

The social production of social hierarchy

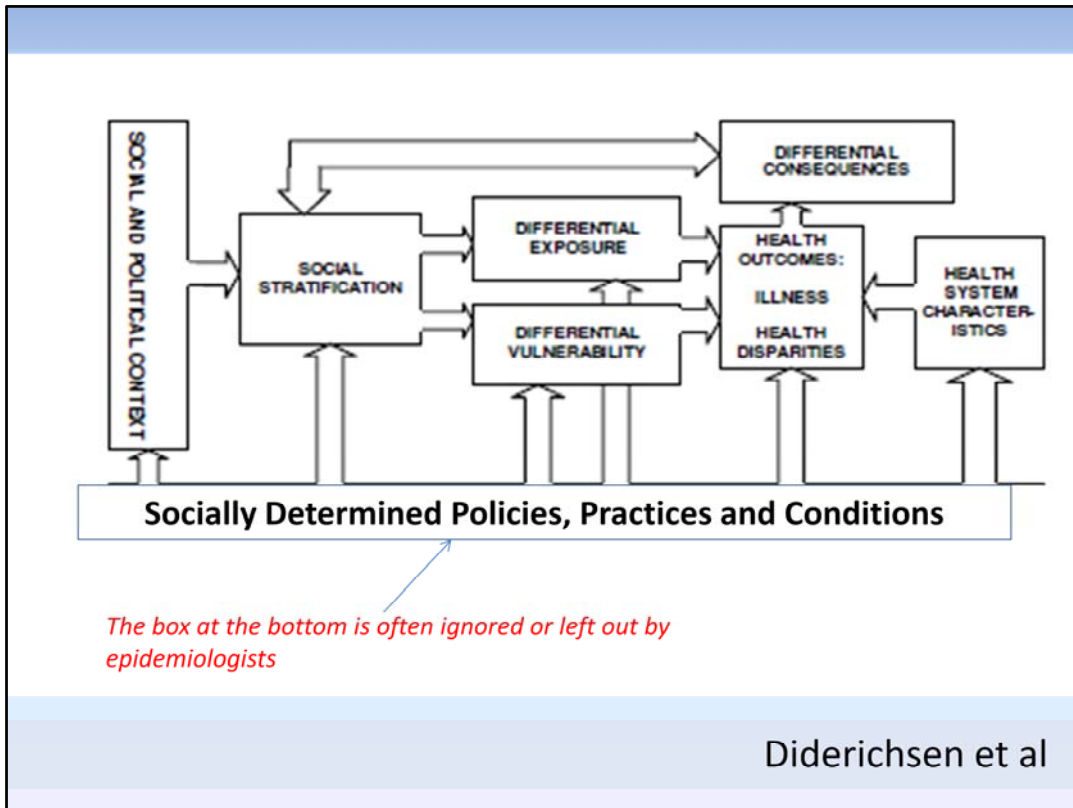
- Structure and agency
- *Men make their own history, but they do not make it as they please; they do not make it under self-selected circumstances, but under circumstances existing already given and transmitted from the past (Marx)*
- Social mobility and the social reproduction of hierarchy

Socio-economic position often treated as a property of the individual, rather than a product of society

Epidemiologists have been criticised in the past for tending to over-individualise social position, and detaching it from the structures from which they are a part

- “epidemiology thereby renders invisible the very social relations of power structuring material and psychic conditions and life chances that contribute to the stratification of health and illness”

Janet Shim, 2002





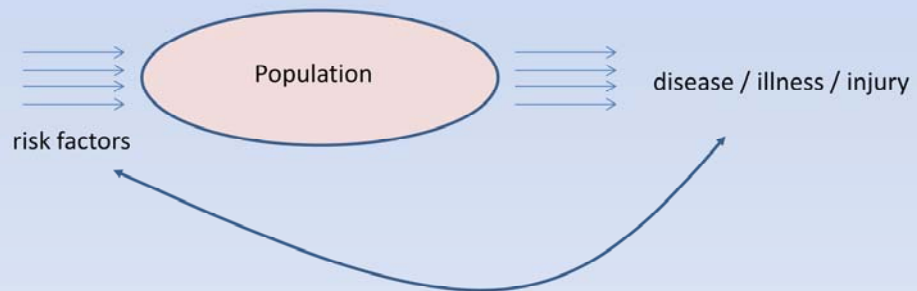
Now we move onto another important element of social epidemiology and the social causation of illness

- Seminal paper: Geoffrey Rose, *International Journal of Epidemiology* 1985, 14: 32-38
- Sick individuals and sick populations

Public health specialists and epidemiologists want to know

Why did *this* patient get *this* disease at *this* time?

Cornerstone of epidemiology is the search for risk factors (and causes of illness or disease)



- case-control studies
- cohort studies

The common approach is to use relative risk as the basic representation of aetiological force: that is, 'the risk in exposed individuals relative to risk in non-exposed' individuals'.

Rose critiques the dominant use of relative risk as a means of measuring aetiological force ...
because of the tendency to examine differences between individuals rather than differences between populations

Thought experiment

What happens if you study a population where everyone smoked 20 cigarettes a day?

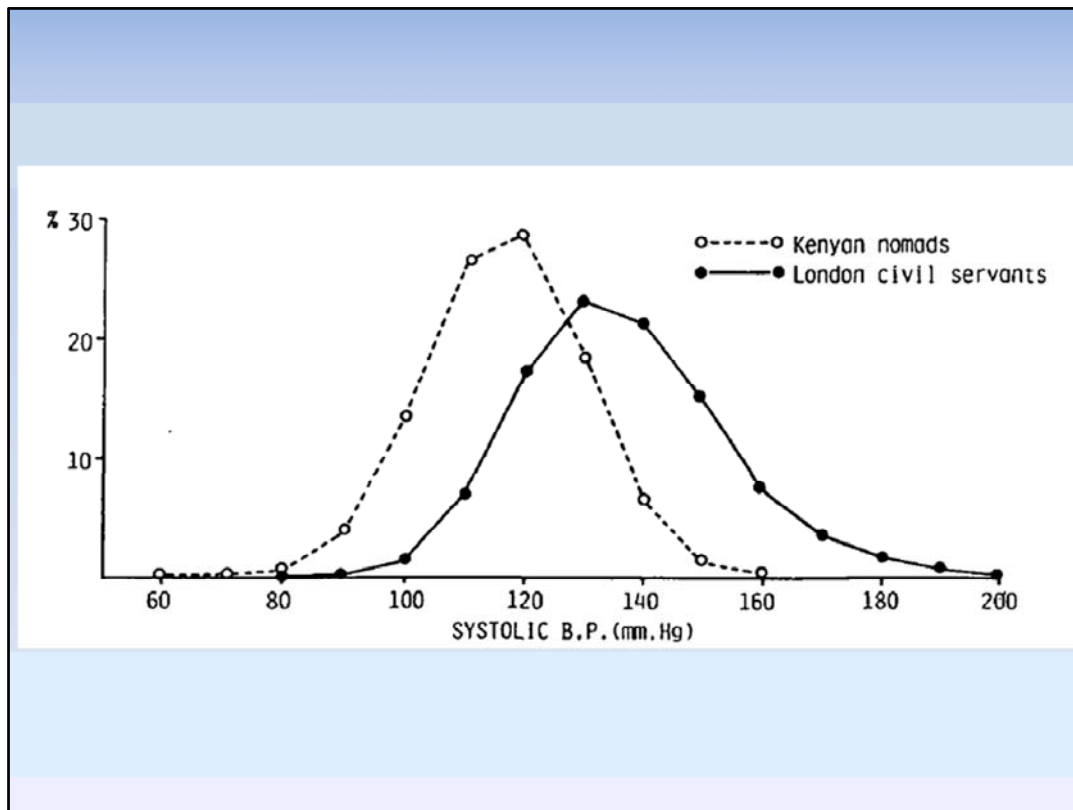
Case-control and cohort studies would probably lead one to conclude that lung cancer was a genetic disease!

"I find it increasingly helpful to distinguish two kinds of aetiological question. The first seeks the causes of cases, and the second seeks the causes of incidence.

'Why do some individuals have hypertension?' is a quite different question from 'Why do some populations have much hypertension, whilst in others it is rare?'

Geoffrey Rose

The determinants of incidence are not necessarily the same as the causes of cases.

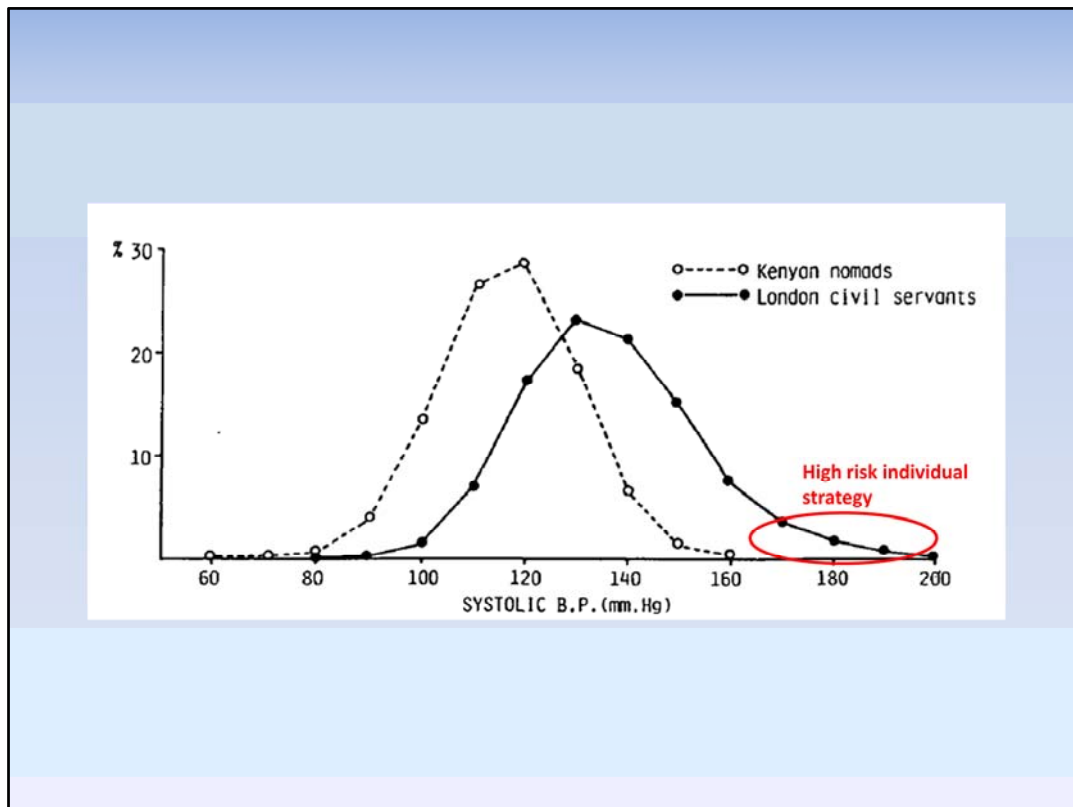


Why is hypertension absent in the Kenyans and common in London?'. The answer to that question has to do with the determinants of the population mean; for what distinguishes the two groups is nothing to do with the characteristics of individuals, it is rather a shift of the whole distribution—a mass influence acting on the population as a whole. To find the determinants of prevalence and incidence rates, we need to study characteristics of populations, not characteristics of individuals.

There is a broad tendency for genetic factors to dominate individual susceptibility, but to explain rather little of population differences in incidence. Genetic heterogeneity, it seems, is mostly much greater within than between populations. This is the contrary situation to that seen for environmental factors. Thus migrants, whatever the colour of their skin, tend to acquire the disease rates of their country of adoption.

Implications?

- Contrast between 'high risk individual' prevention strategy and 'population strategy'



The preventive strategy of targeting high-risk susceptible individuals seeks to offer individuals some protection. In contrast, the 'population strategy' seeks to control the determinants of incidence in the population as a whole.

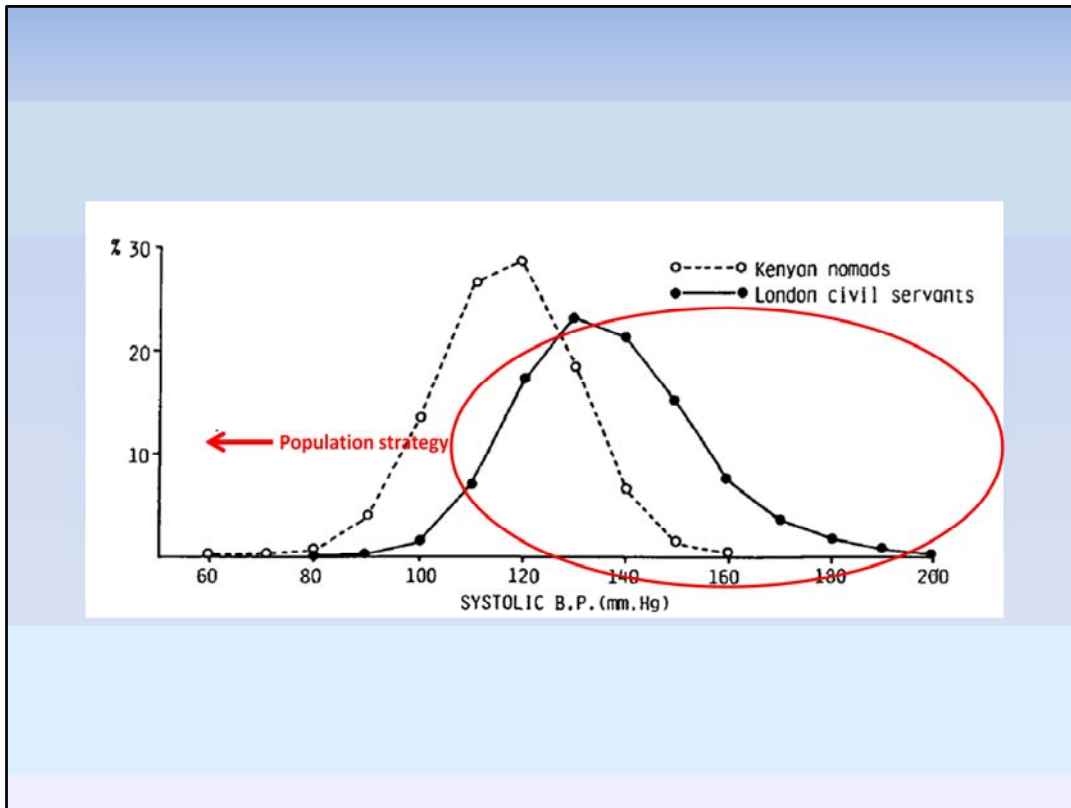
The 'High-Risk' Strategy is the traditional medical approach to prevention. It is focused on screening individuals to detect risk factors, and then to intervene as required. It seeks to achieve is something like a truncation of the risk distribution.

The population strategy aims to attempt to control the determinants of incidence, by lowering the mean level of risk – not to target high-risk individuals, but to shift the whole distribution of exposure in a favourable direction.

Examples include environmental control methods; and alteration of social norms

Population distributions of serum cholesterol levels in East Finland, where coronary heart disease is very common, and Japan, where the incidence rate is low: the two distributions barely overlap. Each country has men with relative hypercholesterolaemia, and one could research into the genetic and other causes of these unusual individuals; but if we want to discover why Finland has such a high incidence of coronary heart disease we need to look for those

characteristics of the national diet which have so elevated the whole cholesterol distribution. Within populations it has proved almost impossible to demonstrate any relation between an individual's diet and his serum cholesterol level; and the same applies to the relation of individual diet to blood pressure and to overweight. But at the level of populations, it has proved easy to show strong associations between population mean values for saturated fat intake *versus* serum cholesterol level and coronary heart disease incidence, sodium intake *versus* blood pressure, or energy intake *versus* overweight.



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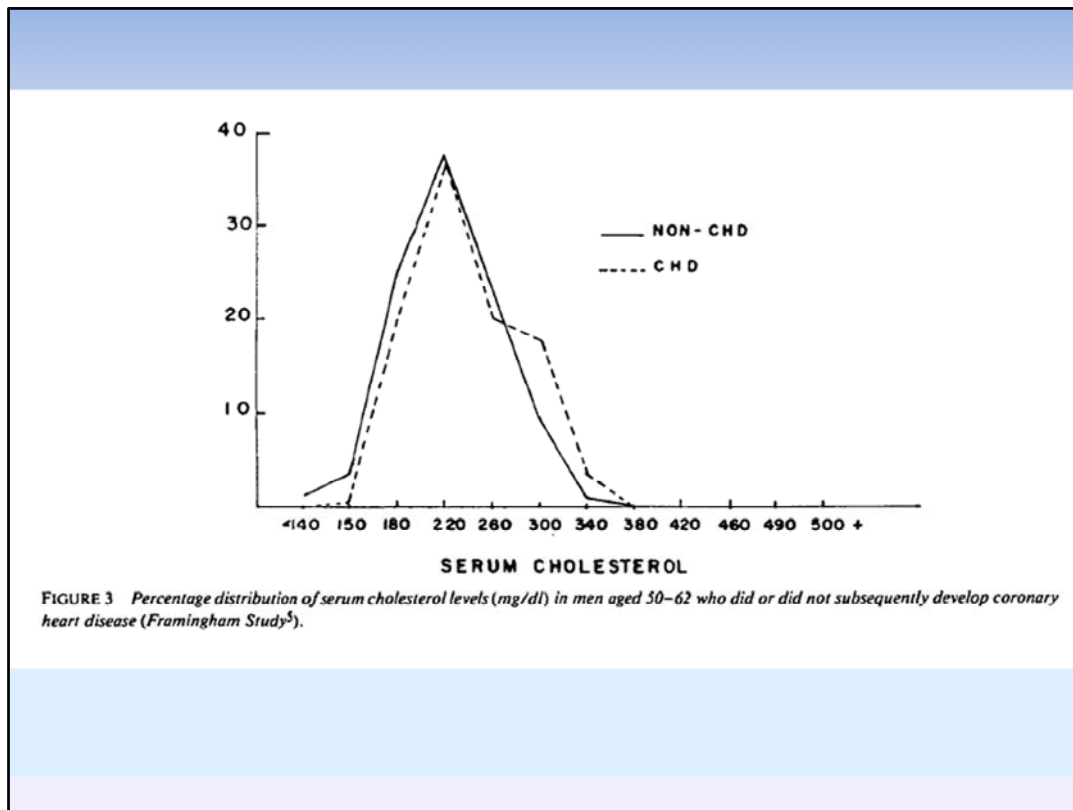
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Prevention by 'high-risk strategy': advantages

1. Intervention appropriate and specific to individual – this can induce greater subject motivation and physician motivation
2. The actual mechanics and process of screening can itself induce motivation (mystique of a scientific investigation)
3. Cost-effective use of resources
4. Benefit: Risk ratio favourable

Prevention by 'high-risk strategy': disadvantages

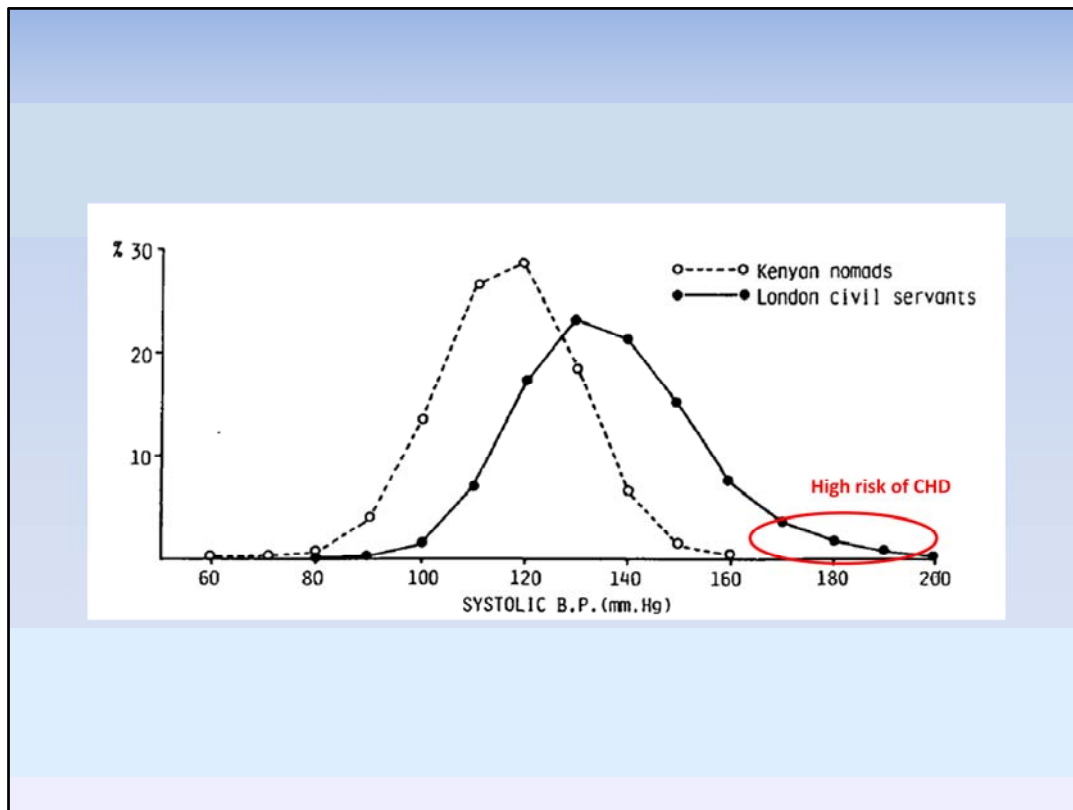
1. Difficulties and costs of screening
2. Palliative and temporary - not radical
3. Limited full potential



The potential for this approach is limited for two reasons. 1) our power to predict future disease is usually very weak. Most individuals with risk factors will remain well, at least for some years; contrariwise, unexpected illness may happen to someone who has just received an 'all clear' report from a screening examination.

A limitation of the relative risk statistic is that it gives no idea of the absolute level of danger.

2) illustrated by the occurrence of Down's syndrome births. Mothers under 30 years are individually at minimal risk; but because they are so numerous, they generate half the cases. High-risk individuals aged 40 and above generate only 13% of the cases. The lesson from this example is that *a large number of people at a small risk may give rise to more cases of disease than the small number who are at a high risk*



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Prevention by 'high-risk strategy': disadvantages

1. Difficulties and costs of screening
2. Palliative and temporary - not radical
3. Limited full potential
4. Changing individual behaviour is difficult

Prevention by the 'population strategy': Advantages

1. Radical
2. Large potential for population
3. Changing behavioural norms may be more effective than changing individual behaviour

The attempt to control the determinants of incidence, to lower the mean level of risk factors, to shift the whole distribution of exposure in a favourable direction. In its traditional 'public health' form it has involved mass environmental control methods; in its modern form it is attempting (less successfully) to alter some of society's norms of behaviour.

If non-smoking eventually becomes 'normal', then it will be much less necessary to keep on persuading individuals.

Prevention by the 'population strategy': Drawbacks

1. Small benefit to individual ('Prevention Paradox')
2. Poor motivation of subject
3. Poor motivation of physician (grateful patients are few in preventive medicine, where non-event = success)
4. Benefit: risk ratio can be worrisome

Examples of prevention paradox –immunisation; seat belts

Prevention Paradox: A preventive measure which brings much benefit to the population offers little to each participating individual'.

This has been the history of public health—of immunization, the wearing of seat belts and now the attempt to change various life-style characteristics.

Benefit: risk ratio: the World Health Organization clofibrate trial, where a cholesterol-lowering drug seems to have killed more than it saved, even though the fatal complication rate was only about 1/1000/year.

The Privatization of Risk

- *Beverly Rockhill*
- *Am J Public Health. 2001; 91: 365–368*

Privatisation / individualisation of risk

- “The phenomenon of risk privatization, so pervasive in modern epidemiology, reflects the value system now underlying much of public health and preventive medicine in the United States. This system gives primacy to personal autonomy and action and seeks to induce personal behaviour change rather than to promote social interventions that often must confront powerful opposing interests”.

Privatisation / individualisation of risk

- Increasingly, individuals are informed of their risk of major diseases on the basis of their personal risk factor profile obtained from simple epidemiologic models.

But For most diseases studied by epidemiologists, the large majority of individuals (with risk) will remain disease free over the considered time period. The relatively few individuals who will develop disease will not receive unusually high estimates of individual risk.

Risk factor logic introduces the notion of probability as a fundamental component of disease causation theories. Risk factors represent the numerous specific causes of disease, but the notion of “cause” is now different from that of the germ theory model that had underlain decades of study of infectious disease. Many of the risk factors hypothesized to be causally related to heart disease and various cancers have only modest associations at the population level. They are neither necessarily nor sufficiently causal at the individual level, by definition as well as by empirical observation.

Consequently, the vast majority of chronic disease risk factors, being both unnecessary and insufficient to cause disease, have proved to be quite poor at discriminating at the individual level between those who eventually develop disease (over a certain time period) and those who do not.

Privatisation / individualisation of risk

- Risk factor findings are couched in probabilistic language.... if exposure can be eliminated for (say) 1000 individuals, 5 cases (for example) will be averted over a 10-year time period.
- “Cause” and “prevention,” as they pertain to probabilistic risk factor logic, are concepts that apply to an aggregate of individuals, not to a specific individual.

The case of breast cancer

Women and their clinicians are increasingly encouraged to use risk estimates derived from statistical risk factor models

One model recommends that women 35 years and older with an estimated 5-year risk of breast cancer of 1.67% consider using tamoxifen prophylactically against breast cancer

What percentage of these women would go on and develop breast cancer?

The case of breast cancer

4 out of 100

If tamoxifen reduces risk by 50%, then 96 women would have taken tamoxifen 'unnecessarily'; 2 will die from cancer; and two will have had cancer prevented

The case of breast cancer

- Despite the potential pitfalls of relying on assessment of individual risk to prevent disease, this approach may be necessary for breast cancer prevention because, unlike with many other major chronic diseases, public health solutions may be unavailable.

The case of breast cancer

Breast cancer incidence is strongly and positively related to:

- the nutritional status of girls and women (related to early menarche)
- women's freedom to choose to reproduce far below traditional and evolutionary levels (nulliparity and or low parity, and a late age at first birth, are associated with increased risk of breast cancer)

Thus, attempts to alleviate the public health problem of breast cancer could bring a net *loss* of public health.

Ten Tips For Better Health - Donaldson, 1999

1. Don't smoke. If you can, stop. If you can't, cut down.
2. Follow a balanced diet with plenty of fruit and vegetables.
3. Keep physically active.
4. Manage stress by, for example, talking things through and making time to relax.
5. If you drink alcohol, do so in moderation.
6. Cover up in the sun, and protect children from sunburn.
7. Practice safer sex.
8. Take up cancer screening opportunities.
9. Be safe on the roads: follow the Highway Code.
10. Learn the First Aid ABC : airways, breathing, circulation.

Ten Tips for Staying Healthy - Dave Gordon, 1999.

1. Don't be poor. If you can, stop. If you can't, try not to be poor for long.
2. Don't have poor parents.
3. Own a car.
4. Don't work in a stressful, low paid manual job.
5. Don't live in damp, low quality housing.
6. Be able to afford to go on a foreign holiday and sunbathe.
7. Practice not losing your job and don't become unemployed.
8. Take up all benefits you are entitled to, if you are unemployed, retired or sick or disabled.
9. Don't live next to a busy major road or near a polluting factory.
10. Learn how to fill in the complex housing benefit/ asylum application forms before you become homeless and destitute.