Clinical outcome indicators : December 1994 / Clinical Outcomes Working Group.

Contributors

Great Britain. National Health Service in Scotland. Clinical Outcomes Working Group.
Great Britain. Scottish Office. Department of Health.

Publication/Creation

[Edinburgh] : [CRAG], 1994.

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THE SCOTTISH OFFICE

National Health Service in Scotland

CLINICAL OUTCOME INDICATORS

December 1994

CLINICAL RESOURCE AND AUDIT GROUP

Clinical Outcomes Working Group

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FOREWORD

These Clinical Outcome Indicators were produced by a Working Group of the Clinical Resource and Audit Group chaired by Dr Dorothy Moir, Director of Public Health for Lanarkshire Health Board. They are derived from information collected routinely by the Registrar General and the Information and Statistics Division of the Common Services Agency and ISD staff played a key role in assisting the Working Group. The 7 Indicators in Group A compare the populations of the 15 Health Boards; the 7 Indicators in Group B compare the average outcomes of patients treated by over 20 NHS Trusts and Directly Managed Units, most of them general hospitals; and the 3 Indicators in Group C compare average mortality rates after discharge from 29 psychiatric hospitals and units.

How each Health Board compares with its neighbours and how each Trust compares with its competitors will attract considerable interest, not least from the Boards and Trusts themselves. That is indeed why these Clinical Outcome Indicators are being published in this format. It is essential, though, that everyone - particularly people who have recently been, or may soon be, treated in one of the hospitals involved - should understand the limitations of these comparisons. They do not constitute "league tables" and are not comparable to the information in the recently published "Patients' Charter : Raising the Standards in Scotland". Comparisons of waiting times for outpatient appointments or for admission to hospital, or cancellation rates for planned admissions, provide both patients and general practitioners with valuable information about the relative performance, and relative attractions, of different hospitals.

These 17 Clinical Outcome Indicators do not provide comparable information, either about the efficacy of the treatment provided for particular conditions in different hospitals or about the effectiveness of the services provided for the inhabitants of the different Health Boards by the NHS as a whole. This is because differences in clinical outcome - in mortality after a heart attack or a stroke, for example - are just as likely to be due to differences in the patients themselves as they are to be due to differences in the quality and efficacy of the treatment they received. Even though differences in age and sex have been allowed for, the patients attending different hospitals may differ considerably in a variety of other ways which affect how well they respond to treatment, particularly if they are drawn from neighbourhoods with very different social and economic characteristics. Patients may differ, for example, in the length of time they have been ill before consulting their general practitioner or being referred for treatment, or in the extent to which they have other complicating conditions like diabetes or high blood pressure. There may also be unrecognised differences in the diagnostic criteria used by the staff of different hospitals, or in the extent to which they treat patients with comparatively mild conditions. Mild illnesses always tend to have a better outcome than more serious ones.

For all these reasons, it would be wrong to conclude from any of these Clinical Outcome Indicators that one hospital provides better treatment than another, or that one Health Board's patients receive better care than those of its neighbours, or even that they did so in the period to which the indicators relate (mainly 1990-93). If one really wished to find out which of two hospitals provided better treatment for a particular condition it would be necessary to carry out a "controlled clinical trial". This would involve allocating patients randomly to each hospital in turn to ensure that the two were treating comparable populations, and in most circumstances this would be both impracticable and unethical.

These comparisons of the positions of different Health Boards and NHS Trusts on these 17 Clinical Outcome Indicators are being disseminated throughout the NHS in Scotland, not to enable general practitioners or the general public to decide which localities and hospitals provide the most expert care but to help raise overall standards of care. If an individual NHS Trust appears to fare badly on a particular indicator we expect that the clinicians concerned will immediately review their treatment of that condition to find out whether it is unusual or incomplete in any way, and why others appear to be getting more satisfactory results. We also expect that the Health Boards and Fundholding GPs purchasing treatment from that Trust will have questions to ask, and that those questions will often lead to an agreement between purchaser and provider that a clinical audit focused on the condition in question should be carried out to try to identify the likely cause of the disparity. If there appear to be substantial differences in outcome for the treatment of a particular condition which involve several hospitals we also expect the clinicians concerned to discuss the issue amongst themselves, and perhaps to mount a Scotland-wide audit. Indeed this is already happening in a number of areas.

In time these Clinical Outcome Indicators will be updated by CRAG and republished. Other indicators may also be added to the portfolio. In the meantime, I and the members of Dr Moir's Working Group trust that the information in this volume will provide food for thought, and for action, for both the purchasers and the providers of healthcare. It should not, though, be used either by the general public or by general practitioners as a basis for inappropriate and premature conclusions about which Health Boards and hospitals provide the best healthcare.

Robert Kendell

R E KENDELL
Chairman, Clinical Resource and Audit Group
December 1994

CLINICAL OUTCOME INDICATORS REPORT 1994

CONTENTS Paragraph

ANNEXES

INTRODUCTION

1.1 In December 1992 the Clinical Outcomes Working Group recommended action in relation to reporting the quality of care and clinical outcomes. This was drawn to the attention of the service in MEL(1992)87 for inclusion in service contracts for 1993-94. The action required related to three main areas of activity:

(i) the quality and completeness of the clinical information supplied to ISD which forms the basis of the current reporting;

(ii) specific outcome measures in selected clinical areas; and

(iii) action in relation to new clinical data collections associated with national clinical audit systems and national guidelines for clinical practice.

1.2 Interest has tended to centre on specific outcome measures but **all three areas of activity are equally important to continued development in this area.** The Working Group's original report of December 1992 fully described the background to this work. It remains relevant to discussion and to further development and is reproduced at Annex 3. It has been agreed, however, that use of the term "outcome indicators" is more appropriate than "outcome measures" and this new term will be used in the current report.

SPECIFIC CLINICAL OUTCOME INDICATORS

2.1 This report describes work that has taken place over the last 12 months in each of the three areas of activity. It gives updated results, at individual hospital level, for the five clinical outcome indicators reported in the June 1993 Report (MEL(1993)93) at health board level. It also extends the range of indicators to include stroke and mental health and indicators of population health status reported at health board level. The relevant tables and graphs for health boards and hospitals in Scotland providing services are presented in the technical annex to this report. These are accompanied by general notes on the derivation of each indicator including the period of coverage, standardisation, confidence intervals and data sources. Each specific indicator is accompanied by exact definitions of the period covered, case selection and outcome event in question.

2.2 Each individual indicator is also accompanied by a discussion of technical issues relevant to the interpretation of the data. Variations may arise from the relative quality and completeness of the data supplied for the Scottish Morbidity Record (SMR), local case mix, geographic variations in disease and other factors. The commentary is based on continued investigation of the data.

2.3 Mortality after acute myocardial infarction is the measure that has been most fully investigated so far. Discussions have been held with clinical staff, and doctors in public health medicine in the Scottish Office Home and Health Department and in the University of Edinburgh have carried the work forward. This work has been submitted for publication. This is the sort of discussion that the Working Group is seeking to promote for each indicator identified, in order to gain the fullest understanding of the use of such indicators and secure agreement from all interested parties about their robustness and validity, and their relevance to improving the quality of care for patients.

2.4 **It is emphasised that no direct inferences can be made on the basis of the information provided about the quality of care in different health boards or hospitals.** The aim is to concentrate discussion on the possible reasons for variations in order to promote the investigation of the underlying causes and to secure improved quality of reporting in future, thereby to contribute to raising the standards of health care across Scotland.

QUALITY OF CLINICAL INFORMATION

3. The indicators reported, at present, at hospital level are all based on SMR data held centrally by ISD and on deaths data from the Registrar General. The first of the Working Group's original recommendations in 1992 to be included in contracts for 1993-94 was that a structured review should be carried out of the quality of the clinical information provided to ISD. The target was set at 90% accuracy and completeness of coding to be achieved by the end of the first year. Discussions have shown that in many areas that audit of data quality may not yet have been completed. Health Boards are being asked, through their Directors of Public Health, to review the position and to request the results of this audit in the hospitals in their area, and to report back to the CRAG Secretariat and ISD on the results of this review and any associated action taken or proposed. The need for any further central initiatives will then be considered. To

assist in this process, the joint CRAG-ISD report **"Precise Clinical Summaries: the source of high quality SMR data"**, first published in 1990, and which will remain relevant until 1996, is available from the CRAG Secretariat. Hospitals may seek assistance in this exercise from the Quality Assurance Branch of ISD.

CLINICAL AUDIT DATABASES AND RELATED ACTIVITY

4. The third element of the original recommendations concerned clinical information databases and other related activity and gave notice of CRAG-sponsored developments in this area which boards should prepare to adopt. Four of these are now in place or about to become available on a national basis, and details are set out below.

Scottish Audit of Surgical Mortality

4.1 This audit includes perioperative deaths in all of the main surgical sub-specialties with the intention of involving all surgeons and all anaesthetists working in those fields. It corresponds to the National Confidential Enquiry into Perioperative Deaths (NCEPOD) in England and became operational on a consistent basis across Scotland on 1 January 1994. The audit is led jointly by the Royal College of Surgeons of Edinburgh, the Royal College of Physicians and Surgeons of Glasgow and the Royal College of Anaesthetists. All contracts for surgical services should now provide the necessary local support to enable this audit to proceed. The major part of the funding relates to the organisation at regional level and is provided at present by CRAG. Discussions will be initiated about possible mechanisms for transferring these costs to contract funding.

Scottish Intensive Care Society Audit

4.2 All intensive therapy units in Scotland have been equipped by CRAG with hardware and software to enable systematic clinical audit to take place on the basis of the APACHE 3 predictive scoring system. The major part of the cost of this system is borne at present by CRAG but associated local costs should be identified in discussion between providers and purchasers and appropriately reflected in contracts.

Scottish Trauma Audit

4.3 In Accident and Emergency Medicine the system developed in four hospitals on a pilot basis by the Scottish Trauma Audit Group, in collaboration with the international Major Trauma Outcomes Study, is being considered for release to A&E Departments which regularly treat major trauma patients. The first phase of this work was reported at a major conference in November 1994 and discussion about extending this audit has been initiated.

ENT Services

4.4 Tonsillectomy was the subject of the first Scottish national clinical audit in otolaryngology. The results of this audit will assist in the definition of the core data to be collected by all ENT units.

THE 1994 REPORT

5. Although Scotland is making good progress in the development and use of outcome indicators largely because of the clinical information that is available through the national data sets and data linkage, the work is still at a very early stage. The quality and completeness of recording of the clinical information on which the indicators are based requires further improvement. Case mix, severity and other variables must be taken into account in comparing one hospital's data with another. **The emphasis at present therefore must be on continuing development through detailed local discussions between clinicians, medical managers and other professional staff so that the material can be presented in a form that is accepted and can be used with confidence by every interested group. For these reasons, a 'health warning' has to accompany the interpretation and use of each clinical indicator.**

THE CONTINUING DEVELOPMENT PROGRAMME

DEVELOPMENT OF THE CURRENT CLINICAL OUTCOME INDICATORS

6.1 Directors of Public Health are being asked to initiate discussions on the development of the current clinical outcome indicators with local clinicians and professional bodies (for example, Area Clinical Audit Committees, Area Medical Committees and other professional advisory

committees). This will provide insight into the nature and uses of the existing indicators and may enable further standardisation.

6.2 Health Boards are being asked to report back, through Directors of Public Health, on other outcome indicators in use or under consideration locally, for possible wider use. Comparative outcome indicators are at their most useful when used to identify possible areas of improvement within individual departments or hospitals, but the use of outcome indicators should also improve the quality of clinical data and the quality of clinical and management decisions.

6.3 This report includes for the first time indicators for stroke and mental illness as well as selected indicators of population health status by health board. This extends the number of specialties and care sectors involved in the exercise and introduces indicators of the joint impact of primary, secondary and community care as well as services provided by health boards, including health education, screening and immunisation programmes. It is intended to use this wider coverage to enhance the general debate.

6.4 The degree to which the outcome indicators based upon linkage between hospital and death records are up-to-date is limited by the frequency of linkage. This is currently annual. However, quarterly linkage will be implemented from mid-1995 allowing more up-to-date outcome indicators to be calculated.

FUTURE DEVELOPMENT OF CLINICAL OUTCOME INDICATORS

7.1 Work is in hand to identify clinical outcome indicators suitable for a range of different purposes, and to set in motion the data collection required to support them where that is required. Clinical outcome indicators will continue to be explored for a wider range of specialties, using SMR data and data linkage. The intention is to try, at the same time, to select indicators that are clearly relevant to the decisions people, including professional staff and patients and carers, have to make.

7.2 The current indicators include some based on relevant end points other than simple mortality. These include discharge home, readmission rates and reoperation rates. This principle of relevance to the patient's interest will be developed in further work.

7.3 Clinical guidelines are, at present, under development by the Scottish Intercollegiate Guidelines Network (SIGN) in association with CRAG under the criteria agreed by SIGN and CRAG based on the 1993 CRAG report "Clinical Guidelines". It is intended that guidelines for possible adoption nationally should include outcome indicators by which the particular episode of treatment should be examined and will specify the core data that should be collected to enable these outcomes to be reported on a consistent basis.

7.4 The Scottish Needs Assessment Programme (SNAP) has been asked to specify in each of its reports the outcome indicators necessary to identify whether need is being met.

7.5 Other types of clinical indicators are under review. These include:

process measures and other **proxy measures**, which can with confidence attribute a specific outcome to a specific intervention, may be acceptable in some conditions as a proxy for actual outcome;

tracer conditions common to an identified group of providers are being investigated as general indicators of quality of care. Definitive work is about to start in hospital acquired infection and pressure area care. Measures of success in post-operative pain relief or pain control in certain chronic conditions may also be feasible. These measures will depend on new data collections for which definitions and other conventions of reporting must be agreed at the outset;

sentinel events (critical incidents) are rarely occurring events all of which should be investigated for the lessons they may hold for future clinical and general management. Deaths from acute asthma are an example of a current audit of this kind, which is relevant in general practice as well as in hospital. Another example is perioperative deaths which are now reviewed individually through the Scottish Audit of Surgical Mortality on a consistent basis throughout the country. Sentinel events may, however, have greater relevance to on-going audit and to improving overall performance than to clinical outcomes as such.

OUTCOMES IN CHRONIC DISEASE AND COMMUNITY CARE

8.1 Outcome indicators in chronic disease, geriatric care and rehabilitation are particularly difficult, because the desired outcome may be maintenance of competence for example

in the activities of daily living, or prevention of deterioration. General health status assessment together with disease specific outcome assessment may be possible in this and other clinical contexts where it has been proved to be valid. Sequential assessment with the same tool for example the Barthel Index is feasible but interpretation of changes is problematic. Work is planned with the WHO-sponsored European programme to develop outcomes in geriatric care. The Scottish component will involve geriatric care with occupational therapy in hospital and in the community.

8.2 In chronic disease and community care the attainment of the goals set out in the care plan may be a possible outcome indicator. The evaluation of goal attainment tends to be based on practitioner assessment and remains largely subjective. The usefulness of indicators derived in this way in a wider context is not yet clear. The Health Systems Division is working with healthcare professionals in the community services on the further development of a core community data set which should assist this process (see paragraph 10 below).

ASSOCIATED DEVELOPMENTS

9.1 Comparisons of outcome indicators on a national basis are likely to be reported increasingly from **national audit systems** developed through CRAG. Clinical areas where such work is underway include obstetrics and gynaecology, otolaryngology, intensive therapy, vascular surgery, paediatric heart disease, and the breast and cervical cancer screening programmes.

9.2 **Clinical guidelines** are being developed under the direction of SIGN for deep vein thrombosis and palliative radiotherapy for some forms of lung cancer. A data set related to diabetic patients will be available soon. This is in response to MEL(1993)156. A further 12 national guidelines are in preparation through SIGN. All national guidelines will include a section on clinical audit and outcomes. The minimum core data and reporting will be specified and will include key indicators of risk and of severity of the disease on presentation. Both of these elements are confounding factors in all comparative analyses of outcomes and are among the most difficult to record and to standardise. All protocols for local practice which are developed from national guidelines will be expected to provide for clinical audit of local practice.

9.3 **Predictive scoring systems** based on risk assessment are already in use. The APACHE 3 system is used in the Scottish Intensive Care Society audit; the TRISS system is used in the Scottish Trauma Audit Group's audit of outcomes for major trauma; and the CRIB predictive scoring system for low birth weight babies has been developed with joint funding from research sources and from CRAG. All such systems will have a major impact on the ability of clinicians to audit outcomes accurately and on a consistent basis that will allow comparison with standards set in clinical protocols and with other practitioners' performance. They are an important factor in international collaborative audit.

NATIONAL DATA SETS - FUTURE DEVELOPMENTS

10. In the longer term changes in the methods of collecting national data sets will open up new opportunities for reporting clinical outcomes. These include:

Core patient profile information in Scottish hospitals (COPPISH). This is a reorganisation of the existing data sets which will provide space for specialty and condition specific data for clinical audit and outcomes reporting from 1996 onwards. Work is being initiated to involve clinicians in defining the necessary data sets.

Core community data set programme. The Effective Purchasing and Providing in the Community project (EPPIC) is currently working on the inclusion of data on outcomes and quality in its development of service profiles.

Cancer registration. This will in future include more information which will enhance the capacity to report outcomes on a comparable basis

OTHER RELATED DEVELOPMENTS

11. In the longer term:

resource management and clinical information systems more generally will make clinical information increasingly accessible for audit purposes. CRAG is currently supporting two pilot sites developing the linkage between resource management and audit;

the **electronic patient record** will eventually provide the structure for implementing local protocols; and

clinical information systems will provide the facility for **continuous review** and for **exception reporting** which will identify topics which require more detailed investigation.

CONCLUSION

12. **In developing clinically relevant outcome indicators the Working Group and ISD depend on critical and constructive dialogue with all of the interests involved. We will welcome any comments and suggestions about how the work might be taken forward.**

Dorothy Moir

Dr Dorothy Moir
Chairman
Clinical Outcomes Working Group
December 1994

ANNEX 1

MEMBERSHIP OF CLINICAL OUTCOMES WORKING GROUP

Chairman *(From June 1993)*	Dr Dorothy Moir Director of Public Health Lanarkshire Health Board
Medical Director	Mr Douglas Harper Consultant Surgeon Falkirk & District Royal Infirmary NHS Trust
General Practitioner	Dr Norman Jarvie Crieff, Perthshire
Nurse	Mrs Mary McGinn South Ayrshire Hospitals NHS Trust
Board General Managers	Mr Croy Smith Argyll & Clyde Health Board
	Mr David Peters Borders Health Board
Chief Executive of Trust	Mr Mike Kelly Falkirk & District Royal Infirmary NHS Trust
Research/Public Health Medicine	Professor Elizabeth Russell University of Aberdeen
Management Executive	Mrs Deirdre Evans Purchasing Strategy Division
ISD Assessors	Dr Susan Cole Consultant in Public Health Medicine
	Dr Stephen Kendrick Senior Health Information Scientist
Departmental Assessors	Miss Jacqueline Docherty, Nursing Officer
	Dr Boyd Moir, Deputy Chief Scientist
	Mrs Pamela Warrington, Deputy Chief Pharmacist
Administrative Secretary	Mrs Eileen Barnwell, CRAG Secretariat
Medical Secretary	Dr Simon Capewell, Senior Medical Officer

ANNEX 2

Technical Annex. Specific Clinical Outcome Indicators.

The outcome indicators presented in this Annex fall into three groups as follows:

SECTION A. Health Board Indicators.

Introduction.

The indicators presented in this section relate to the resident population of the Scottish Health Boards.

It is stressed that no direct inferences about quality of care should be drawn from these indicators. They are intended rather to highlight issues which may require further investigation

The following indicators are presented:

1. Teenage conceptions.

Conceptions per 1000 females aged 13 to 15.

2. Therapeutic abortion.

a) Ratio of abortions to live births.

b) Abortions per 1000 women aged 15 to 44.

c) Proportion of abortions performed at less than 10 weeks gestation.

3. Childhood incidence of measles.

a) Notifications per 1000 children aged under 1 year.

b) Notifications per 1000 children aged 1 to 4 years.

4. Cervical cancer mortality.

Deaths from cervical cancer per 100,000 women.

5. Suicides.

Deaths from suicide per 100,000 population.

6. Diabetic ketoacedosis.

Emergency inpatient admissions per 100,000 population.

7. Inpatient stays for children with asthma.

Inpatient episodes of four days or more per 1000 children aged under 16 years.

General features.

The indicators at Health Board level presented in this section are of various kinds. However, their analysis and presentation have several features in common.

Areas presented

Indicators for all Scottish Health Boards including the Island Health Boards are presented in the tables. However because of the small numbers involved and the consequently wide confidence intervals, the Island Boards are omitted from the graphs.

Period of coverage.

Indicators are presented for the three most recent years for which data are available. Numbers and rates are presented for the three years separately. A total and an aggregate rate for the three years as a whole are also presented. Confidence intervals are given for the three year rate.

Standardisation.

Where indicators apply to a relatively narrow age range, they are presented as unstandardised rates. Thus teenage conception rates, childhood incidence of measles and the incidence of longer stays in hospital for children under 16 admitted with asthma are presented unstandardised. However, in order to adjust for the effects of the differing demographic structures of the Health Boards, the more general rates are directly standardised to the population structure of Scotland as a whole in terms of age and sex.

Confidence intervals.

95% confidence intervals are presented as an aid to interpretation. They provide no hard and fast answers. Some of the variation in the indicators presented - whether over time or between Health Boards - is due to random factors. The influence of these random factors will be proportionately greater the smaller the numbers of events involved. Confidence intervals thus express the fact that more credence can be placed in an indicator based on large numbers than on one based on small numbers of events.

Where the Scottish mean lies outwith the confidence intervals for a particular Health Board indicator, there is a strong probability that the deviation is due to factors other than random variations in the data. However where the Scottish mean lies within the confidence interval for a particular Health Board indicator, this does not necessarily mean that the deviation can be ignored. Factors other than random variation may well be involved.

Data sources.

The indicators are derived from Scottish Morbidity Records held at ISD and from population and death data used by kind permission of the Registrar General for Scotland.

1 Teenage conceptions

Definition:	Rate of conceptions at ages 13 to 15 years
Period covered:	1990 to 1992
Source:	SMR1 and SMR2 records
Standardisation:	Unstandardised rates
Comment:	These figures represent the age at which young girls become pregnant: some will go on to deliver, others will have a termination of the pregnancy or miscarry. Some of these events will occur after the girls have reached the age of sixteen. The prevention of pregnancy in underage girls is complex and sensitive but will involve attitudes in the home, health education in schools and the availability of contraceptive services.

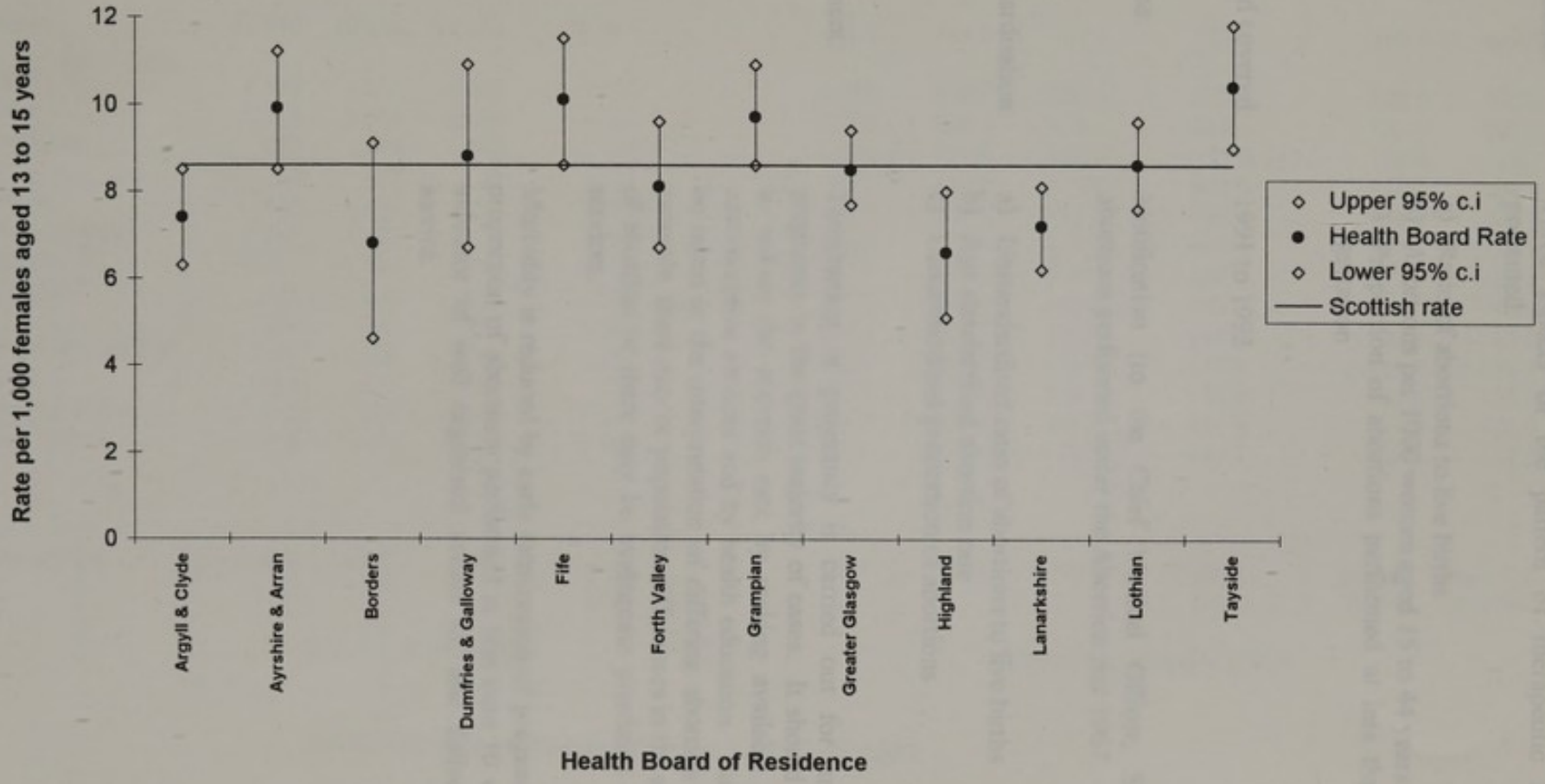
Table 1. Teenage conceptions aged 13 to 15 years.

Scotland and Health Boards 1990 to 1992

	Numbers				Rate per 1,000 females aged 13 to 15 years					
Health Board	1990	1991	1992	1990 to 1992	1990	1991	1992	1990 to 1992	Upper 95% c.i.	Lower 95% c.i.
Argyll & Clyde	57	56	59	172	7.1	7.3	7.7	**7.4**	8.5	6.3
Ayrshire & Arran	70	72	62	204	9.9	10.5	9.2	**9.9**	11.2	8.5
Borders	9	16	11	36	5.1	9.3	6.2	**6.8**	9.1	4.6
Dumfries & Galloway	21	23	23	67	8.0	9.2	9.2	**8.8**	10.9	6.7
Fife	52	62	74	188	8.3	10.1	11.9	**10.1**	11.5	8.6
Forth Valley	37	43	41	121	7.3	8.8	8.3	**8.1**	9.6	6.7
Grampian	79	87	101	267	8.6	9.6	11.0	**9.7**	10.9	8.6
Greater Glasgow	130	131	127	388	8.4	8.6	8.5	**8.5**	9.4	7.7
Highland	30	18	28	76	7.8	4.7	7.3	**6.6**	8.0	5.1
Lanarkshire	78	75	77	230	7.1	7.0	7.4	**7.2**	8.1	6.2
Lothian	113	104	86	303	9.3	8.9	7.5	**8.6**	9.6	7.6
Orkney	2	1	2	5	4.8	2.5	4.9	**4.1**	7.6	0.5
Shetland	7	3	3	13	13.7	6.0	5.9	**8.6**	13.2	3.9
Tayside	64	78	66	208	9.4	11.8	9.9	**10.4**	11.8	9.0
Western Isles	1	4	1	6	1.5	6.3	1.6	**3.1**	5.6	0.6
Scotland	750	773	761	2284	8.3	8.8	8.7	**8.6**	8.9	8.2

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 1 Teenage conceptions aged 13 to 15 years 1990 to 1992 aggregated



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

2 Therapeutic abortion.

Definition: Three aspects of the pattern of therapeutic abortion are presented:

a) Ratio of abortions to live births
b) Abortions per 1000 women aged 15 to 44 years
c) Proportion of abortions performed at less than 10 weeks gestation

Period covered: 1991 to 1993

Source: Notification (to the Chief Medical Officer, SOHHD) of abortions performed under the Abortion Act 1967.

Standardisation:
a) Unstandardised ratio of abortions to live births
b) Age standardised abortion rate
c) Unstandardised proportion of abortions

Comment: Termination of pregnancy is carried out for an unwanted pregnancy in the great majority of cases. It should be possible to reduce the abortion rate by making available appropriate contraceptive services and by health education. But care must be taken in the interpretation of differing abortion rates. For example, there may be population differences in the acceptability of abortion or there may be inadequate provision of abortion services.

Morbidity is reduced by early termination of pregnancy and the proportion of abortions performed at less than 10 weeks is an indicator of well organised access to, and delivery of, the service.

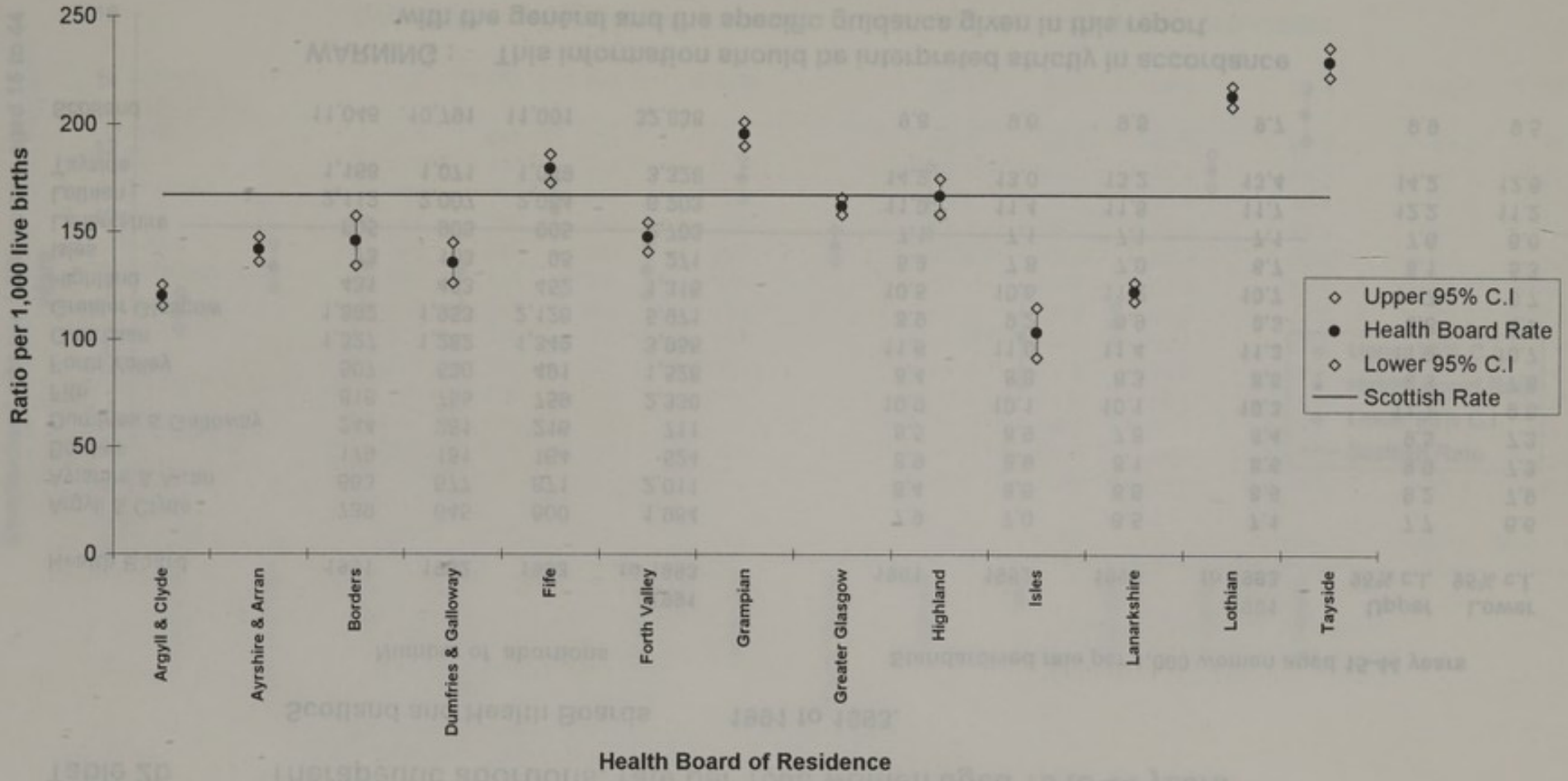
Table 2a. Therapeutic abortions: ratio per 1000 live births.

Scotland and Health Boards 1991 to 1993

Health Board	Number of abortions				Ratio per 1,000 live births					
	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95% c.i.	Lower 95% c.i.
Argyll & Clyde	739	645	600	1,984	130.8	114.3	115.2	**120.2**	125.2	115.3
Ayrshire & Arran	663	677	671	2,011	135.6	143.3	146.8	**141.8**	147.5	136.0
Borders	179	181	164	524	142.2	151.3	144.1	**145.8**	157.4	134.3
Dumfries & Galloway	244	251	216	711	137.0	143.3	126.4	**135.7**	144.9	126.4
Fife	816	755	759	2,330	186.0	175.3	177.4	**179.6**	186.2	173.0
Forth Valley	507	530	491	1,528	142.2	153.4	147.0	**147.5**	154.3	140.6
Grampian	1,327	1,282	1,349	3,958	195.8	187.2	203.7	**195.5**	200.9	190.0
Greater Glasgow	1,892	1,953	2,126	5,971	148.2	159.2	179.9	**162.1**	165.8	158.3
Highland	431	433	452	1,316	162.2	160.7	177.9	**166.8**	175.0	158.5
Isles	73	103	95	271	82.0	115.0	114.0	**103.5**	115.1	91.8
Lanarkshire	895	903	905	2,703	118.7	123.0	125.8	**122.5**	126.8	118.1
Lothian	2,112	2,007	2,084	6,203	212.1	205.0	223.1	**213.2**	217.9	208.5
Tayside	1,168	1,071	1,089	3,328	238.0	219.6	229.6	**229.1**	235.9	222.2
Scotland	11,046	10,791	11,001	32,838	164.8	164.0	173.7	**167.4**	169.1	165.8

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 2a Therapeutic abortions : ratio per 1000 live births 1991 to 1993 aggregated



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

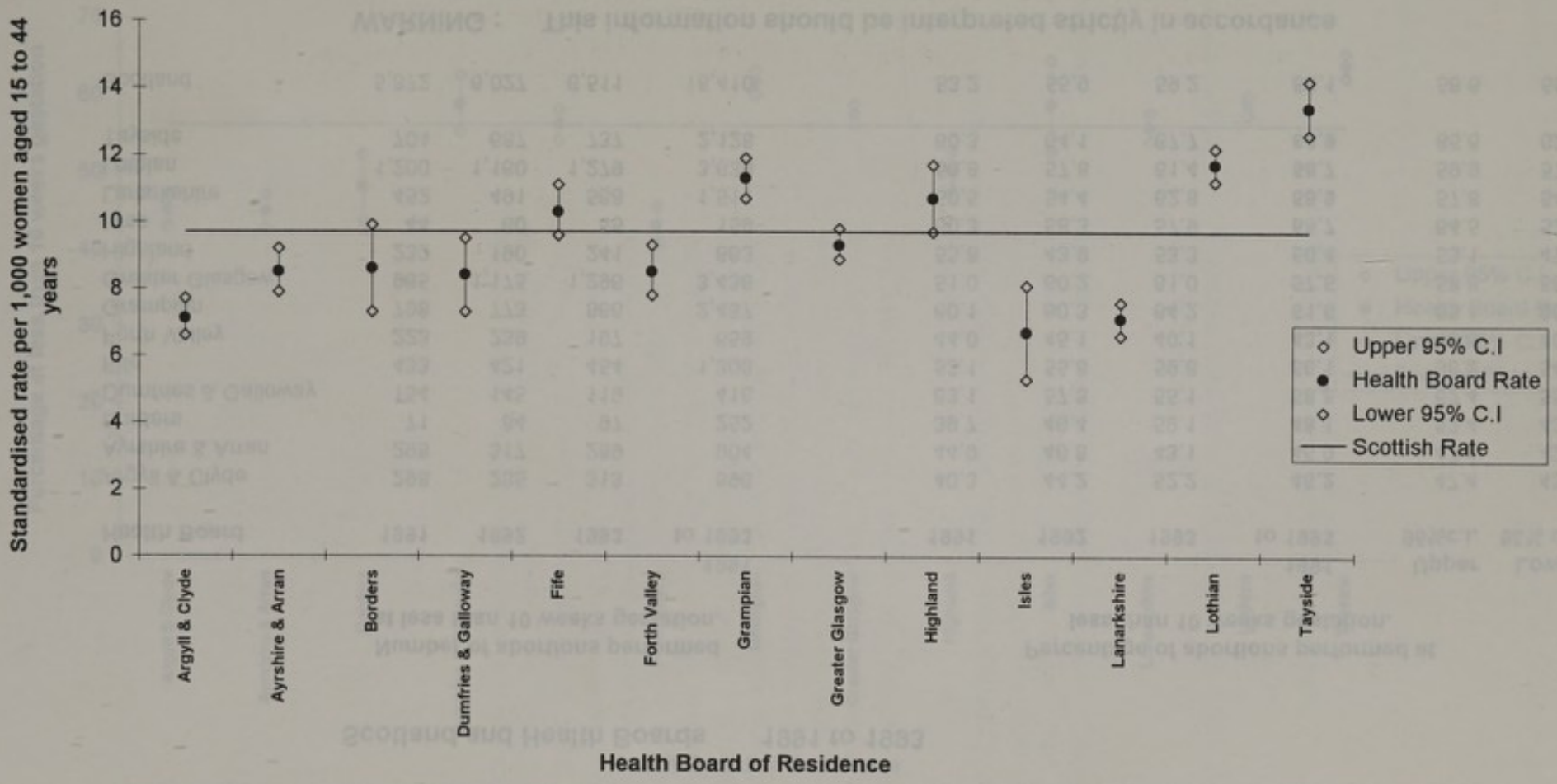
Table 2b Therapeutic abortions: rate per 1000 women aged 15 to 44 years

Scotland and Health Boards 1991 to 1993.

Health Board	Number of abortions				Standardised rate per 1,000 women aged 15-44 years					
	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95% c.i.	Lower 95% c.i.
Argyll & Clyde	739	645	600	1,984	7.9	7.0	6.5	**7.1**	7.7	6.6
Ayrshire & Arran	663	677	671	2,011	8.4	8.6	8.6	**8.5**	9.2	7.9
Borders	179	181	164	524	8.9	8.9	8.1	**8.6**	9.9	7.3
Dumfries & Galloway	244	251	216	711	8.5	8.9	7.8	**8.4**	9.5	7.3
Fife	816	755	759	2,330	10.9	10.1	10.1	**10.3**	11.1	9.6
Forth Valley	507	530	491	1,528	8.4	8.8	8.3	**8.5**	9.3	7.8
Grampian	1,327	1,282	1,349	3,958	11.6	11.0	11.4	**11.3**	11.9	10.7
Greater Glasgow	1,892	1,953	2,126	5,971	8.9	9.2	9.9	**9.3**	9.8	8.9
Highland	431	433	452	1,316	10.5	10.5	11.2	**10.7**	11.7	9.7
Isles	73	103	95	271	5.3	7.8	7.0	**6.7**	8.1	5.3
Lanarkshire	895	903	905	2,703	7.1	7.1	7.1	**7.1**	7.6	6.6
Lothian	2,112	2,007	2,084	6,203	11.9	11.4	11.8	**11.7**	12.2	11.2
Tayside	1,168	1,071	1,089	3,328	14.2	13.0	13.2	**13.4**	14.2	12.6
Scotland	11,046	10,791	11,001	32,838	9.8	9.6	9.8	**9.7**	9.9	9.5

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 2b Therapeutic abortions : rate per 1000 women aged 15 to 44 years 1991 to 1993 aggregated



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

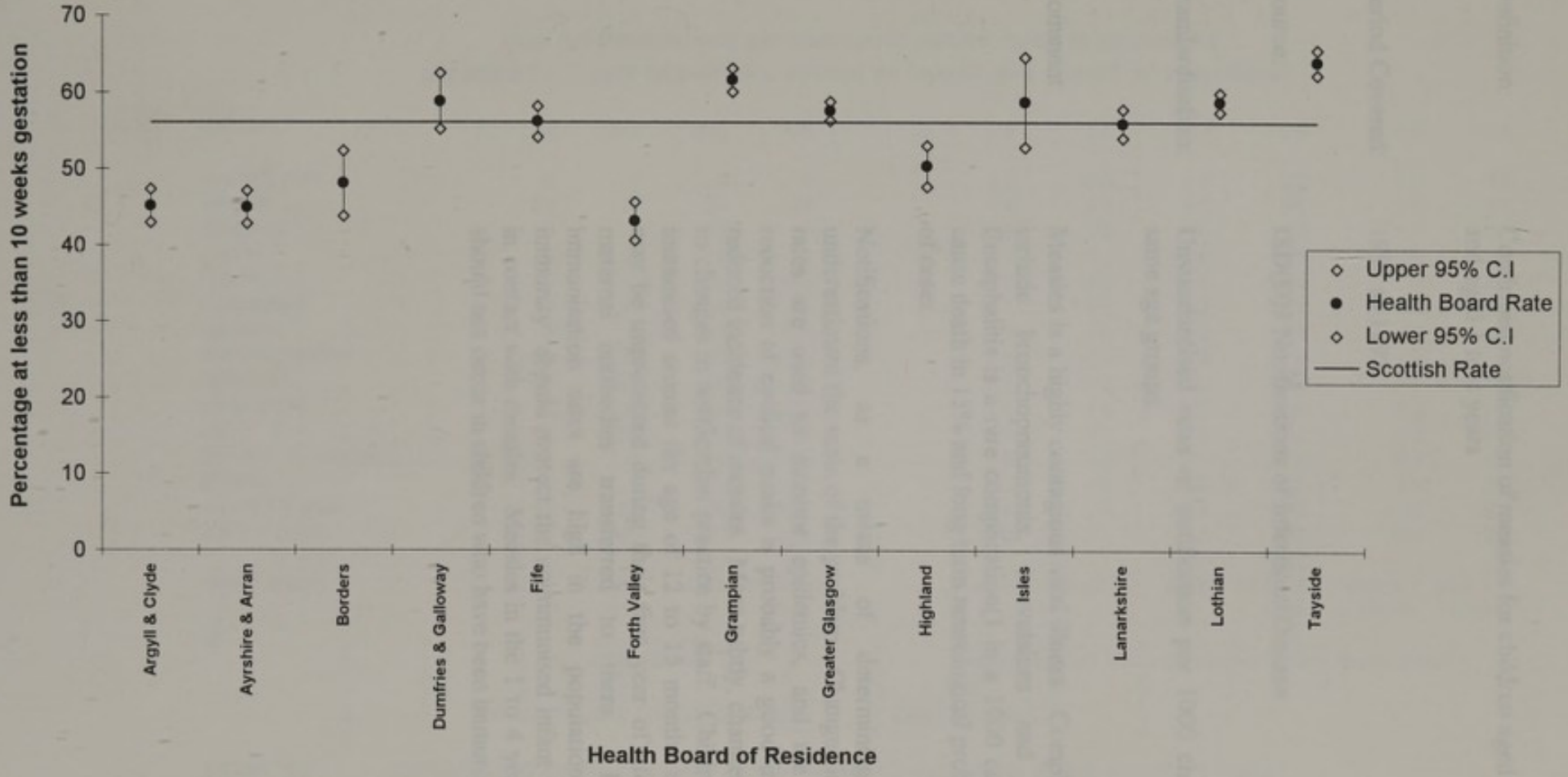
Table 2c. Therapeutic abortions: proportion performed at less than 10 weeks gestation.

Scotland and Health Boards 1991 to 1993

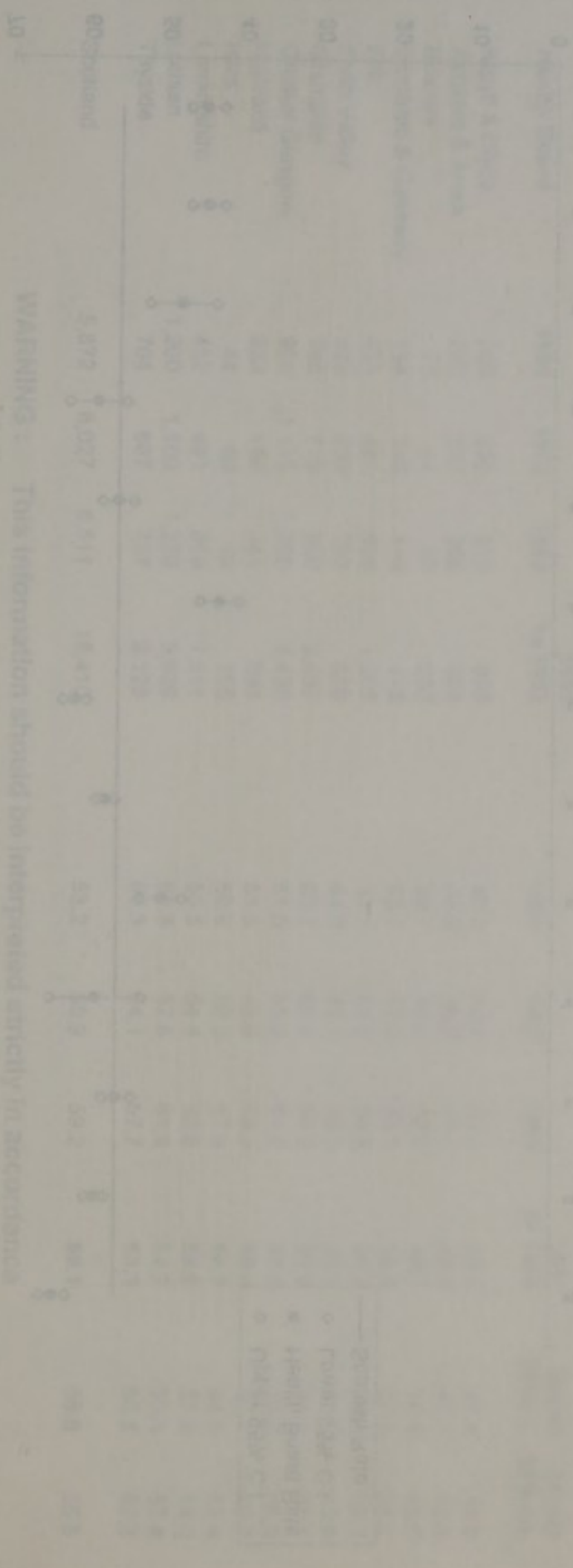
Health Board	Number of abortions performed at less than 10 weeks gestation.				Percentage of abortions performed at less than 10 weeks gestation.					
	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95%c.i.	Lower 95% c.i.
Argyll & Clyde	298	285	313	896	40.3	44.2	52.2	**45.2**	47.4	43.0
Ayrshire & Arran	298	317	289	904	44.9	46.8	43.1	**45.0**	47.1	42.8
Borders	71	84	97	252	39.7	46.4	59.1	**48.1**	52.4	43.8
Dumfries & Galloway	154	145	119	418	63.1	57.8	55.1	**58.8**	62.4	55.2
Fife	433	421	454	1,308	53.1	55.8	59.8	**56.1**	58.2	54.1
Forth Valley	223	239	197	659	44.0	45.1	40.1	**43.1**	45.6	40.6
Grampian	798	773	866	2,437	60.1	60.3	64.2	**61.6**	63.1	60.1
Greater Glasgow	965	1,175	1,296	3,436	51.0	60.2	61.0	**57.5**	58.8	56.3
Highland	232	190	241	663	53.8	43.9	53.3	**50.4**	53.1	47.7
Isles	44	60	55	159	60.3	58.3	57.9	**58.7**	64.5	52.8
Lanarkshire	452	491	568	1,511	50.5	54.4	62.8	**55.9**	57.8	54.0
Lothian	1,200	1,160	1,279	3,639	56.8	57.8	61.4	**58.7**	59.9	57.4
Tayside	704	687	737	2,128	60.3	64.1	67.7	**63.9**	65.6	62.3
Scotland	5,872	6,027	6,511	18,410	53.2	55.9	59.2	**56.1**	56.6	55.5

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 2c Therapeutic abortions : proportion performed at less than 10 weeks gestation 1991 to 1993 aggregated



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report



3 Childhood incidence of measles

Definition: Confirmed notification of measles for children aged under 1 year and aged 1 to 4 years

Period Covered: 1991 to 1993

Source: ISD(D)3 Notifications of Infectious Disease

Standardisation: Unstandardised rates of notification per 1000 children in the same age groups.

Comment: Measles is a highly contagious viral illness. Complications may include bronchopneumonia, convulsions and encephalitis. Encephalitis is a rare complication(1 in a 1000 cases) but can cause death in 15% and long term neurological problems in 25% of cases.

Notifications, as a means of determining incidence, underestimate the scale of the problem. Changes in notification rates are used to monitor epidemics, and the absence or reduction of cyclical peaks is probably a good indicator of a reduced incidence of measles. More subtly, changes may be due to changes in notification practice by staff. Children should be immunised around the age of 12 to 15 months and therefore may be unprotected during their first year of life apart from maternal antibodies transferred to them. However, if immunisation rates are high in the population, the "herd immunity" should protect the unimmunised infant from coming in contact with measles. Measles in the 1 to 4 year age group should not occur in children who have been immunised.

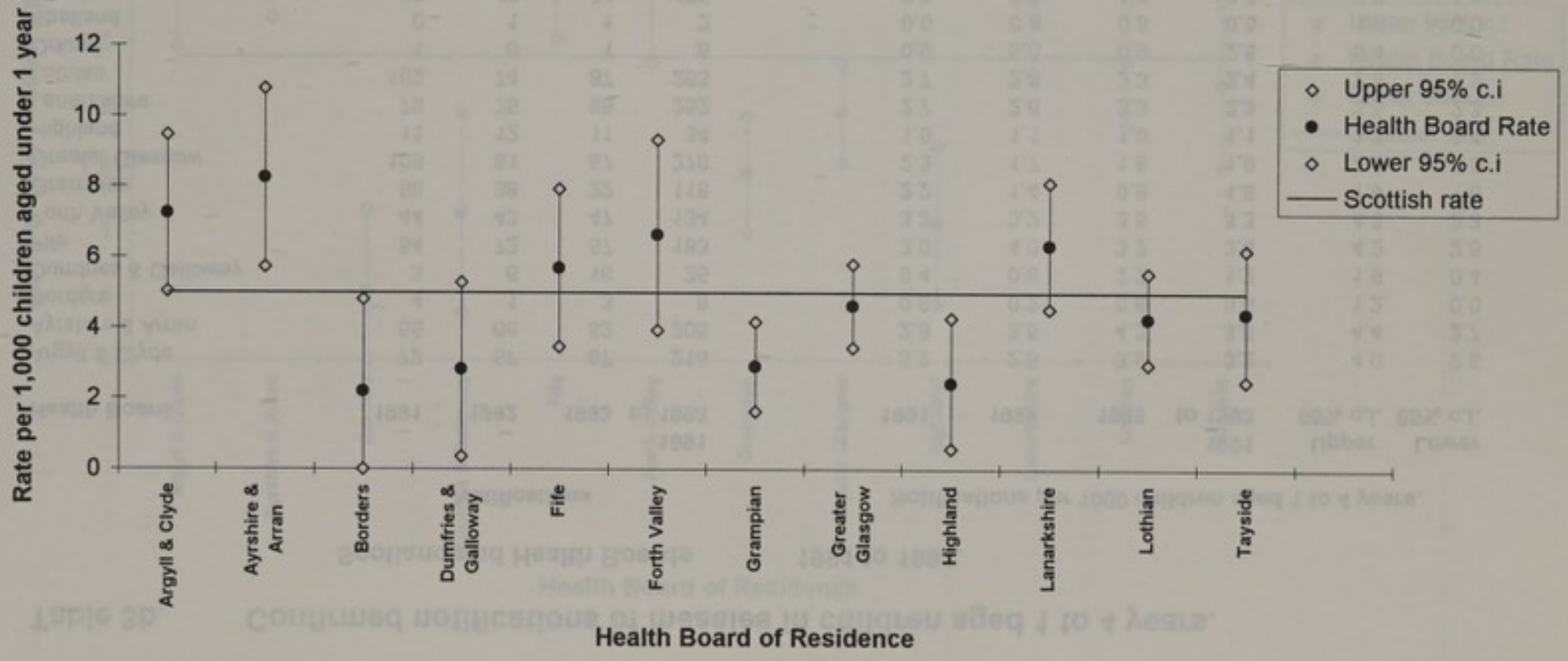
Table 3a. Confirmed notifications of measles in children aged under 1 year.

Scotland and Health Boards 1991 to 1993.

Health Board	Notifications				Notifications per 1000 children aged under 1 year.					
	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95% c.i.	Lower 95% c.i.
Argyll & Clyde	57	32	33	122	10.1	5.7	6.1	**7.2**	9.5	5.0
Ayrshire & Arran	47	38	36	121	9.8	7.8	7.8	**8.2**	10.8	5.7
Borders	4	2	2	8	3.2	1.6	1.6	**2.2**	4.8	0.0
Dumfries & Galloway	5	4	6	15	2.8	2.2	3.4	**2.8**	5.3	0.4
Fife	35	39	0	74	7.8	9.0	0.0	**5.7**	7.9	3.4
Forth Valley	18	27	24	69	5.1	7.8	7.0	**6.6**	9.3	3.9
Grampian	28	18	14	60	4.2	2.6	2.1	**2.9**	4.2	1.6
Greater Glasgow	61	58	56	175	5.0	4.6	4.8	**4.6**	5.8	3.4
Highland	5	7	8	20	1.9	2.6	3.1	**2.4**	4.3	0.6
Lanarkshire	45	34	64	143	6.1	4.5	8.9	**6.3**	8.1	4.5
Lothian	52	30	43	125	5.3	3.1	4.6	**4.3**	5.5	3.0
Orkney	0	1	0	1	0.0	3.7	0.0	**1.2**	5.4	0.0
Shetland	0	1	0	1	0.0	3.0	0.0	**1.0**	4.4	0.0
Tayside	24	19	21	64	4.9	3.9	4.3	**4.4**	6.2	2.5
Western Isles	0	0	0	0	0.0	0.0	0.0	**0.0**	0.0	0.0
Scotland	381	310	307	998	5.8	4.6	4.8	**5.0**	5.5	4.4

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 3a **Confirmed notifications of measles in children aged under 1 year 1991 to 1993 aggregated**



WARNING : **This information should be interpreted strictly in accordance with the general and the specific guidance given in this report**

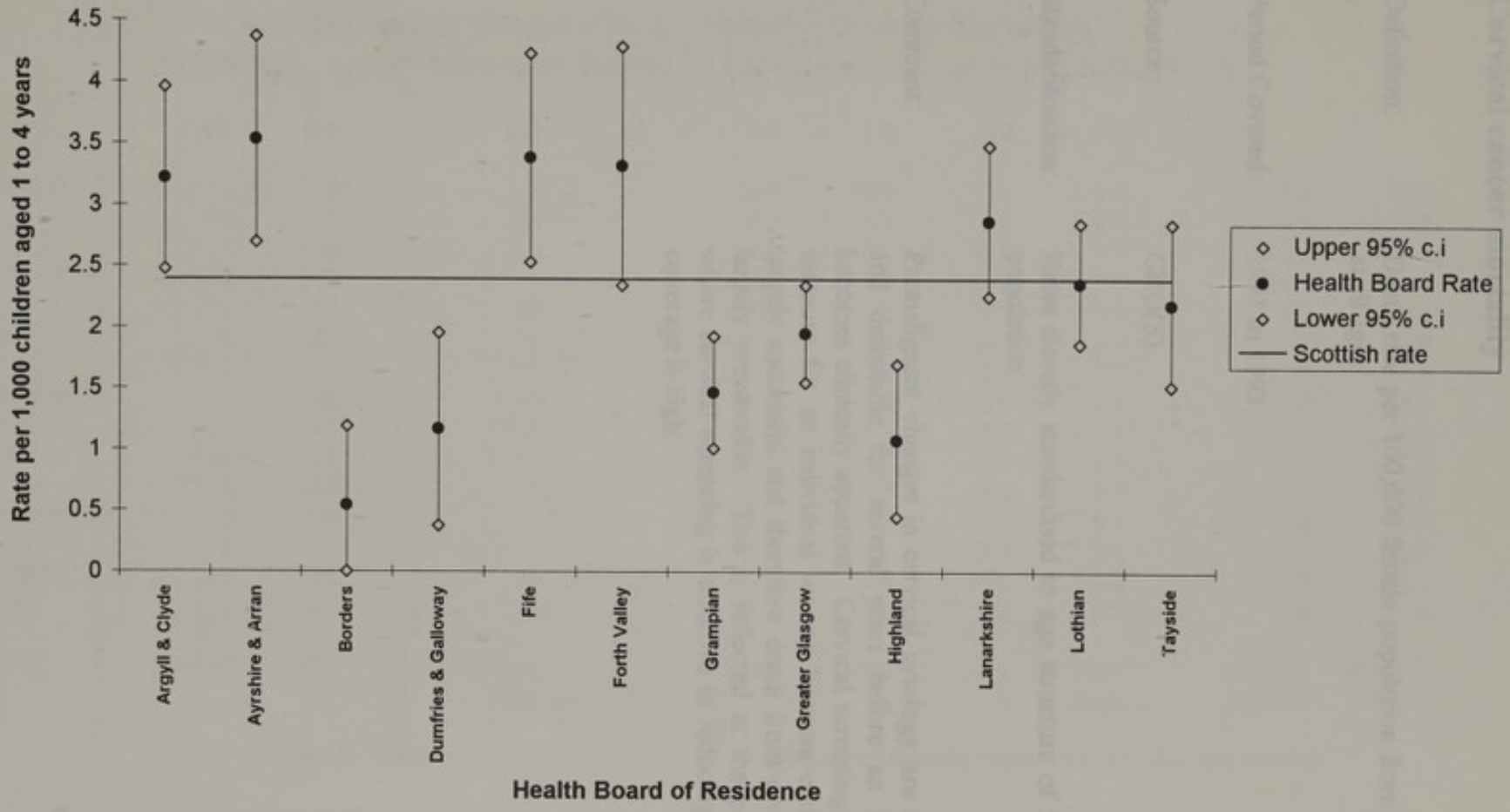
Table 3b. Confirmed notifications of measles in children aged 1 to 4 years.

Scotland and Health Boards 1991 to 1993.

Health Board	Notifications				Notifications per 1000 children aged 1 to 4 years.					
	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95% c.i.	Lower 95% c.i.
Argyll & Clyde	72	57	87	216	3.2	2.5	3.9	**3.2**	4.0	2.5
Ayrshire & Arran	55	68	82	205	2.8	3.5	4.3	**3.5**	4.4	2.7
Borders	4	1	3	8	0.8	0.2	0.6	**0.5**	1.2	0.0
Dumfries & Galloway	3	6	16	25	0.4	0.8	2.2	**1.2**	1.9	0.4
Fife	54	72	57	183	3.0	4.0	3.2	**3.4**	4.2	2.5
Forth Valley	44	43	47	134	3.3	3.2	3.5	**3.3**	4.3	2.3
Grampian	58	38	22	118	2.2	1.4	0.8	**1.5**	1.9	1.0
Greater Glasgow	108	81	87	276	2.3	1.7	1.8	**1.9**	2.3	1.5
Highland	11	12	11	34	1.0	1.1	1.0	**1.1**	1.7	0.4
Lanarkshire	79	75	98	252	2.7	2.6	3.3	**2.9**	3.5	2.3
Lothian	102	74	87	263	2.7	2.0	2.3	**2.4**	2.8	1.9
Orkney	1	6	1	8	0.9	5.6	0.9	**2.5**	5.4	0.0
Shetland	0	1	1	2	0.0	0.8	0.8	**0.5**	1.8	0.0
Tayside	46	45	34	125	2.5	2.4	1.8	**2.2**	2.8	1.5
Western Isles	10	1	3	14	6.9	0.7	2.0	**3.2**	6.1	0.3
Scotland	647	580	636	1,863	2.5	2.2	2.4	**2.4**	2.6	2.2

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 3b Confirmed notification of measles in children aged 1 to 4 years 1991 to 1993 aggregated



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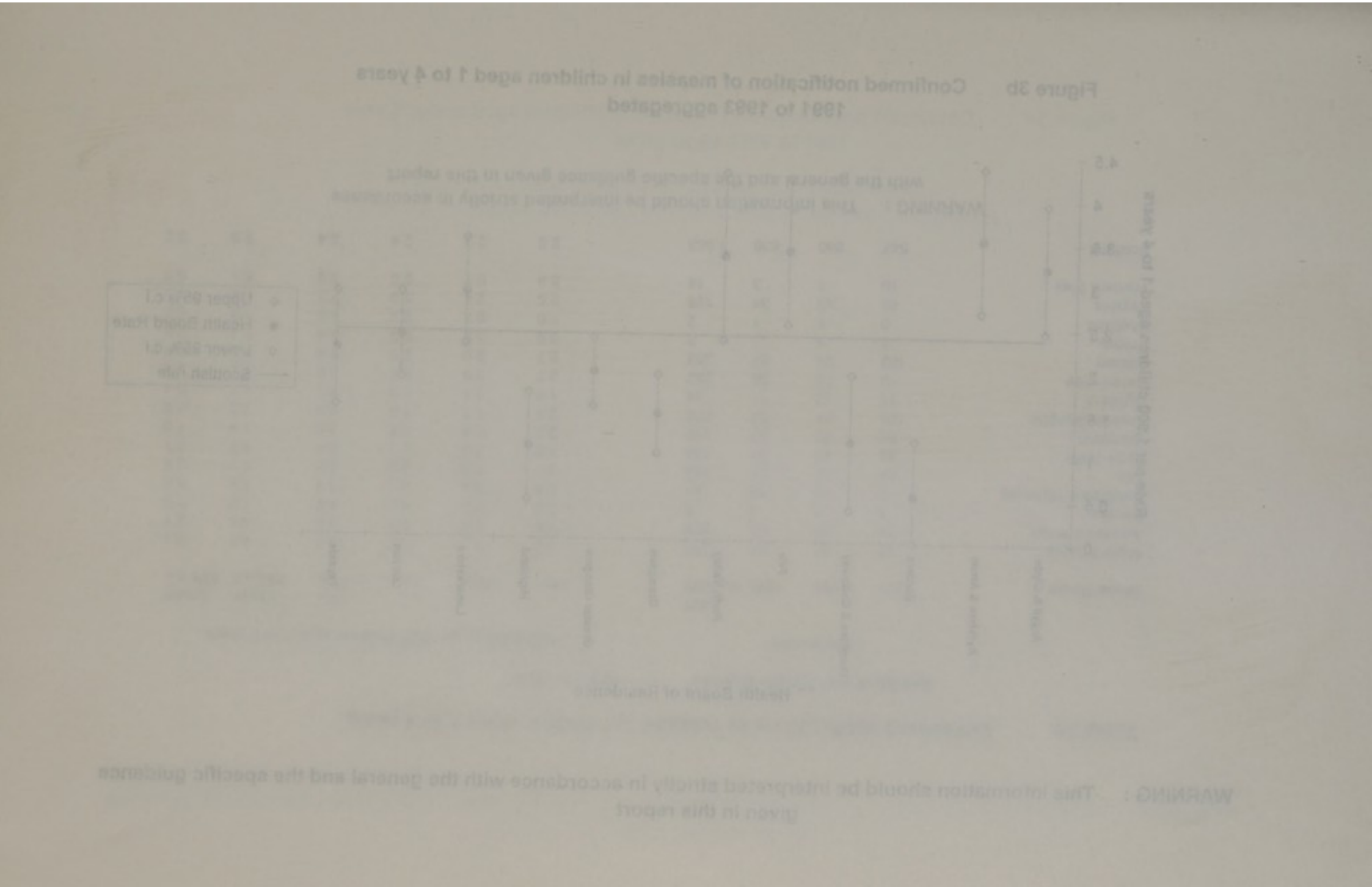


4 Cervical cancer mortality

Definition:	Death rate per 100,000 female population from cervical cancer at all ages
Period Covered:	1991 to 1993
Source:	GRO(S)
Standardisation:	Rates directly standardised to age structure of Scottish female population
Comment:	Premalignant changes in cervical cytology are usually present and detectable for several years before an invasive lesion becomes clinically apparent. Cervical screening is an effective measure for an individual woman because early treatment is largely successful and therefore death from cervical cancer is largely preventable. This is reflected at the population level where cervical screening is effective in reducing death rates if coverage is high.

Table 4. Deaths from cervical cancer.

Scotland and Health Boards

1991 to 1993

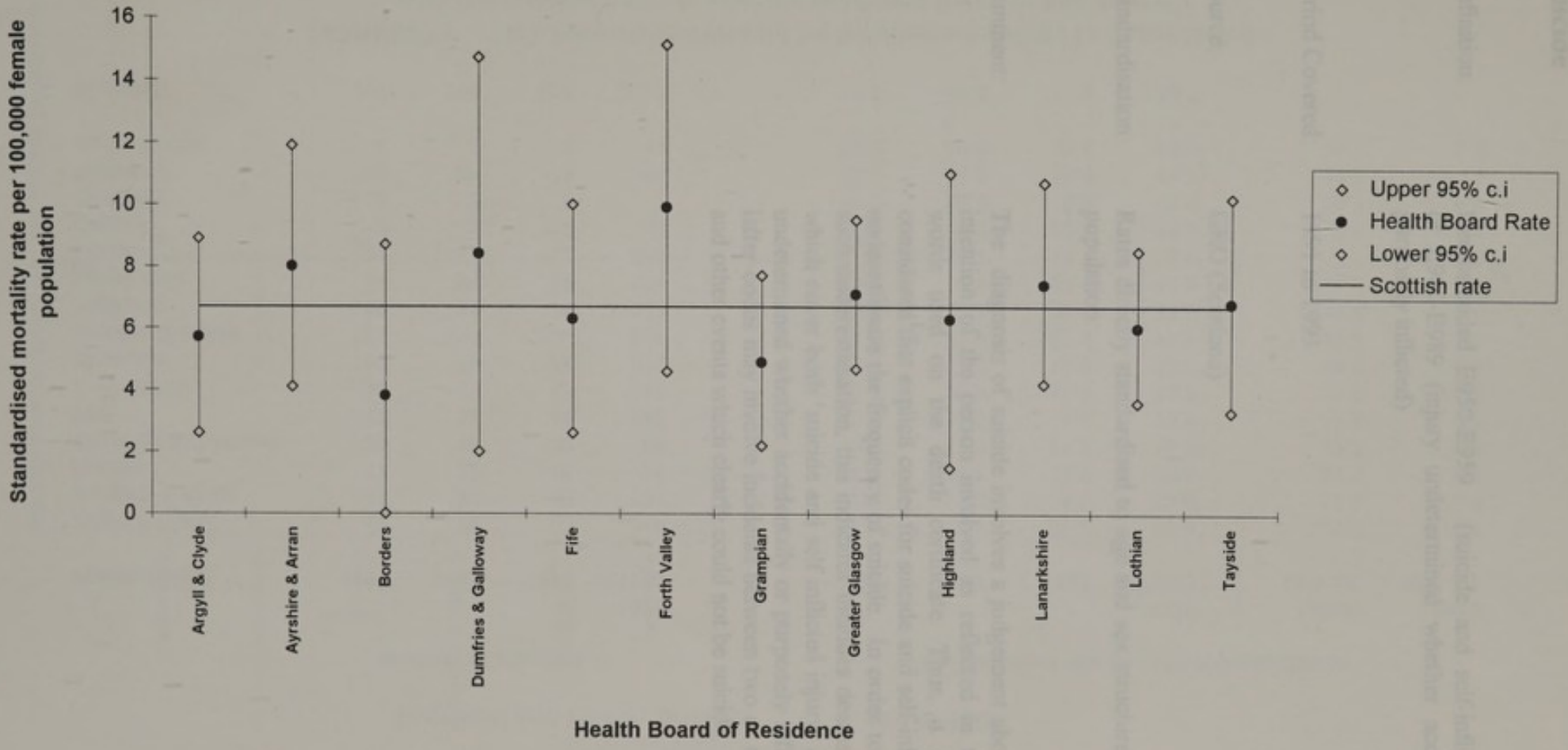
Number of deaths

Age standardised death rate per 100,000 women.

Health Board	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95% c.i.	Upper 95% c.i.
Argyll & Clyde	16	13	10	39	7.1	5.8	4.5	**5.7**	8.9	2.6
Ayrshire & Arran	14	13	21	48	7.0	6.6	10.6	**8.0**	11.9	4.1
Borders	3	2	2	7	4.8	3.1	3.4	**3.8**	8.7	0.0
Dumfries & Galloway	6	9	5	20	7.7	11.3	6.2	**8.4**	14.7	2.0
Fife	9	13	12	34	5.0	7.2	6.7	**6.3**	10.0	2.6
Forth Valley	11	17	13	41	7.9	12.2	9.4	**9.9**	15.1	4.6
Grampian	15	11	12	38	6.0	4.3	4.7	**4.9**	7.7	2.2
Greater Glasgow	41	32	29	102	8.5	6.7	6.2	**7.1**	9.5	4.7
Highland	7	4	9	20	6.6	3.8	8.4	**6.3**	11.0	1.5
Lanarkshire	16	22	22	60	5.9	8.2	8.3	**7.4**	10.7	4.2
Lothian	21	30	18	69	5.5	7.8	4.7	**6.0**	8.5	3.6
Orkney	0	0	1	1	0.0	0.0	11.1	**3.7**	16.5	0.0
Shetland	2	0	0	2	19.3	0.0	0.0	**6.2**	21.1	0.0
Tayside	13	16	15	44	6.1	7.4	6.9	**6.8**	10.2	3.3
Western Isles	1	2	0	3	7.0	12.8	0.0	**6.6**	19.5	0.0
Scotland	175	184	169	528	6.6	7.0	6.5	**6.7**		

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 4 Deaths from cervical cancer 1991 to 1993 aggregated



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5 Suicide

Definition:	Deaths coded E950-E959 (suicide and self-inflicted injury) or E980-E989 (injury undetermined whether accidentally or purposely inflicted)
Period Covered:	1991 to 1993
Source:	GRO (Scotland)
Standardisation:	Rates directly standardised to age and sex structure of Scottish population.
Comment:	The diagnosis of suicide involves a judgement about the prior intention of the person involved as reflected in the form of words used on the death certificate. Thus, it is generally considered that explicit codes for suicide and self-inflicted injury underestimate the frequency of suicide. In order to reduce any such underestimation, this indicator includes deaths with codes which cover both 'suicide and self inflicted injury' and 'injuries undetermined whether accidentally or purposely inflicted.' The latter codes may involve incidents between two or more people and other events which clearly could not be suicide.

Table 5. Suicides.

Scotland and Health Boards. 1991 to 1993.

Number of suicides.

Health Board	1991	1992	1993	1991 to 1993
Argyll & Clyde	48	78	92	218
Ayrshire & Arran	41	51	59	151
Borders	17	22	15	54
Dumfries & Galloway	20	18	30	68
Fife	41	52	49	142
Forth Valley	34	30	48	112
Grampian	59	79	78	216
Greater Glasgow	151	193	204	548
Highland	58	35	49	142
Lanarkshire	74	55	69	198
Lothian	97	117	132	346
Orkney	2	2	4	8
Shetland	2	3	2	7
Tayside	50	58	72	180
Western Isles	6	3	3	12
Scotland	700	796	906	2402

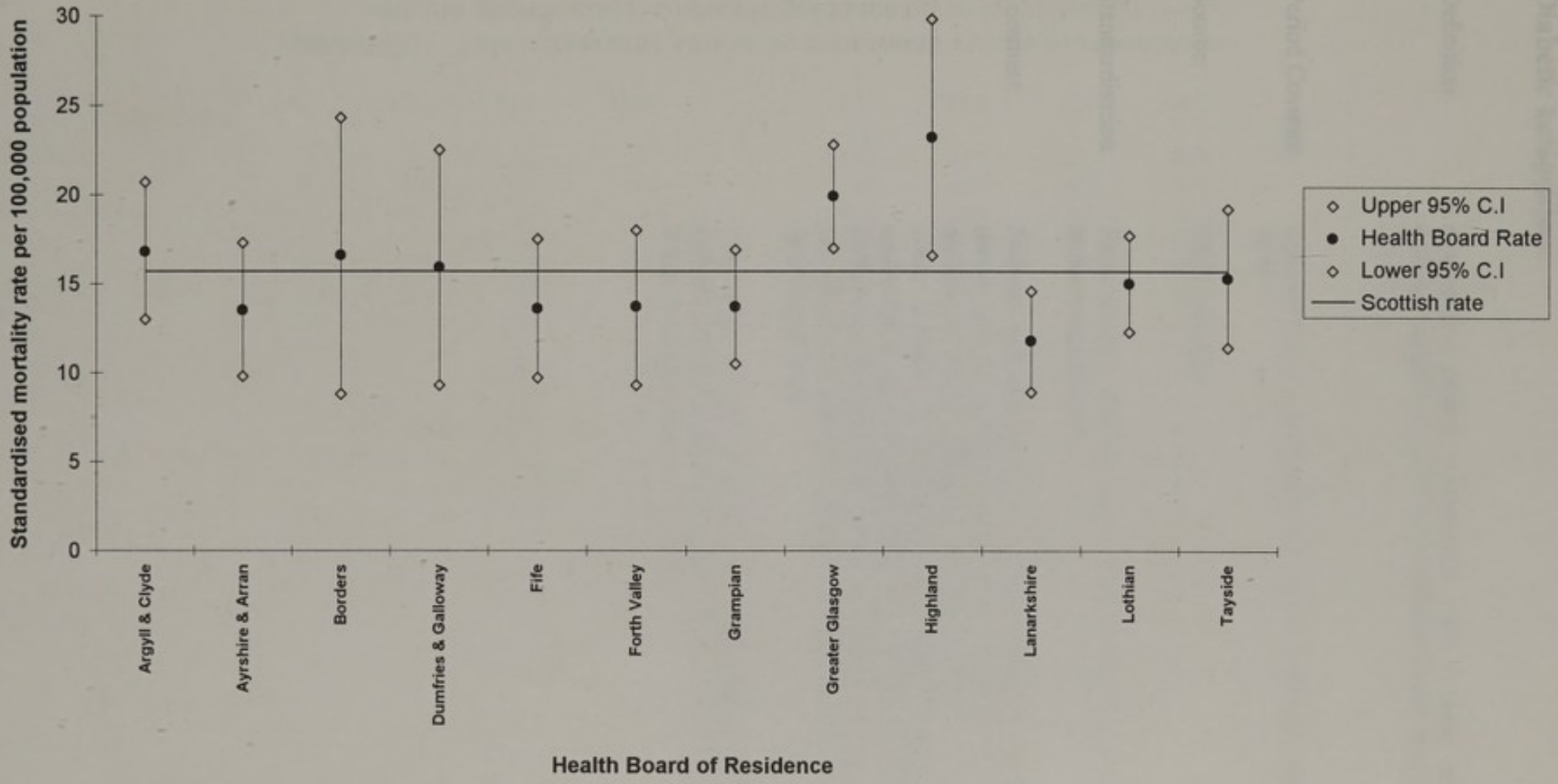
Standardised rate per 100,000 population

1991	1992	1993	1991 to 1993	Upper 95% c.i.	Lower 95% c.i.
11.0	18.1	21.2	**16.8**	20.7	13.0
11.0	13.8	16.0	**13.5**	17.3	9.8
15.4	20.7	13.8	**16.6**	24.3	8.8
13.8	13.0	21.2	**15.9**	22.5	9.3
11.8	15.0	14.2	**13.6**	17.5	9.7
12.5	11.0	17.6	**13.7**	18.0	9.3
11.3	15.2	15.2	**13.7**	16.9	10.5
16.5	21.0	22.5	**19.9**	22.8	17.0
28.8	17.1	23.9	**23.2**	29.8	16.6
13.1	9.9	12.5	**11.8**	14.6	8.9
12.6	15.2	17.3	**15.0**	17.7	12.3
10.6	9.2	22.8	**13.8**	30.6	0.0
10.0	16.5	8.8	**11.6**	26.7	0.0
12.9	14.8	18.5	**15.3**	19.2	11.4
23.4	10.6	10.4	**15.0**	29.7	0.2
13.7	15.6	17.9	**15.7**		

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 5 Suicides

1991 to 1993 aggregated



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6 Diabetic ketoacidosis

Definition:	Emergency inpatient admissions with a main condition of diabetic ketoacidosis (250.1) or diabetic ketoacidosis with coma (250.2).
Period Covered:	Episodes with a discharge date in the calendar years 1991 to 1993
Source:	SMR1 records
Standardisation:	Rates directly standardised to Scottish population structure in terms of age and sex.
Comment:	Diabetic ketoacidosis is a medical emergency and the data shown here are episodes not people. Some of these episodes are due to "brittle" diabetes which is difficult to control, others occur because the individual with diabetes has been less successful in balancing diet, exercise and insulin requirements. Differences between boards may also involve failure of support and advice to diabetic patients who have to learn to manage their own disease. The rates are based on the whole population and not the diabetic population and there are known to be differences in the urban: rural prevalence of diabetes.

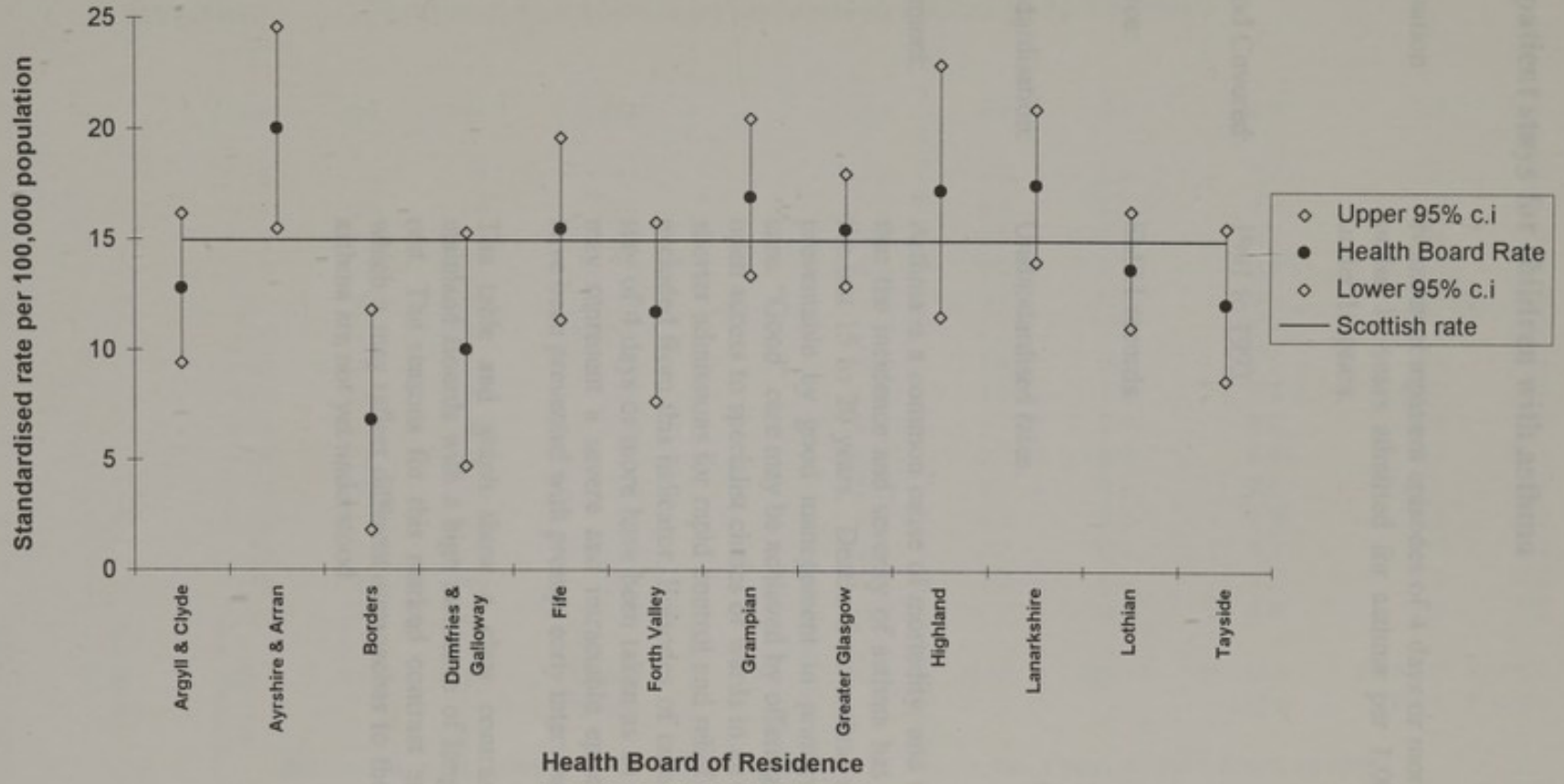
Table 6. Diabetic ketoacedosis: emergency admissions.

Scotland and Health Boards 1991 to 1993.

Health Board	Number of admissions.				Standardised rate per 100,000 population					
	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95%c.i.	Lower 95% c.i.
Argyll & Clyde	47	42	75	164	10.9	9.9	17.6	**12.8**	16.2	9.4
Ayrshire & Arran	75	82	68	225	20.0	21.9	18.2	**20.0**	24.6	15.5
Borders	4	8	10	22	4.1	7.0	9.4	**6.8**	11.8	1.8
Dumfries & Galloway	17	7	18	42	12.4	5.1	12.4	**10.0**	15.3	4.7
Fife	62	54	46	162	17.7	15.6	13.1	**15.5**	19.6	11.3
Forth Valley	32	25	39	96	11.7	9.3	14.2	**11.7**	15.8	7.7
Grampian	74	90	100	264	14.5	17.3	19.0	**16.9**	20.5	13.4
Greater Glasgow	154	129	145	428	16.7	13.9	15.6	**15.4**	18.0	12.9
Highland	35	49	22	106	17.2	23.7	10.9	**17.2**	22.9	11.5
Lanarkshire	86	89	120	295	15.2	15.7	21.4	**17.5**	20.9	14.0
Lothian	88	120	102	310	11.7	15.8	13.4	**13.7**	16.3	11.0
Orkney	4	4	7	15	19.9	22.7	35.3	**25.8**	48.7	2.8
Shetland	1	2	1	4	4.8	8.6	4.6	**6.1**	16.5	0.0
Tayside	34	56	53	143	8.6	14.4	13.4	**12.1**	15.5	8.7
Western Isles	5	4	7	16	17.7	12.4	23.0	**18.0**	33.5	2.6
Scotland	718	761	813	2292	14.1	14.9	15.9	**14.9**		

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 6 Diabetic ketoacedosis : emergency admissions 1991 to 1993 aggregated



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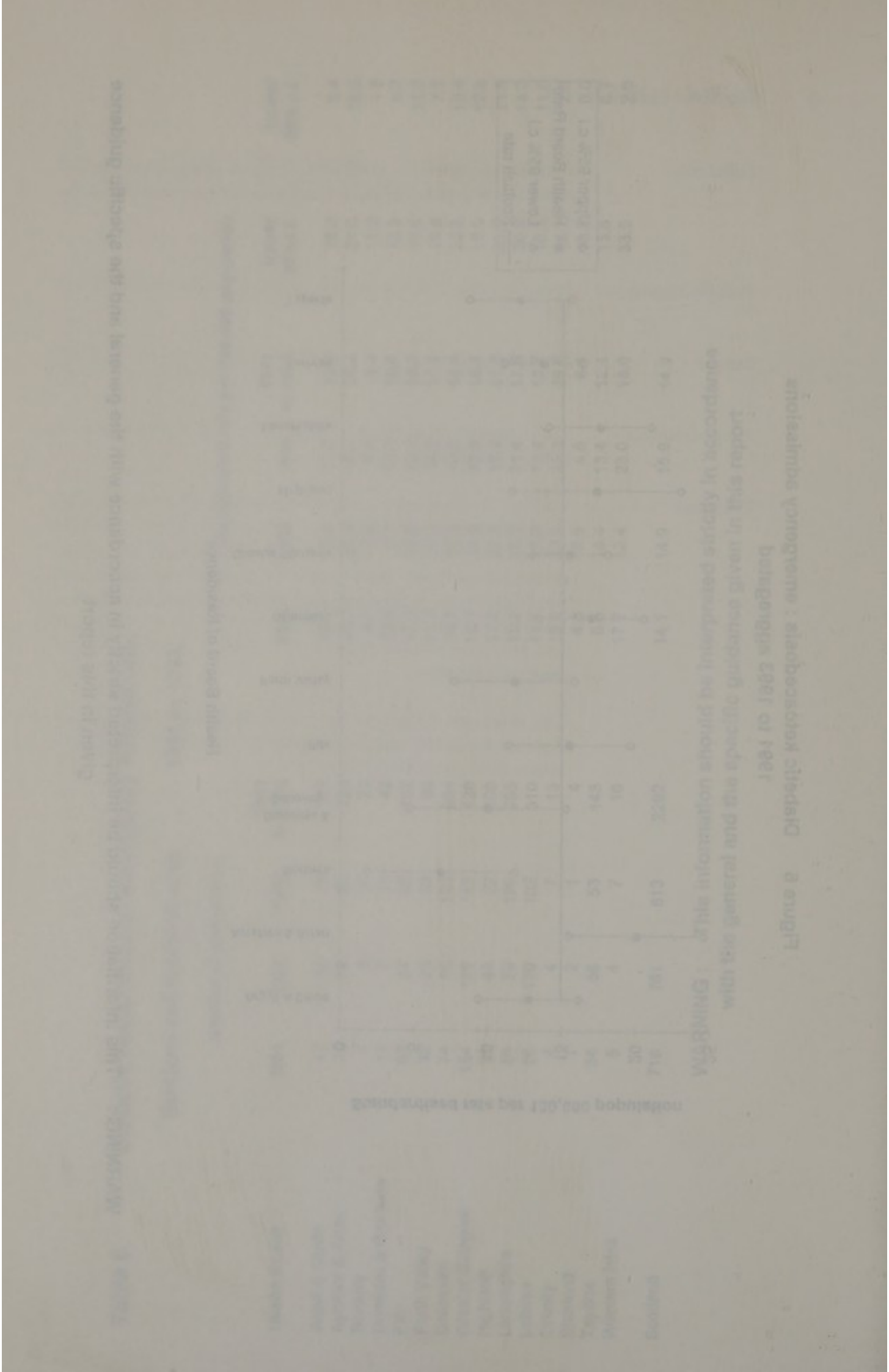


7 In-patient stays for children with asthma

Definition: Number of inpatient episodes of 4 days or more among children under 16 years admitted for asthma per 1,000 children aged under 16 years.

Period Covered: 1991 to 1993

Source: SMR1 records.

Standardisation: Unstandardised rates.

Comment: Asthma is a common cause of morbidity, and research suggests that the incidence and severity of asthma has been rising over the last 15 to 20 years. Deaths from asthma should be largely preventable by good management in primary and secondary care. "Good" care may be achieved by offering asthma sufferers open access to specialist clinics or wards in an emergency. Thus shorter admissions for rapid control and relief of symptoms are excluded from this indicator. Episodes of care with a length of stay of 4 days or more have been taken as an indicator as they may represent a severe and intractable episode which might have been prevented with prompt early intervention.

The table and graph show a clear contrast between four mainland Boards with a high incidence of longer stays and the rest. The reasons for this marked contrast and the extent to which it may reflect different approaches to the management of asthma are not yet understood.

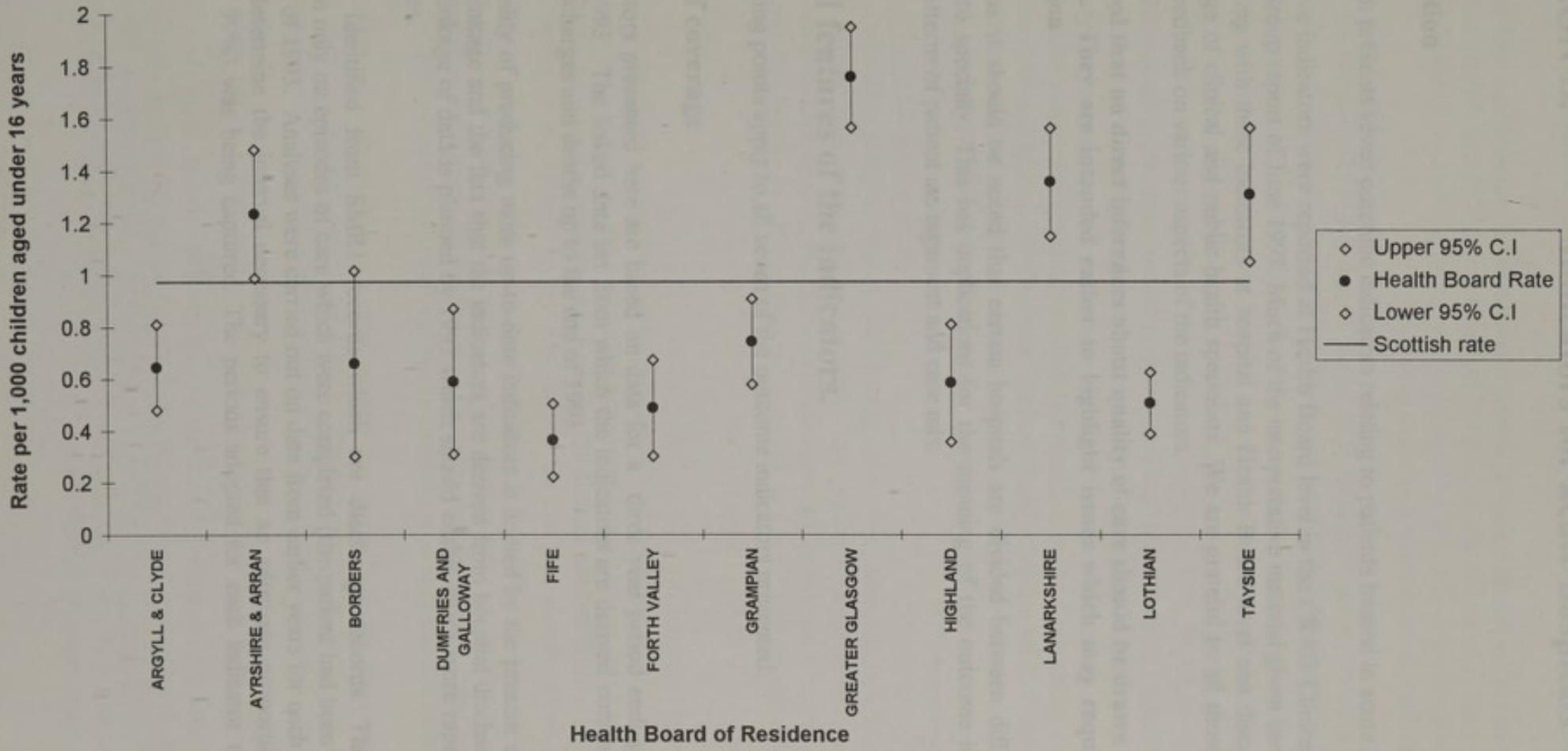
Table 7. Childhood asthma: inpatient stays of 4 days or more.

Scotland and Health Boards 1991 to 1993

Health Board	Number of discharges				Rate per 1,000 children under 16 years.					
	1991	1992	1993	1991 to 1993	1991	1992	1993	1991 to 1993	Upper 95% c.i.	Lower 95%c.i.
Argyll & Clyde	58	49	66	173	0.6	0.5	0.7	**0.6**	0.8	0.5
Ayrshire & Arran	113	94	80	287	1.5	1.2	1.0	**1.2**	1.5	1.0
Borders	22	11	6	39	1.1	0.6	0.3	**0.7**	1.0	0.3
Dumfries & Galloway	17	12	22	51	0.6	0.4	0.8	**0.6**	0.9	0.3
Fife	22	19	37	78	0.3	0.3	0.5	**0.4**	0.5	0.2
Forth Valley	24	26	30	80	0.4	0.5	0.5	**0.5**	0.7	0.3
Grampian	92	76	68	236	0.9	0.7	0.6	**0.7**	0.9	0.6
Greater Glasgow	348	306	304	958	1.9	1.7	1.7	**1.8**	1.9	1.6
Highland	29	17	31	77	0.7	0.4	0.7	**0.6**	0.8	0.4
Lanarkshire	164	182	142	488	1.4	1.5	1.2	**1.4**	1.6	1.1
Lothian	67	64	81	212	0.5	0.5	0.6	**0.5**	0.6	0.4
Orkney	3	1	1	5	0.7	0.2	0.2	**0.4**	1.0	0.0
Shetland	0	1	1	2	0.0	0.2	0.2	**0.1**	0.4	0.0
Tayside	135	94	71	300	1.8	1.2	0.9	**1.3**	1.6	1.1
Western Isles	2	5	4	11	0.3	0.8	0.6	**0.6**	1.2	0.0
Scotland	1,096	957	944	2,997	1.1	0.9	0.9	**1.0**	1.0	0.9

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 7 Childhood asthma : inpatient stays of 4 days or more 1991 to 1993 aggregated



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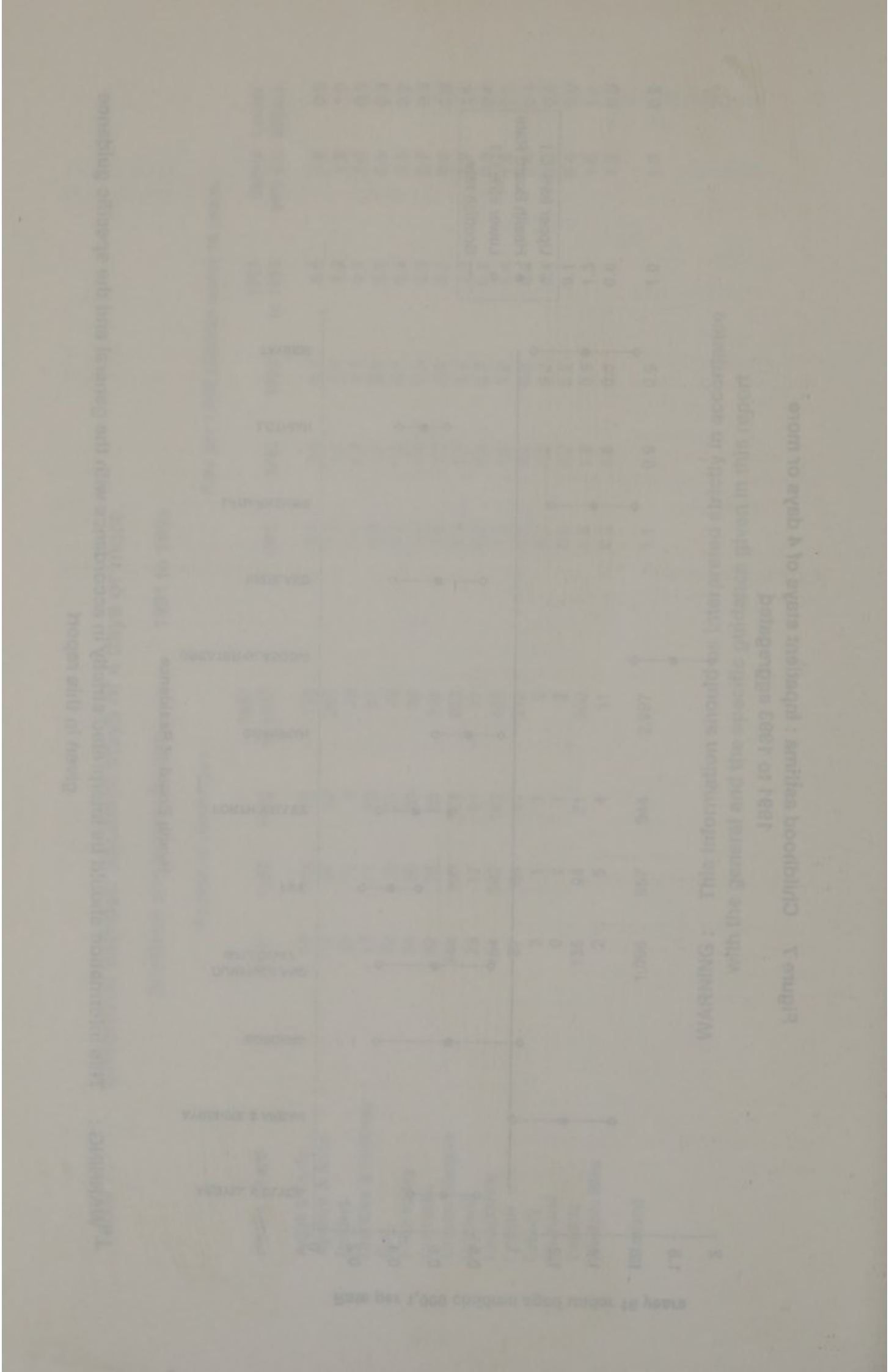

SECTION B. Indicators for acute hospitals

Introduction

This section presents seven outcome indicators relating to patients treated in acute hospitals.

The first five indicators were reported at Health Board level in the CRAG Clinical Outcomes Working Group report of June 1993. Much of the interpretative material given here is derived from working with these indicators at hospital and Health Board level and discussing them with a range of clinical and public health specialists. We are grateful to all those who have provided feedback on various aspects of the indicators.

It is stressed that no direct inferences about quality of care should be drawn from these indicators. They are intended rather to highlight issues which may require further investigation

In particular it should be noted that certain hospitals are divided between different trusts according to specialty. This has implications for the meaning of the outcome indicators in terms of patterns of patient management and case mix.

General features of the indicators.

The following points apply to all seven of the outcome indicators presented:

Period of coverage

The indicators presented here are based on data for a three year period ending at varying points in 1993. The linked data set from which the indicators are derived currently contains data on discharges and deaths up to the end of 1993.

The possibility of producing more up-to-date indicators is limited by the present annual cycle of record linkage and the fact that the indicators are derived from hospital discharge records. Quarterly linkage of data is planned by 1995 which should enable much more rapid follow up of outcomes.

Cases are identified from SMR1 records which are **discharge** records. Thus there is information only on episodes of care which were completed (the patient had been discharged) by the end of 1993. Analyses were carried out on data from earlier years for each indicator in order to determine the interval necessary to ensure that an adequate proportion of cases (minimum 99%) was being captured. The periods adopted for each indicator reflect these analyses.

Standardisation.

Rates have been standardised using direct standardisation to the Scottish age and sex structure for the outcome indicator in question. Thus for mortality after acute myocardial infarction, rates are standardised to the age and sex structure of all patients in Scotland admitted for acute myocardial infarction in the given time period.

The first five indicators are standardised in terms of age and sex. Indicators 13 and 14 for stroke are also standardised in terms of the ICD9 3-digit condition code.

Confidence intervals

Since the indicators presented are based on complete enumeration rather than sampling, a case could be made that it is inappropriate to present confidence intervals based on sampling theory. However there is also an argument that many of the unmeasured or unmeasurable factors which influence outcome are likely to vary in a random fashion. The influence of these random factors will be proportionately greater the smaller the numbers of events involved. Confidence intervals are therefore presented as an aid to assessing the likely effect of random fluctuations on the data. The confidence intervals are calculated using the square root transform method.

Even where the Scottish mean lies within the confidence interval for a particular unit, factors other than random variation in patient characteristics may well be involved. Where the Scottish mean lies outwith the confidence intervals for a particular unit, this means that there is a strong probability that the deviation is due to factors other than random variations in the data.

Data sources

All analyses are based on data contained in the linked data set of morbidity records generated and maintained by ISD and the Data Centre of the Common Services Agency. The linked data set contains death records and this, as well as their use in analysis, is by permission of the Registrar General for Scotland.

The mortality rates presented here are based on linkage to the Registrar General's death records and thus take account of **all** deaths and not only those occurring in hospital.

A full description of the Scottish record linkage system is contained in the Health Bulletin, March 1993.

Patient-based indicators.

With the exception of emergency readmissions to medical specialties, all of the indicators are patient-based. In other words each patient satisfying the criteria for entry is included once and once only. For example, if a patient has been admitted with acute myocardial infarction three times in the period of coverage only the first admission will contribute to the outcome indicator for acute moyocardial infarction.

Definition of provider units.

Trusts and directly managed units are as constituted on 1st August 1994. Where a constituent hospital closed before that date, figures for that hospital are not included.

Provider units included.

For each indicator a threshold has been chosen in terms of the number of index events. The threshold for inclusion is chosen partly in order to include only units with sufficient numbers of events and partly so that the units selected broadly correspond to the major adult acute hospitals. In the case of the two pairs of related indicators - those for fractured neck of femur and those for stroke - the same sets of units are presented for both. With this exception, the provider units presented for each indicator will vary. The thresholds for presentation of results are as follows:

Indicator 8.	Mortality after fractured neck of femur.	200 events
Indicator 9.	Discharge home after fractured neck of femur.	Same units as Indicator 8.
Indicator 10.	Mortality after AMI.	400 events
Indicator 11.	Reoperation after TURP	100 events
Indicator 12.	Emergency readmissions	5000 events
Indicator 13	Mortality after stroke	500 events
Indicator 14	Discharge home after stroke	Same units as Indicator 13.

The provider units are presented in order of Health Board cipher.

Presentation.

For each of the seven indicators the following information is provided.

a) **Tables**

The number of patients or events for which an outcome has been assessed is given first. This is followed by the number of 'outcome events', e.g. deaths within thirty days of admission for acute myocardial infarction, and the unstandardised rate of these events.

The outcome indicator takes the form of the rate standardised for the age and sex composition of the patients involved (see section on standardisation above for details).

In addition, the lower and upper 95% confidence intervals for the standardised outcome indicator are provided (see above for discussion)

For each indicator the Scottish totals and mean rate is given. The Scottish figures are derived from all relevant events including those occurring in units where numbers are too small to be presented individually.

b) **Comparative graphs**

The graphs present the standardised outcome indicators for each provider unit along with the 95% confidence intervals. The Scottish mean for the indicator is presented as a reference point in the form of a horizontal line.

Validation or further analysis

ISD wishes to be of assistance in any way it can in the validation of the data involved in these indicators, in the further exploration of factors involved in variations and in any other technical issues which arise from local discussion. For example, ISD can provide trend data of the indicators at provider unit level or diagrams showing patient pathways in more detail.

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Information and Statistics Division
National Health Service in Scotland
Trinity Park House
South Trinity Road
Edinburgh EH5 3SQ

8. Mortality after admission for fractured neck of femur.

Deaths occurring within 30 days of admission as percentage of all admissions with fractured neck of femur

Inclusion criteria: Inpatients admitted with a principal diagnosis of fractured neck of femur (ICD9 code 820) between July 1990 and June 1993 inclusive.

Where a patient has more than one episode with a diagnosis of fractured neck of femur in the period, only the first one is used.

Outcome: The outcome is defined as death from any cause, in hospital or elsewhere, within 30 days of admission.

Discussion : For this indicator aspects of case mix are likely to be particularly important in determining outcome.

Work is currently under way to incorporate categories of prior and comorbidity into the standardisation model.

In addition, attention is being paid to the problem of classifying patients according to residential origin. It is possible that patients admitted from residential care may have characteristics affecting outcome. At present the SMR1 record cannot differentiate between patients admitted from their own home and those admitted from residential care. The possibilities of making this distinction based on residential postcode are being explored.

Table 8

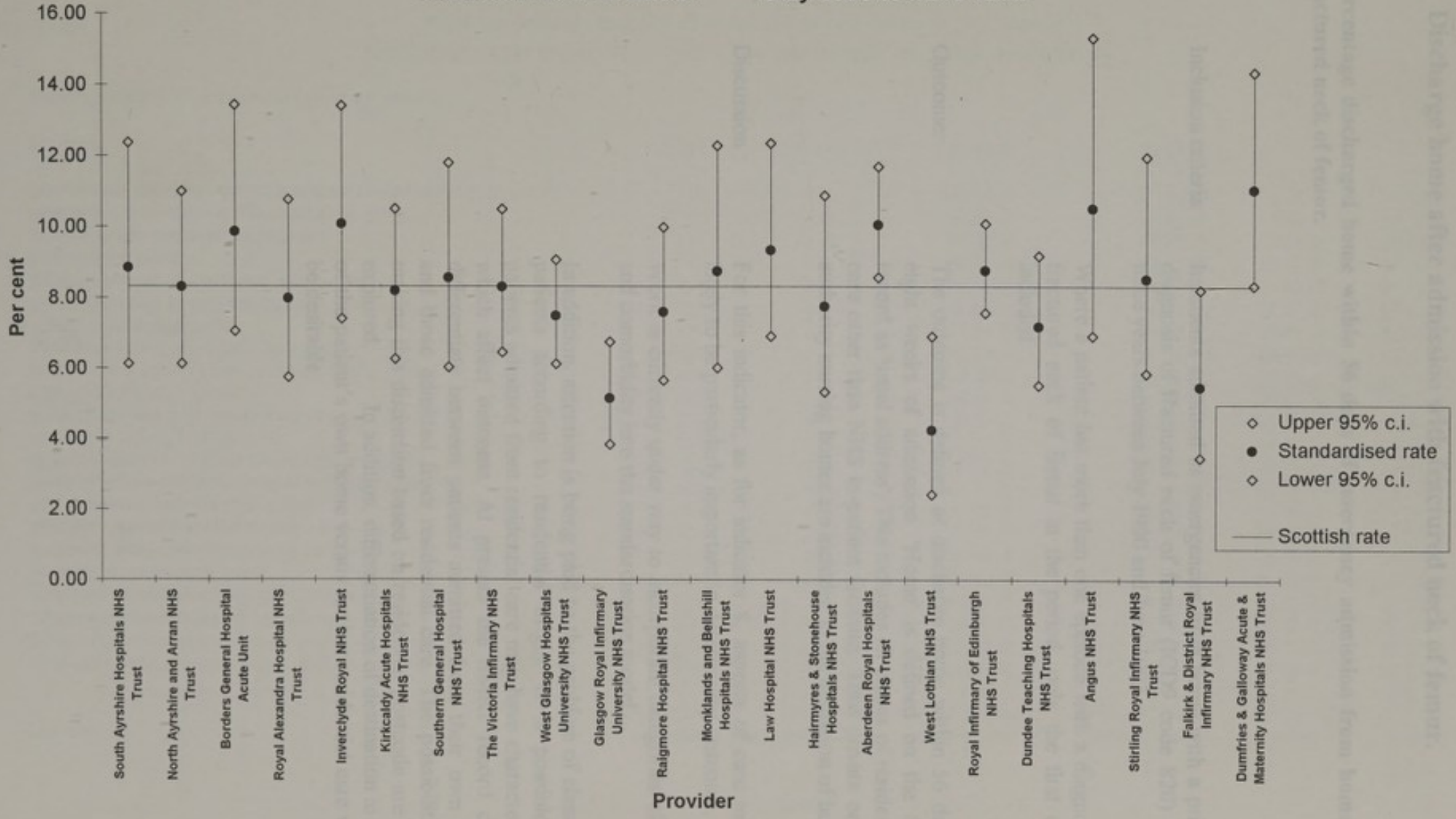
Deaths occurring within 30 days of admission as a percentage of all admissions for fractured neck of femur. July 1990 to June 1993

Provider	Patients Admitted	Died within 30 days	Mortality rate	Standardised mortality rate	Lower 95% c.i.	Upper 95% c.i.
South Ayrshire Hospitals NHS Trust	367	34	9.26 %	8.84 %	6.12 %	12.36 %
North Ayrshire and Arran NHS Trust	588	48	8.16 %	8.29 %	6.11 %	11.00 %
Borders General Hospital Acute Unit	372	40	10.75 %	9.86 %	7.04 %	13.44 %
Royal Alexandra Hospital NHS Trust	563	42	7.46 %	7.96 %	5.74 %	10.77 %
Inverclyde Royal NHS Trust	467	47	10.06 %	10.07 %	7.40 %	13.40 %
Kirkcaldy Acute Hospitals NHS Trust	720	61	8.47 %	8.18 %	6.25 %	10.51 %
Southern General Hospital NHS Trust	445	37	8.31 %	8.55 %	6.02 %	11.80 %
The Victoria Infirmary NHS Trust	813	69	8.49 %	8.29 %	6.45 %	10.49 %
West Glasgow Hospitals University NHS Trust	1390	104	7.48 %	7.48 %	6.11 %	9.07 %
Glasgow Royal Infirmary University NHS Trust	1094	52	4.75 %	5.14 %	3.84 %	6.74 %
Raigmore Hospital NHS Trust	665	51	7.67 %	7.59 %	5.65 %	9.99 %
Monklands and Bellshill Hospitals NHS Trust	432	33	7.64 %	8.74 %	6.01 %	12.29 %
Law Hospital NHS Trust	546	49	8.97 %	9.35 %	6.91 %	12.36 %
Hairmyres & Stonehouse Hospitals NHS Trust	465	33	7.10 %	7.75 %	5.33 %	10.89 %
Aberdeen Royal Hospitals NHS Trust	1605	166	10.34 %	10.05 %	8.58 %	11.71 %
West Lothian NHS Trust	415	16	3.86 %	4.24 %	2.42 %	6.90 %
Royal Infirmary of Edinburgh NHS Trust	2157	192	8.90 %	8.76 %	7.57 %	10.09 %
Dundee Teaching Hospitals NHS Trust	842	63	7.48 %	7.18 %	5.52 %	9.19 %
Angus NHS Trust	254	27	10.63 %	10.52 %	6.92 %	15.32 %
Stirling Royal Infirmary NHS Trust	386	33	8.55 %	8.52 %	5.86 %	11.98 %
Falkirk & District Royal Infirmary NHS Trust	430	23	5.35 %	5.47 %	3.46 %	8.22 %
Dumfries & Galloway Acute & Maternity Hospitals NHS Trust	502	56	11.16 %	11.05 %	8.34 %	14.35 %
Scotland	17535	1458	8.31 %	8.31 %		

Note : Threshold for inclusion is 200 patients admitted in period

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 8 Deaths occurring within 30 days of admission as percentage of all admissions with fractured neck of femur. July 1990 to June 1993



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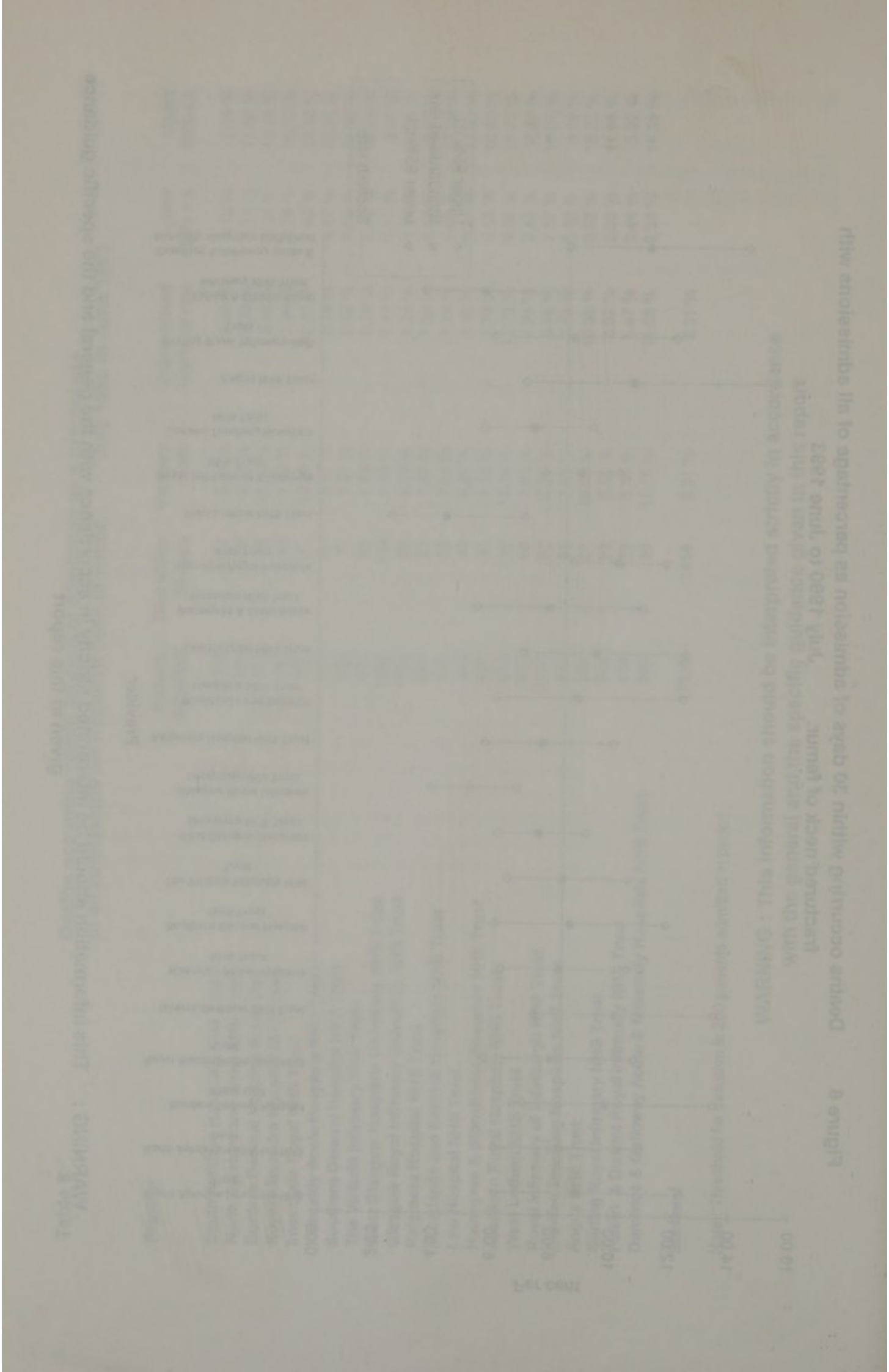


9. Discharge home after admission with fractured neck of femur.

Percentage discharged home within 56 days of emergency admission from home with fractured neck of femur.

Inclusion criteria: Inpatients admitted as emergencies from home with a principal diagnosis of fractured neck of femur (ICD9 code 820) in the three years between July 1990 and June 1993.

Where a patient has more than one episode with a diagnosis of fractured neck of femur in the period, only the first one is included.

Outcome: The outcome is defined as discharge home within 56 days or eight weeks of admission. 'Home' is defined on the SMR1 record as 'usual address'. This includes all places of residence or care other than NHS in-patient facilities. Thus private or local authority nursing homes are included in the definition of home.

Discussion : For this indicator, as for indicator 8, aspects of case mix are likely to be particularly important in determining outcome.

Work is currently under way to incorporate categories of prior and comorbidity into the standardisation model.

In addition, attention is being paid to the problem of classifying patients according to residential origin. It is possible that patients admitted from residential care may have characteristics which affect outcome. At present the SMR1 record cannot differentiate between patients admitted from their own home and those admitted from residential care. The possibilities of making this distinction based on residential postcode are being explored. In addition, differentiation of destination in terms of the patient's own home versus further residential care would be desirable.

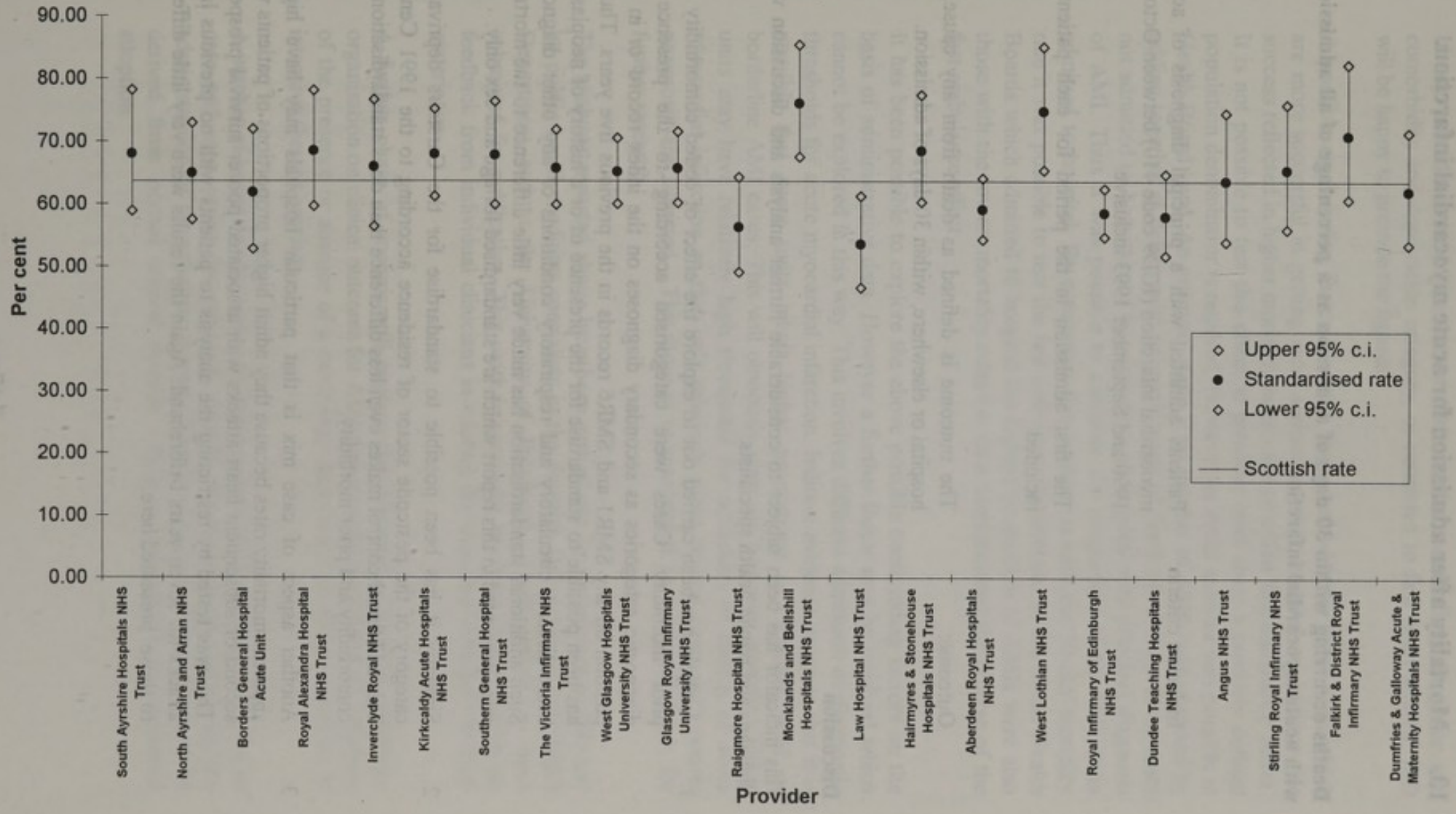
Table 9 **Percentage discharged home within 56 days of emergency admission from home with fractured neck of femur. July 1990 to June 1993**

Provider	Patients Admitted	Discharged home	Proportion discharged home	Standardised proportion	Lower 95% c.i.	Upper 95% c.i.
South Ayrshire Hospitals NHS Trust	293	197	67.24 %	68.01 %	58.84 %	78.21 %
North Ayrshire and Arran NHS Trust	438	282	64.38 %	64.86 %	57.51 %	72.90 %
Borders General Hospital Acute Unit	284	166	58.45 %	61.80 %	52.75 %	71.96 %
Royal Alexandra Hospital NHS Trust	316	219	69.30 %	68.44 %	59.67 %	78.13 %
Inverclyde Royal NHS Trust	268	170	63.43 %	65.92 %	56.38 %	76.62 %
Kirkcaldy Acute Hospitals NHS Trust	549	374	68.12 %	67.91 %	61.20 %	75.16 %
Southern General Hospital NHS Trust	385	270	70.13 %	67.74 %	59.90 %	76.32 %
The Victoria Infirmary NHS Trust	721	473	65.60 %	65.66 %	59.88 %	71.86 %
West Glasgow Hospitals University NHS Trust	923	601	65.11 %	65.14 %	60.03 %	70.56 %
Glasgow Royal Infirmary University NHS Trust	768	528	68.75 %	65.68 %	60.20 %	71.53 %
Raigmore Hospital NHS Trust	388	217	55.93 %	56.27 %	49.03 %	64.28 %
Monklands and Bellshill Hospitals NHS Trust	359	288	80.22 %	76.02 %	67.50 %	85.34 %
Law Hospital NHS Trust	383	212	55.35 %	53.51 %	46.55 %	61.22 %
Hairmyres & Stonehouse Hospitals NHS Trust	356	254	71.35 %	68.47 %	60.31 %	77.44 %
Aberdeen Royal Hospitals NHS Trust	1002	572	57.09 %	59.07 %	54.33 %	64.12 %
West Lothian NHS Trust	296	231	78.04 %	74.79 %	65.46 %	85.09 %
Royal Infirmary of Edinburgh NHS Trust	1572	911	57.95 %	58.54 %	54.80 %	62.47 %
Dundee Teaching Hospitals NHS Trust	564	315	55.85 %	58.03 %	51.80 %	64.81 %
Angus NHS Trust	242	154	63.64 %	63.67 %	54.01 %	74.57 %
Stirling Royal Infirmary NHS Trust	271	173	63.84 %	65.42 %	56.04 %	75.94 %
Falkirk & District Royal Infirmary NHS Trust	242	174	71.90 %	70.96 %	60.80 %	82.33 %
Dumfries & Galloway Acute & Maternity Hospitals NHS Trust	312	190	60.90 %	62.00 %	53.50 %	71.48 %
Scotland	12224	7778	63.63 %	63.63 %		

Note : Threshold for inclusion derived from Table 8

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 9 **Percentage discharged home within 56 days of emergency admission from home with fractured neck of femur. July 1990 to June 1993**



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10. Mortality after admission for acute myocardial infarction.

Deaths occurring within 30 days of admission as a percentage of all admissions with acute myocardial infarction

Inclusion criteria:	Patients admitted with a principal diagnosis of acute myocardial infarction (ICD9 code 410) between October 1990 and September 1993 inclusive. The first admission in the period for each patient is included.
Outcome:	The outcome is defined as death from any cause, in hospital or elsewhere, within 30 days of admission.

Discussion

This indicator has been subject to considerable further analysis and discussion with clinicians and public health specialists.

1. Analysis has been carried out to explore the effect of coded comorbidity and prior morbidity. Cases were categorised according to the presence of diagnostic categories as secondary diagnoses on the index record or in any position on any SMR1 and SMR6 records in the previous five years. Thus it has been possible to standardise for the presence of or a history of neoplasms, heart disease, circulatory and respiratory conditions or any other diagnosis. Such additional standardisation has made very little difference to the mortality rates presented in this report which are standardised for age and sex only.

2. Similarly it has been possible to standardise for the Carstairs deprivation category of the postcode sector of residence according to the 1991 Census. This additional control makes even less difference than does standardisation for comorbidity and prior morbidity.

3. Another aspect of case mix is that particular hospitals may have higher apparent mortality rates because they admit higher proportions of patients with second or subsequent heart attacks with associated poorer survival prospects. This was tested by restricting the analysis to patients with no previous heart attacks for seven years beforehand. Again the results were very little different to those presented here.

If any provider would like to see their results standardised for prior and comorbidity and deprivation category, or restricted to first heart attacks, ISD will be happy to provide the figures.

4. A possible confounding factor has been suggested whereby those units which are more successful in getting more serious cases to hospital might have this success reflected in higher mortality rates - the so called 'fast ambulance' effect. It is not possible to test this effect at provider level since a precisely defined population denominator is required. However an initial analysis was possible at Health Board level. An estimate of the total number of AMIs was obtained by adding together a) deaths with principal cause of death of AMI for those cases not admitted to hospital and b) admissions to hospital with principal diagnosis of AMI. Thus it was possible to calculate the proportion of all AMI cases admitted to hospital. By comparing this proportion with the 30 day mortality rate it was possible to test the fast ambulance hypothesis. In fact those Health Boards which admitted to hospital the highest proportion of AMIs were also those with the lowest mortality rates i.e. data demonstrated the reverse of the fast ambulance effect.

5. It has been possible to explore the above possible confounding factors on the basis of administrative data. However a further factor may be involved which cannot be explored in this way. This involves different admission or diagnostic thresholds for acute myocardial infarction. Indirect evidence suggests that it is possible that some units admit higher proportions of relatively mild or borderline AMI cases. This will obviously give rise to lower mortality. Other units may have relatively high thresholds for admission or coding of acute myocardial infarction so that only relatively more serious cases with poorer prognosis are admitted. This issue is recommended as a primary focus for further research.

6. The analyses reported above have been carried out by statisticians at ISD and by public health medicine specialists in the Scottish Office Home and Health Department and at the University of Edinburgh. Their report has been submitted for publication. This work in particular has been illuminated by the feedback from individual clinicians in relating the outcome indicators to their experience.

7. A further phase of analysis will explore the influence of aspects of service organisation on clinical outcome for AMI, for example in terms of the influence of the presence or absence of a cardiology department or the organisation of intensive therapy services.

8. A number of hospitals are using a process measure as an indicator of quality of care and as a proxy for outcome, namely "door to needle time" for the administration of thrombolytic therapy. This is a simple indicator likely to be derived from normal clinical records which is appropriate for universal adoption.

Table 10

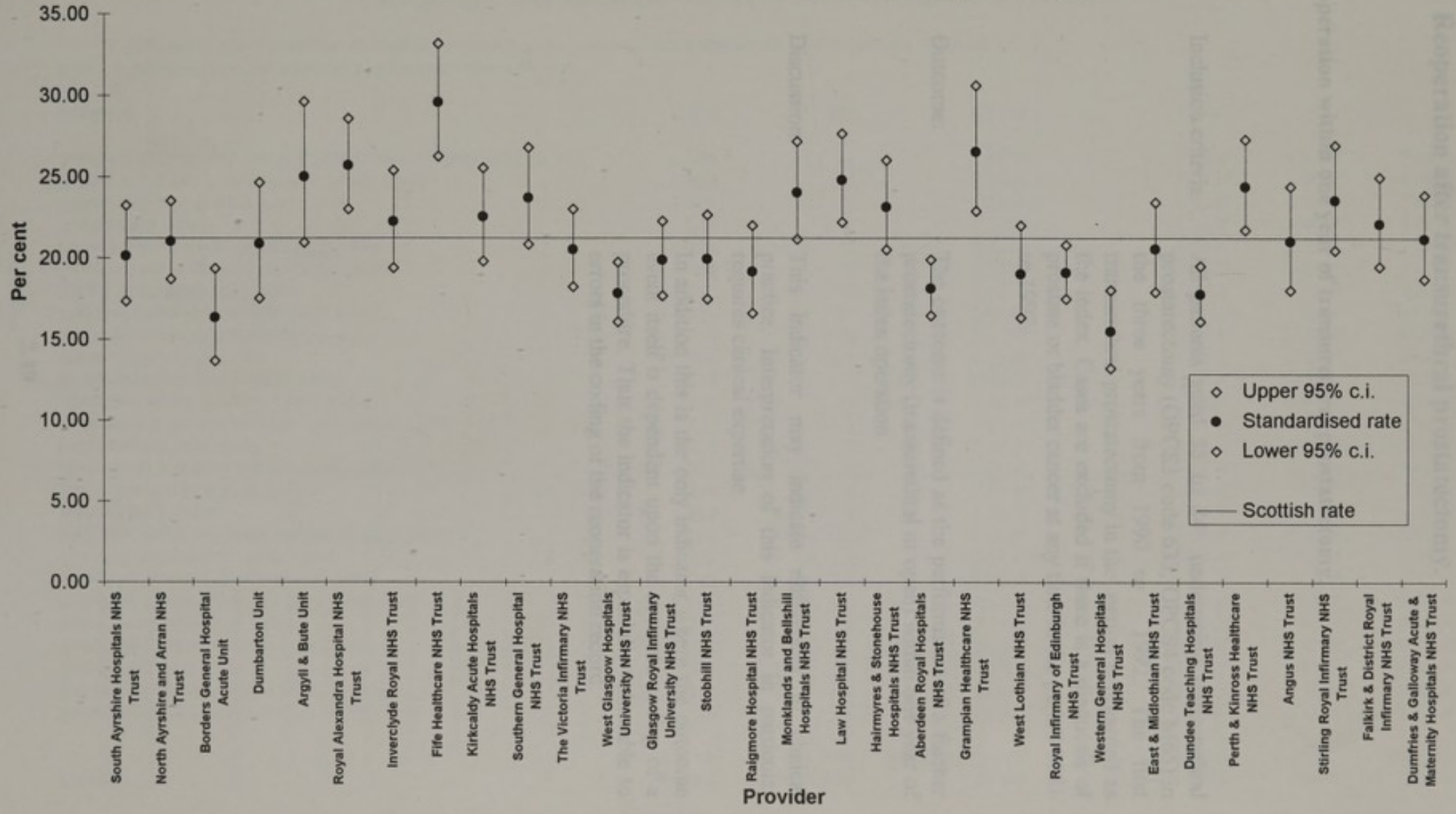
Deaths occuring within 30 days of admission as a percentage of all admissions with acute myocardial infarction. October 1990 to September 1993

Provider	Patients Admitted	Died within 30 days	Mortality rate	Standardised mortality rate	Lower 95% c.i.	Upper 95% c.i.
South Ayrshire Hospitals NHS Trust	922	184	19.96 %	20.14 %	17.33 %	23.27 %
North Ayrshire and Arran NHS Trust	1503	301	20.03 %	21.01 %	18.70 %	23.53 %
Borders General Hospital Acute Unit	786	132	16.79 %	16.31 %	13.65 %	19.35 %
Dumbarton Unit	648	138	21.30 %	20.86 %	17.53 %	24.65 %
Argyll & Bute Unit	496	134	27.02 %	25.01 %	20.95 %	29.62 %
Royal Alexandra Hospital NHS Trust	1398	338	24.18 %	25.68 %	23.02 %	28.58 %
Inverclyde Royal NHS Trust	1049	218	20.78 %	22.23 %	19.38 %	25.39 %
Fife Healthcare NHS Trust	885	292	32.99 %	29.56 %	26.26 %	33.15 %
Kirkcaldy Acute Hospitals NHS Trust	1171	246	21.01 %	22.54 %	19.81 %	25.54 %
Southern General Hospital NHS Trust	1065	252	23.66 %	23.69 %	20.86 %	26.81 %
The Victoria Infirmary NHS Trust	1401	292	20.84 %	20.52 %	18.23 %	23.02 %
West Glasgow Hospitals University NHS Trust	2133	370	17.35 %	17.83 %	16.06 %	19.74 %
Glasgow Royal Infirmary University NHS Trust	1621	295	18.20 %	19.86 %	17.66 %	22.26 %
Stobhill NHS Trust	1254	234	18.66 %	19.92 %	17.45 %	22.65 %
Raigmore Hospital NHS Trust	1117	200	17.91 %	19.16 %	16.59 %	22.01 %
Monklands and Bellshill Hospitals NHS Trust	1222	253	20.70 %	24.03 %	21.16 %	27.18 %
Law Hospital NHS Trust	1404	330	23.50 %	24.81 %	22.21 %	27.64 %
Hairmyres & Stonehouse Hospitals NHS Trust	1358	281	20.69 %	23.15 %	20.52 %	26.02 %
Aberdeen Royal Hospitals NHS Trust	2547	438	17.20 %	18.10 %	16.45 %	19.88 %
Grampian Healthcare NHS Trust	471	190	40.34 %	26.54 %	22.90 %	30.59 %
West Lothian NHS Trust	1067	180	16.87 %	19.00 %	16.33 %	21.99 %
Royal Infirmary of Edinburgh NHS Trust	2834	517	18.24 %	19.08 %	17.47 %	20.80 %
Western General Hospitals NHS Trust	1032	165	15.99 %	15.47 %	13.20 %	18.02 %
East & Midlothian NHS Trust	829	221	26.66 %	20.53 %	17.92 %	23.43 %
Dundee Teaching Hospitals NHS Trust	2371	427	18.01 %	17.74 %	16.10 %	19.51 %
Perth & Kinross Healthcare NHS Trust	1154	304	26.34 %	24.39 %	21.73 %	27.30 %
Angus NHS Trust	701	172	24.54 %	21.03 %	18.01 %	24.42 %
Stirling Royal Infirmary NHS Trust	958	212	22.13 %	23.56 %	20.49 %	26.95 %
Falkirk & District Royal Infirmary NHS Trust	1139	257	22.56 %	22.11 %	19.49 %	24.98 %
Dumfries & Galloway Acute & Maternity Hospitals NHS Trust	1250	266	21.28 %	21.16 %	18.70 %	23.87 %
Scotland	40190	8532	21.23 %	21.23 %		

Note : Threshold for inclusion is 400 patients admitted

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 10 Deaths occurring within 30 days of admission as a percentage of all admissions with acute myocardial infarction. October 1990 to September 1993



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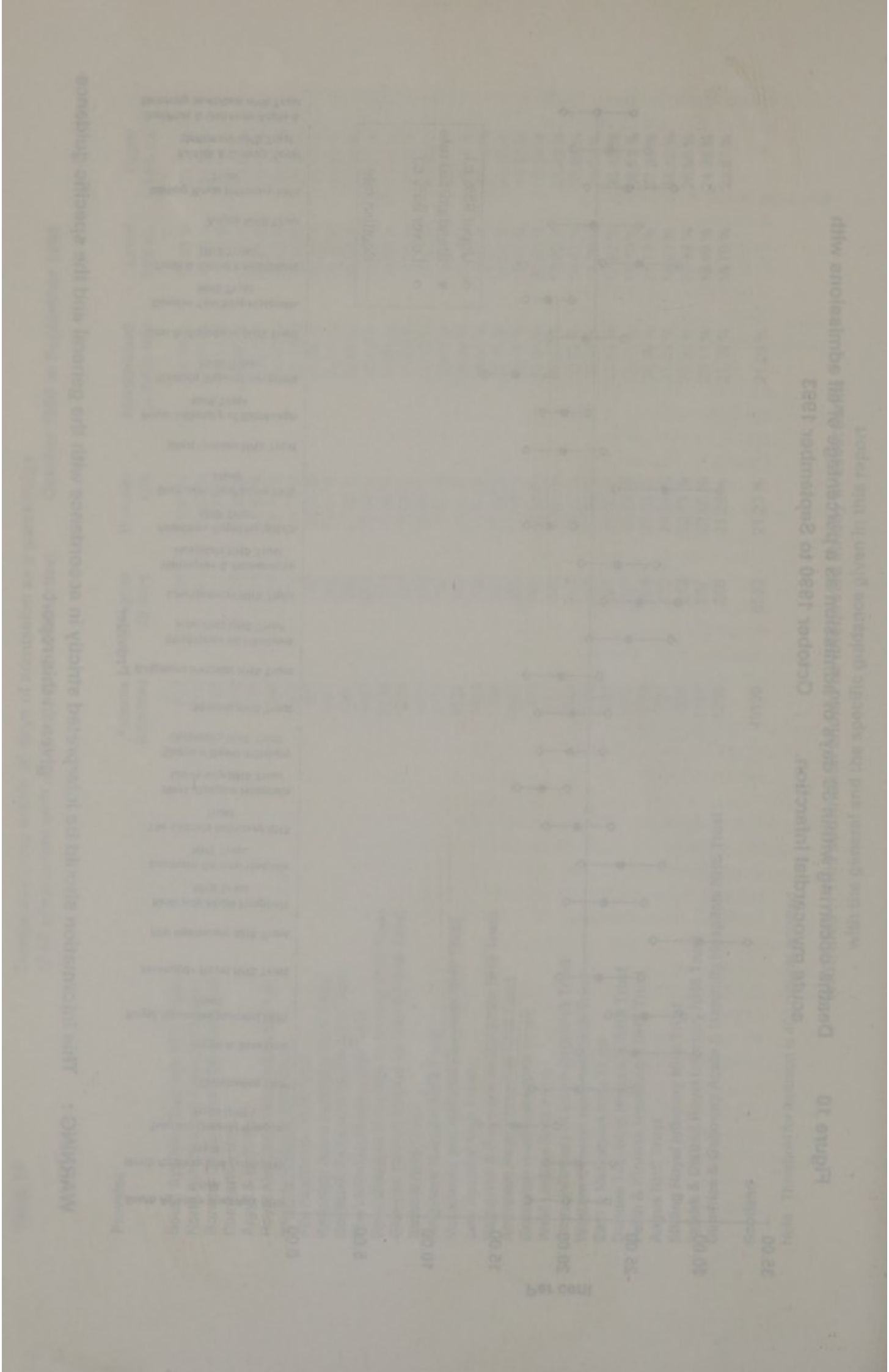


11. Reoperation after transurethral prostatectomy.

Reoperation within one year of transurethral prostatectomy.

Inclusion criteria.	All patients aged 55 to 84 undergoing transurethral prostatectomy (OPCS3 code 633, OPCS4 code M65) in the three years from 1990 to 1992. The first transurethral prostatectomy in the period is regarded as the index. Cases are excluded if there is a diagnosis of prostate or bladder cancer at any time in the period 1981 to 1992.
Outcome:	The outcome is defined as the performance of a further prostatectomy (transurethral or open) within one year of the index operation.
Discussion:	This indicator may indicate differences in clinical practice. Interpretation of this indicator in particular requires clinical expertise. In addition this is the only indicator where the outcome event itself is dependent upon the accurate coding of a procedure. Thus the indicator is especially vulnerable to errors in the coding of the reoperation record.

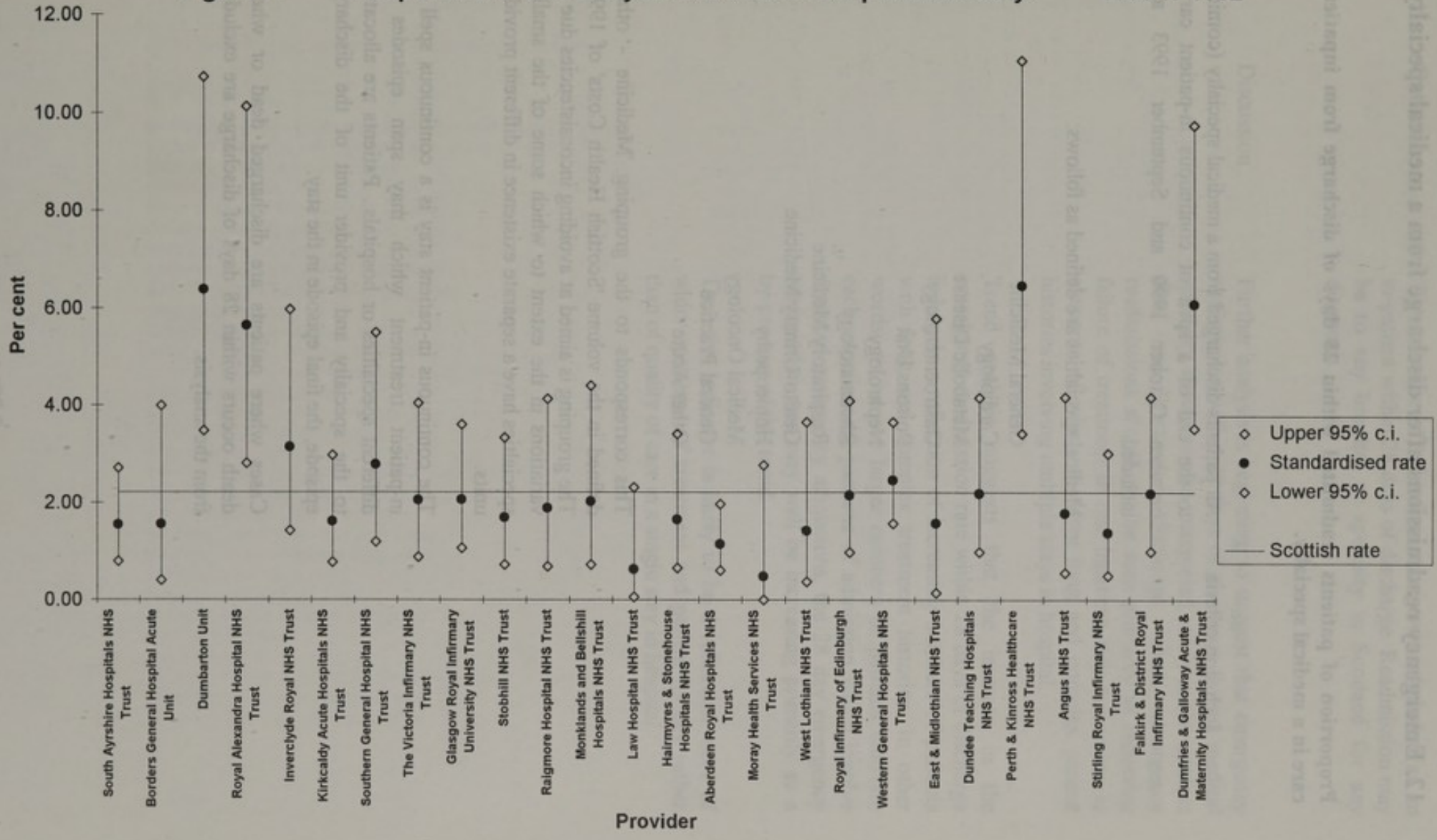
Table 11 Reoperation within one year of transurethral prostatectomy. 1990 to 1992

Provider	Patients operated on	Reoperation within 1 year	Crude Reoperation rate	Standardised Reoperation rate	Lower 95% c.i.	Upper 95% c.i.
South Ayrshire Hospitals NHS Trust	776	12	1.55 %	1.54 %	0.79 %	2.70 %
Borders General Hospital Acute Unit	260	4	1.54 %	1.54 %	0.40 %	3.99 %
Dumbarton Unit	220	14	6.36 %	6.38 %	3.47 %	10.73 %
Royal Alexandra Hospital NHS Trust	193	11	5.70 %	5.64 %	2.80 %	10.12 %
Inverclyde Royal NHS Trust	279	9	3.23 %	3.13 %	1.42 %	5.97 %
Kirkcaldy Acute Hospitals NHS Trust	615	10	1.63 %	1.61 %	0.77 %	2.97 %
Southern General Hospital NHS Trust	299	8	2.68 %	2.77 %	1.18 %	5.49 %
The Victoria Infirmary NHS Trust	392	8	2.04 %	2.04 %	0.87 %	4.04 %
Glasgow Royal Infirmary University NHS Trust	597	12	2.01 %	2.06 %	1.06 %	3.60 %
Stobhill NHS Trust	479	8	1.67 %	1.68 %	0.72 %	3.33 %
Raigmore Hospital NHS Trust	314	6	1.91 %	1.88 %	0.68 %	4.13 %
Monklands and Bellshill Hospitals NHS Trust	300	6	2.00 %	2.01 %	0.72 %	4.40 %
Law Hospital NHS Trust	320	2	0.63 %	0.63 %	0.06 %	2.31 %
Hairmyres & Stonehouse Hospitals NHS Trust	431	7	1.62 %	1.65 %	0.65 %	3.41 %
Aberdeen Royal Hospitals NHS Trust	1129	13	1.15 %	1.14 %	0.61 %	1.96 %
Moray Health Services NHS Trust	210	1	0.48 %	0.48 %	0.00 %	2.76 %
West Lothian NHS Trust	291	4	1.37 %	1.41 %	0.37 %	3.65 %
Royal Infirmary of Edinburgh NHS Trust	414	9	2.17 %	2.15 %	0.97 %	4.09 %
Western General Hospitals NHS Trust	970	24	2.47 %	2.45 %	1.57 %	3.65 %
East & Midlothian NHS Trust	124	2	1.61 %	1.57 %	0.15 %	5.78 %
Dundee Teaching Hospitals NHS Trust	408	9	2.21 %	2.18 %	0.99 %	4.15 %
Perth & Kinross Healthcare NHS Trust	194	13	6.70 %	6.45 %	3.42 %	11.06 %
Angus NHS Trust	285	5	1.75 %	1.77 %	0.56 %	4.17 %
Stirling Royal Infirmary NHS Trust	450	6	1.33 %	1.37 %	0.49 %	3.00 %
Falkirk & District Royal Infirmary NHS Trust	409	9	2.20 %	2.18 %	0.99 %	4.16 %
Dumfries & Galloway Acute & Maternity Hospitals NHS Trust	284	17	5.99 %	6.07 %	3.53 %	9.74 %
Scotland	11929	264	2.21 %	2.21 %		

Note : 1 Threshold for inclusion is 100 patients operated on
2 Figures for West Glasgow Hospitals University NHS Trust are not included as they are under revision

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 11 Reoperation within one year of transurethral prostatectomy. 1990 to 1992



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

12. Emergency readmissions after discharge from a medical specialty.

Proportion of patients readmitted within 28 days of discharge from inpatient care in a medical specialty.

Inclusion criteria: All patients discharged from a medical specialty (coming to the end of a spell of continuous in-patient care) between October 1990 and September 1993 are included.

Medical specialties are defined as follows:

General Medicine
Cardiology
Metabolic Disease
Gastroenterology
Poisons Unit
Nephrology
Rheumatology
Respiratory Medicine
Genito-Urinary Medicine
Homeopathy
Medical Oncology
General Practice
Other Acute

This corresponds to the grouping 'Medicine - other' defined in the volume 'Scottish Health Costs' of 1990. The grouping is aimed at avoiding inconsistencies due to variations in the extent to which some of the smaller specialties have a separate existence in different provider units.

The continuous in-patient stay is a continuous spell of in-patient treatment which may span episodes in different specialties or hospitals.. Patients are allocated to the specialty and provider unit of the discharge episode, the final episode in the stay.

Cases where patients are discharged dead or where death occurs within 28 days of discharge are excluded from the analysis.

Outcome: The outcome is defined as emergency admission as an in-patient within 28 days of discharge. Readmission may be to any hospital or specialty in Scotland for any diagnosis.

Discussion : Further analysis is beginning to suggest that emergency readmission within 28 days of discharge from a medical specialty should not be interpreted solely in the context that one particular discharge. Such emergency readmissions should not be seen primarily as reflecting failure of treatment in one inpatient stay but rather as elements of what are often long and complex patient histories involving multiple stays in hospital.

Trend analysis suggests that the increase in the emergency readmission rate within 28 days of discharge is largely a reflection of increasing numbers of patients with long and complex treatment histories. In other words, as we see larger numbers of patients who are each experiencing patterns of admission which involve repeated emergency admissions, the 28 day emergency readmission rate may well be increasing primarily as a by-product of this trend.

Thus this indicator is likely to be a reflection more of wider patterns of treatment and patient history rather than of quality of care in a single stay in hospital.

Table 12

Proportion of patients readmitted within 28 days of discharge from inpatient care in an adult medical specialty. October 1990 to September 1993

Provider	Discharges	Emergency readmissions within 28 days	Rate	Standardised rate	Lower 95% c.i.	Upper 95% c.i.
South Ayrshire Hospitals NHS Trust	9767	1161	11.89 %	11.53 %	10.87 %	12.21 %
North Ayrshire and Arran NHS Trust	21787	2031	9.32 %	9.57 %	9.16 %	10.00 %
Borders General Hospital Acute Unit	9346	1054	11.28 %	10.98 %	10.33 %	11.67 %
Dumbarton Unit	6294	668	10.61 %	10.38 %	9.60 %	11.19 %
Argyll & Bute Unit	10399	1324	12.73 %	12.77 %	12.09 %	13.48 %
Royal Alexandra Hospital NHS Trust	17301	2105	12.17 %	12.10 %	11.59 %	12.63 %
Inverclyde Royal NHS Trust	12816	1482	11.56 %	11.39 %	10.81 %	11.98 %
Fife Healthcare NHS Trust	13868	1873	13.51 %	13.77 %	13.16 %	14.41 %
Kirkcaldy Acute Hospitals NHS Trust	10018	1065	10.63 %	10.46 %	9.84 %	11.11 %
Southern General Hospital NHS Trust	15397	2010	13.05 %	12.98 %	12.42 %	13.56 %
The Victoria Infirmary NHS Trust	16500	1872	11.35 %	11.23 %	10.72 %	11.75 %
West Glasgow Hospitals University NHS Trust	39152	4217	10.77 %	10.71 %	10.39 %	11.03 %
Glasgow Royal Infirmary University NHS Trust	36074	3685	10.22 %	10.22 %	9.89 %	10.55 %
Stobhill NHS Trust	27458	3292	11.99 %	12.62 %	12.19 %	13.05 %
Raigmore Hospital NHS Trust	15171	1907	12.57 %	12.37 %	11.82 %	12.94 %
Monklands and Bellshill Hospitals NHS Trust	16040	1888	11.77 %	12.28 %	11.73 %	12.85 %
Law Hospital NHS Trust	14732	1514	10.28 %	10.13 %	9.63 %	10.65 %
Hairmyres & Stonehouse Hospitals NHS Trust	14890	1905	12.79 %	12.61 %	12.05 %	13.19 %
Aberdeen Royal Hospitals NHS Trust	40173	4937	12.29 %	12.38 %	12.04 %	12.73 %
Grampian Healthcare NHS Trust	15059	1589	10.55 %	10.26 %	9.76 %	10.78 %
West Lothian NHS Trust	10408	1470	14.12 %	14.02 %	13.32 %	14.76 %
Royal Infirmary of Edinburgh NHS Trust	53049	7443	14.03 %	14.32 %	14.00 %	14.65 %
Western General Hospitals NHS Trust	20662	2270	10.99 %	10.83 %	10.39 %	11.29 %
East & Midlothian NHS Trust	8406	1011	12.03 %	11.15 %	10.48 %	11.86 %
Dundee Teaching Hospitals NHS Trust	32926	4389	13.33 %	13.31 %	12.92 %	13.71 %
Perth & Kinross Healthcare NHS Trust	10679	1193	11.17 %	10.73 %	10.13 %	11.36 %
Angus NHS Trust	8156	1079	13.23 %	12.55 %	11.82 %	13.33 %
Stirling Royal Infirmary NHS Trust	10749	1190	11.07 %	11.02 %	10.41 %	11.67 %
Falkirk & District Royal Infirmary NHS Trust	9740	954	9.79 %	9.81 %	9.20 %	10.45 %
Dumfries & Galloway Acute & Maternity Hospitals NHS Trust	13359	1571	11.76 %	11.68 %	11.11 %	12.27 %
Scotland	580557	69106	11.90 %	11.90 %		

Note : Threshold for inclusion is 5000 discharges in period

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

THE SCOTTISH OFFICE

NHS
MEL(1994)82

National Health Service in Scotland
Management Executive

St. Andrew's House
Edinburgh EH1 3DG

Dear Colleague

7 December 1994

Addressees:

For action:

General Managers and Directors of Public Health, Health Boards

GP Fundholders

Chief Executives, or Chief Executives designate of NHS Trusts and Medical Directors

Unit General Managers and Medical Directors

CLINICAL OUTCOME INDICATORS

Summary

1. Health Boards were invited, in MEL(1992)87, to include in contracts for 1993/94, and subsequently, the clinical outcome indicators recommended by the Clinical Outcomes Working Group of CRAG, and to take certain other action in relation to the management of clinical information. The results for 5 of the specific indicators recommended were published, at Health Board level, in June 1993 along with MEL(1993)93. The attached report updates these 5 indicators which are now presented for each NHS Trust providing services in the relevant specialties. To these have been added 12 further indicators including 7 in public health medicine and 3 in psychiatry.

Action

Variations between hospitals

2. No direct inferences can be drawn about the quality of clinical care in different hospitals or health board areas on the basis of the information provided. This is because these clinical outcome indicators do not provide directly comparable information either about the efficacy of treatment for a particular condition in different hospitals or about the effectiveness of services provided for the inhabitants of different health board areas. Variations in clinical outcome may be due to the relative quality and completeness of the data supplied by hospitals and health boards to ISD for the Scottish Morbidity Record (SMR), local case mix, geographic variations in disease, socio-economic and other factors. The indicators are being published now with the specific aim of stimulating local discussion about the possible reasons for any apparent variation so that this may be investigated and appropriate action taken; for example by setting in train a clinical audit to identify the likely cause of the disparity.

Enquiries to:

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Quality of data and related activity

3. The first of the Working Group's original recommendations in 1992 to be included in contracts for 1993-1994 was that a structured review should be carried out of the quality of the data supplied to ISD. Health Boards are asked to review the position and to request the results of this review of data quality in the hospitals in their area. Boards are asked to report back to ISD on the outcome of this review by 30 September 1995. Boards are also asked to initiate local discussions about the use of outcome measures in general and about issues arising from the specific indicators included in the report and to report back to CRAG on progress by the same date. These discussions should involve Directors of Public Health, local Trusts and other hospital units, professional clinical staff, general practitioners, professional advisory and clinical audit committees, and other relevant local interests, including patient representatives.

4. Finally Boards and GP fundholders are asked to make known to CRAG any outcome indicators in use or under development locally, so that they may be considered by the Clinical Outcomes Working Group for possible wider use.

Use of outcome indicators

5. Specific attention is drawn to the care with which these indicators must be interpreted in the light of all local circumstances. They should not be used as the basis for inappropriate or premature conclusions about which health boards or which hospitals provide the best health care.

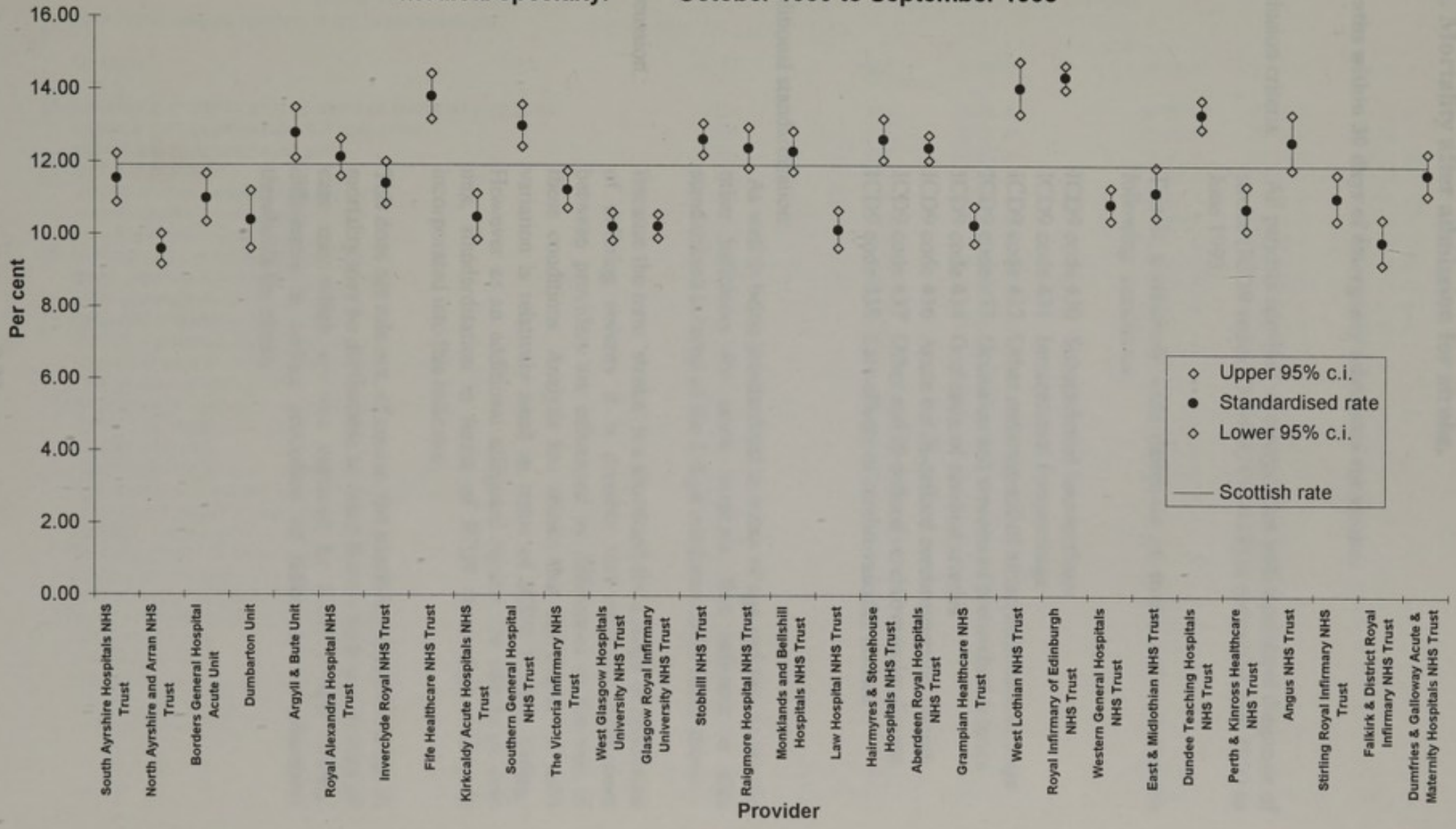
Robert Kendell

R E KENDELL
Chief Medical Officer

Geoff. Scaife

GEOFF SCAIFE
Chief Executive
NHS in Scotland

Figure 12 **Proportion of patients readmitted within 28 days of discharge from inpatient care in a medical specialty. October 1990 to September 1993**



WARNING : **This information should be interpreted strictly in accordance with the general and the specific guidance given in this report**

13. Mortality after admission for stroke.

Deaths within 30 days of emergency admission for stroke.

Inclusion criteria: All patients admitted as emergencies with a principal diagnosis of stroke (ICD9 codes 430-434, 436-438) in the period July 1990 to June 1993.

This is a relatively wide definition of stroke and includes the following conditions:

ICD9 code 430 Subarachnoid haemorrhage
ICD9 code 431 Intracerebral haemorrhage
ICD9 code 432 Other and unspecified intracranial haemorrhage
ICD9 code 433 Occlusion and stenosis of precerebral arteries
ICD9 code 434 Occlusion of cerebral arteries
ICD9 code 436 Acute but ill-defined cerebrovascular disease
ICD9 code 437 Other and ill-defined cerebrovascular disease
ICD9 code 438 Late effects of cerebrovascular disease

Additional standardisation:

As well as being standardised in terms of age and sex, as are the other indicators for acute hospitals, this indicator is also standardised in terms of the 3-digit condition codes listed above.

Discussion.: Because the term 'stroke' is a shorthand for a range of conditions of differing severity it is possible that mortality differences between providers are influenced by differences in the mix of these conditions. Analysis has shown that the degree of such variation is relatively small in terms of ICD9 3- digit coding. However as an additional safeguard against the effects of case mix, standardisation in terms of ICD9 three digit coding is incorporated into this indicator.

This does not rule out, of course, the possibility that differences in mortality may be attributable to other factors such as elements of case mix which are not captured by ICD9 3-digit coding, differences in coding procedure or differences in admission thresholds for stroke.

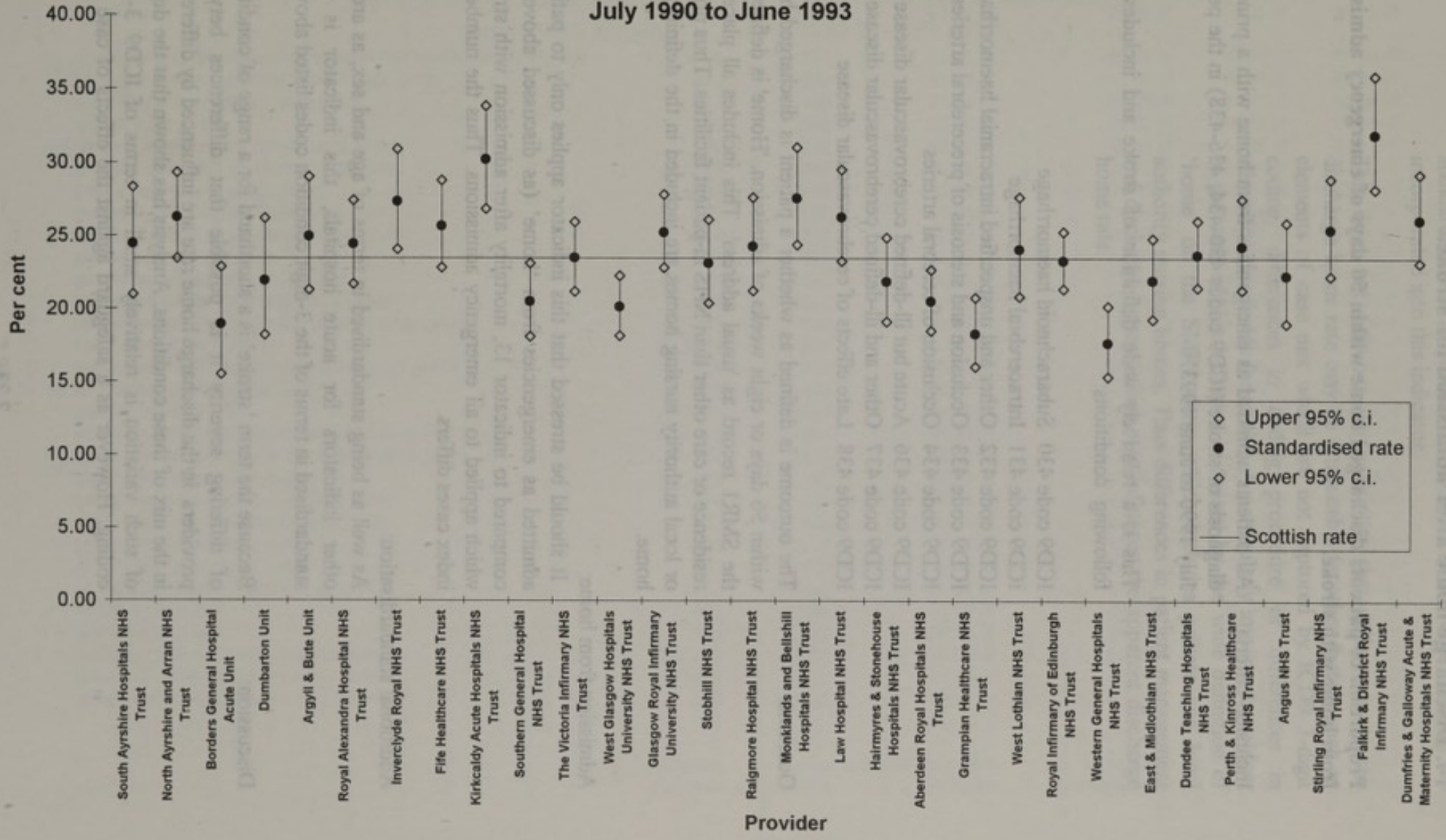
Table 13 Deaths within 30 days of emergency admission for stroke. July 1990 to June 1993

Provider	Patients Admitted	Died within 30 days	Mortality rate	Standardised mortality rate	Lower 95% c.i.	Upper 95% c.i.
South Ayrshire Hospitals NHS Trust	723	178	24.62 %	24.43 %	20.97 %	28.30 %
North Ayrshire and Arran NHS Trust	1208	319	26.41 %	26.25 %	23.45 %	29.29 %
Borders General Hospital Acute Unit	531	107	20.15 %	18.92 %	15.50 %	22.87 %
Dumbarton Unit	508	122	24.02 %	21.92 %	18.20 %	26.17 %
Argyll & Bute Unit	614	167	27.20 %	24.92 %	21.28 %	29.00 %
Royal Alexandra Hospital NHS Trust	1203	287	23.86 %	24.40 %	21.66 %	27.40 %
Inverclyde Royal NHS Trust	946	252	26.64 %	27.30 %	24.03 %	30.89 %
Fife Healthcare NHS Trust	1084	294	27.12 %	25.62 %	22.78 %	28.73 %
Kirkcaldy Acute Hospitals NHS Trust	955	293	30.68 %	30.14 %	26.79 %	33.80 %
Southern General Hospital NHS Trust	1444	264	18.28 %	20.46 %	18.06 %	23.08 %
The Victoria Infirmary NHS Trust	1565	380	24.28 %	23.45 %	21.15 %	25.93 %
West Glasgow Hospitals University NHS Trust	1880	382	20.32 %	20.10 %	18.13 %	22.22 %
Glasgow Royal Infirmary University NHS Trust	1707	404	23.67 %	25.20 %	22.80 %	27.78 %
Stobhill NHS Trust	1180	260	22.03 %	23.09 %	20.37 %	26.08 %
Raigmore Hospital NHS Trust	942	229	24.31 %	24.24 %	21.20 %	27.59 %
Monklands and Bellshill Hospitals NHS Trust	1024	274	26.76 %	27.53 %	24.37 %	30.99 %
Law Hospital NHS Trust	1075	280	26.05 %	26.23 %	23.25 %	29.49 %
Hairmyres & Stonehouse Hospitals NHS Trust	1109	230	20.74 %	21.83 %	19.10 %	24.84 %
Aberdeen Royal Hospitals NHS Trust	1975	380	19.24 %	20.48 %	18.47 %	22.65 %
Grampian Healthcare NHS Trust	1230	238	19.35 %	18.27 %	16.02 %	20.75 %
West Lothian NHS Trust	846	198	23.40 %	24.04 %	20.81 %	27.63 %
Royal Infirmary of Edinburgh NHS Trust	2409	560	23.25 %	23.24 %	21.36 %	25.25 %
Western General Hospitals NHS Trust	1260	213	16.90 %	17.64 %	15.35 %	20.18 %
East & Midlothian NHS Trust	1049	250	23.83 %	21.91 %	19.28 %	24.80 %
Dundee Teaching Hospitals NHS Trust	1797	422	23.48 %	23.64 %	21.44 %	26.01 %
Perth & Kinross Healthcare NHS Trust	942	243	25.80 %	24.24 %	21.29 %	27.49 %
Angus NHS Trust	744	167	22.45 %	22.24 %	19.00 %	25.89 %
Stirling Royal Infirmary NHS Trust	917	234	25.52 %	25.40 %	22.25 %	28.87 %
Falkirk & District Royal Infirmary NHS Trust	850	274	32.24 %	31.85 %	28.19 %	35.86 %
Dumfries & Galloway Acute & Maternity Hospitals NHS Trust	1184	296	25.00 %	26.05 %	23.16 %	29.19 %
Scotland	38121	8938	23.45 %	23.45 %	22.96 %	23.94 %

Note : Threshold for inclusion is 400 patients admitted

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 13 **Deaths within 30 days of emergency admission for stroke. July 1990 to June 1993**



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

14. Discharge home after admission for stroke.

Proportion of patients discharged home within 56 days of emergency admission from home with stroke.

Inclusion criteria: All patients admitted as emergencies from home with a principal diagnosis of stroke (ICD9 codes 430-434, 436-438) in the period July 1990 to June 1993.

This is a relatively wide definition of stroke and includes the following conditions:

ICD9 code 430 Subarachnoid haemorrhage
ICD9 code 431 Intracerebral haemorrhage
ICD9 code 432 Other and unspecified intracranial haemorrhage
ICD9 code 433 Occlusion and stenosis of precerebral arteries
ICD9 code 434 Occlusion of cerebral arteries
ICD9 code 436 Acute but ill-defined cerebrovascular disease
ICD9 code 437 Other and ill-defined cerebrovascular disease
ICD9 code 438 Late effects of cerebrovascular disease

Outcome: The outcome is defined as whether a patient is discharged home within 56 days or eight weeks of admission. 'Home' is defined on the SMR1 record as 'usual address'. This includes all places of residence or care other than NHS in-patient facilities. Thus private or local authority nursing homes are included in the definition of home.

Admission from home:

It should be stressed that this indicator applies only to patients admitted as emergencies from 'home' (as discussed above) as compared to indicator 13, mortality after admission with stroke, which applied to all emergency admissions. Thus the number of index cases differs.

Additional standardisation:

As well as being standardised in terms of age and sex, as are the other indicators for acute hospitals, this indicator is also standardised in terms of the 3-digit condition codes listed above.

Discussion: Because the term 'stroke' is a shorthand for a range of conditions of differing severity it is possible that differences between providers in the discharge home rate are influenced by differences in the mix of these conditions. Analysis has shown that the degree of such variation is relatively small in terms of ICD9 3-digit coding. However as a safeguard against the effects of case mix,

standardisation in terms of ICD9 three digit coding is incorporated into this indicator.

This does not rule out the possibility that differences in the discharge home rate may be attributable to other factors such as elements of case mix which are not captured by ICD9 3-digit coding, differences in coding procedure or differences in admission thresholds for stroke. A particularly important problem in the case of this indicator is caused by the wide definition of 'home' on the SMR1 form which includes private and local authority nursing homes. Thus differences in patient management and discharge opportunities may influence the apparent discharge home rate.

Table 14

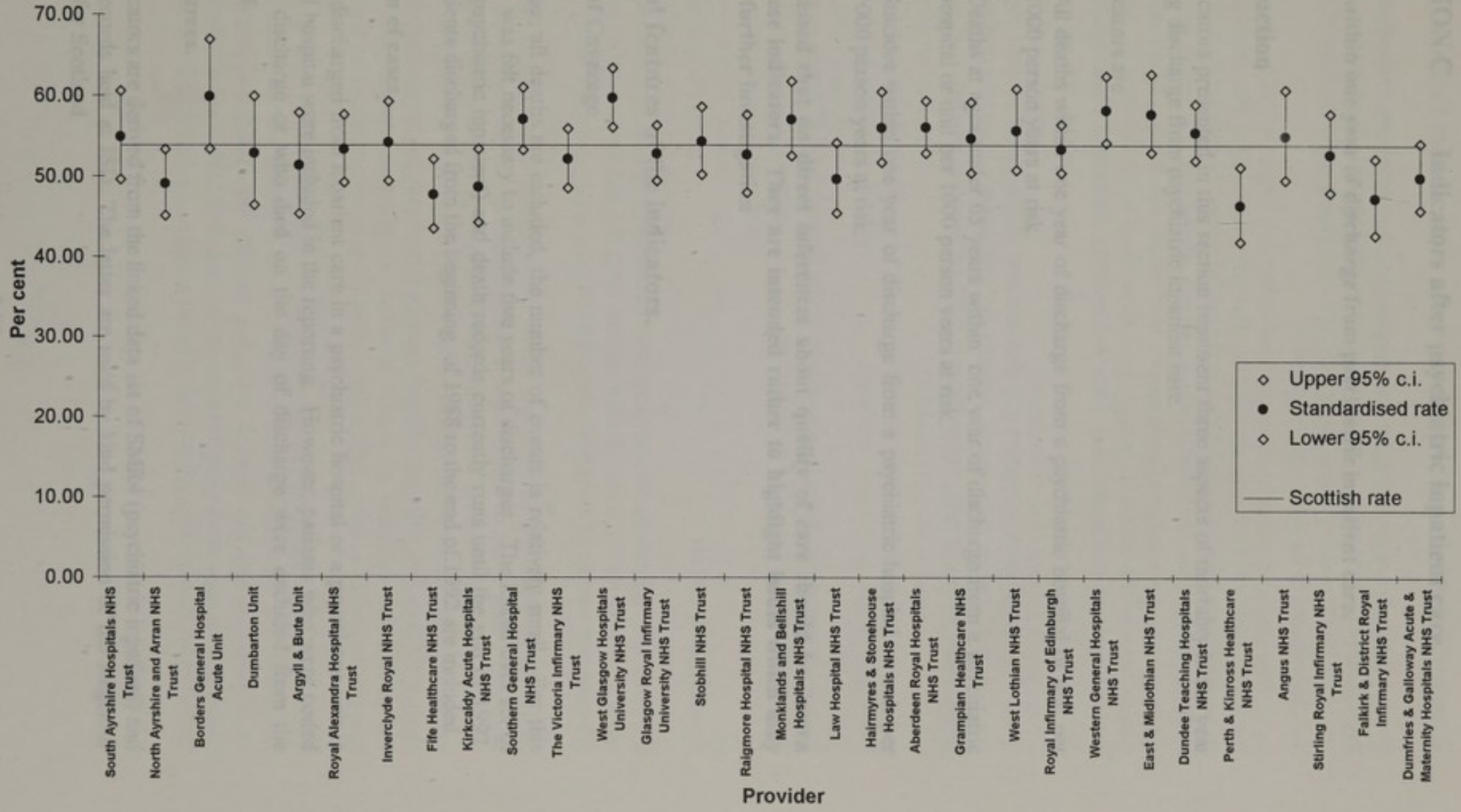
Proportion of patients discharged home within 56 days of emergency admission from home with stroke. July 1990 to June 1993

Provider	Patients Admitted	Discharged home	Proportion discharged home	Standardised proportion	Lower 95% c.i.	Upper 95% c.i.
South Ayrshire Hospitals NHS Trust	710	392	55.21 %	54.83 %	49.53 %	60.54 %
North Ayrshire and Arran NHS Trust	1144	562	49.13 %	49.04 %	45.07 %	53.27 %
Borders General Hospital Acute Unit	525	308	58.67 %	59.83 %	53.33 %	66.90 %
Dumbarton Unit	492	246	50.00 %	52.81 %	46.42 %	59.84 %
Argyll & Bute Unit	565	267	47.26 %	51.29 %	45.32 %	57.83 %
Royal Alexandra Hospital NHS Trust	1165	636	54.59 %	53.26 %	49.20 %	57.57 %
Inverclyde Royal NHS Trust	857	474	55.31 %	54.12 %	49.36 %	59.23 %
Fife Healthcare NHS Trust	1068	474	44.38 %	47.62 %	43.43 %	52.11 %
Kirkcaldy Acute Hospitals NHS Trust	927	450	48.54 %	48.61 %	44.22 %	53.32 %
Southern General Hospital NHS Trust	1438	848	58.97 %	56.97 %	53.20 %	60.94 %
The Victoria Infirmary NHS Trust	1568	787	50.19 %	52.06 %	48.48 %	55.83 %
West Glasgow Hospitals University NHS Trust	1721	1032	59.97 %	59.62 %	56.04 %	63.37 %
Glasgow Royal Infirmary University NHS Trust	1677	921	54.92 %	52.73 %	49.38 %	56.25 %
Stobhill NHS Trust	1190	659	55.38 %	54.25 %	50.19 %	58.55 %
Raigmore Hospital NHS Trust	862	465	53.94 %	52.60 %	47.93 %	57.61 %
Monklands and Bellshill Hospitals NHS Trust	1019	600	58.88 %	56.99 %	52.53 %	61.74 %
Law Hospital NHS Trust	1024	514	50.20 %	49.61 %	45.42 %	54.09 %
Hairmyres & Stonehouse Hospitals NHS Trust	1103	640	58.02 %	55.97 %	51.72 %	60.48 %
Aberdeen Royal Hospitals NHS Trust	1909	1161	60.82 %	56.04 %	52.86 %	59.36 %
Grampian Healthcare NHS Trust	1218	616	50.57 %	54.65 %	50.42 %	59.14 %
West Lothian NHS Trust	844	483	57.23 %	55.63 %	50.78 %	60.82 %
Royal Infirmary of Edinburgh NHS Trust	2285	1232	53.92 %	53.35 %	50.41 %	56.41 %
Western General Hospitals NHS Trust	1262	769	60.94 %	58.14 %	54.10 %	62.40 %
East & Midlothian NHS Trust	1050	555	52.86 %	57.62 %	52.93 %	62.63 %
Dundee Teaching Hospitals NHS Trust	1770	996	56.27 %	55.37 %	51.98 %	58.92 %
Perth & Kinross Healthcare NHS Trust	909	395	43.45 %	46.31 %	41.86 %	51.12 %
Angus NHS Trust	732	385	52.60 %	54.87 %	49.53 %	60.64 %
Stirling Royal Infirmary NHS Trust	873	460	52.69 %	52.65 %	47.94 %	57.69 %
Falkirk & District Royal Infirmary NHS Trust	837	395	47.19 %	47.23 %	42.69 %	52.13 %
Dumfries & Galloway Acute & Maternity Hospitals NHS Trust	1119	572	51.12 %	49.81 %	45.81 %	54.06 %
Scotland	36947	19883	53.81 %	53.82 %	53.07 %	54.57 %

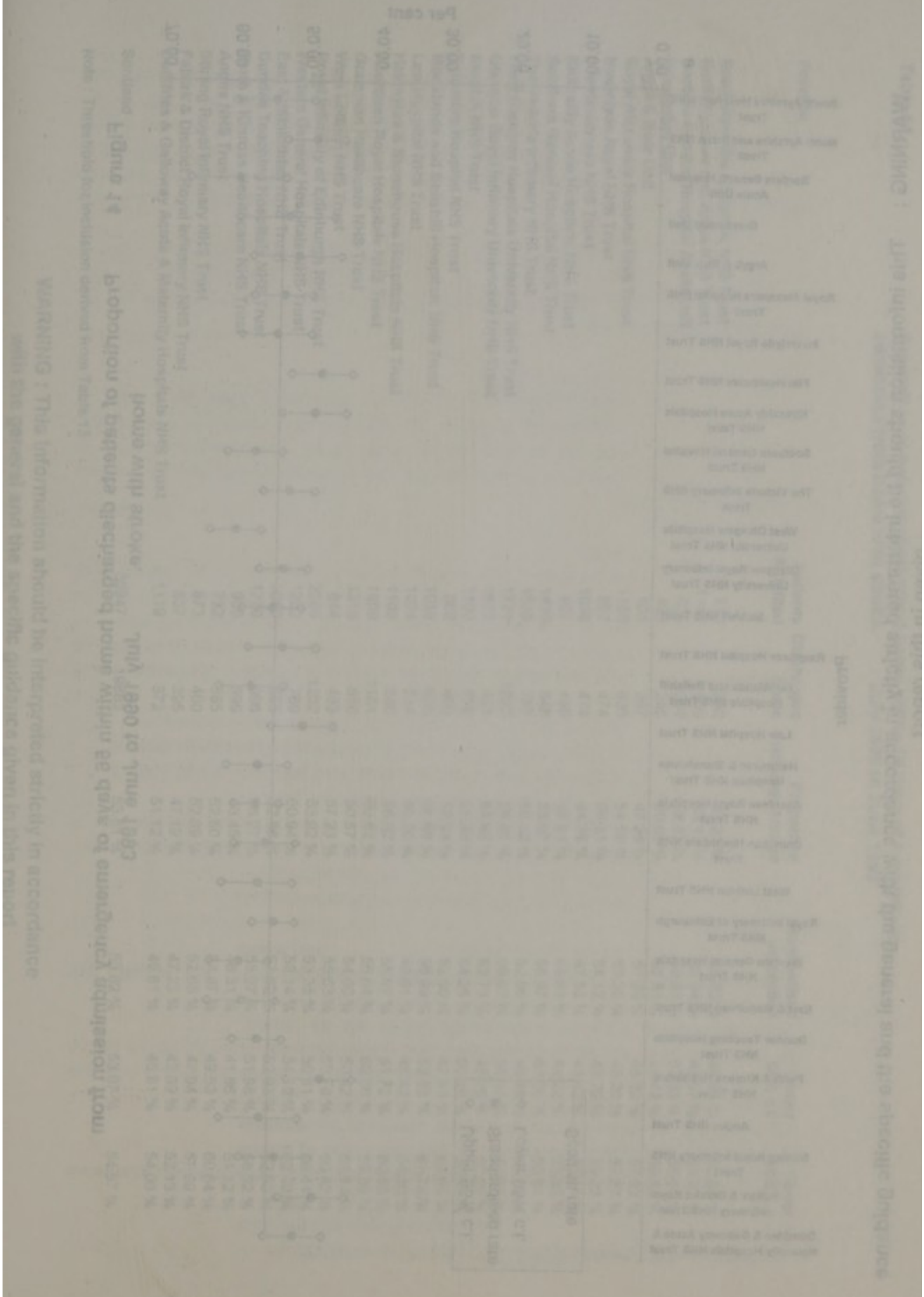
Note : Threshold for inclusion derived from Table 13

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 14 **Proportion of patients discharged home within 56 days of emergency admission from home with stroke. July 1990 to June 1993**



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report



SECTION C Indicators after psychiatric inpatient care.

Deaths within one year of discharge from psychiatric inpatient care.

Introduction

The indicators presented in this section represent three aspects of mortality in the year following discharge from psychiatric inpatient care.

The indicators are:

15 All deaths within one year of discharge from a psychiatric hospital or unit per 1000 person years at risk.

16 Deaths at ages under 65 years within one year of discharge from a psychiatric hospital or unit per 1000 person years at risk.

17 Suicides within one year of discharge from a psychiatric hospital or unit per 1000 person years at risk.

It is stressed that no direct inferences about quality of care should be drawn from these indicators. They are intended rather to highlight issues which may require further investigation

General features of the indicators.

Period of Coverage

Even when all deaths are included, the number of events is relatively small. For this reason it was felt necessary to include five years of discharges. The linked data set of SMR4 (psychiatric inpatient) and death records currently runs until the end of 1992. Thus patients discharged from the beginning of 1988 to the end of 1992 are included.

Selection of cases

Patients discharged from inpatient care in a psychiatric hospital or a psychiatric unit in a general hospital were included in the reporting. However, patients who were coded dead on discharge or who died on the day of discharge were excluded from the reporting.

Data sources.

The indicators are derived from the linked data set of SMR4 (psychiatric inpatient) and deaths records held at ISD. The latter are used by kind permission of the Registrar General for Scotland.

Rates per 1000 person years at risk.

For the indicators of mortality for non-psychiatric acute care such as death within 30 days of admission for acute myocardial infarction, the relatively short period of follow-up meant that it was legitimate to include only one admission for each patient and for the denominator to be the number of patients.

However patients receiving psychiatric inpatient care may be discharged and subsequently readmitted several times in the period under observation (here the period 1988 to 1992). Thus the time at which patients are 'at risk' i.e. within one year of discharge may vary between patients. To take simply the number of patients as the denominator of the indicators would be to allow them to be distorted by the balance between patients discharged only once and patients discharged several times in the period.

Thus, for the present indicators the denominator of the indicator must be 'person years at risk' rather than simply patients or discharges. Thus the indicators are presented in terms of deaths or suicides per 1000 person years at risk.

Standardisation

Rates given are standardised by age and sex to the Scottish total of person years at risk using the indirect method of standardisation.

Confidence Intervals

95% confidence intervals for the rates (standardised by age and sex) were calculated using a formula for the standard error derived from the standardised ratio, comparing the observed number of cases with that expected.

Since the indicators presented are based on complete enumeration rather than sampling, a case could be made that it is inappropriate to present confidence intervals based on sampling theory. However there is also an argument that many of the unmeasured or unmeasurable factors which influence mortality are likely to vary in a random fashion. The influence of these random factors will be proportionately greater the smaller the numbers of events involved. Confidence intervals are therefore presented as an aid to assessing the likely effect of random fluctuations on the data.

Even where the Scottish mean lies within the confidence interval for a particular hospital or unit, factors other than random variation in patient characteristics may well be involved. Where the Scottish mean lies outwith the confidence intervals for a particular unit, this means that there is a strong probability that the deviation is due to factors other than random variations in the data.

Hospitals or units included.

In the interests of including only hospitals and units with sufficiently large numbers of patients to allow meaningful comparison we have included only those which contribute more than 1000 person-years at risk for persons of all ages.

This selection criterion means that the twenty largest psychiatric hospitals have been included as well as nine psychiatric units within other hospitals:

Psychiatric hospitals.

Ailsa Hospital, Ayr
Dingleton Hospital , Melrose
Argyll and Bute Hospital, Lochgilphead
Dykebar Hospital, Paisley
Stratheden Hospital, Cupar
Woodilee Hospital, Lenzie
Leverndale Hospital, Glasgow
Gartnavel Royal Hospital, Glasgow
Craig Dunain Hospital, Inverness
Hartwood Hospital, Shotts
Kingseat Hospital, Aberdeenshire
Royal Cornhill Hospital, Aberdeen
Rosslynlee Hospital, Roslin
Royal Edinburgh Hospital
Bangour Village Hospital, Broxburn
Royal Dundee Liff Hospital, Dundee
Strathmartine Hospital, Dundee
Sunnyside Royal Hospital, Montrose
Bellsdyke Hospital, Larbert
Crichton Royal Hospital, Dumfries

Psychiatric units within general hospitals.

Crosshouse Hospital, Kilmarnock
Inverclyde Royal Hospital, Greenock
Royal Alexandra Hospital, Paisley
Victoria Hospital, Kirkcaldy
Queen Margaret Hospital, Dunfermline
Parkhead Hospital, Glasgow
Stobhill Hospital, Glasgow
Southern General Psychiatric Unit, Glasgow
Monklands Hospital, Airdrie

Definition of suicide for indicator 17

Deaths were classed as 'suicide' when they were coded on the death record with the following E (external cause) codes:

E950-E959 (suicide and self-inflicted injury) and
E980-E989 (injury undetermined whether accidentally or purposely inflicted)

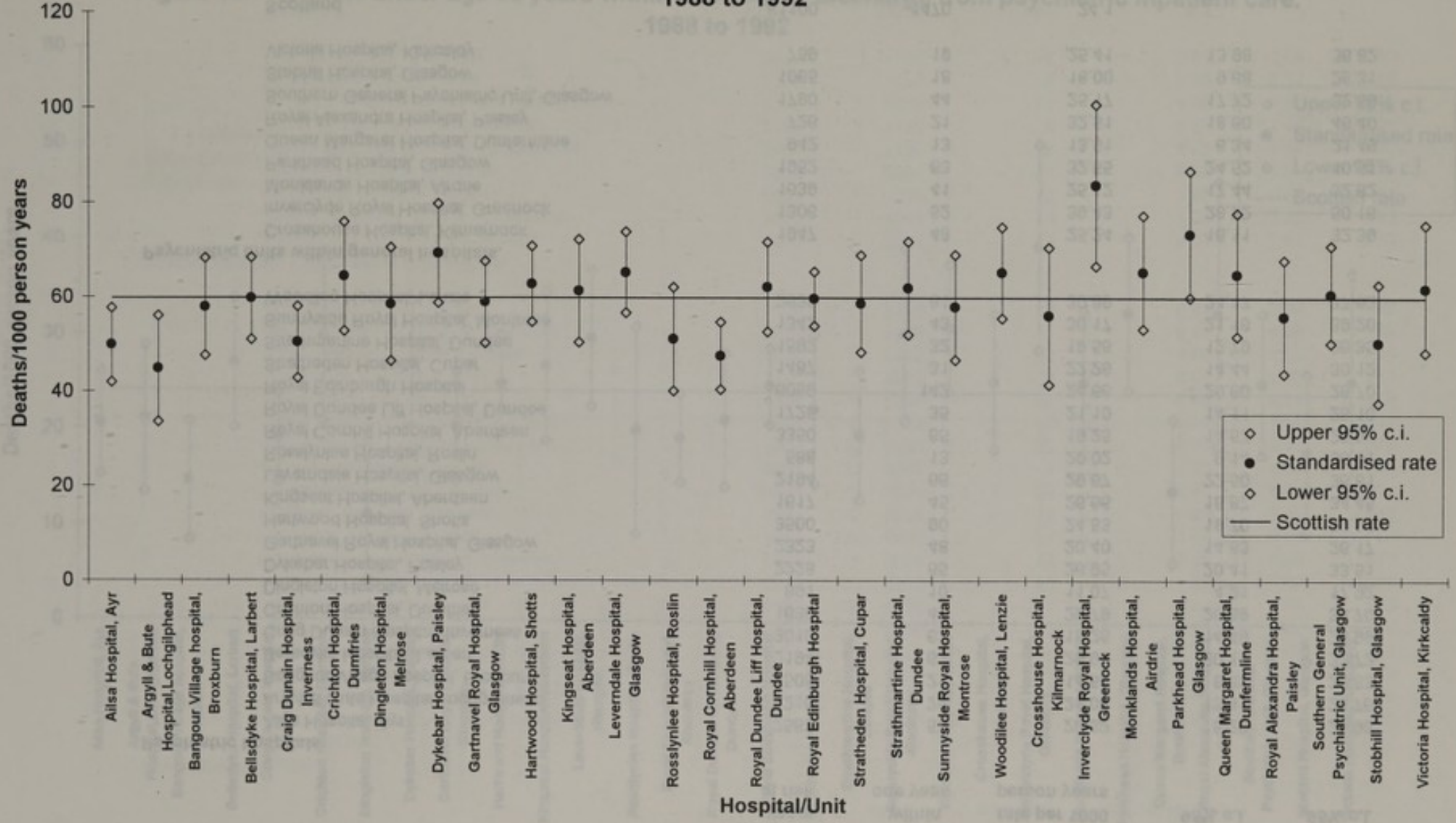
It is generally considered that explicit codes for suicide and self-inflicted injury underestimate the frequency of suicide. Therefore it is usual to include E980-989 (injury undetermined whether accidentally or purposely inflicted).

Table 15 All deaths within one year of discharge from psychiatric inpatient care. 1988 to 1992

	Number of discharges	Person years at risk	Deaths within one year	Standardised rate per 1000 person years	Lower 95% c.i.	Upper 95% c.i.
Psychiatric hospitals						
Ailsa Hospital, Ayr	6198	3271	154	49.85	41.95	57.69
Argyll & Bute Hospital,Lochgilphead	2507	1522	61	44.82	33.56	56.04
Bangour Village hospital, Broxburn	3819	2030	121	57.87	47.55	68.18
Bellsdyke Hospital, Larbert	6143	2920	182	59.66	51.00	68.33
Craig Dunain Hospital, Inverness	6368	3716	169	50.39	42.79	57.98
Crichton Hospital, Dumfries	5567	2090	119	64.27	52.70	75.78
Dingleton Hospital, Melrose	2492	1286	91	58.40	46.38	70.37
Dykebar Hospital, Paisley	5510	2740	169	69.12	58.70	79.54
Gartnavel Royal Hospital, Glasgow	5933	3038	176	58.82	50.11	67.49
Hartwood Hospital, Shotts	7692	4335	236	62.71	54.71	70.71
Kingseat Hospital, Aberdeen	4061	2065	122	61.28	50.40	72.14
Leverndale Hospital, Glasgow	5893	3064	222	65.17	56.57	73.71
Rosslynlee Hospital, Roslin	2092	1037	83	51.10	40.10	62.09
Royal Cornhill Hospital, Aberdeen	7664	4190	173	47.51	40.46	54.63
Royal Dundee Liff Hospital, Dundee	4924	2392	164	62.05	52.57	71.57
Royal Edinburgh Hospital	14256	7628	410	59.60	53.82	65.36
Stratheden Hospital, Cupar	3787	2025	126	58.58	48.33	68.78
Strathmartine Hospital, Dundee	4058	2168	151	61.87	51.99	71.72
Sunnyside Royal Hospital, Montrose	2810	1738	103	57.81	46.63	68.95
Woodilee Hospital, Lenzie	6460	3179	175	65.17	55.50	74.81
Psychiatric units within general hospitals.						
Crosshouse Hospital, Kilmarnock	3832	2070	57	55.95	41.42	70.46
Inverclyde Royal Hospital, Greenock	2960	1542	93	83.60	66.60	100.57
Monklands Hospital, Airdrie	3833	2056	114	65.23	53.26	77.21
Parkhead Hospital, Glasgow	3973	2261	115	73.24	59.87	86.65
Queen Margaret Hospital, Dunfermline	2464	1326	95	64.69	51.68	77.69
Royal Alexandra Hospital, Paisley	2105	1176	83	55.77	43.79	67.79
Southern General Psychiatric Unit, Glasgow	4730	2348	132	60.56	50.22	70.88
Stobhill Hospital, Glasgow	2732	1379	62	50.21	37.69	62.67
Victoria Hospital, Kirkcaldy	2071	1095	81	61.75	48.33	75.24
Scotland	1565833	80350	4808	59.8		

WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Figure 15 All deaths within one year of discharge from psychiatric inpatient care. 1988 to 1992



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Table 16 **Deaths at ages under 65 years within one year of discharge from a psychiatric inpatient care. 1988 to 1992**

	Person years at risk	Deaths within one year	Standardised rate per 1000 person years	Lower 95% c.i.	Upper 95% c.i.
Psychiatric hospitals					
Ailsa Hospital, Ayr	2562	57	20.62	15.26	25.96
Argyll & Bute Hospital,Lochgilphead	1216	29	21.08	13.41	28.76
Bangour Village hospital, Broxburn	1508	21	14.58	8.35	20.83
Bellsdyke Hospital, Larbert	2194	61	26.95	20.19	33.72
Craig Dunain Hospital, Inverness	3010	63	19.25	14.49	23.99
Crichton Hospital, Dumfries	1639	43	29.79	20.89	38.70
Dingleton Hospital, Melrose	891	10	11.07	4.21	17.92
Dykebar Hospital, Paisley	2228	65	26.95	20.41	33.51
Gartnavel Royal Hospital, Glasgow	2323	48	20.40	14.63	26.17
Hartwood Hospital, Shotts	3500	90	24.83	19.70	29.97
Kingseat Hospital, Aberdeen	1617	45	26.66	18.87	34.45
Leverndale Hospital, Glasgow	2194	66	29.67	22.50	36.81
Rosslynlee Hospital, Roslin	588	13	20.02	9.14	30.91
Royal Cornhill Hospital, Aberdeen	3350	65	19.25	14.57	23.93
Royal Dundee Liff Hospital, Dundee	1725	35	21.10	14.11	28.10
Royal Edinburgh Hospital	6099	142	24.66	20.60	28.70
Stratheden Hospital, Cupar	1487	31	22.28	14.44	30.12
Strathmartine Hospital, Dundee	1592	32	19.56	12.79	26.35
Sunnyside Royal Hospital, Montrose	1342	43	30.17	21.16	39.20
Woodilee Hospital, Lenzie	2635	81	30.89	24.17	37.62
Psychiatric units within general hospitals.					
Crosshouse Hospital, Kilmarnock	1947	48	25.24	18.11	32.39
Inverclyde Royal Hospital, Greenock	1306	52	39.43	28.72	50.16
Monklands Hospital, Airdrie	1639	41	25.12	17.44	32.82
Parkhead Hospital, Glasgow	1952	63	32.55	24.52	40.61
Queen Margaret Hospital, Dunfermline	942	13	13.91	6.34	21.46
Royal Alexandra Hospital, Paisley	726	21	32.51	18.60	46.40
Southern General Psychiatric Unit, Glasgow	1790	44	25.17	17.72	32.59
Stobhill Hospital, Glasgow	1065	18	18.00	9.68	26.31
Victoria Hospital, Kirkcaldy	759	19	25.41	13.98	36.82
Scotland	61100	1470	24.1		

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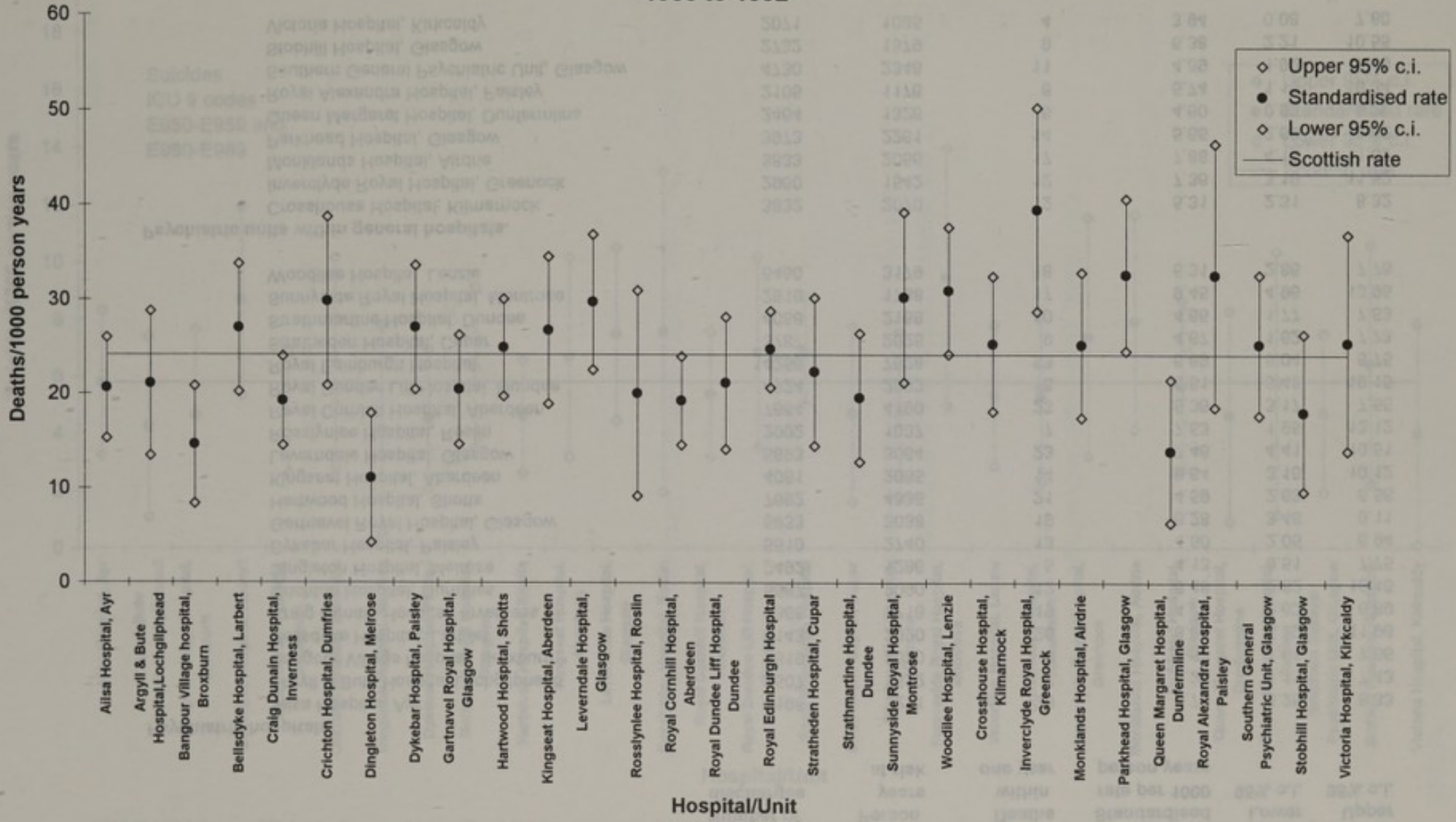
Figure 16 Deaths under age 65 years within one year of discharge from psychiatric inpatient care. 1988 to 1992



WARNING : This information should be interpreted strictly in accordance with the general and the specific guidance given in this report

Table 17 Suicides within one year of discharge from psychiatric inpatient care. 1988 to 1992

	Number of discharges	Person years at risk	Deaths within one year	Standardised rate per 1000 person years	Lower 95% c.i.	Upper 95% c.i.
Psychiatric hospitals						
Ailsa Hospital, Ayr	6198	3271	20	5.79	3.25	8.33
Argyll & Bute Hospital,Lochgilphead	2507	1522	7	4.26	1.11	7.43
Bangour Village hospital, Broxburn	3819	2030	9	4.63	1.61	7.66
Bellsdyke Hospital, Larbert	6143	2920	26	8.64	5.32	11.96
Craig Dunain Hospital, Inverness	6368	3716	19	4.76	2.62	6.89
Crichton Hospital, Dumfries	5567	2090	12	6.48	2.82	10.16
Dingleton Hospital, Melrose	2492	1286	5	4.13	0.51	7.75
Dykebar Hospital, Paisley	5510	2740	13	4.50	2.05	6.94
Gartnavel Royal Hospital, Glasgow	5933	3038	19	6.28	3.46	9.11
Hartwood Hospital, Shotts	7692	4335	21	4.59	2.63	6.56
Kingseat Hospital, Aberdeen	4061	2065	14	6.64	3.16	10.12
Leverndale Hospital, Glasgow	5893	3064	23	7.46	4.41	10.51
Rosslynlee Hospital, Roslin	2092	1037	7	7.53	1.95	13.12
Royal Cornhill Hospital, Aberdeen	7664	4190	23	5.36	3.17	7.55
Royal Dundee Liff Hospital, Dundee	4924	2392	16	6.81	3.48	10.15
Royal Edinburgh Hospital	14256	7628	53	6.89	5.04	8.75
Stratheden Hospital, Cupar	3787	2025	9	4.67	1.62	7.73
Strathmartine Hospital, Dundee	4058	2168	10	4.65	1.77	7.53
Sunnyside Royal Hospital, Montrose	2810	1738	17	9.45	4.96	13.95
Woodilee Hospital, Lenzie	6460	3179	18	5.31	2.86	7.76
Psychiatric units within general hospitals.						
Crosshouse Hospital, Kilmarnock	3832	2070	12	5.31	2.31	8.32
Inverclyde Royal Hospital, Greenock	2960	1542	12	7.36	3.19	11.52
Monklands Hospital, Airdrie	3833	2056	17	7.88	4.13	11.62
Parkhead Hospital, Glasgow	3973	2261	14	5.65	2.69	8.62
Queen Margaret Hospital, Dunfermline	2464	1326	6	4.60	0.92	8.29
Royal Alexandra Hospital, Paisley	2105	1176	6	5.74	1.15	10.34
Southern General Psychiatric Unit, Glasgow	4730	2348	11	4.69	1.92	7.46
Stobhill Hospital, Glasgow	2732	1379	9	6.38	2.21	10.55
Victoria Hospital, Kirkcaldy	2071	1095	4	3.94	0.08	7.80
Scotland	1565833	80350	466	5.8		

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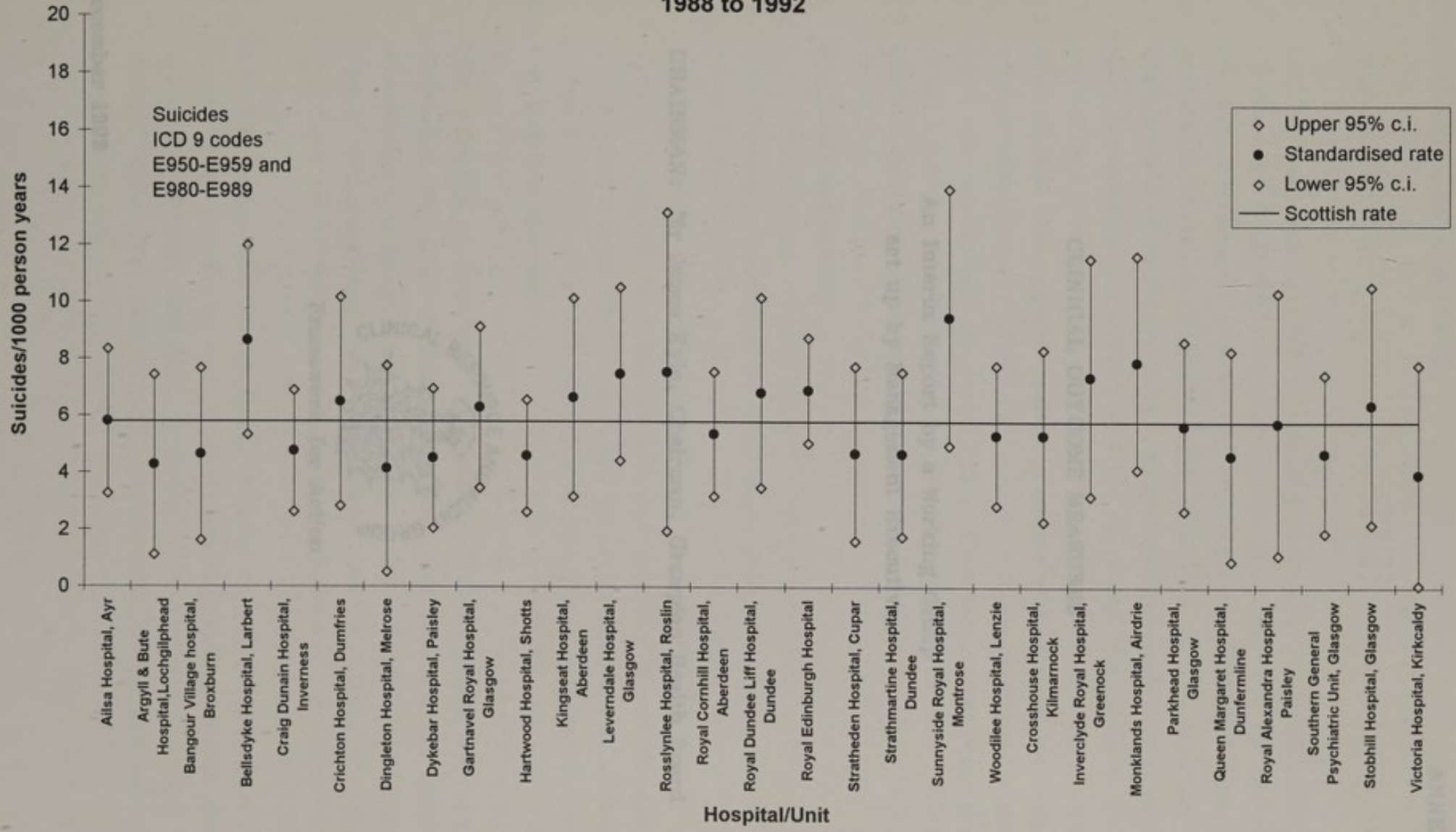
Figure 17 Suicides within one year of discharge from psychiatric inpatient care. 1988 to 1992



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ANNEX 3

CLINICAL OUTCOME MEASURES

An Interim Report by a Working Group
set up by Management Executive

CHAIRMAN: Mr James Kyle, Chairman, Grampian Health Board

CLINICAL RESOURCE AND AUDIT GROUP

Framework for Action

December 1992

ANNEX 3

CLINICAL OUTCOME MEASURES

An Interim Report by a Working Group
set up by Management Executive

CHAIRMAN: Mr James Kyle, Chairman, Greenplain Health Board

Frameworks for Action

December 1992

CLINICAL OUTCOME MEASURES

1. Introduction

1.1 In late Spring 1992 a Working Group to determine clinical outcomes for inclusion in contracts from April 1993 was set up under the NHS Purchasers' Forum. At the same time CRAG, which had considered clinical outcomes in 1989 in a Working Group under the chairmanship of Professor Bryan Jennett and intermittently since that time, returned to the subject and set up a working group to review and to take forward work on clinical outcomes. This was to include both clinical and public health interests and general as well as clinical management. These two initiatives were amalgamated under the chairmanship of Mr James Kyle, Chairman, Grampian Health Board with support from the CRAG Secretariat and met twice, in October and early December 1992.

2. Remit and Membership

2.1 The remit, confirmed at the Group's first meeting was:

> to consider and advise Management Executive by December 1992 on a range of clinical outcomes suitable for inclusion in contracts from April 1993; and to advise on ways of achieving a better common understanding of the nature and use of clinical outcome measures.

The work is in two distinct phases. This preliminary report discharges the first of these and work will continue on Phase 2, developing a strategy for reporting outcomes and for a better common understanding about the whole area of quality of clinical care, best use of resources and improving outcomes for patients.

2.2 The membership of the Group represents general management at health board/purchaser and at unit/provider level; public health medicine; clinical interests; nursing; general practice and the patients' interests; research and clinical audit. The membership is set out at Annex 1.

3. The Context In Which The Group's Initial Recommendations Are Made

Nature of Outcome Measures

3.1 The Group concluded that the main purpose of clinical outcome measures is not to provide quantified and absolute scores but to set the context for discussion between clinicians and management in provider units and between providers and purchasers on clinical outcomes and quality of care. The intention is to identify variations in clinical outcomes; to stimulate discussion about their causes; and to develop strategies for improvement. Only after thorough examination and discussion will value judgements be possible and the emphasis now is on generating critical and constructive dialogue. Interpretation of data by qualified practitioners is fundamental to the process along with detailed examination of the influence of co-morbidity and risk factors affecting the quality of outcome that can be achieved. The Group proposes further work in this area.

3.2 The Group has reviewed the range of data relevant to outcomes which is readily available to all units. This is at present limited. It was decided to keep the exercise simple and to tackle the easiest areas first. Medical (as contrasted with surgical) treatment and particularly the long-stay specialties and primary care present complex problems because of the difficulty of recording appropriate end points. The Group intends to continue work on these and to encourage others to carry out relevant research and clinical audit. Meantime the Group has concentrated on conditions, operations or events that are important in terms of the numbers of people affected and the level of resources committed to them and which relate to different patient groups and specialties. These are in areas that people will recognise as measuring and reporting things that are relevant and important. They measure genuine health service objectives.

Comparability

3.3 Recommendations are made about indicators that are available for use now; for establishing baseline levels of performance against which progress may be audited over the 3-year period of future

contracts; and for a start to be made on collecting clinical management information on a consistent basis throughout the country which will enable reporting by units on a fully comparable basis. The aim is for continuous, good quality clinical data collection as part of normal day-to-day clinical practice which may be examined periodically for particular purposes or ad hoc reviews. Purchasers will be assured of fully comparable reports from units which will allow a better informed decision making process and better contracts to be drawn up. Providers will benefit by being required to report on a consistent basis and to the same standards by all their purchasers.

Practical Applications

3.4 The Group's focus has been on the practical application of clinical outcomes that managers can use, which are clinically relevant and have the full support of the clinicians or staff involved. This must be a joint enterprise with the common goal of better care for patients. It is an enabling not a threatening exercise which will involve a constructive dialogue between professional clinical staff and managers, providing the evidence on which discussions with purchasers may take place. (This subject is dealt with in some detail in the CRAG report on **The Interface Between Clinical Audit and Management** - to be published early in 1993.) Necessary changes in professional practice or attitudes will be effected by education, by peer example and pressure, by a clearer awareness on the part of professional clinical staff of their individual personal accountability and responsibility for quality of care; and by incentives rather than by sanctions.

Clinical Audit and Quality of Care

3.5 The Group considered the distinction between indicators of clinical outcome and indicators of the quality of clinical care. The Group has concentrated meantime mainly on clinical outcomes but stresses the importance of the association between clinical outcomes and quality of clinical care as part of quality assurance as it is developing more widely. Clinical audit, as clinical quality assurance, is of particular importance as the means of demonstrating the

interaction between the structure of a service; the resources used by it; the processes used in treating patients; and the outcome of treatment. It provides comparison between units; identifies areas where improvements are needed; defines and tests better ways of doing things; and provides the means of demonstrating that improvements have been achieved. Clinical audit can identify areas where research is needed and provides a means of implementing research findings in practice. The contracting process provides the mechanism where both audit and improvements in performance can be built into normal day-to-day clinical practice. The potential benefits for patients and for the better use of available resources are considerable.

Clinical Guidelines

3.6 Good clinical practice, standards and outcome are a central focus of clinical guidelines. These are the subject of a report by a Working Group of CRAG which is to be published in January 1993. Development of clinical guidelines is a priority area for CRAG, which is working with the Scottish Royal Colleges, specialist societies and groups of clinicians engaged in clinical audit projects funded by CRAG. Several nationally funded projects have recently reported with agreed guidelines, or are about to do so. Other projects have already developed core data sets and structured reporting and these, along with guidelines, will become increasingly available in future. The Group recommends that health boards as purchasers should now begin to include these in contracts, and to provide resources to support their implementation, by requiring units to collect core data on a nationally recommended basis and, from national guidelines, to develop protocols for their own practice which will reflect their own local circumstances, opportunities and constraints. This process of implementation is described in Annex 2.

Involvement of the Professions

3.7 Increasingly the emphasis is on the totality of care to which all health care professionals contribute. The Group has consequently identified clinical outcomes for specific conditions and individual

patients without distinguishing between the different components of care. Work will nevertheless continue to see if the distinctive contributions of the different professions can usefully be separated out for investigation and reporting.

4. Outcome Measures

Clinical Information

4.1 The Group considered that the outcome measures to be recommended in the first phase of its remit should be based on clinical information generally available equally to all units. The central data collections e.g. SMR1 records (on which contracts and charging are already based) have been reviewed and are the basis of the recommendations set out below. The central data collections will by their nature always reflect a highly selected range of basic information which will need to be supplemented at local level. The quality as well as the nature of the clinical data available is relevant to the selection of measures that the Group has been able to make; it is consequently somewhat arbitrary. Coding of information is particularly complex, and consequently not reliable at present, in some conditions e.g. stroke. The Group's first recommendation therefore is that professional clinical staff should critically review the quality and completeness of their clinical records and secure agreement about definitions and coding where this is still needed. Clinicians will also be encouraged to make fuller use of available codes on SMR1 to record, for example, the immediate outcome of a single episode of care. ISD will be the lead interest in taking these aspects forward in their joint programme of training conferences with CRAG and in their other related activities.

4.2 Where information is already available, as in SMR1, work should be set in hand now to systematise reporting on a consistent basis among units; to establish systematic information collection where that is not yet available on a consistent basis; to build that into resource management; and to establish the baseline of current performance against which future changes may be assessed. For the measures recommended ISD will shortly provide health board comparisons for the most recent relevant period available.

Nature of Outcome Measures Recommended

4.3 The Group concluded that measures recommended must be reliable, valid, robust and relevant to both provider unit managers, purchasers and professional clinical staff. They should be simple to understand and to apply. They should relate to important areas of clinical care and should be sensitive to changes in structure e.g. staff or equipment and to processes e.g. forms of clinical treatment. The number of cases likely to occur in a single unit influences the areas in which measures can be recommended. It is intended that the development of appropriate outcome measures should be actively encouraged in the context of clinical audit and improvements in the quality of care.

4.4 Indicators should wherever possible be independent of, or should be expressed in terms that allow for, complicating factors like severity of disease, case mix, co-morbidity, age etc. This will not be possible in the first group of indicators but is a later objective which the Group will go on to address. If a proxy measure only rather than a direct measure is available its validity must be properly established to ensure that it truly reflects the topic under review. Again further work will be proposed in this area. Wherever possible measures should be quantifiable but the Group recognises the importance in relation to quality of care of a range of indicators that cannot by their nature be quantified. Further work will be done on these. They will include patient's perceptions of the process of treatment and the outcome of care.

Record Linkage

4.5 Several of the measures recommended depend on ISD's system of record linkage. This is available only in Scotland and it allows an individual patient's separate episodes of in-patient care, re-admissions, destination on discharge and ultimately death to be linked continuously over time. Death may be followed up whether it takes place in hospital, at home or elsewhere in the community. Linkage within the SMR data sets and with certain external data sets e.g. blood transfusion, reporting may be carried out on a quarterly basis, if required. Linkage giving mortality will become available

each year about October, when the Registrar General's records for the previous calendar year are issued. This linkage facility will allow the clinical history to be followed in future in a wide range of conditions for which outcome measures will be developed later. Reporting will be possible at all levels of aggregation including unit and national level. The Group recognises the relevance of the period over which outcomes should be measured and the possible limitations of mortality as a measure of outcome in many conditions. Mortality does however offer an immediate start to be made and refinement of measures will follow.

5. Clinical Outcome Measures for Contracts in April 1993

The Clinical Outcome Measures and other activity recommended as appropriate for inclusion in contracts from April 1993 are:

5.1 General Recommendation

All units/trusts should carry out a systematic review of the accuracy and completeness of clinical data collection, at a minimum in the areas in which outcomes are specified below. (Assistance in this is available from the Information and Statistics Division of CSA.)

The quality of data should be audited regularly thereafter with the aim of achieving 90% accuracy and completeness of coding at the end of year one. Monitoring should be carried out by the unit/trust with sampling by purchasers.

ISD will provide regular reports on an agreed basis, with baseline data for the measures proposed below being provided by ISD, at health board level, in January 1993.

5.2 Specific Clinical Outcome Measures

fractured neck of femur

- deaths occurring within 30 days of admission as percentage of all admissions

- percentage discharged home within 2 months of emergency admission from home

acute myocardial infarction

- deaths occurring within 30 days of admission as a percentage of all admissions with acute MI

cholecystectomy

- deaths occurring within 30 days of operation as percentage of all patients undergoing cholecystectomy

carcinoma of the colon

- deaths occurring within 30 days of operation as percentage of all patients undergoing operation for carcinoma of colon

transurethal resection of the prostate

- percentage of re-operations within one year

medical emergency re-admissions

- percentage of re-admissions as emergencies within 28 days of discharge

5.3 Clinical Audit Databases and Other Related Activity

All contracts which include the services set out below should include the following provisions:

ENT Services Units/Trusts to collect the clinical data recommended periodically by the Scottish National Audit Subcommittee for Otolaryngology and participate in the audits led by that group;

Intensive Therapy to initiate core data collection which will shortly be recommended by CRAG. Units/Trusts should have a policy or guidelines for admission and discharge of patients;

Coronary Care Units to initiate data collection which will shortly be recommended by CRAG and have a policy or guidelines for admission and discharge of patients;

General Surgery to maintain core data to enable reporting through the Scottish Mortality Study sponsored by CRAG;

Accident and Emergency Medicine to prepare to collect the basic core data which will be defined by the Scottish Trauma Audit Group.

N.B. It is assumed that wherever specific regulations are in force eg. in pharmacy, laboratory services, diagnostic and therapeutic radiology etc. these will be fully covered in contracts.

MEMBERSHIP

Chairman:	Mr James Kyle Chairman, Grampian Health Board
Members:	
Hospital Clinician	Mr Douglas Harper Consultant Surgeon (Member of CRAG)
General Practitioner	Dr Norman Jarvie Crieff (NMAC Chairman and member of CRAG)
DPH/CAMO	Dr Dorothy Moir Forth Valley Health Board
Nurse	Mrs M McGinn South Ayrshire Hospitals NHS Trust
Purchaser/BGM	Mr I Croy Smith Argyll and Clyde Health Board
Provider/UGM	Mr Mike Kelly Falkirk and District Royal Infirmary (Member of CRAG - Medical Audit Subcommittee)
Research/Public Health Medicine	Professor Elizabeth Russell University of Aberdeen
SOHHD -	
Medical Services	Dr Bill Dodd
Management Executive	Mr Bill Moyes
Chief Scientist Office	Dr Boyd Moir
CRAG Secretariat	Mrs Eileen Barnwell Miss Elaine Dobbie

ANNEX I

MEMBERSHIP

Chairman: Mr James Kyle
Chairman, Crumplan Health Board

Members:

Hospital Clinician — Mr Douglas Harper
Consultant Surgeon
(Member of CRAG)

General Practitioner — Dr Norman Jarvie
Crieff
(NMAC Chairman and member of CRAG)

DPH/CAMO — Dr Dorothy Mole
North Valley Health Board

Nurse — Mrs M McGinn
South Ayrshire Hospitals NHS Trust

Purchaser/BGM — Mr I Croy Smith
Argyll and Clyde Health Board

Provider/UGM — Mr Mike Kelly
Falkirk and District Royal Infirmary
(Member of CRAG - Medical Audit
Subcommittee)

Research/Public Health Medicine — Professor Elizabeth Russell
University of Aberdeen

SOHHD -

Medical Services — Dr Bill Dodd

Management Executive — Mr Bill Moyes

Chief Scientist Office — Dr Boyd Moir

CRAG Secretariat — Mrs Eileen Barnwell
Miss Elaine Dobbie

CLINICAL AUDIT, STANDARDS AND OUTCOMES IN PRACTICE

1. The **aim** is to secure the best possible outcome for the greatest number of people for the least possible outlay;

2. The **mechanism** is good quality health care that is effective and efficient and the best available value for money;

3. The **context** is that of continuing, critical evaluation of performance and the search for improvements;

4. The **responsibility** rests with all professional clinical staff as part of a personal accountability for the quality of their own professional practice;

5. **Quality** and **standards** of care and **outcomes** are identified by research and the best practice of acknowledged experts is established and promoted through clinical audit;

6. Standards and outcomes are expressed in guidelines for good practice which may be drawn up by expert groups drawn from e.g. the Royal Colleges, specialist societies, by CRAG sponsored conferences, working groups and nationally funded projects and by selected other expert groups;

7. **Protocols for good practice** are developed at unit or area level. These are derived from guidelines for good practice but reflect specific local circumstances;

8. **Clinical Audit** is used to monitor and evaluate local practice, systematically and regularly, against the standards and outcomes contained in local protocols. Results are compared against the standards adopted locally and against performance by peers working elsewhere.

9. CRAG is the Scottish **clearing house for guidelines** and **clinical outcomes**, and for **core data sets**. CRAG will promote their implementation advising about new areas where systematic core data collection has been identified and on areas that may be appropriate for specific investigation;

10. CRAG will promote the **development of guidelines** through the Royal Colleges, educational organisations and other appropriate groups;

11. **Data collection** and **data management** will be the responsibility of clinicians at unit/trust level as part of the clinical information component of resource management;

12. Basic core data should enable area or national comparisons to be made;

13. **Standardised reporting** to purchasers on a consistent basis from all units or groups will allow consistent comparisons to be made between units and at national/international level. For provider units standard forms of reporting for different purchasers will simplify data collection and processing;

14. CRAG will continue to sponsor the development of core data sets and the **methodology** of clinical audit in different specialties and circumstances. CRAG will have continuing responsibility for audit which is most appropriately arranged on a national basis e.g. in highly specialised areas with restricted numbers of practitioners and patients;

15. **Clinical audit** will be carried out at unit/trust and at area level and will take different forms reflecting locally agreed priorities which are recorded in contracts;

16. Clinical audit at local level will draw on and progressively absorb approaches developed through central initiatives.