



UNDERSTANDING OF RISK - PART 2

Risk is the word that describes the chance of something happening – always in a given set of circumstances. It is a probability and, as such, obeys the laws of probability lying between zero and one (or < 1%-100%).

Incidence Rates

Coronary Heart Disease (CHD) incidence rates tell us the risk of having a myocardial infarction (MI) in a year. In 1980 the risk of having, or dying from, an MI, were roughly twice as high as they are now. Since then, death rates have halved for all ages and each sex¹. In men, for example, aged 45-54 death rates fell from 270 to 100/100,000 per year and for women of the same age from 50 to 20/100,000 each year. However, these numbers have little meaning for most members of the public, since they are small and seem irrelevant compared to risks encountered in daily life, like missing a train or crashing a car.

Risks are better understood in terms of how many people will be required for how long for one event to occur. For a 1% risk it is a 100 and for a 0.05% risk, it is 2000, as was the case for women aged 45-54 in 1980. Currently, the figure is around 5,000: thus, the women amongst us know that other things being equal, this is very unlikely to happen to anyone they know – never mind themselves.

Risk Ratios

Risks compared by using risk ratios can be more informative than risk differences. For example, the relative risk (RR) for people aged 45-54 of dying of an MI, comparing men with women was 270/50 or 5.4 in 1980. That is real enough – more than five times the risk of dying for men compared with women. Although there is not much people can do about their

gender, these relative risks tend to be quite stable over time and between different people.

Cumulative Risk

If we consider the risks of having an MI as opposed to dying from one, these risks are greater because less than 50% are fatal. Having an MI is a risk that most people are concerned about – the risk of death after an MI is high (and palpable, immediate and amenable to rapid change) and the consequences so unpleasant. If we calculate (using the basic laws of probability) the cumulative risk of an MI over the next five years, then these risks become even more tangible. For example, for a man aged 55, the risk of an MI before he is 60 is around 2%, and recognisable: 1 in 50 men. However, women aged 55 still hardly register, since the cumulative risk of having an MI before aged 60 is only 1%.

But, these risks relate to "average people" in the UK, of whom many deviate from the average in one way or another (Table 1). Hence, any individual's actual risk will depend on how they relate to these levels of exposure. In addition, all (except gender) are amenable to change. Although these effects may not be immediate, they certainly alter the medium and longer-term risks. In some instances, for example, lowering cholesterol or BP, the effect can be big and relatively rapid. Quitting smoking at age 35 will have a large effect over a longer period of time, whilst others such as reducing Body Mass Index by 5 points will have a smaller effect². Nevertheless, reducing several risk factors can have a more dramatic effect. Thus, a low fat diet, abstinence from tobacco and taking plenty of exercise from age 25 can reduce the average risk of a myocardial infarction by the age of 70 from 24% for men and 9% for women to something like 7% and 2% respectively, or even lower.

Table 1

Frequency and relative importance of recognised risks³			
Risk factor	Prevalence	Trend	Relative risk
Raised cholesterol (aged 55-64)	30	↓	Up to 5 fold
Physical inactivity	60	↑	2
High blood pressure	50	?	2-3 fold
Smoking	27	↓	Up to 15 fold
Obesity	15	↑	Up to 3 fold

References:

1. British Heart Foundation. Coronary Heart disease statistics. *BHF 2002*
2. McPherson K, Britton A & Caser L. Coronary Heart Disease. Estimating the impact of changes in risk factors. *The National Heart Forum TSO 2002*
3. Sharpe I (Ed) Looking to the Future; making coronary disease an epidemic of the past. *The National Heart Forum TSO 1999*

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