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Effectiveness of secondary prevention: benefits and disappointments—Part I

If the efficacy of preventive measures has been proved—ie, it has convincingly been demonstrated that they do more good than bad—as many people as possible should benefit. As a prerequisite, the facilities have to be accessible without economic or other restraints, ie, the availability has to be guaranteed. Thereafter the acceptance of such programs, ie, the effectiveness, has to be evaluated.

The efficacy of preventive measures in coronary heart disease (CHD) has been convincingly documented in many well-conducted, large, controlled randomized trials. Its benefit may even be demonstrated in the total population. As in several other countries, in the US a marked decrease in deaths from CHD has been observed. From 1980 through 2000, the age-adjusted death rate fell from 542.9 to 266.8 deaths per 100 000 population among men and from 263.3 to 134.4 deaths per 100 000 population among women. During the last 20 years, therefore, the CHD mortality has decreased in the US by an impressive 51% for men and 49% for women. Approximately 11% of this success can be attributed to the secondary prevention program. About 44% are due to changes in risk factors, such as reduction in total cholesterol (24%), systolic blood pressure (20%), smoking prevalence (12%), and physical inactivity (12%). However, at the same time higher body mass index and higher prevalence of diabetes has been observed. These unwanted effects increased the death rate by 9% and 10%, respectively.¹ These results suggest in accordance with many other studies that the use of drugs is preferred, whereas lifestyle changes, the primary recommendations of all health systems, could not be effectively established.

Such lifestyle changes may be equally as effective as pharmacotherapy, but at lower costs. According to a systematic review of lifestyle and dietary changes on all-cause mortality in patients with CHD, cessation of smoking reduced the risk by 36% (relative risk [RR], 0.64; 95% CI, 0.58 to 0.71), increased physical activity by 24% (RR, 0.76; 95% CI, 0.59 to 0.98), and moderate alcohol use by 20% (RR, 0.80; 95% CI, 0.78 to 0.83). The dietary evaluation was based on energy balance (determined by the body mass index), intake of saturated fat and trans-fatty acids, regular fish consumption (≥ 2 portions of oily fish per week) as well as the intake of fruits and vegetables. The combination of these dietary changes was associated with a reduced mortality of 44% (RR, 0.56; 95% CI, 0.42 to 0.74).²

For beneficial effects to occur, preventive measures have to be implemented. Most results are gained from registry data. However, such results cannot be assumed to be representative; they depend on the population selected and studied. Most data are collected at hospital

discharge, but this implies uncertainty as to whether and to what extent these recommendations are followed by the patient and his family doctor at home. Patients' carelessness and unwillingness, negligence by the doctor, and/or economic restraints are frequent causes for noncompliance.

In Europe a prospective study was started in 1995 with the latest follow-up data in 2007—the EuroAspire study. It comprises about 3000 consecutive patients, ≤ 70 years old at the time of the index event. It is a study of the effectiveness of secondary prevention. The patients' data were collected at discharge from hospital after a coronary event. From the first evaluation from 1995-1996 (EuroAspire I) to the second from 1999-2000 (EuroAspire II)³ to the third from 2006-2007 (EuroAspire III)⁴ an impressive improvement of adherence to the drug regimes could be observed: Total cholesterol ≥ 5 mmol/L decreased from 87% (I) to 59.6% (II) and to 28.5% (III). Antiplatelet drugs were given in 80.8% (I), 83.6% (II) and 93.2% (III), β -blockers in 56% (I), 69.0% (II) and 85.5% (III), ACE inhibitors/ARBs in 31.0% (I), 49.2% (II), and 74.6% (III) and statins in 18.1% (I), 57.3% (II) and 87.0% (III). In contrast the results for the lifestyle changes were disappointing: overweight (BMI > 25 kg/m²) increased from 76.8% (I) to 79.9% (II) and to 82.7% (III), as did obesity (BMI > 30 kg/m²) from 25% (I) to 32.6% (II) and 38.0% (III), diabetes from 17.4% (I) to 20.1% (II) and to 28.0% (III), hypertension from 54.6% (I) to 54.0% (II) and to 55.2% (III). Only smoking revealed no deterioration with 20.3% (I), 21.2% (II), and 18.2% (III). These data confirm the notion that the general population prefers drugs to any alteration in daily habits. In addition the data should not be generalized; they were collected from hospital patients at discharge, almost 50% of the study population was ≤ 60 years old, and there was a marked difference in drug prescription between different European countries (variation for ACE inhibitors 19% to 59%, for β -blockers 44% to 88%, for aspirin 75% to 93%, and for statins 31% to 75%).³

The assessment of the effectiveness of preventive measures probably has in addition to take into account the national circumstances, including the economic situation, long-term treatment after discharge from hospital, and the age of the patients (see part II).

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