Chapter 10
More Sustainability in Cardiovascular Disease Prevention—Holistic, Practice-Oriented Approaches Taking into Account Environmental Topics

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Various interdependencies exist between personal health and the general condition of nature. There are indications that the condition of ecosystems, including the landscapes characterised by them, has a direct and an indirect influence on health. General precautionary environmental protection would provide an immediate contribution to individual health. Thus personal health risks have a more comprehensive correlation with environmental risks than previously communicated.

Can the Risk of Coronary Heart Disease Be Predicted? Can It Be Influenced?

Coronary heart disease, usually in the form of an acute heart attack, is the most frequent cause of death in men in the prime of life from 40 to 70 years of age. Women, inter alia through their hormonal protection, on average are affected 10 years later, but then to the same extent.

A heart attack is not a matter of luck; rather, it is 90% predictable based on nine classical risk factors. People who have all nine risk factors have an approximately 334-fold (!) higher risk of suffering a heart attack than those without these risk factors (Interheart Study). This applies in a similar fashion for bypass operations or stent implants. The causative risk factors are, without exception, controllable. There is a prevalent opinion that people with genetic risks can barely avoid their fate. The opposite is the case; precisely, if a genetic risk exists, the individual specific risk can be extensively neutralised through a holistic preventive approach. Thus, heart attacks and, in a similar fashion, bypass operations or stent implants are 70–80% preventable.

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Through improvements in acute care, particularly in interventional cardiology with stent implants and balloon dilation, mortality associated with acute infarct has declined by more than 40% over the last 25 years (Heart Attack Register February 2016). The risk factors that cause a heart attack in the long term, however, contrast considerably with this and thus neutralise the gains made with modern medicine. Significant successes in health promotion and disease prevention are nearly nonexistent. The classic risk factors—overweight, lack of exercise, diabetes mellitus, stress burden, excessive meat consumption—in parallel with this, have increased significantly in the last 25 years.

Why Is the Promotion of Health and Disease Prevention of so Little Appeal and so Unsuccessful?

Profit and benefit from disease prevention and the promotion of health are very difficult to prove with figures, as the return on investment is only discernible after decades. That means in a society oriented mainly to short-term profit maximisation, and with a background of increasing financial difficulties in the health service, that disease prevention and promotion of health is not really attractive for most of those involved, and thus constitutes no serious concern. At the same time, for individual interest groups, there are various aspects in the foreground:

- For cost units, for example, health insurance funds: Prevention programmes are primarily used for marketing purposes, but are seldom a first concern. A clear benefit from prevention programmes in the form of relatively expensive disease management programmes of the health insurance funds, for example, with coronary heart disease, is not easy to verify. A possible disadvantage of other prevention programmes is that good prevention programmes attract patients from high-risk groups into the insurances and may lead to higher costs.
- The direct benefits of prevention and promotion of health are not easily verifiable in a single legislative period of four years, and are thus of little effect for politicians with respect to re-election campaigning. One essential component of the promotion of health is its motivation through role model functions. Politicians generally offer few positive examples of such a role model for a health-conscious lifestyle.
- The promotion of health in schools is difficult, primarily due to a shortage of resources and competition with lesson time, but also due to insufficient specific qualifications, frequently of only marginal significance. (Through current initiatives publicised by the Bavarian Ministry, such as promoting club sport activities after 1 p.m., with parallel cutting of official physical education at school, health resources were actually more reduced.)
- Medicine itself, as a generator of an important part of the gross national product, "lives" essentially from the profits of medical interventions. The more expensive the interventions, the more lucrative they are for the provider's reimbursement.

In areas with an oversupply, e.g. in heart surgery capacity or interventional cardiology facilities, successful prevention would in contrast lower their specific demand and would be rather "bad for business"—and because it is itself barely accountable, economically uninteresting.

- Government prevention programs and legislative health measures could lead to feelings of paternalism and possible limitations of freedom in the population (The State as "Super-Nanny", see Fokus, January 2016). In addition, governmental health measures in Germany are historically still encumbered.
- Unfortunately, in Germany, the state even blocks important prevention measures in some areas. Reduction in cigarette consumption is a measure with the highest preventive effect, in particular with respect to heart attacks. Through the consumption of one packet of cigarettes a day, a heart attack occurs on average 15 years earlier, and the smoker of a packet of cigarettes per day has on average a 12–15 year shorter life expectancy. In order to prevent the loss of tax, the German government has even implemented valid EU law with great delay, only after the threat of financial penalties.

Pertinent is a long overdue prevention law, which was presented for the first time in 2004 and could only be adopted after several legislative periods in 2015.

New Approaches for Improvement and Further Development Through Motivation for Risk-Minimising Behaviour

A further chance for improvement in addition to offering costly disease-prevention programs, is to motivate people in an attractive way and to enable them to improve their health in other, more "do-it-yourself" manners.

This challenge was formulated in the WHO-Ottawa Charter in 1986 as one essential objective. In the meantime, parts of the Ottawa Charter have been adopted in the legislation of several states. One aim is to motivate people more sustainably and to enable them to take over more personal responsibility for their own health. A major emphasis was placed on the "setting approach": Health is created and lived by people in their everyday environment: where they play, learn, work and love. An essential role for the promotion of health is supported by two areas: the psychosocial environment and as the natural environment.

The Ottawa Charter of 1986 was followed, also in Germany, by various important practical initiatives: "healthy cities", "healthy schools" and the "network of health-promoting hospitals". The sustainability of these initiatives, which were introduced with great engagement, has unfortunately not been consistent. These activities have withered, inter alia, through increasing economic constraints and through the previously mentioned lack of educated understanding regarding the significance of the environment for health.

For a more comprehensive approach with the promotion of health and prevention of diseases, the following basic conditions have been defined by the WHO:

1. Stable feeling of self-worth
2. Positive rapport with one's own body
3. Aptitude for making friends and social relationships
4. Supportive environments
5. Sensibility for health
6. Sufficient medical care
7. Valuable present living conditions and hope for a healthy future

This summary of factors bears some challenges for their application and implementation in practical conditions. Other factors for health promotion can be derived from the Blue Zone Project.

The Blue Zone Project

The term "blue zone" goes back to an Italian research group which observed that, in a mountainous region of Sardinia, a noticeably high percentage of people achieved a very advanced age. The group found correlations with lifestyle habits and a close relationship with nature. Another remarkable finding was that the life expectancy in immediately neighbouring regions in Sardinia was distinctly lower, more representative of the customary average. Due to these findings, Dan Buettner, an American editor of *National Geographic* magazine, initiated world-scale investigations in order to discover other possible Blue Zones, which show particularly high life expectancy. Subsequently, five regions with an abnormally high number of persons over 100 years old were found: Loma Linda, California; Okinawa, Japan; Nicoya, Costa Rica; Ikaria, Greece; and Sardinia, Italy.

Searching for factors which could determine such a high life expectancy, the following living conditions were identified as being present in all Blue Zone regions:

- Strong family orientation
- Predominantly vegetarian diets, with more fruit and vegetables
- Restraints of the consumption of alcohol and tobacco
- A strong purpose in life
- Relatively low overall calorie intake (80% rule of satiation)
- Managing stress well
- Participation in a spiritual community
- Lifestyles with regular physical exercise
- Broader social engagement
- Involvement in a social system, which truly enculturates these values

A predominantly vegetarian diet and limited calorie intake are indicative of a more responsible way of dealing with natural resources and the environment. The fact that Blue Zone regions mainly exist on islands or peninsulas indicates that involvement with nature and environment are of major importance for these populations. Since 2013, Dan Buettner and a team of co-workers have developed a programme based on this knowledge, according to which communities and cities in the state of Illinois, USA, could develop in the direction of a Blue Zone. A prerequisite for implementing this programme was that a large part of the local inhabitants and institutions agreed to this planned development. Even if such projects are difficult to imagine in Germany and will require further scientific support, they may offer a different basis for considering alternate ways towards more sustainability in the promotion of health.

Pilot Projects for New Ways

Reacting to the low sustainability of previous cardiovascular rehabilitation and prevention efforts, a group of cardiologists, psychologists, physiotherapists and health trainers has, in the last 25 years, searched for new ways to test ideas for a sustainable promotion of health and disease prevention. To clarify the starting conditions again: On the one hand, mortality with acute myocardial infarction has been significantly lowered by measures of cardiology interventions (in the last 25 years by more than 40%). This was achieved through modern, interventional procedures (inter alia, through balloon dilation, stent implantation). On the other hand, however, most of the risk factors, e.g. lack of exercise, being overweight, diabetes mellitus and increased stress load in most spheres of life, which causally lead to heart attacks, have increased continuously. Setting the goal of converting new scientific knowledge into practical programmes, this body of abovementioned experts from various professional groups started, over the last few years, as the non-profit "München-Chiemseer Initiative", under the label of "Kardioforum-Bayern", and has initiated various projects using a more holistic approach to health promotion:

- Of trans-generational projects (such as a Youth-Seniors Olympiad, common grandparents-grandchildren trekking).

These concepts strive to motivate and encourage patients and those who are interested to be active without any public funding. In Germany, more so than in other countries, most people take it for granted that their health and treatment of illnesses can be achieved, due to the good insurance system, without any additional costs or efforts. Following this view, there is limited aspiration to become proactive for their health. As an example: Only after the introduction of essentially greater self-participation with dental prosthetics has there been a significant improvement

in dental health as a result of better prevention. Apparently, this also applies precisely to health care. It seems to be true for many: only that which costs has a value.

With the abovementioned health projects we follow a modified salutogenic and resource-oriented approach. Already, the great pedagogue A. Pestalozzi has described that a successful and sustained learning may be achieved mainly within a holistic framework, taking into account heart, brain and hand. The heart stands for motivation, enthusiasm and volition; the brain stands for knowledge and comprehension of relationships; the hand stands for dealing, doing and practicing. Prevention usually signifies changes in lifestyle. These are linked with continuous learning and regular practice, until the change is anchored in long-term memory, at the earliest after ca. three weeks.

The heart, brain and hand have similarities to neurophysiological findings: The first relates to the limbic system, the second to the prefrontal cortex, the third to parts of the brain stem.

The American sociologist Antonowsky sees three similar levels within his salutogenic approach, in which he has also described prerequisites for a successful way of life (sense of coherence).

In our own comprehensive approach, the addressing and involvement of the following six pillars of our disease prevention programme is striven for always on three levels.

The Six Pillars of Our Comprehensive Programme for More Sustainability in Cardiovascular Disease Prevention

An approach which mainly addresses the risk factors of cardiovascular diseases has not proven to be very motivating and successful. Within the scope of the WHO project Health Promoting Hospitals in Prien am Chiemsee, a more holistic, resource-oriented six-pillar programme, with an emphasis on salutogenesis, has been developed. It builds on the following elements:

I. Optimisation of the "technical data" for heart health: cholesterol, blood pressure, blood sugar, body weight
II. Motivation for consequent, more intensive, daily physical activity of at least 15–30 min
III. Instruction on a diet with many fruits and vegetables, nuts and legumes like beans, lentils and peas, which corresponds to the diet on the islands, which show a high life expectancy ("Mediterranean cuisine")
IV. Optimisation of one's own "domestic policies" such as stress and time management, work-life balance, relaxation, humour
V. Psychosocial bonding within the family and a circle of friends, mutual appreciation and love
VI. Using the benefits of a "healthy" nature and adopt more responsibility for the environment.

Stimuli for sustainability in the promotion of health and prevention through an intensive networking and linking with questions of the environment (hereby are meant both the psychosocial environment and also nature as the environment) ensue both from the WHO concept and also from the Blue Zone concept. Health is to be achieved sustainably only through simultaneous inclusion of environmental factors and the constraints.

Bavaria, with the then new formation of the Ministry for Environment and Health, was the political trailblazer for this approach. Apparently, the time was, however, not ripe for this; health and the environment were again separated.

Can Pragmatic Ties from the Impulses of the Ottawa Charter and from the Climate Conference in Paris Be Used for More Sustainability in Disease Prevention?

At the beginning, one's own health is closer to most people than "greater" questions of climate protection or sustainability. However, people who suffer from an illness or a genetic risk are more interested in health and, in general, more open and motivated regarding questions of environment and climate.

Here is an example which may clarify relationships between personal health behaviour and the environment for patients:

With consumption of more than 300 g of meat and sausages per week, general mortality increases moderately but significantly. The worldwide available food product resources, based on a mainly vegetarian diet and given a proper solution of logistic distribution problems, might be sufficient to double the world population. However, to produce 1 kg of meat needs 6 to 12 kg of "vegetarian" food products, which thus are no longer available for human consumption. As a result of the increasing consumption of meat and its accompanying excessive use of food resources, followed by the necessity of creating further areas under cultivation, the destruction of climate-significant regions is inevitable.

Many people, who after a certain age are no longer willing to change their lifestyle habits (e.g. change their meat consumption) for a little expansion of life expectancy, are nevertheless motivated with a prospect that they may influence the quality of life and environment of their grandchildren. This also addresses their function as role models.

The conceivable statement that, from 1970 to 2010, approximately half of the existing animal species have become extinct can make many patients more aware of the environment and may have a greater impact on the quality of life and the life expectancy of their children and grandchildren than the mere optimal medical adjustment of their technical heart data: blood pressure, cholesterol and blood sugar.

Result: Pilot Projects for More Sustainability in Cardiovascular Prevention and Promotion of Health

As cardiovascular diseases represent the most frequent cause of death, and a well-functioning cardiovascular system determines good performance and quality of life, the topic might well be of significance for many people.

1. Motivation to exercise
   Optimal intensive physical activity of 15–30 min daily can increase life expectancy by five to eight years (Copenhagen Heart Study). This has to be better presented and networked (possibly the current programme of the "Chiemsee Active Heart days" as an annex).
   Supporting this goal is a pilot project in which one activity is regularly and intensively carried out over 5–10 weeks under instruction in natural surroundings. Activities are performed in a scenically very attractive valley which is designated as a conservation area with health-promoting elements and subjects on nature and environmental protection. The project is developed by collaboration between doctors, physiotherapists and tourism experts.
   In conjunction with students of the Munich Technical University, new ideas are tested to utilise nature as a resource for the strengthening of resilience. These projects want to inspire as many age groups as possible and provide better knowledge about the value of physical activity.
   To combine health, nature and the environment is the particular objective of grandparent-grandchildren trekking. For many grandparents, their grandchildren are one of the most important topics in their lives. Moreover, grandparents are important sources of guidance for their grandchildren. This special relationship is used for a new project in which grandparents have the possibility, within a several-day hike to a nearby small mountain resort, of receiving practical guidance and information on how they can keep themselves fit in old age and protect against heart diseases. Within an adventure hike, running parallel to this, accompanied by two wilderness teachers, their grandchildren and a group of peers learn about exciting things experienced in nature and what they can do for their own health, as well as prepare healthy food on their own. Once a day, both groups meet to exchange experiences, for example, at a campfire in the evening. Thus, health and environment become a more conscious topic in their families.
2. Initiative circle health and environment
   In order to develop networking and sustainably between the fields of health and environment further, it is advantageous to be able to draw on other long-standing experiences. An "initiative circle" is set up in which people from various fields of expertise, and in particular "retirees" with more time resources, can engage.
   The enthusiasm over the result of the Paris Climate Conference raises hopes that the preservation of the environment could after all be possible. The ambitious targets of lowering the German greenhouse gas emissions by 2050 by 85–90%

will not be possible without the engagement and participation of the individual. The hesitant engagement of politics and industry will not be sufficient.

For the individual person, climate protection is, however, usually abstract and frequently associated with political trends, which do not match their own. Their own health and that of their children and grandchildren are, for many more people, of greater significance. This can be used as a door opener to engender greater interest in the environment and climate protection.

Mankind is part of the environment and without this is not viable. The environment and nature represent an essential health resource.

Healthy changes in the environment have a concrete impact on personal health. Risks for damaging the environment are almost linearly coupled with risks for our health.