

## 2001 Healthcare Conference *Keeping Health on Track*

21-23 October 2001  
Scarman House

### Session B1 : **Critical Illness**

- Trends in Incidence Rates
- Working Party / Research Group Progress Report
- Neil Robjohns

### **Critical Illness Trends Working Party**

Our Aims :

- To examine underlying trends in the factors influencing UK Insured Critical Illness claim rates, and from these, to assess :
  - The historic trend in incidence and death rates for the major CI's
  - Any pointers for future trends in Standalone CI, Mortality and hence Accelerated CI.
- Formed in March 2001

### Group Members and our Initial Focus

- |  | <u>Cancer</u>                                  | <u>Heart Attack</u>                        |
|--|--|--|
| ■ Actuaries  | Azim Dinani<br>Richard Morris<br>Neil Robjohns | Scott Reid<br>Joanne Wells                 |
| ■ Medical Experts                                      | Professor Rubens<br>Consultant Oncologist      | Richard Croxson<br>Consultant Cardiologist |
| ■ Links :  |  |  |
| ■ Actuaries Panel on Medical Advances                  |  |  |
| ■ CMIB CI experience investigation (via Dave Grimshaw) |  |  |
| ■ ABI CI definitions group (also via Dave Grimshaw)    |  |  |

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### Cancer Trends

- Data sources
- Overall trends
- Possible reasons behind observed trends
- Illustrate by examples
- Revisit overall picture
- Some thoughts looking into the future

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### Cancer Data Sources

- Incidence
  - Cancer Registrations - England & Wales
  - First ever incidences
  - Selected behaviour codes
- Mortality
  - ONS
  - By cause - England & Wales
- Years covered : 1971 - 97

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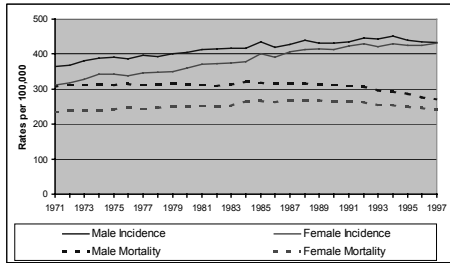
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### Cancer Incidence and Mortality Rates, 1971 - 97 All Ages




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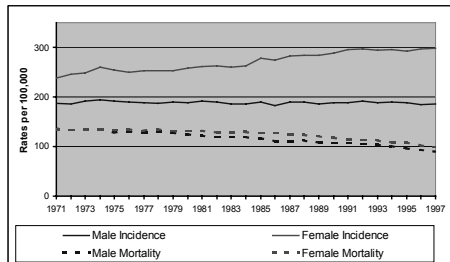
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### Cancer Incidence and Mortality Rates, 1971 - 97 "Key Insurance Ages"




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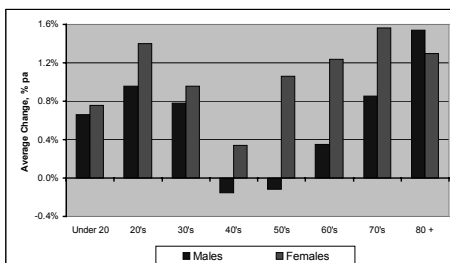
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### Trends in Cancer Incidence Rates over 1971 - 97 Average Rate of Change, by Sex and Age Band




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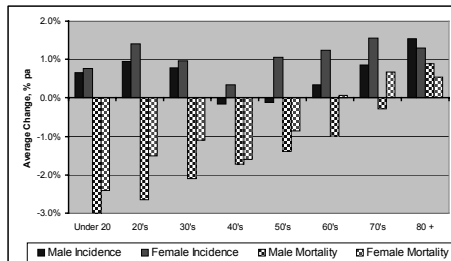
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### Trends in Cancer Incidence and Mortality Rates Average Rate of Change, by Sex and Age Band, over 1971 - 97



### Summary of Trends in Cancer Incidence and Mortality Rates Crude Rates of Change, % pa, over 1971 - 97

Age Range	Female rate of Incidence	Female rate of Mortality	Male rate of Incidence	Male rate of Mortality
Under 20	0.8%	-2.4%	0.7%	-3.0%
20 - 29	1.4%	-1.5%	1.0%	-2.6%
30 - 39	1.0%	-1.1%	0.8%	-2.1%
40 - 49	0.3%	-1.6%	-0.2%	-1.7%
50 - 59	1.1%	-0.9%	-0.1%	-1.4%
60 - 69	1.2%	0.1%	0.3%	-1.0%
70 - 79	1.6%	0.7%	0.9%	-0.3%
80 & over	1.3%	0.6%	1.5%	0.9%
All ages	1.2%	0.1%	0.7%	-0.4%
Key Insurance Ages	0.8%	-1.1%	0.0%	-1.5%

### Possible Reasons Behind Observed Trends

- Issues with Data Recording
- Cancer Screening Initiatives
- Behavioural changes
- Treatment
  - of Cancer
  - of other illnesses
- Awareness
- Other ?

### Cancer Screening Initiatives

- Breast Cancer
- Cervical Cancer
- Prostate Cancer

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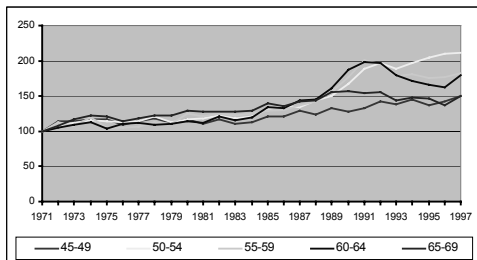
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### Breast Cancer

Changes in Incidence Rates, by age band, over 1971 - 97




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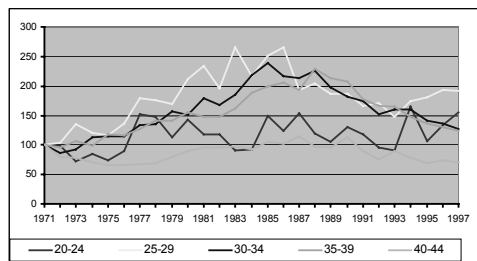
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### Cervical Cancer

Changes in Incidence Rates, by age band, over 1971 - 97




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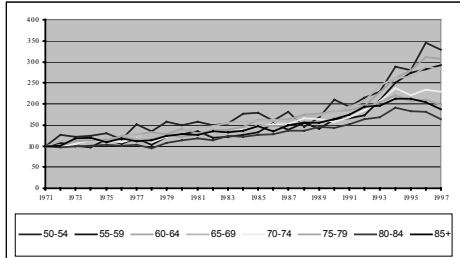
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### Prostate Cancer

Changes in Incidence Rates, by age band, over 1971 - 97




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### Behavioural Changes

- Lung Cancer
- Malignant Melanoma

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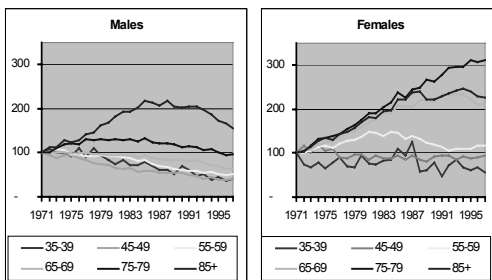
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### Lung Cancer

Changes in Incidence Rates, by age band, over 1971 - 97




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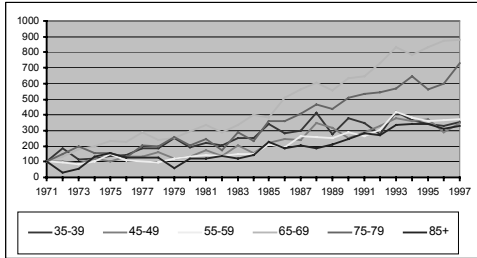
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### Malignant Melanoma

Changes in Incidence Rates for Males, by age band, over 1971 - 97




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### Treatments / Medical Advances

- Lung Cancer
  - Improvements in treatment of other smoker-related illnesses
- Breast Cancer
- Stomach Cancer
  - Treatment of other stomach conditions

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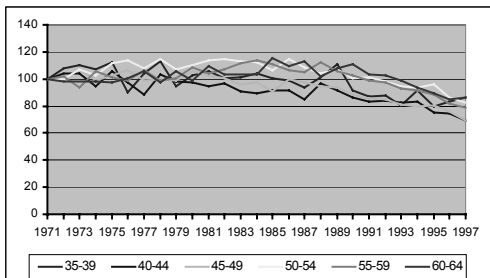
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### Breast Cancer

Changes in Mortality Rates, by age band, over 1971 - 97




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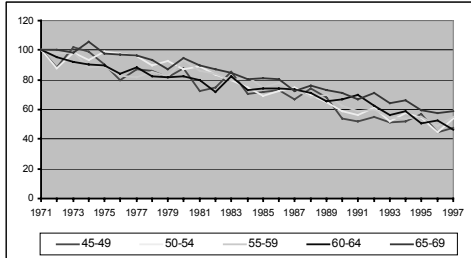
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### Stomach Cancer

Changes in Incidence Rates for Males, by age band, over 1971 - 97



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### Awareness

- Breast Cancer
- Testicular Cancer
- Malignant melanoma

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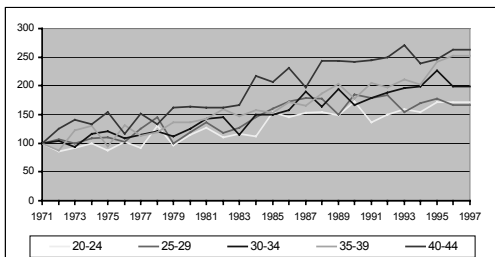
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### Testicular Cancer

Changes in Incidence Rates, by age band, over 1971 - 97



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- Diet ?
- Exercise ?
- Socio-Economic Differences ?
- Climate ?
- Pollution ?

[illegible]

**All Ages**

Cancer Type	Percentage
Colon/Rectal	12%
Stomach	20%
Other	22%
Long	11%
Bladder & Pancreas	2%
Prostate	2%
Testis	2%
Small Intestine	2%
Uterus	2%
Conjunctiva	2%
Malignant Melanoma	2%

**Key Insured Ages**

Cancer Type	Percentage
Stomach	47%
Colon/Rectal	9%
Long	4%
Bladder & Pancreas	2%
Other	18%
Malignant melanoma	4%
Uterus	4%
Small Intestine	4%
Conjunctiva	4%
Testis	4%
Prostate	4%
Bladder & Pancreas	2%
Other	2%

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**All Ages**

Cancer Type	Percentage
Lung	30%
Prostate	17%
Colorectal	14%
Stomach & Pancreas	9%
Oesophagus	9%
Kidney	5%
Bladder	5%
Mouth	3%
Gallbladder	3%
Testis	1%
Leukemia	2%

**Key Insured Ages**

Cancer Type	Percentage
Lung	30%
Prostate	15%
Colorectal	13%
Stomach & Pancreas	9%
Kidney	4%
Mouth & Oesophagus	3%
Testis	2%
Leukemia	2%
Malignant melanoma	2%

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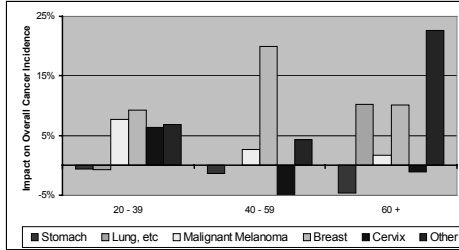
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**Contribution to Overall Change in Cancer Incidence**  
Selected Cancer Sites for Females, by Age Band, over 1971 - 97



All Cancers      29%                      21%                      39%

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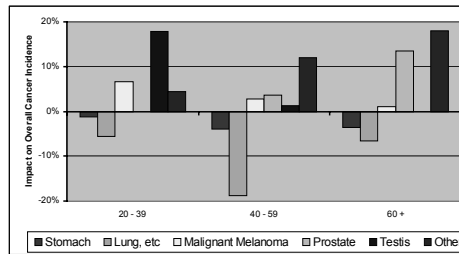
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**Contribution to Overall Change in Cancer Incidence**  
Selected Cancer Sites for Males, by Age Band, over 1971 - 97



All Cancers      22%                      -3%                      22%

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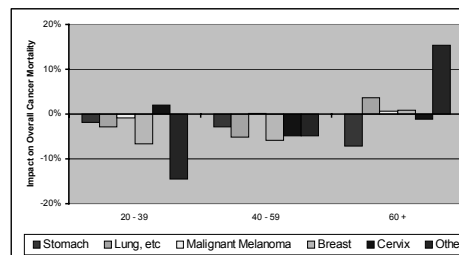
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**Contribution to Overall Change in Cancer Mortality**  
Selected Cancer Sites for Females, by Age Band, over 1971 - 97



All Cancers      -25%                      -23%                      12%

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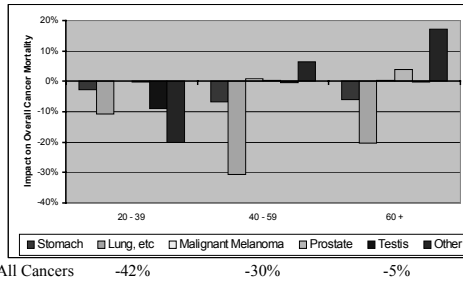
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**Contribution to Overall Change in Cancer Mortality**  
Selected Cancer Sites for Males, by Age Band, over 1971 - 97



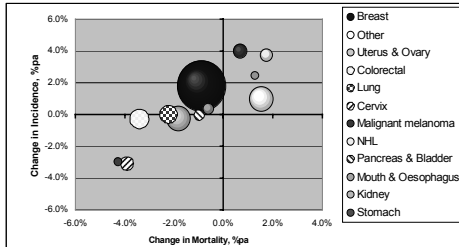
**Summary of Contribution to Overall Change**  
Females, by Age Band, over 1971 - 97

	Cancer Incidence			Cancer Mortality		
	20 - 39	40 - 59	60 +	20 - 39	40 - 59	60 +
Stomach	-1%	-1%	-5%	-2%	-3%	-7%
Lung, etc	-1%	0%	10%	-3%	-5%	4%
Malignant Melanoma	8%	3%	2%	-1%	0%	1%
Breast	9%	20%	10%	-7%	-6%	1%
Cervix	6%	-5%	-1%	2%	-5%	-1%
Other	7%	4%	23%	-14%	-5%	15%
All Cancers	29%	21%	39%	-25%	-23%	12%

**Summary of Contribution to Overall Change**  
Males, by Age Band, over 1971 - 97

	Cancer Incidence			Cancer Mortality		
	20 - 39	40 - 59	60 +	20 - 39	40 - 59	60 +
Stomach	-1%	-4%	-4%	-3%	-7%	-6%
Lung, etc	-6%	-19%	-7%	-11%	-31%	-20%
Malignant Melanoma	7%	3%	1%	0%	1%	0%
Prostate	0%	4%	13%	0%	0%	4%
Testis	18%	1%	0%	-9%	0%	0%
Other	4%	12%	18%	-20%	6%	17%
All Cancers	22%	-3%	22%	-42%	-30%	-5%

**Summary of Trends in Cancer Incidence and Mortality**  
Average Change % pa, for Females, aged 40 - 59, over 1971 - 97



Size of Balls Indicates Relative Importance of Cancer Site, measured by Incidence Rates in 1997.

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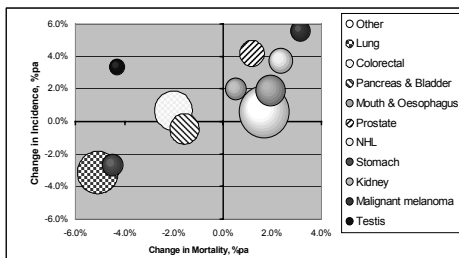
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**Summary of Trends in Cancer Incidence and Mortality**  
Average Change % pa, for Males, aged 40 - 59, over 1971 - 97



Size of Balls Indicates Relative Importance of Cancer Site, measured by Incidence Rates in 1997.

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**Some Thoughts Looking Forwards**

- Government Targets / Initiatives
  - More Screening ?
- Medical Advances
  - Cancer Treatment
  - Earlier Detection
  - Other Illnesses
  - Latent Cancer
- CI definitions
  - Prostate Cancer
  - But how long until the next change is "forced" ?

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### Some Thoughts Looking Forwards

- Tentative Initial Views :
- Cancer Mortality :
  - “Good News” ?
  - “Continuing Reductions, at least for ages below 65” ?
- Cancer Incidence :
  - “Bad News” ?
  - “Underlying, steady increase, plus jumps up” ? !

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### Group Members and our Initial Focus

- |                   | <u>Cancer</u>  | <u>Heart Attack</u>                        |
|-------------------|--|--|
| ■ Actuaries       | Azim Dinani<br>Richard Morris<br>Neil Robjohns         | Scott Reid<br>Joanne Wells                 |
| ■ Medical Experts | Professor Rubens<br>Consultant Oncologist              | Richard Croxson<br>Consultant Cardiologist |
| ■ Links :         |  |  |
|                   | ■ Actuaries Panel on Medical Advances                  |  |
|                   | ■ CMIB CI experience investigation (via Dave Grimshaw) |  |
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### Overview

- Mortality and morbidity
  - Scotland
  - England
- Risk factors
- Reasons for historical change
- The Future

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## Overview

- Mortality and morbidity
  - **Scotland**
  - England
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## Scotland - why use Scottish data?

- Scottish Morbidity Record Database
- Good Quality
  - Patient based
  - Linked to all Scottish Mortality data
- Detailed Medical studies on trends
  - Trends in case fatalities with AMI
  - Gender and survival studies
- Check on the English HES data
- Understanding trends in UK

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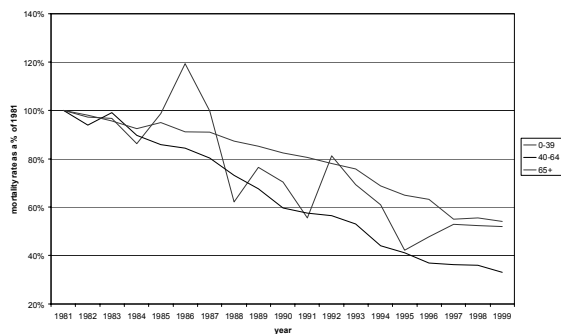
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Trends in mortality in AMI - males - Scotland - 1981 to 1999



Own figures: source Registrar General Scotland

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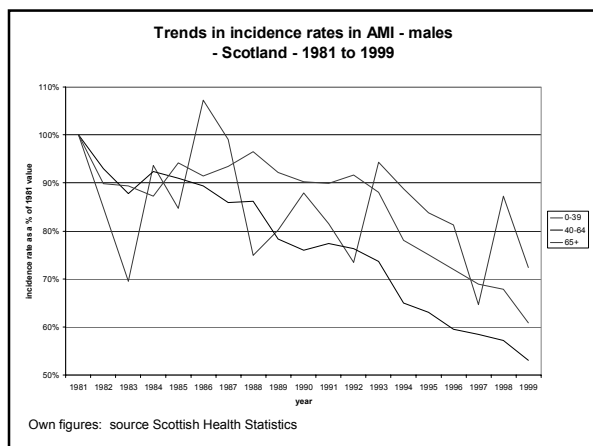
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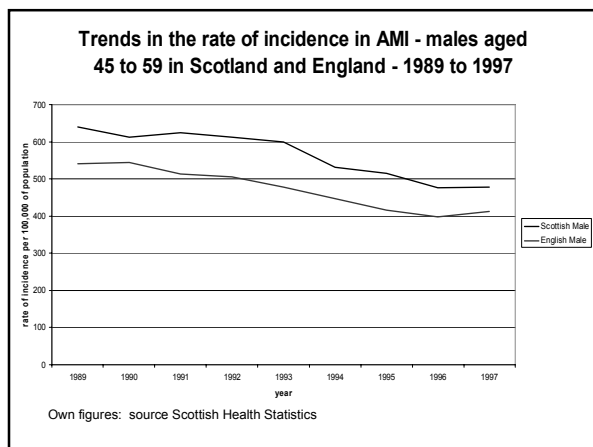
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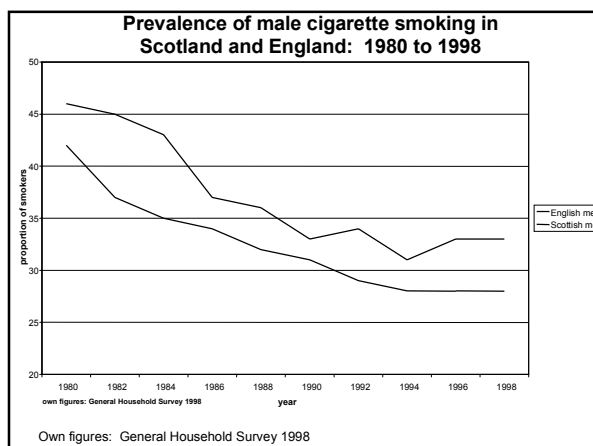
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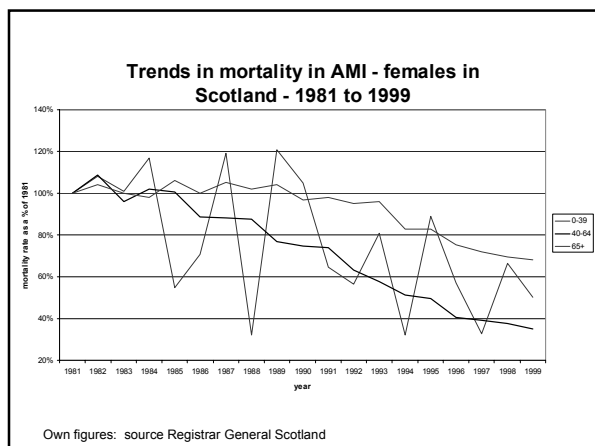
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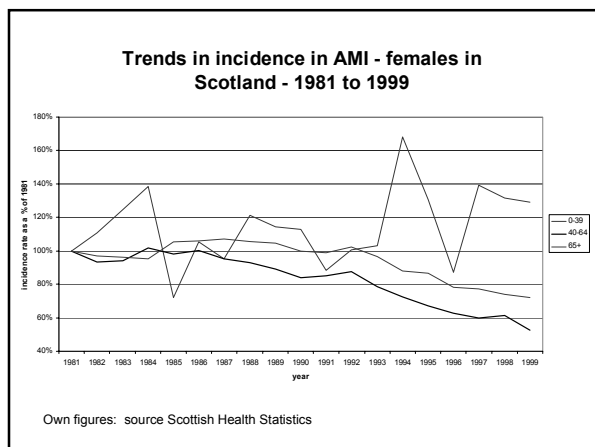
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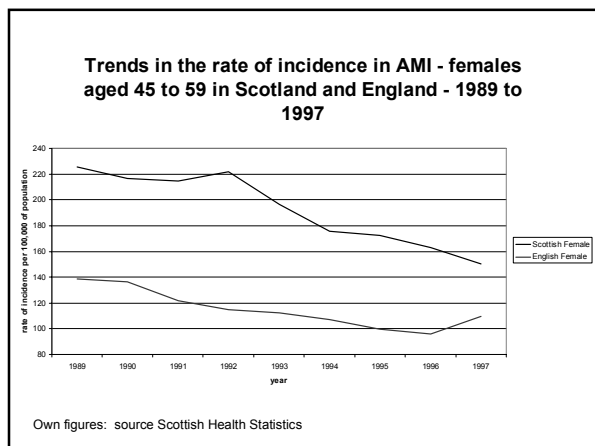
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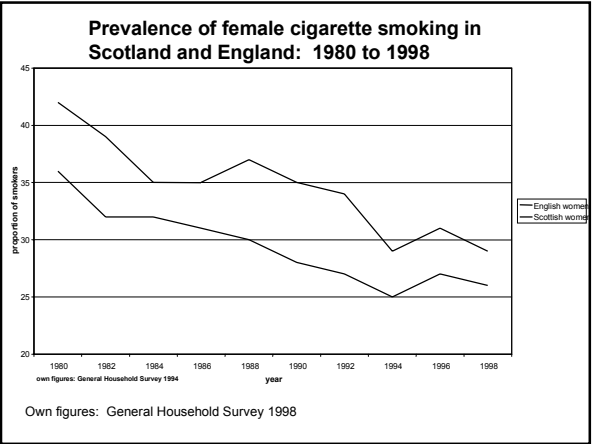
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**Summary of overall improvements from AMI in Scotland - crude rates of improvement per annum 1981 to 1999**

Age Range	Male rate of Mortality	Male rate of Incidence	Female rate of Mortality	Female rate of Incidence
0-39	3.6%	1.8%	3.8%	-1.4%
40-44	5.5%	2.6%	5.1%	2.6%
45-49	7.1%	2.7%	5.2%	1.9%
50-54	5.9%	3.6%	5.8%	3.4%
55-59	5.6%	4.0%	4.9%	3.5%
60-64	5.2%	2.9%	5.2%	3.2%
65+	3.4%	2.7%	2.3%	1.8%
All ages	3.9%	2.6%	2.4%	2.0%

own figures-data source Scottish Health Statistic and Registrar General Scotland

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**Summary of overall improvements from AMI in Scotland - crude rates of improvement per annum 1981 to 1999**

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0-39	3.6%	1.8%	3.8%	-1.4%
40-44	5.5%	2.6%	5.1%	2.6%
45-49	→ 7.1%	2.7%	5.2%	1.9%
50-54	5.9%	3.6%	→ 5.8%	3.4%
55-59	5.6%	→ 4.0%	4.9%	→ 3.5%
60-64	5.2%	2.9%	5.2%	3.2%
65+	3.4%	2.7%	2.3%	1.8%
All ages	3.9%	2.6%	2.4%	2.0%

own figures-data source Scottish Health Statistic and Registrar General Scotland

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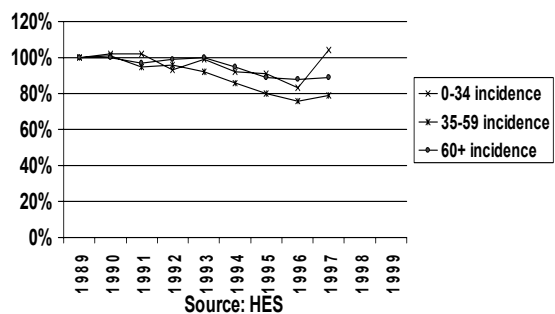
## Overview

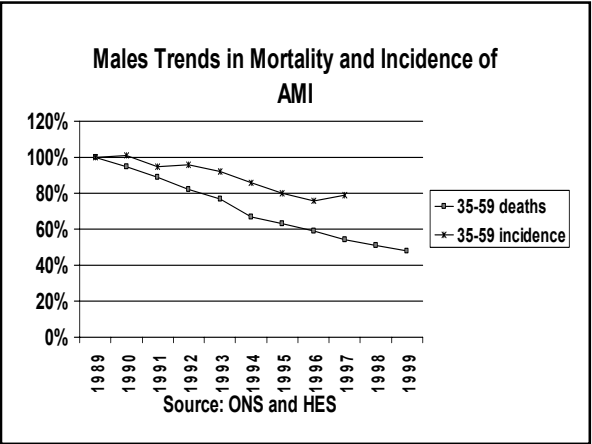
- Mortality and morbidity
  - Scotland
  - **England**
- Risk factors
- Reasons for historical change
- The Future

## England - The Data

- Hospital Episode Statistics (HES)
  - Complex
  - Essential to understand the coding system
- Years 1989/90 to 1997/98
- Code change between 1994/95 and 1995/96
  - Myocardial infarction
  - ICD9 410
  - ICD10 I21 and I22

## Males Trends Incidence of AMI





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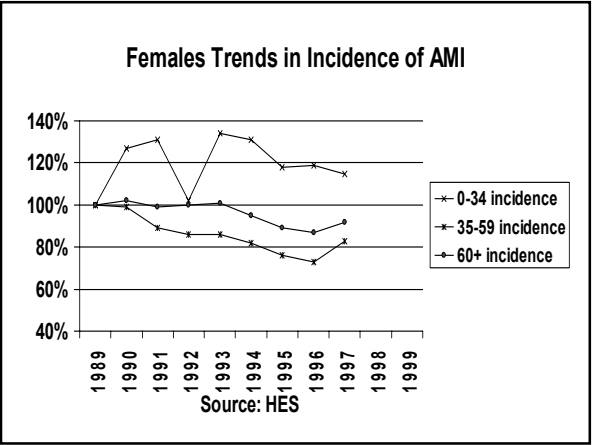
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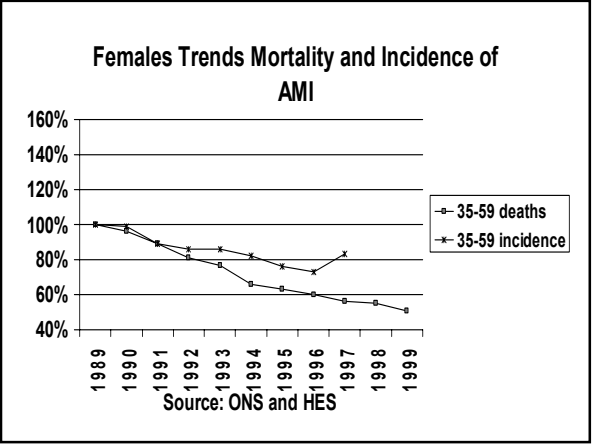
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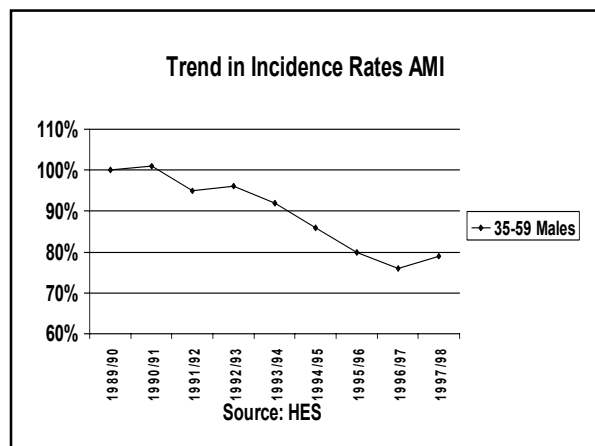
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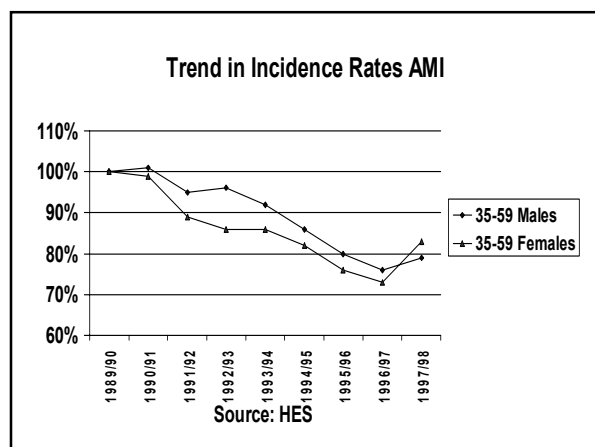
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### Overall Improvements from AMI in England - 1989-1997

Age Range	Male Incidence	Male Mortality	Female Incidence	Female Mortality
30-34	1.8%	0.7%	-3.7%	0.4%
35-39	2.5%	8.7%	2.5%	1.3%
40-44	1.9%	4.9%	1.0%	3.9%
45-49	3.1%	7.2%	1.7%	4.8%
50-54	3.5%	8.0%	2.9%	8.0%
55-59	2.6%	7.3%	2.2%	7.6%
60-64	2.6%	7.3%	2.5%	7.1%
65-69	2.0%	6.4%	1.5%	6.7%
70-74	2.0%	5.9%	1.7%	6.5%
All Ages	1.7%	5.1%	1.5%	4.9%

Own Figures - Data from HES and ONS

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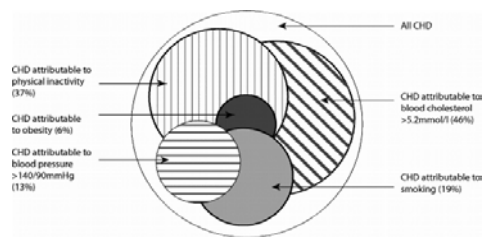
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## Overview

- Mortality and morbidity
  - Scotland
  - England
- **Risk factors**
- Reasons for historical change
- The Future

## Coronary Heart Disease - Risk Factors



Source: Britton and McPherson (2000). National Heart Forum

## Overview

- Mortality and morbidity
  - Scotland
  - England
- Risk factors
- **Reasons for historical change**
- The Future

Reason for historical changes

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- Reduction in the prevalence of smoking
- Improvements in diet
- Social-economic wellbeing
- Awareness of Cardiovascular risk

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Reason for historical changes

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- Medical advances
  - thrombolytic therapy
  - ACE (Angiotensinconverting enzyme) inhibitors
  - Statins
  - aspirin
  - beta-blockers
  - Angioplasty
  - CABG

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Reason for historical changes

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- Medical advances
  - **thrombolytic therapy**
  - **ACE (Angiotensinconverting enzyme) inhibitors**
  - **Statins**
  - **aspirin**
  - **beta-blockers**
  - Angioplasty
  - CABG

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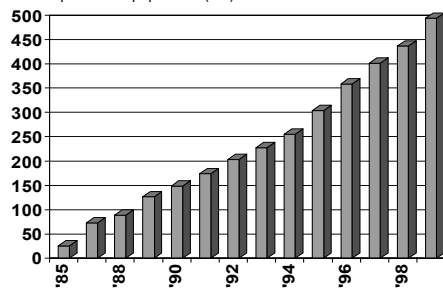
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#### Reason for historical changes

- Medical advances
  - thrombolytic therapy
  - ACE (Angiotensin converting enzyme) inhibitors
  - Statins
  - aspirin
  - beta-blockers
  - **Angioplasty- not so good for CI insurers!**
  - **CABG - not so good for CI insurers!**

#### Reason for historical changes

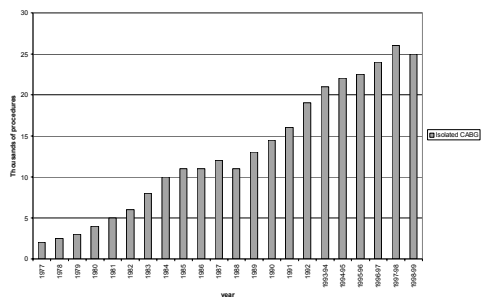
PCI Rates per million population (UK)



Source: BCIS returns 1999

#### Reason for historical changes

United Kingdom Cardiac Surgical Register Trends in Cardiac Surgery 1977-1999



#### Overview

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- Mortality and morbidity
  - Scotland
  - England
- Risk factors
- Reasons for historical change
- **The Future**

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#### The Future

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- Life style factors
  - Awareness of cardiovascular risk
    - Smoking
    - Diet
    - Environment
    - Exercise
- Government targets
  - Availability of treatments
- Definition of heart attack
  - Troponin

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#### Session B1 : **Critical Illness**

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- Trends in Incidence Rates
- Comments / Questions.
- Suggestions for future focus of our work.

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