	77.0

Within the youngest age band, the basic pattern is similar to that outlined in Table 2 although with an increased representation of females across the 3 sources, modest in the Garda data, but higher in both the HIPE and Treatment lists.

In the middle age band (the largest numerically) the percentages are quite similar to the cross-tabulation of gender by source regardless of age. Again, the most pronounced difference is in the Garda data with a much lower proportion of females.

In the last age band, we see a decline in the percentage of females represented in each source when compared to the previous age bands, but this is more evident for the HIPE and Treatment lists.

A more formal statistical modelling of the relationship between age (in years), sex and source and the interaction between sex and source, confirms that:

- on average males tend to be older than females (28 years and 26 years, respectively), and
- average age[5] (rounded to the nearest whole age) is lowest in the Garda data (26 years), and similar in HIPE (29 years) and the Treatment list (29 years).

There is a significant interaction between source and gender in relation to age as illustrated in Table 4. Males tend to be typically 1 to 2 years older, with a positive trend in increasing age across the Garda, HIPE and Treatment lists in that order.

Table 4: Average age for males and females by source

Sex by source	Average age
Females in Garda data	25.1
Females in HIPE	27.4
Females in Treatment list	27.3
Males in Garda data	26.3
Males in HIPE	29.9
Males in Treatment list	29.3

5 Weighted according to percentage of males and females within each source in Table 4.

Source by Health Board

Table 5: Percentage of persons by Health Board within source

Health Board	Garda	HIPE	Treatment
Eastern Regional Health Authority	91.4	92.3	96.8
All Other Health Boards	8.6	7.7	3.2

Almost all of the cases (greater than 90% of the column percentages) identified in each source were located within the Eastern Regional Health Authority[6].

6 The Eastern Regional Heath Authority (ERHA) consists of three Area Health Boards the Northern, East Coast and South Western Area Health Boards.

Results

The results are presented in the following order:

1. Ireland
2. Dublin
3. Rest of Ireland excluding Dublin
4. Dublin 2001 *versus* Dublin 1996

Where possible, analyses have been reported by 3 age bands: 15-24, 25-34 and 35-64 years for males and females separately. However, the data are too sparse outside Dublin to enable this level of detail and for the 'Rest of Ireland' we report the combined age group 15-64 years for males and females. No reliable CRM estimates are possible by Health Boards due to the small numbers of persons observed.

Please note the following abbreviations used in the tables and figures to follow:

T = Treatment list. H = HIPE data. G = Garda data.

Lower Bound , Upper Bound = Lower and Upper 95% confidence limits, respectively.

Consistency of Results

The reported prevalence estimates for combined age/sex totals or for individual age/sex combinations by sub-region (i.e. Dublin or the 'Rest of Ireland') will not necessarily be entirely consistent, i.e. adding estimates within age/sex bands across regions need not give the same figure as that reported for Ireland as a whole. There are two issues here that can contribute to this apparent inconsistency: one is that the estimation procedure is statistical in nature – it is not a simple head count, while the second relates to data completeness.

For the first issue, it should be borne in mind that each individual estimate is derived from a specific fitted statistical model and the latter can be sensitive to the exact combination of numbers supplied in the 7 cells derived from the 3-sources (see Figure 1). Actually, seven differently structured models – reflecting different dependencies between the three lists - are routinely fitted to each set of observations in order to derive the required estimate. The quality of fit of these 7 models can vary considerably with major differences in the proposed prevalence estimate and associated confidence interval. Based on the reported statistical information on model fit, the most appropriate model is selected. But in any given instance, even this model may be a relatively poor fit to a set of observations thus reducing the reliability of the estimate for that particular age/sex/year/location. For the chosen model, the statistical uncertainty in the estimate is reflected in the 95% confidence interval and this implies that the *true* value is believed to lie somewhere within that interval – the *point estimate* is simply the 'best guess'.

The second issue that contributes to the problem is the inadequacies of the raw data. For instance,

matching individuals across the 3 sources depends on the complete and proper recording of details of initials, sex, date of birth and county of origin. There is scope for error in person details within and between data sets (e.g. middle initial included/omitted, date recorded as month/day/year in one data set and day/month/year in another, etc. etc.). We have developed a probability-matching algorithm to cope with these difficulties. This will compensate to some degree for omissions or errors but clearly some residual uncertainty remains. A particular problem can arise when county of origin is omitted. This causes no difficulty for the model for Ireland as a whole, but will obviously cause problems for sub-regional models. These practical difficulties must be addressed in order to supply estimates by different age and sex combinations for different regions.

1) Ireland

Table 6: Summary of the results of the 3-source Capture-Recapture models for Ireland for the years 2000 and 2001 stratified by age and sex

Year	Sex	Age Group	Estimates	Lower Bound	Upper Bound	Rate/ 1000[7]
2000	Males	15-24	3,480	3,298	3,691	10.4
		25-34	3,935	3,753	4,144	13.7
		35-64	2,344	2,013	2,803	3.6
	Females	15-24	1,866	1,664	2,142	5.8
		25-34	1,729	1,542	1,983	6.1
		35-64	804	614	1,120	1.2
Total	**M+F**	**15-64**	**14,158**	**12,884**	**15,883**	**5.6**
2001	Males	15-24	3,194	3,048	3,363	9.5
		25-34	4,376	4,206	4,570	14.7
		35-64	2,228	2,042	2,462	3.3
	Females	15-24	1,999	1,750	2,340	6.2
		25-34	1,941	1,765	2,178	6.6
		35-64	714	594	906	1.1
Total	**M+F**	**15-64**	**14,452**	**13,405**	**15,819**	**5.6**

(NB: Lower Bound = lower 95% Confidence Limit. Upper Bound = Upper 95% Confidence Limit)

7 Rates for this and subsequent tables are derived from Central Statistic Office (CSO) population estimates: i) "Population and Migration Estimates April 2000, CSO 'Bulletin', 12 September 2000", ii) "Population and Migration Estimates April 2002, CSO 'Bulletin', 5 September 2002", iii) "Population and Migration Estimates April 2001, CSO 'Bulletin', 29 August 2001".

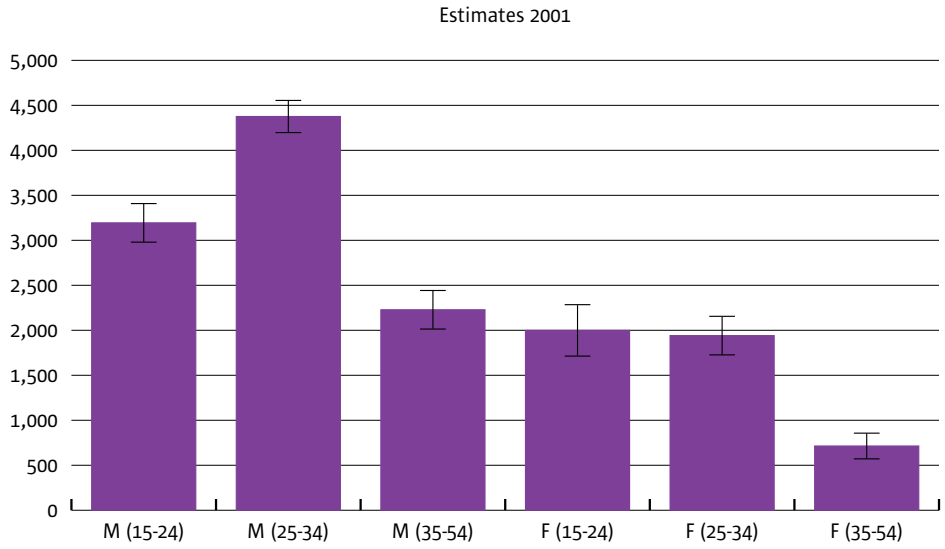


Figure 5: Bar chart of the results for 2001 with the 95% confidence intervals shown

2) Dublin

Table 7: Summary of the results of the 3-source Capture-Recapture models for Dublin for the years 2000 and 2001 stratified by age and sex

Year	Sex	Age Group	Estimates	Lower Bound	Upper Bound	Rate/ 1000
2000	Males	15-24	3,083	2,915	3,278	32.2
		25-34	3,417	3,256	3,607	34.9
		35-64	1,940	1,678	2,312	10.8
	Females	15-24	1,714	1,533	1,958	17.5
		25-34	1,497	1,342	1,713	14.4
		35-64	617	480	857	3.2
Total	**M+F**	**15-64**	**12,268**	**11,204**	**13,725**	**15.9**
2001	Males	15-24	2,735	2,604	2,888	29.3
		25-34	3,740	3,589	3,915	36.3
		35-64	1,803	1,657	1,992	9.9
	Females	15-24	1,766	1,537	2,085	18.7
		25-34	1,784	1,621	2,003	16.2
		35-64	628	511	828	3.2
Total	**M+F**	**15-64**	**12,456**	**11,519**	**13,711**	**15.9**

(NB: Lower Bound = lower 95% Confidence Limit; Upper Bound = Upper 95% Confidence Limit)

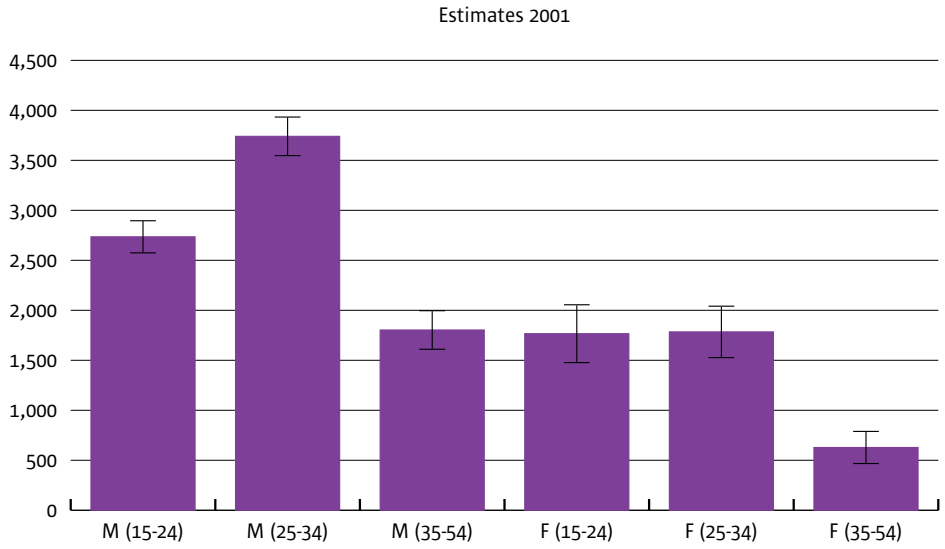
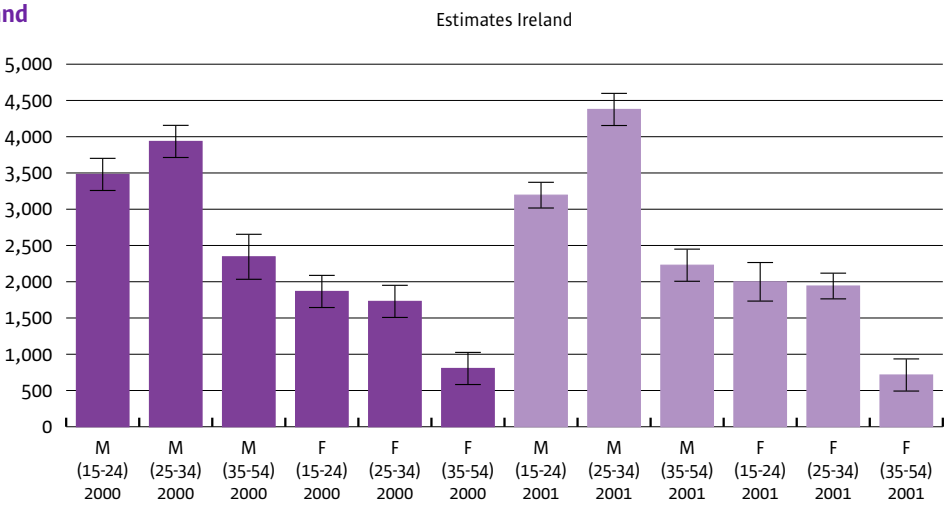


Figure 6: Bar chart of the results for 2001 with the 95% confidence intervals shown

Ireland



Dublin

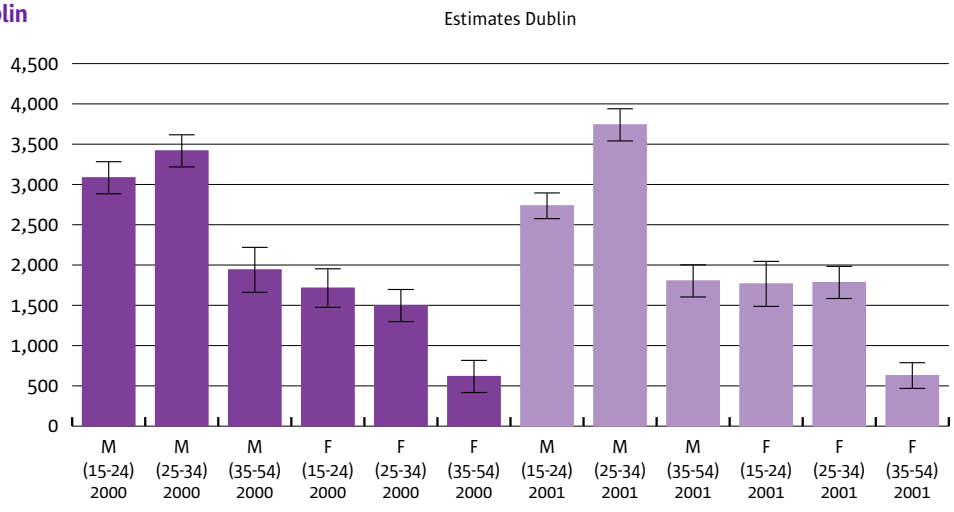


Figure 7: Juxtaposed charts for Ireland and Dublin illustrating the essentially similar patterns of prevalence by age and sex

3) Rest of Ireland (excluding Dublin)

Table 8: Summary of the results of the 3-source Capture-Recapture models for Rest of Ireland (excluding Dublin) for the years 2000 and 2001 stratified by sex for 15-64 years combined

Year	Sex	Age Group	Estimates	Lower Bound	Upper Bound	Rate/ 1000
2000	Males	15-64	1,499	1,266	1,816	1.7
	Females	15-64	1,027	627	1,823	1.2
Total	**M+F**	**15-64**	**2,526**	**1,893**	**3,639**	**1.4**
2001	Males	15-64	1,688	1,493	1,940	1.8
	Females	15-64	537	441	685	0.6
Total	**M+F**	**15-64**	**2,225**	**1,934**	**2,625**	**1.2**

(NB: Lower Bound = lower 95% Confidence Limit; Upper Bound = Upper 95% Confidence Limit)

4) Dublin 2001 contrasted to Dublin 1996

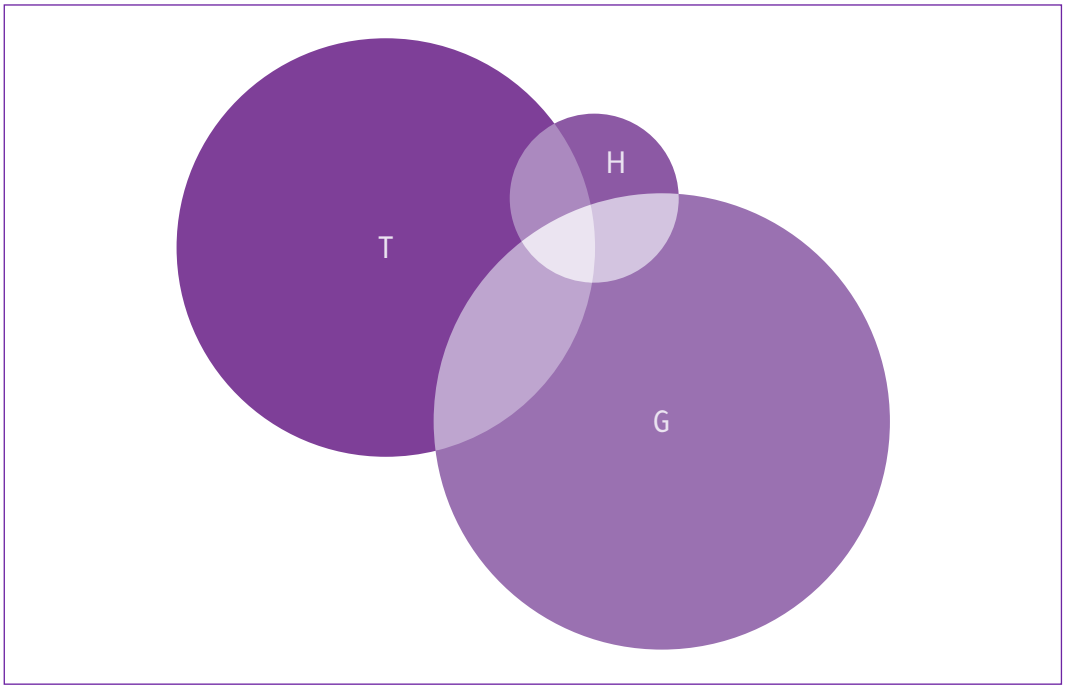
As the Comiskey study in 1996 included individuals aged 15 to 54 years of age, the estimates for Dublin 2001 have been recomputed to facilitate comparison. These are shown in Table 9 and illustrated in Figure 8.

Table 9: Numbers of persons identified across sources for Dublin in 1996 and 2001

1996	Source	2001
2,125	T	4,215
193	H	333
3,015	G	1,451
160	T ∩ H	369
764	T ∩ G	1,526
121	H ∩ G	37
191	T ∩ H ∩ G	191

Source for 1996 estimates: Comiskey, C., and Barry, J. (2000) A Capture-Recapture Study of the prevalence and implications of opiate use in Dublin, European Journal of Public Health.

1996



2001

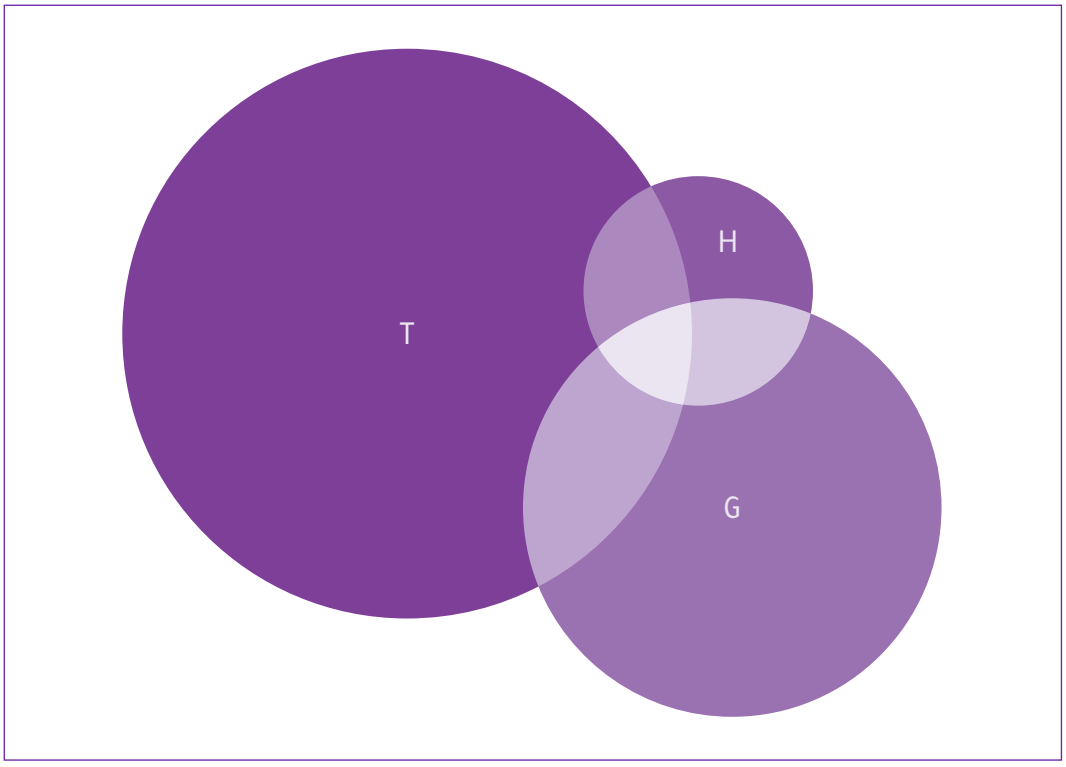


Figure 8: Venn diagram representation of data for Dublin in 1996 and 2001. The size of the individual circles represents the numbers contributed from the particular source. This figure corresponds to Table 9 above

Table 10: Prevalence estimates, confidence intervals and corresponding rates per thousand population by age and sex for Dublin 1996 and 2001

	Dublin 1996				Dublin 2001			
	Estimate	Lower bound	Upper bound	Rate/ 1000 pop.	Estimate	Lower bound	Upper bound	Rate/ 1000 pop.
M 15-24	5,405	4,980	5,891	56	2,735	2,604	2,888	29.3
M 25-34	3,512	3,276	3,778	42	3,740	3,589	3,915	36.3
M 35-54	1,427	1,175	1,773	11	1,793	1,648	1,980	13.0
F 15-24	1,778	1,525	2,108	18	1,766	1,537	2,085	18.7
F 25-34	1,039	875	1,265	11	1,784	1,621	2,003	16.2
F 35-54	300	206	491	2	626	509	825	4.2
Total	**13,461**	**12,037**	**15,306**	**21**	**12,444**	**11,508**	**13,696**	**18.2**

(NB: Lower Bound = lower 95% Confidence Limit; Upper Bound = Upper 95% Confidence Limit)

Note that the confidence bounds for both point estimates overlap substantially and we conclude that there is a negligible difference in the prevalence for both years. The rate has declined in 2001 versus 1996 due to the (approximately) 22% increase in the population 15-54 years over the 5-year period. These results are illustrated in Figure 9 below.

A contrast between Dublin results for 2001 and 1996 for persons aged 15-54 years

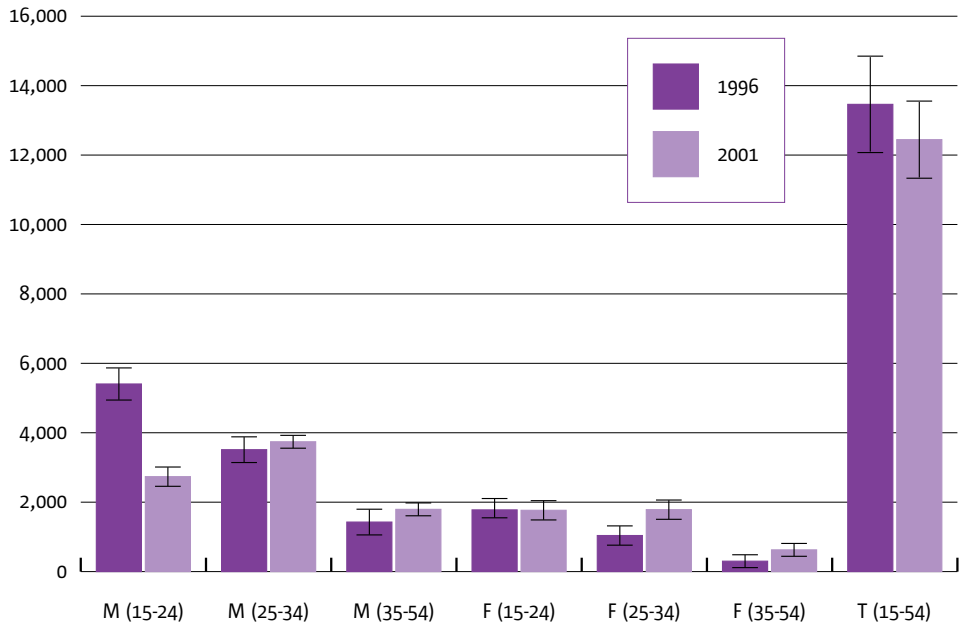


Figure 9: Prevalence estimates (with 95% confidence intervals indicated) by age and sex for Dublin 1996 and 2001 and totals for 15-54 years males and females combined

Comments on the Estimates for Dublin 1996 and 2001 (Table 10 and Figure 9)

Age band: 15-24

There is evidence of a marked decrease in both the rate and in the estimated number of opiate users in this age band for males only. The CSO report a 6.5% decline in the population of males in this age band for Dublin between 1996 and 2001. For females, there is essentially no difference in the estimates. Given the 5-year gap in the reported estimates, many of those aged 15-24 years in 1996 would have aged by 5 years and would – by 2001 - be counted in the 25-34 age band.

Age band: 25-34

The 25-34 age band shows a modest increase in prevalence for males but a significantly higher proportionate increase for females. The rate for males has declined somewhat while that for females has risen. The population rose by 21% and 23% for males and females, respectively, over the 5 years.

Age band: 35-54

There has been an increase in both the rate and prevalence for males in this age band. The estimated prevalence and rate for females is seen to have more than doubled between 1996 and 2001, although this is with respect to a low base number. During the 5-year period, the population rose by over 9% for both males and females for this age group.

Total

The final pair of bars in Figure 9 shows the estimated totals across all age bands for males and females combined for both years. In terms of the point prevalence estimates there has been a decline of just 1,000 opiate users (from 13,462 in 1996 to 12,444 in 2001). However, it is relevant to note that the 95% confidence intervals overlap *(viz. 12,037 – 15,306 in 1996 and 11,508 – 13,696 in 2001)* and so from a strictly statistical perspective, we lack strong evidence of a real decline in the numbers of opiate users in this 5-year period.

Concluding Remarks

Prevalence Estimates

The 3-source CRM results for Ireland as a whole suggest a figure of 14,158 as the prevalence estimate of opiate users (aged 15-64) for 2000 (a rate or 5.6/1000 population) with a modest rise to 14,452 for 2001 (a rate of 5.6/1000 population). On the available evidence, there has been little or no real increase in prevalence between 2000 and 2001 as the respective confidence intervals overlap substantially, and therefore we cannot conclude that any trend exists.

The point estimates for Dublin are 12,268 for the year 2000 (15.9/1000 pop.) and 12,456 for the year 2001 (15.9/1000 pop.). Again, no evidence of any significant difference between both years.

The Rest of Ireland (excluding Dublin) estimates are 2,526 for the year 2000 (1.4/1000 pop.) and 2,225 for the year 2001 (1.2/1000 pop.).

No 3-source CRM estimates are available on an individual Health Board basis.

In comparing the estimates for Dublin for the year 1996 with those for the year 2001, there has been a drop of just 1,000 in the prevalence of opiate users. However, taking account of the statistical uncertainty in these two point estimates, there is no compelling evidence of a real difference between the two time periods.

Study Limitations

The analysis shows that contact with the three sources differs depending on the age and sex of the person. In particular, it was found that younger females are less likely to appear in the Garda data when compared with both the HIPE and the Treatment lists. This implies that the probability of being 'captured' by the Garda data differs from that of HIPE and the Methadone Treatment list, at least with respect to this category. This violates one of the underlying assumptions for the CRM (i.e. the presumed equal probability of being 'captured' by all sources) with the result that the estimates are possibly biased downwards.

A second relevant assumption - that the population is closed (i.e. that there is no migration in or out of the region) - may also be violated to some extent when considering the sub-regions and particularly when year-on-year estimates are compared as eastward migration of opiate users may have occurred from the regions.

An important limiting consideration for the reliable applications of the CRM is the requirement for a high overlap of information across the sources. In this study, the 2 and 3-source overlap was low or very low for certain age/sex combinations (e.g. for 3-source overlap: females in the 35-64 age band; for 2-source overlap: HIPE with Garda data for most age/sex combinations) and where this occurs it will give rise to a less reliable point estimate with a wide confidence interval.

Continuity

As this was the first national CRM exercise, a number of valuable lessons have been learned. The acquisition of the hospitals' data was a particularly lengthy process due to the need to contact a large number of hospitals nation-wide and – in most instances – the requirement to make a formal application to their ethics committees. With appropriate national ethical approval, this process could well be semi-automated for any future CRM exercise with a considerable saving in time and effort. As the Treatment list is maintained on an on-going basis and is therefore current, it should be possible to undertake a 2-source annual or bi-annual CRM for monitoring purposes. The special survey conducted by the Garda is not likely to be repeated annually, but could be undertaken every 3 or so years to enable updating of the 3-source estimates.

Notes

Notes

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