

3 Fatal and non-fatal events

3.1 Fatal events

3.1.1 Definition

Fatal events were classified as:

- *definite AMI* if they satisfied the diagnostic criteria of 'non-fatal definite AMI' before death occurred or if autopsy data confirmed AMI;
- *possible AMI* if there were suggestive terminal symptoms, a history of coronary artery disease or autopsy evidence of chronic occlusive coronary disease without another cause of death established; and
- *unclassifiable* if no autopsy was performed, CHD was mentioned on the death certificate as the cause of death and no alternative cause of death could be established.

For this document all of these deaths are included as fatal coronary events.

3.1.2 Trends in Newcastle and Perth

In the Newcastle and Perth MONICA populations there was a substantial reduction in the rate of mortality from CHD from 1985 to 1993 for both men and women (Table 3.1). Newcastle had higher rates of mortality from CHD than Perth during this period but it also had the greater absolute and relative declines.

Men in Newcastle with a history of AMI accounted for 30% of fatal events throughout the study period. In contrast, men in Perth with a history of AMI accounted for 46% of fatal events in 1985–87 and this fell to 40% in 1991–93. The prevalence of previous AMI was also greater in fatal events among women from Perth compared with fatal events among women from Newcastle but it declined in women from both centres. These data suggest that there was a difference in the ascertainment of a history of AMI between centres. Events with unknown status for history of AMI were excluded from calculations of the proportion of fatal and non-fatal events among patients with previous AMI.

Table 3.1: Average annual rates of mortality for coronary heart disease and percentage of deaths in patients with previous AMI for persons aged 35–64 years, 1985–93

Centre	Rate (per cent previous AMI) ^(a)			Estimated annual percentage change (95% CI)
	1985–87	1988–90	1991–93	
Men				
Perth	158.2 (46)	148.4 (42)	123.2 (40)	–3.9 (–5.5, –2.4)
Newcastle	222.0 (29)	177.3 (31)	142.0 (30)	–7.7 (–9.6, –5.7)
Women				
Perth	44.7 (41)	40.8 (33)	34.3 (31)	–3.9 (–6.8, –0.9)
Newcastle	81.9 (27)	54.2 (22)	46.8 (20)	–8.6 (–11.9, –5.2)

AMI = acute myocardial infarction.

(a) Age-standardised rate per 100,000 population.

3.2 Non-fatal events

3.2.1 Definition

Non-fatal events were classified as ‘definite AMI’ if they satisfied the following criteria:

- definite sequential changes in a series of electrocardiographs (ECGs); or
- symptoms of AMI that were typical, atypical or inadequately described, together with more minor ECG changes and abnormal enzymes; or
- typical symptoms, abnormal enzymes and ischaemic or non-codable ECG or ECG not available.

As the MONICA definition of non-fatal definite AMI is more strict than the definition used clinically to define AMI, some non-fatal events that would be classified clinically as AMI were not included in the MONICA data in Perth. A non-fatal event was one in which the patient was alive 28 days after the onset of AMI. Therefore a second or recurrent event could only begin at least 28 days after any preceding event.

3.2.2 Trends in Newcastle and Perth

There was a reduction in the rate of non-fatal definite AMI in Newcastle and Perth from 1985 to 1993 (Table 3.2). The rate of decrease was less than that observed for fatal cases of CHD. The reductions in non-fatal definite AMI were similar in both centres. The prevalence of previous AMI was lower in cases of non-fatal definite AMI than in fatal events and it was constant throughout the period, except among women from Perth where it declined.

Table 3.2: Average annual rates of non-fatal definite AMI and percentage of non-fatal definite AMIs in patients with previous AMI for persons aged 35–64 years, 1985–93

Centre	Rate (per cent previous AMI) ^(a)			Estimated annual percentage change (95% CI)
	1985–87	1988–90	1991–93	
Men				
Perth	256.2 (22)	244.9 (24)	217.9 (20)	-3.0 (-4.1, -1.7)
Newcastle	310.7 (27)	264.9 (22)	247.9 (25)	-3.9 (-5.6, -2.2)
Women				
Perth	46.6 (29)	55.2 (20)	43.5 (17)	-1.0 (-3.7, 1.8)
Newcastle	96.4 (19)	89.8 (22)	71.1 (21)	-3.0 (-5.9, 0.0)

AMI= acute myocardial infarction.

(a) Age-standardised rate per 100,000 population.

3.2.3 Differences in case ascertainment

As mentioned in section 2.1, non-fatal events were identified by using a 'cold pursuit' method in Perth and a 'hot pursuit' method in Newcastle. The latter, by identifying more possible cases, could be expected to identify more mild cases. However, for events classified according to the MONICA criteria as non-fatal definite AMI, the higher rates in Newcastle are believed to reflect true differences because:

- they are consistent with the known higher mortality and hospital admission rates for AMI in Newcastle,
- case fatality was higher in Newcastle than in Perth which is against a systematic bias towards ascertaining more milder non-fatal cases in Newcastle (both centres undertook the same care to collect data on fatal cases).

Both Australian centres produced high quality data as determined by the quality control procedures implemented by the MONICA Data Centre in Helsinki and documented in the major publications from the project and in detailed reports available from the WHO MONICA Project web-site <http://www.ktl.fi/monica/>

3.2.4 Rates and trends of mild AMI in Newcastle

To ensure that information on all non-fatal definite AMIs in each population was collected, the MONICA protocol required centres to register all suspected coronary events. Some centres, including Newcastle, collected information on all patients who reported prolonged chest pain (that is, pain lasting longer than 20 minutes) but did not meet the criteria for 'non-fatal definite AMI'. These cases were called 'non-fatal possible AMIs'. A recent MONICA paper specified criteria which allowed AMIs to be subdivided into 'non-fatal probable AMIs', denoted as 'mild AMI' subsequently in this report, and 'prolonged chest pain' (Salomaa et al. 1997). Events were categorised as 'non-fatal probable AMI' if any of the following sets of criteria were met:

- typical symptoms, probable ECG and enzyme changes categorised as equivocal, non-specific, normal, incomplete or insufficient data;
- typical symptoms, abnormal enzymes and ECG categorised as 'other', that is, mainly normal; or
- typical symptoms, equivocal enzymes and ECG categorised as ischaemic, uncodable, insufficient data, or other.

There was no statistically significant change in either sex in the rate of 'mild AMI' in Newcastle, that is, in cases meeting the criteria for 'non-fatal probable AMI', from 1985–93 (Table 3.3). The Perth MONICA Centre did not collect information on patients with possible AMI.

Table 3.3: Average annual rates of non-fatal probable AMI in Newcastle and percentage of non-fatal probable AMIs in patients with previous AMI for men and women aged 35–64 years, 1985–93

Sex	Rate (per cent previous AMI) ^(a)			Estimated annual percentage change (95% CI)
	1985–87	1988–90	1991–93	
Men	190.7 (30)	229.7 (30)	192.7 (25)	1.0 (–1.0, 3.1)
Women	104.3 (19)	92.0 (22)	85.7 (19)	–2.0 (–4.8, 0.9)

AMI = acute myocardial infarction.

(a) Age-standardised rate per 100,000 population.