

**Invitational Conference 'Is health a state or an ability? Towards a dynamic concept of health'**  
Report of the meeting December 10-11, 2009

May 2010



ZonMw is the Netherlands Organisation for Health Research and Development. ZonMw works to improve disease prevention, care services and health by fostering and funding research, development and implementation. ZonMw's main commissioning organisations are the Ministry of Health, Welfare and Sport (VWS) and the Netherlands Organisation for Scientific Research (NWO). They commission ZonMw to find solutions to certain problems or to boost work in particular areas, including care of the elderly, cancer screening, the relationship between diet and health and reducing waiting lists.

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## **Invitational Conference 'Is health a state or an ability? Towards a dynamic concept of health.'**

On December 10<sup>th</sup> & 11<sup>th</sup> 2009, in The Hague, the Netherlands, the two leading Dutch governmental organisations providing scientific advice on health and health research, the Health Council of the Netherlands (*GR-Gezondheidsraad*) and the Netherlands Organisation for Health Research and Development (*ZonMw*), hosted an Invitational Conference on the concept of 'health'. The initiative arose when, at the same time, in different domains it became apparent that there is a need for a revision, or at least discussion, of the widely known WHO definition of health. A large nutritional health study, financed by the Dutch government, had failed to come to a conclusion due to the lack of an operationalized definition of health<sup>1</sup>; in December 2008 Alex Jadad from Toronto called in the *British Medical Journal* for a global conversation on the web about the way health should be defined, after a literature search and conclusions about broad criticism of the WHO definition<sup>2,3</sup> and in March 2009 an editorial appeared in *The Lancet* entitled 'What is health? The ability to adapt'<sup>4</sup>. The GR and ZonMw recognised a need for a shift from defining health as a static concept towards a more dynamic and functional description. They identified this need in a number of domains and among stakeholders with different perspectives, for whom a new operationalization of the concept of health would be relevant. They include health promotion and disease prevention, research and research funding, scientific advice on health issues, health insurance and social security coverage, health policy and politics, international regulatory and policymaking organisations and, last but not least, the public and patients. The two host organisations decided on an Invitational Conference, invited some 40 Dutch and international experts for two days, and challenged them to consider the question of whether useful descriptions of health can be found for the perspectives of the different stakeholders.

The aim was to move towards a new definition or, even better, a new conceptual framework, and the title 'Is health a state or an ability?' reflects the need for a shift from defining health as a static concept towards a more dynamic and functional description or framework. Operationalization should be relevant to different stakeholders.

The programme comprised general introductions to the theme, including a look towards the future, and contributions on physical, psychological/behavioural and sociological aspects of health. In between there was ample time for discussion. Finally, the discussions of the two days were summarized and an outlook described.

The different contributions will be described here, in the sequence in which they were presented during the two days, by keynote speakers and referees examining a particular theme. The overview is based on the input from the speakers Henk Smid (who hosted the conference on behalf of ZonMw, The Hague) and André Knottnerus (chair, host from GR, The Hague), Alejandro Jadad (Toronto), Somnath Chatterji (WHO, Geneva), Lawrence Green (San Francisco) and Isabel Loureiro (Lisbon), Brian Leonard (Galway), Jos van der Meer (Nijmegen), Atie Schipaanboord (Federation of Patients' and Consumer Organisations in the Netherlands, NPCF), Kate Lorig (San Francisco), Rudy Westendorp (Leiden), Chris van Weel (Nijmegen), Jennie Popay (Lancaster), Henriëtte van der Horst (Amsterdam), Paul Schnabel (The Hague) and Richard Smith (London), as well as the briefly summarized discussions following the contributions.

A list of all participants is included in the Appendix.

### **The concept of health and the WHO definition**

Etymologically the English word 'health' literally means wholeness, being whole, complete, sound or well. To 'heal' literally means to make whole. Both words go back to the old English word *hal* and the old German word *heil*. The ancient Greek word for health is *euexia*, which means to be in a vital and resilient state. *Hygiea* is the name of the goddess of health, the daughter of Asclepius, who represents a good way of living. The Greek, English and German words for health are etymologically unrelated to the words illness and disease. Whereas the English word wholeness is more a static concept, the Greek words for health emphasize good functioning and the activity of the whole.

The World Health Organization was established at the International Health Conference of June 19<sup>th</sup>-22<sup>nd</sup> 1946, when the Constitution of the WHO was adopted. The Constitution entered into force on April 7<sup>th</sup> 1948.

The Constitution states: "The States Parties to this Constitution declare, in conformity with the Charter of the United Nations, that the following principles are basic to the happiness, harmonious relations and security of all peoples: Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition. The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States. The achievement of any State in the promotion and protection of health is of value to all.... (etc.)"<sup>5</sup>.

Since then, the statement "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" has been the generally accepted WHO definition of health.

At the time, this definition was groundbreaking because of its broadness. It is generally liked because of the aspiration it represents and because of the commonly recognised 'Health Triangle', a combination of physical, mental and emotional, and social well-being. However, over the past 60 years the definition has also often met with criticism, mainly because of the word 'complete', which makes it impracticable, as it is neither operational nor measurable.

In preparing for the 'Ottawa Charter for Health Promotion'<sup>6</sup> of the First World Conference on Health Promotion in 1986, the European Regional Office of the WHO redefined health as: "The amount of health is the extent to which an individual or group is able on the one hand to realize aspirations and satisfy needs, and, on the other hand, to change and cope with the environment. Health is therefore seen as a resource for everyday life, not the objective of living; it is a positive concept emphasizing social and personal resources, as well as physical capacities".

Furthermore, in need of indicators of population health, the WHO designed classification systems such as the WHO Family of International Classifications (WHO-FIC), which comprises the International Classification of Functioning, Disability and Health (ICF), and the International Classification of Diseases (ICD), which also define health<sup>7</sup>.

Although, over the past 60 years, several alternative definitions have been proposed, none has been embraced in the medical discourse as a replacement for the first. The original definition has never been modified or replaced and is generally described as "honored in repetition, but not in application".

### **Programme of the Invitational Conference on December 10<sup>th</sup> & 11<sup>th</sup> 2009**

- Opening
- General introduction, three keynote speeches
- A comprehensive approach to health, keynote speech and two referees
- A participatory approach to health in care and prevention, keynote speech and two referees
- Societal dimensions of health, keynote speech and two referees
- Reflections on the contributions, keynote speech
- Summary, Conclusions and Outlook

### **Opening**

**Henk Smid**, one of the two hosts, opens the Conference and expresses a warm welcome to all participants, as well as his pleasure in hosting what will hopefully be an inspiring and fruitful Conference at the home of the Netherlands Organisation for Health Research and Development (*ZonMw*), of which he is director. He then hands the microphone to the second host and chairman of this meeting, **André Knottnerus**, president of the Health Council of the Netherlands (*GR*). In his opening speech Knottnerus compares defining health with the torment of Tantalus: most of us have useful implicit ideas on what health is in daily life, but when we try to grasp it to define it explicitly, it seems to recede. Every time we think we have covered an area well, with an outline of a definition, another domain turns up which requires a quite different content. The concept of health may have different implications when applied in different fields such as health promotion, disease prevention, medicine & healthcare, determinants and outcomes, research and research funding (*Netherlands Organisation for Health Research and Development, ZonMw*), scientific advice on health issues

(*Health Council, Gezondheidsraad*), health insurance & social security, and health policy & politics. There even seem to be conflicting objectives, for example between the primary process of care, where we need a broad and comprehensive definition in the interest of individual patients, and the field of policymaking and decisions on the standard insurance package, where other interests such as cost containment come in and where more focused definitions are needed.

The purpose of this conference is to go back to the basics and to reconsider one's own principles, in order to find out what we do need and what is most feasible. No explicit definition at all? A modest or comprehensive one? A state or an ability? A dynamic framework of relevant dimensions and elements? He expresses his hopes that there will be fruitful discussion.

## **General introduction**

### **Defining health: chronicle of a 60-year journey**

**Alex Jadad** explains in his contribution that with the global conversation he initiated in the BMJ<sup>2</sup> and through his blog<sup>3</sup> he has tried to promote a social network discussion on the topic, like a re-enactment of the discussion of 60 years ago which led to the WHO definition, albeit now harnessing the power of social media. With his postdoctoral fellow Laura O'Grady he had searched the terms 'World Health Organization', 'health', and 'definition' or 'defined' in Medline, which had yielded 2081 citations, of which only a handful focused specially on the definition. Some of the articles highlighted its lack of operational value and the problems created by the use of the word 'complete'. Others declared the definition, which has not been modified since 1948 "simply a bad one". More recently Richard Smith suggested that it is a "ludicrous definition that would leave most of us unhealthy most of the time". Jadad invited anyone with internet access to comment on the definition, to challenge it or to try to enhance it. His call did bring 38 comments, most of them within three weeks, and most of these (23) with proposals for a definition (including some already existing ones). His efforts did not however result in the collaboration among the contributors which he had hoped for. Nor were additional attempts with Richard Smith<sup>8</sup> and others, through other blogs or Facebook and Wikipedia, any more successful. He is therefore very pleased with the present conference. His impression is that the difficulty with raising a discussion lies in the complexity of the concept; he tends now to feel even more strongly one of the conclusions he drew in his BMJ editorial: "In the end, we might conclude that any attempt to define health is futile; that health, like beauty, is in the eye of the beholder and that a definition cannot capture its complexity. We might need to accept that all we can do is to frame the concept of health through the services that society can afford, and modulate our hopes and expectations with the limited resources available, and common sense."

He is also very pleased with the conference's focus on the 'concept' of health and not a 'definition', as the meaning of the latter implies 'setting boundaries' and trying to arrive at a 'precise meaning of a term'. Focusing on 'the concept of health', on the other hand, would not require boundaries to be set and would permit efforts to be directed to the identification of the key characteristics of the construct.

### **Defining and measuring health – Do conceptual distinctions matter?**

In his contribution **Somnath Chatterji** explains that for the WHO conceptual clarity in thinking about health states is essential in order that the notion can be operationalized for measurement purposes. Accurate measurements at a cross section in, and longitudinally over time are critical inputs into evidence-based policy, and are necessary to enable appropriate comparison, monitoring and evaluation of interventions. As life expectancy has risen, mortality rates alone are insufficient as indicators of population health and should be combined with non-fatal health outcomes. The consistent comparison of health states between individuals, between populations, between individuals with the same or different diseases, or comparisons within an individual over time, is essential. Chatterji describes how, besides the well known WHO definition of health from 1948, the WHO has developed several conceptual models and definitions to operationalize health measurements<sup>7</sup>. The WHO definition of 'Disability' is "Difficulty in functioning at the body, person or societal levels, in one or more life domains, as experienced by an individual with a health condition in interaction with environmental factors", and is based on the conceptual framework of the ICF, the WHO's International Classification of Functioning, Disability and Health. Chatterji describes how the ICF conceptual model measures in an interactive model the domains of 1. Health Condition (Disorder/disease), 2. Body function & structure (Impairment), 3. Activities (Limitations), 4. Participation (Restriction), as well as 5. Environmental Factors and 6. Personal Factors. The key concepts of the ICF in defining disability are "Performance of a task or action in real life situation or surroundings" and the "Capacity to execute a task or action that is an inherent or intrinsic feature of the person".

In the measurement of an *individual's health state* eight core health domains – a vector of capacities – are measured in WHO's surveys, for cost reasons: 1. Mobility, 2. Self-care, 3. Pain, 4. Cognition, 5. Interpersonal activities, 6. Vision, 7. Sleep and energy, and 8. Affect. These can be expanded as required depending on the purpose and can be combined into a single metric of 'health status' on a continuum between death (value 0) and perfect health (value 1) using valuations across these domains and across multiple levels of functioning.

This quantification needs to be distinguished from a person's overall health experience and subjective appraisal. In this context, the WHO defines 'Quality of Life' as "The individual's perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards, and concerns". Quality of Life is included in a framework for assessing the *individual's health experience*, which also measures Health condition, Functioning, Capacity (Health state), Performance (in the real environment), Valuation and Well-being.

Chatterji states that an operational definition of health should include the following sub-statements: 1. Health is distinct from diagnostic categories, 2. Health is a multi-dimensional attribute of individuals, 3. Health is an intrinsic feature of the individual, 4. Health can be measured as a vector of capacities, 5. Individual health states may be described in terms of levels in different domains, 6. Health *per se* must be separated from determinants of health, 7. Health cannot be equated with all aspects of well-being.

Chatterji's overall conclusion is that conceptual clarity on the concept of health, in all its aspects, remains essential to allow meaningful comparison of like with like; to identify relationships between health and non-health outcomes; to predict future non-fatal and fatal health outcomes; to identify possible interventions and because of its implications for policy across health and other sectors.

#### **Future demands concerning a definition of health**

**Lawrence Green** prepared his views on future demands for a definition of health with **Maria Isabel Loureiro**. Green regrets the fact that the invitees do not include representatives of the medical technology and pharmaceutical industries, as these are dominant stakeholders who have had the strongest influence on new and implicit definitions of health. Their new diagnostic technologies and drugs have caused health to become increasingly defined as the absence of finer and finer abnormalities. New screening technologies are produced to detect abnormalities at levels that might never cause illness; diagnostic imaging and laboratory technologies co-create yet more false-positives; pharmaceutical companies produce new drugs for problems not previously defined as health problems or needs. The medical normative definition of health changes with each technological advance in the measurement of health indicators. Biological risk factors are lowered and require intervention, like the lowering 'borderline' and at-risk definitions of blood pressure, of cholesterol and of pre-diabetes, which were not treated in the past. The benefits of treatments are small, hundreds might need treatment for one person to benefit, and some will be harmed by treatment. We tend to let the so-called 'medical-industrial complex' define our health and we ignore our subjective perceptions of health. Health is thus presently more and more defined by default as the absence of abnormality. We must realize that, if we seek a more dynamic, functional and meaningful definition, as this Conference does, health is not a terminal but an instrumental value. We need a definition that describes health not as 'a state' but rather as a 'resource' or 'capacity'.

Green cites several thinkers and organisations that have formulated their own definitions of health. They include René Dubos<sup>9</sup>, microbiologist and humanist, who described health as "A *modus vivendi* enabling imperfect men to achieve a rewarding and not too painful existence while they cope with an imperfect world .... Health and vigor can be achieved in the absence of modern sanitation and without the help of western medicine. Man has in his nature the potentiality to reach a high level of physical and mental well-being without nutritional abundance or physical comfort". In 1982 the International Epidemiological Association<sup>10,11</sup> defined health as "A state characterized by anatomical, physiological and psychological integrity, ability to perform personally valued family, work and community roles; ability to deal with physical, biological, psychological and social stress; a feeling of well-being; and freedom from the risk of disease and untimely death", but in 1985 as "A state of equilibrium between humans and the physical, biologic and social environment, compatible with full function activity". This notion of 'state of equilibrium' might suggest a static situation, but it should be recognized that such a state is dynamic.

Alvin Tarlov<sup>12</sup> found a remarkable consistency in three elements of the definitions used over the past half century since the launch of the WHO definition: 1. Capacity to perform (relative to potential), 2. Capacity to achieve individual fulfilment and the pursuit of values, tasks, needs,

aspirations and potential, and 3. Relation to the social environment. Based on this Tarlov proposed as a definition "Health is a capacity, relative to potential and aspirations, for living fully in the social environment". Searching for a definition for the 21<sup>st</sup> century that is new, dynamic, functional, relevant and fruitful, Green shows a scheme, adapted from the EUHPID model (European Health Promotion Indicators Development Consortium)<sup>13</sup>, to indicate that even without a consented definition of health, health interventions can be initiated. The human being is placed between the tensions of salutogenesis on the one hand and pathogenesis on the other. From here a new and dynamic definition might be derived.

### Contributions to the discussion on the Introduction

- Suggestions made: A health definition should include a dynamic, dimensional aspect like duration or course. A health definition should include an element of cultural perception of health and disease.
- Concerning health, the individual is the most important stakeholder. Why not change the word 'complete' to 'personal' in the WHO definition?
- With a definition it should be possible to provide some evidence that a specific intervention actually improves health, to answer questions like: 'Is health actually improved by changing facilities in society?'
- The kind of definition one is searching for depends on whether measurements of health are needed or not. Laboratories are interested in deviation, whereas clinics are interested in problems. In addition there is a gap between professional and lay knowledge and interests (a patient in case of cancer thinks: why me, why now, what causes it?).
- A definition is probably not that important. First the basic problems should be defined, the issues we actually want to address with a new definition of health. Since there is a difference between the scientific discourse and political debate, we should analyse how different stakeholders use the concept of health. The definition itself should not be the goal.
- Although there are no current functional explicit definitions, there are several implicit definitions which are worth looking at.
- Representatives of different practices with different tasks are present here. Why not focus on how different practices can meaningfully talk to each other, instead of opposing each others' definitions? Are we looking for a 'true health' that exists in the real world (whose existence is open to question), or for different tasks for different practices? Maybe we should look for some kind of situation-related definition, where the current definition is implicit, but which favours particular perspectives, research questions, etc.

### A comprehensive approach to health

#### Stress and Health - The importance of allostasis

In his presentation **Brian Leonard** describes the physiological mechanisms of health. In Webster's New International Dictionary<sup>14</sup> this aspect of health is described as: "The condition of an organism, or one of its parts, in which it performs vital functions normally or properly". Henri Laborit described it in his '*La Vie anterieure*'<sup>15</sup> thus: "Well regulated environments rarely produce biological, physiological or behavioural disturbances. Disorders of that kind tend to appear when control of the immediate surroundings becomes impossible". The most common modern experience of loss of control is 'stress', experienced by many people as "there is so much to do and so little time to do it". Other sources of stress are social causes and consequences like economic insecurity, poor physical and mental health and interpersonal conflict. It has been reported that more equal societies almost always do better<sup>16</sup>. Stress causes physiological changes in cardiac, respiratory and gastrointestinal functions, the endocrine system and the immune system. Psychologically it causes anxiety and fear, and behaviourally it brings the fight or flight response. A healthy organism has coping strategies: the imposition of a protective process between the stressful stimulus and the individual to reduce the effects of stress. In 1988 Sterling<sup>17</sup> and Eyer<sup>18</sup> introduced the term 'allostasis' for this ability to cope, referring to the active process whereby the body responds to daily events and maintains homeostasis. Allostasis literally means achieving stability through change. A non-linear network of mediators with reciprocal interactions directs allostasis physiologically. The term 'allostatic load' is used to describe the state that results from excessive stress and the inefficiency of the coping strategy and adaptation, and is associated with pathophysiological changes. Is stress always bad? There is a difference between acute stress and chronic stress. Acute stress induces a HPA axis reaction and recovery normally follows. However, most common

stress causing stimuli operate chronically and at a low level, and cause prolonged and/or inadequate responses, like sustained increase in cortisol levels and activation of the immune system, which results in chronic low level inflammation processes. The brain, with its behavioural and physiological responses, plays a central role in allostasis. Cumulative allostatic load leads to cognitive impairment and causes atrophy of the hippocampus and prefrontal cortex, resulting in adverse changes in memory, selective attention and executive function. Accompanying hypertrophy of the amygdala is associated with fear, anxiety and aggression. Early life stress is associated with a lifelong burden of behavioural and psychopathological problems. Thus emotionally 'cold', uncaring families produce children with long-lasting emotional problems, bringing a risk of depression and Post-Traumatic Stress Disorder. In rodent studies, methylation of the DNA on key genes has shown to play a role in epigenetic transmission of stressful maternal care.

What are the consequences of coping strategies? Positive effects include low cortisol output, high heart rate variability (increased parasympathetic activity) and low fibrinogen response (decreased blood clotting) in response to mental stress tests. Negative effects bring the opposite changes, like poor adaptation of the HPA axis to stressors, decreased hippocampal volume (12%), and poor self-esteem associated with loneliness, linked to increases in cortisol, fibrinogen and natural killer cell activity. Increase in social contacts lowers the allostatic load.

In conclusion, whether stress is harmful to health depends on its nature, severity, duration and whether coping strategies are available and implemented. Stress can be activating and avoidance of it can lead to inactivity and non-optimal health. Chronic stress however triggers chronic ill-health, both physical and psychological. Social and environmental factors are major adverse factors that precipitate physical and mental ill-health in modern society.

### **Chronic fatigue syndrome**

**Jos van der Meer** has studied chronic fatigue syndrome (CFS) for over twenty years. CFS is presented here as an example of an illness that is surrounded by a great deal of controversy and bias, and which might, with its successful therapeutic approach, contribute to the discussion on health. CFS is defined as a chronic incapacitating fatigue of more than six months' duration, which is accompanied by a range of physical and psychological symptoms, but is somatically unexplained<sup>19</sup>. On the one hand there are disbelievers who consider it a variant of normal, or an imaginary illness. At the other end of the spectrum are those who are convinced that there must be a purely somatic cause.

In this field of debate it is difficult to perform sound and unbiased research into the nature of the illness. In this context a research approach is helpful which distinguishes predisposing, precipitating and perpetuating factors.

Most research points to central disturbances in perception and patients have decreased grey matter volume in the central nervous system. No drug treatment has proved effective so far, whereas cognitive behavioural therapy (CBT) has been successful, accompanied by an increase in grey matter volume, although the direction of this association and causal interpretations are as yet unclear. One interesting fact in terms of the health discussion is that in successful CBT it is essential to aim at 'recovery' and not at 'learning to live with CFS'.

### **Health, the ability to adapt - The patient's perspective**

From the patients' perspective **Atie Schipaanboord** stresses the importance of self-management. Health care has changed considerably over the last decade, shifting from supply-driven to demand-driven, with a better match between needs and possibilities and with patients making substantive choices. Some trends are visible among patients. They are more prepared to pay for better quality and services, and to travel further for their care. They are in general more highly educated than before and better informed thanks to the internet; they are more critical and interested in making comparisons between suppliers. Patients expect a high standard of medical care attuned to their needs, coordination of health care functions with proper information and communication, a respectful approach and psychosocial support. In reality, however, this is not without its problems as health care is a complex system involving many providers. Solutions are mostly instrumental and not everybody wants to be an assertive consumer. When disease occurs, quality of life may deteriorate as a result of discomfort, tiredness, pain and stiffness. It may bring limitations in daily activities, dependence on others, limited mobility and less social participation. At the same time it is important for health care professionals to realize that a patient is more than his or her disease, and to think in terms of possibilities. How far can people adapt to their situation? In Schipaanboord's view of successful self-management, the patient manages his or her own disease, while the health professional acts as a coach. She distinguishes the following factors for successful self-

management: knowledge of the disease, insight into the available options, adjustment to daily life, support from caretakers and policy. Schipaanboord perceives in present developments a paradigm switch, whereby health is becoming more than just 'costs', where patients' interests are firmly included in policy management, with investments in people to enable them to participate and to manage the disease and, where necessary, to be 'coached' by a health professional. All this is supported by rapid introduction of new ICT applications, from which patients can benefit greatly.

#### **Contributions to the discussion on 'A comprehensive approach to health'**

- The relationship between mental and physical health should be incorporated into a definition, as well as the fact that health is 'striving for equilibrium'.
- Concerning under- and over-diagnosing of illness and defining health: In contrast to the influence of science and the pharmacological industry in narrowing the domain of 'normality', there is a lack of interest in depression in society; it is an iceberg phenomenon. Mental ill-health lacks recognition because of the stigma attached to it.
- The protective aspect of 'resilience' should be studied more, for example in people who do well despite difficulties. In addition, we have to learn more about the capability approach, e.g. not all smokers get lung cancer.
- How to reinforce protective factors, empowerment and increase resilience? An example: breast feeding is a protective factor, as it constitutes a link between body, mind and environment.
- Take into account the concept of salutogenesis (becoming healthy) and Antonovsky's 'Sense of Coherence' (SOC)<sup>20</sup>. SOC includes the capacities of comprehensibility, manageability and meaningfulness, as predictive psychological factors for the capacity to cope.
- According to some speakers, devices that are implanted or which the user carries, and which change physiology, should be included in measuring health status. Should one measure a person's health status with or without their glasses? Do glasses as a device improve intrinsic health? Is supply of glasses a health intervention?

#### **A participatory approach to health in care and prevention**

##### **What is health? Does self-management make a difference?**

In her contribution **Kate Lorig** points at the fact that the WHO definition "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity", is from 1948, when acute and infectious diseases were still the norm in pathology and chronic diseases led to early death. Today death and disability from acute and infectious disease is decreasing and life expectancy with chronic illnesses is increasing. Through the years Lorig has seen the definitions of disease shift continuously. Risk factors like systolic blood pressure went from a historical 160 to 140 to 120 mmHg nowadays; diastolic blood pressure accordingly went from 100 to 90 to 80 mmHg. LDL cholesterol was first defined a risk at 3.6, then at 3.3, and now at 2.5 mmol/l (US values); fasting plasma glucose rates went from 7.7 to 6.9 to 5.5 mmol/l (US values). From these perspectives, most of the US population is sick! Furthermore, Lorig finds the WHO definition problematic as it places health in a dichotomy and not in a continuum. She perceives health not just as an absolute conclusion based on physiological or psychological measurements, but prefers to include the '*role function*' of an individual in it and to define health as a continuum of role functions. A role is a set of connected behaviours, rights and obligations. It is an expected behaviour in a given individual social status and social position. If health were to be defined as a continuum of role functions, what would it mean? The implication would be that the health system would have to change and individuals would become participators as co-creators of health, as informed and activated patients in productive interaction with a well-prepared practice team. Her experience is that patients can be activated and learn to manage their disease, resulting in measurable improvements in patient outcomes and quality of life, as well as in significant decreases in health care costs.

The 'Stanford Chronic Disease Self-Management Programme' is designed for co-morbid conditions and focuses on managing life in the face of chronic conditions. It systematically uses strategies to enhance self-efficacy, through skill mastery, modelling, reinterpretation of symptoms and social persuasion. The key self-management elements are illness-related problem solving, action planning, decision-making and confidence. The programme is peer-led in small groups, with standardized training for leaders, a highly structured teaching protocol and standardized participant materials. The effects have been extensively monitored – the US Center for Disease Control commissioned meta-analyses of the Stanford programmes - and significant improvements in health behaviour and health status were reported for up to 10 months after the intervention ended.

Participants reported improved self-rated health, less disability, less social and role activity limitations, less fatigue and more energy and less distress with their present health status. It produced similar results for different populations in the US, Canada, England and Australia, as well as among Caucasians, Spanish speakers, African Americans, Bangladeshis in the UK, Chinese, Vietnamese and Greeks. The programme was calculated to save enough through reductions in health care to pay for itself within the first year, as on average it reduced the number of days spent in hospital per half year by eight, and fewer outpatient visits were made. These effects provide a strong argument for a definition of health which includes the impact of the self-managing role of the individual.

### **Defining health in the ageing, operationalized as functional capacities**

When **Rudi Westendorp** investigated people who were 'successfully ageing'<sup>21</sup>, from the perspective of the WHO definition he found only very small percentages of people who did age successfully. The classic definition includes a physical, mental and social domain, combined in 'optimal functioning', but *self-rated well-being* is likewise important in true 'successful ageing'. Each person weighs these various components of health differently and the significance of disabilities varies over a lifetime. However, a major European study on self-rated quality of life showed a more or less constant rating over a lifetime that did however vary between nationalities. Apparently, age-related impaired functioning does not strongly influence or change perceived quality of life (Veenhoven<sup>22</sup>).

Westendorp states that ratings of health cannot be compared between groups of individuals, nor between periods of time, if they contain composite endpoints<sup>23</sup>. Standardization of weighting, by consensus for instance, allows for a less biased comparison, but ignores the marked inter-individual preferences that underlie a wide variety of personal goals. In practice the solution is to decipher the concept of health into its *underlying components*, to rate these components separately, and to study the various interrelationships. In contrast to the broad concept of health, *quantifying functional capacities* allows for valid comparisons between groups and time periods. When studying the interrelationships, it will become clear which functional capacities are a means to maximize well-being.

### **Defining health in general practice**

In his contribution **Chris van Weel** presents his experience of measuring health status in primary care. Whereas health is seen as an ideal state, functional status assessment in primary care is a pragmatic solution for obtaining an insight into the individualized situation. Thus, functional status is defined as "A measure of patients' overall physical, emotional and social well-being. It is defined as the level of functioning of a certain patient at a certain moment or in a given period of time. It refers to the ability to perform daily life activities" (Scholten & van Weel<sup>24</sup>). The '*COOP/WONCA functional status charts*' have been developed for this assessment. They present six different dimensions of health in charts: Overall health, Change in health, Physical fitness, Feelings, Daily activities and Social activities. In each domain patients are asked to rate the situation during the past two weeks, on charts showing five cartoon-like drawings or signs that clearly represent a scale of 1-5, ranging from an optimal (1) to very poor (5) situation in that specific dimension. A patient's template may change over time and is calibrated according to changing circumstances in life. The functional status is individually targeted and not disease-specific. As most patients will experience a *variety* of illness and disease throughout their life, sometimes suffering from more than one disease at once ('co-morbidity' or 'multimorbidity'), disease-specific outcomes will provide only a limited basis for valuing the effects of interventions.

For a family physician encountering a broad range of diseases, it is important to understand why a patient is seeking care at the present moment and what might be a helpful way to proceed. It is therefore important to look beyond the diagnosis to the impact of illness and disease on the patient. Even if a disease gets worse, a person's functional state might remain good.

The charts have proven to be operational in different social contexts and in different cultures. It was stressed that each dimension should be assessed in its own right and that cumulative scores cannot be calculated.

### **Contributions to the discussion on 'A participatory approach to health in care and prevention'**

- Concerning roles, a doctor is both expert and partner. Real encounters need not necessarily be face-to-face and patient-professional. They can also take the form of an exchange of patient-patient knowledge.

- Identity, encompassing multiple roles, is more important than 'role'.
- Both patient and environment can impair or restore health. On average, the impact of a prescribed treatment is due more to the placebo effect than to the context (empathy, listening skills), and least of all to the effect of a specific treatment.
- If care is all about responsiveness and compassion with patients, isn't the risk that having a good conversation should by definition be paid for by health insurance?
- Is there a distinction between a state of health and health per se? It is important to realize that on top of criteria and domains, there is also subjective valuation by the individual. This valuation changes all the time and during the course of a disease (in connection with coping and adjusting).
- A definition of health should circumvent problems like the Quality of Life Index, which has so far only been used in Western countries, but which may show an inverse relationship between quality of life and mortality in other places.
- One should use a broad range of health parameters in order to understand cure, rehabilitation and care. In classical prevention disease is the endpoint, but nowadays we also have to look at outcomes of disease. Weights of outcomes are different; e.g. in case of cure: disease; in case of care: well-being; etc.
- Health is by definition a generic concept. It does not make sense to add up parameters (numbers) of different aspects of health.

### Societal dimensions of health

#### **Health: a moral imperative embedded in unequal power relationships!**

**Jennie Popay** presents yet another view, a sociologist's view, on the question of the definition of health. She stresses it is merely a view, not *the* view. In her perception health is neither a 'state' nor an 'ability', but rather '*a moral imperative deeply embedded in unequal power relationships*'. And although the context has changed profoundly this has ever been thus. From traditional tribal societies to African States struggling to modernise in an unequal global economy; from Galenian notions of disharmony and disequilibrium to the (post)modern 'Western' world obsessed with individual lifestyles and the regulation and disciplining of the self, becoming ill has always been a sign of moral failure, a source of blame. As Turner argues 'states of health are therefore inherently associated with moral meanings and judgements'. Two things follow from this. First, because they involve struggles over moral meanings, concepts of health are inherently contested and always will be. Second, there is some, albeit limited, evidence that perceptions of health reflect basic structural and cultural differences in power relationships in society. Popay illustrates the social patterning of 'lay' narratives about health by, for example, the absence of disease, the ability to function in the 'everyday', a state of well-being, a stock or reserve. She suggests that these different narratives or concepts reflect people's attempt to retain moral worth in the context of enduring inequalities in access to the resources needed to maintain and promote health and in the experience of ill health and premature mortality.

On the question of whether a new more dynamic concept of health is needed, Popay's response flows from an understanding of health as a contested moral and political domain, characterised by struggles over *meanings*, over 'how life is to be lived' in unequal social systems. Currently, research on health and health inequalities is dominated by an epistemology rooted in naturalism, positivism and quantification. In this numerical world, individuals dominate, but as accumulated vulnerabilities and resiliences and/or sets of freely chosen behaviours. An alternative approach is to see individuals and communities as 'knowing subjects', constructing meanings and judgements about health that are logical in the conditions in which they live, and able and willing to account for their actions. In this context no single definition or associated quantitative measure of health – no matter how dynamic – will suffice. In contrast to current approaches to evidence accumulation and utilisation dominated by scientific and professional rationalities, Popay describes an example of popular epidemiology and health needs assessment that engaged multiple lay, scientific and professional perspectives in a deliberative process<sup>25,26</sup>. She argues that whilst sometimes uncomfortable and conflictual, these types of processes provide opportunities for a collective *verstehende* theorising, creating 'new knowledge spaces' for the development of policy and practice. The co-creation of citizen and scientific expertise is not just a more inclusive and democratic form of science, but a more reliable, valid, effective and context-rich science, better able to inform social action (Forrester<sup>27</sup>).

### **Societal dimensions of health in general practice**

**Henriette van der Horst** presents a similar view. Referring to John Bergers' book '*A Fortunate Man. The Story of a Country Doctor*<sup>28</sup>', in which he characterizes illness as a subjective experience, she wonders if health is likewise a subjective experience? As a general practitioner she recognises that health has different connotations for different people, in different periods of life and in different societies, and that it has different importance in different personal domains. Health is clearly not the absence of physical symptoms, as innocent symptoms are omnipresent; nor is it the absence of disease, as no single person is free of all disease. A focus on symptoms and on treating disease carries the risk of over-diagnosing, and might even cause new symptoms. Van der Horst discerns several dimensions of health: one dimension is a person's capacity to fulfil their potentialities and obligations, another dimension is the ability to manage one's own life, despite a 'medical' condition, and a third dimension is the ability to participate in social and societal activities, including work. Although work might cause stress, it is also important for mental health and protects against depression. Health is indeed, in her opinion, as subjective as illness. Health can be regarded as a dynamic balance between opportunities (good physical condition, fortunate disposition) and limitations (poor physical condition, unfortunate disposition), shifting through life and affected by external conditions (societal and environmental factors). This balance can be achieved by the ability to adapt (successfully) to internal and external changes. By means of adaptation, people are able to work or participate in social activities, and can feel healthy, despite severe limitations.

### **A sociologist's view of concepts and frameworks**

Reflecting on the discussion of concepts, definitions and operationalizations **Paul Schnabel** refers to sociologist Herbert Blumer's differentiation between two domains of concepts: *definite concepts*, providing prescriptions of what to see, e.g. a table, a tree, and *sensitizing concepts*, merely suggesting directions in which to look, e.g. intelligence, love, or health<sup>29</sup>. Through operationalization, a sensitizing concept can turn into a definite concept, e.g. intelligence may be operationalized by introducing the concept of intelligence quotient. Blumer stipulated that the process of operationalization inevitably alienates the sensitizing concept from its original content and does injustice to the rich variation in meanings and connotations embodied in the sensitizing concept. Schnabel's view is however that the richness of the content of a concept only becomes clear by specifying it. In order to conceptualize health a dynamic approach combining *definite* and *sensitizing* concepts is needed. 'Health' may be operationalized by defining it by 'indicators of health', and a hierarchy of health *frames* might help in arriving at a more systematic approach to health research.

Concerning building a framework, Schnabel proposes differentiating first between the health status of collectives and of individuals, and secondly between objective indicators of health and subjectively experienced health. Concerning the health of a *collective*, the hierarchy of health indicators might be: 1<sup>st</sup> frame: Health in terms of low infant mortality and high life expectancy is good. 2<sup>nd</sup> frame: Difference in health between groups due to internal and external factors (inequality), connected to the general idea that an evenly distributed health is a better indicator of health than a highly uneven distribution. 3<sup>rd</sup> frame: The penchant in society for risky behaviour. We might ask the members of the collective if, in what way and on what grounds they would call *themselves* healthy or unhealthy. Simple questions suffice.

A framework for the *individual's* state of health might objectively differentiate between: 1<sup>st</sup> frame: physical indicators, e.g. blood pressure, BMI, cholesterol levels, all on scales with fairly narrow boundaries; 2<sup>nd</sup> frame: tests, adapted to age and gender, of the abilities of the person concerned, in relation to expectations; 3<sup>rd</sup> frame: a person's medical history and an assessment of the present situation. Subjectively experienced health can be questioned in the same way as with collective health, but the answers will be analysed on the level of the individual. What is the pattern in the answers of people in comparable situations? How big is the distance from what is considered 'normal'?

### **Contributions to the discussion on 'A sociological view of health'**

- How can lay health be assessed? Simply by asking lay people? Who are experts in this field: health care workers or scientists?
- Lay knowledge may appear inconsistent, yet within different frames of reference it will actually relate consistently. It is a different domain.
- A risk of defining health from a layman's perspective is that it relies only on the subjective part. Do politicians pay attention to it? It could be used as an excuse: what we can't measure we can't manage and therefore can't change.

- In our discussion of empowerment, we have overlooked the fact that inequality –including health inequality – is socially patterned. When addressing the question of health promotion one should also look at inequality in society.
- Should one use the term inequity (unfairness; a more moral connotation) rather than inequality?
- We may not need to develop a new concept, but rather a toolbox of different ways to approach health, within different domains, with different frames of reference. We should learn to switch between the domains.
- All we verbalize about health needs to match an intuitive notion that people have; there is a universal aspect. If we don't agree upon the underlying assumption that health is 'a good thing to have', defining health is doomed to fail.

### **Reflections on the contributions**

In his reflections on the contributions **Richard Smith** decided to challenge the audience, raising the question of what exactly the problem is that we are trying to solve here. Do we really need to come up with another definition of health? Didn't Wittgenstein say that all problems are linguistic problems? So is it a real problem? It is true that a growing proportion of the population is nowadays defined as ill. It makes sense to bring that number down again, which might be supported by talking more about death. Smith refers to the editor of Harper's magazine, who wrote about death as 'a very healthy thing'. Smith argues that the discourse about disease used to be useful, but today, with average life expectancies steadily increasing across the globe, the discourse about doctors, diseases and drugs has started to become counterproductive. In today's society, under the influence of the medical and pharmacological industries, diseases are growing in number all the time and we busy ourselves with treating them, whereas what we really should be looking at is global health, at improving sanitation, hygiene and social justice. A lot has been said about classifications. It has become clear that if we measure something, we must focus on what we need to know and not add aspects that are quite different. He himself, at the age of 57, would score low on functioning, but at the same time he feels very good. Likewise, his mother, who remembers nothing, is very happy. So what is health?

Smith admits that he, like most of us, is not entirely happy with the current definition. Maybe framing indicators of health according to society's possibilities is the best we can do. Smith cites a number of definitions of health that have been put forward during the Conference. Of course there are some that he likes and some that he likes less, but how many do we really need to consider, he questions.

According to Smith, at least three additional points should be included in any redefinition:

- Include the broader environment in which people live
- What do we define as normal? Beware of making us all abnormal!
- Consider health as a journey, rather than the destination

He describes a number of words that have been associated with health, some of which he likes (adapt, social, ability, capacity, resource, cope), some of which he doesn't (complete, mental, absolute), some of which he is unsure about (aspirations) and one which he would like to add: value. He concludes that, frankly, we will probably not be able to define health (not even with frameworks), as he would expect to end up with seven billion definitions. His preferred definition remains Freud's "Health is the capacity to love and work".

Smith suggests continuing this conversation, and looking for what is needed, be it in agreement or in disagreement. He proposes that we include other people, in other places. He concludes by stressing that it is the quality of the search, including epidemiology, lay knowledge, economists, anthropologists, ecologists etc. that counts, not so much the outcome.

### **Contributions to the final general discussion**

- It is crucial to focus on ability/capacity in a new definition or concept of health.
- It is important in defining health to keep in mind the 'active' perspective. The debate should be continued in more groups like this one, and among politicians and in other fields. Bear in mind the consequences this may have for the funding of scientific research, health care finances etc.
- Acknowledge that there are different networks that need to become involved in the conversation.
- Cost containment should be considered. We hope to keep things in order by exercising objectivity. Yet we should pay attention to the fact that the costs of quantitative research might be getting out of hand.

- On public health: Public strategies should be targeted at optimizing and maintaining functional capacities. Yet people themselves are primarily responsible for achieving personal goals and emotional well-being. Individual variety makes it hard to optimize happiness through public strategies. Reconsider what bits and pieces should be provided, without being responsible for the personal outcome.

### **Summary, Conclusions and Outlook**

#### **Chairman André Knottnerus summarizes the two days and draws conclusions**

The title of this Conference is 'Is health a state or an ability? Towards a dynamic concept of health'. In general it became clear during the Conference, as was expected, that defining health is an ambitious and complex topic. Many aspects have been considered, like determinants and outcome measures, prevention and care, individual versus society, professional versus consumer, subjective versus objective, evidence base versus evidence chase. The point of reference of all these aspects remains a primordial concept, definition, or framework of health.

At the time the WHO definition was a breakthrough. The well-known criticisms arose, regarding the difficulty to apply the definition for practical purposes, mainly due to the mention of the 'complete' states of well-being. From the discussions at the present Conference one might conclude that a single comprehensive definition of the concept of health is not realistic, but that nevertheless a framework, or a hierarchy of frames, in relation to relevant objectives and contexts is an attractive and probably feasible goal.

Important *elements* expressed at this conference, which should be taken into account in defining and operationalizing health are:

- Health should not be considered a state, but should be seen in relation to dynamic factors like the balance or equilibrium of different aspects, homeostasis, allostasis, resilience, and it should also be related to age.
- Further characteristics of health include: an inner resource, a capacity, an ability, a potentiality to cope with or adapt to internal and external challenges, to perform (relative to potential, aspirations and values), to achieve individual fulfilment, to live, function and participate in a social environment, to reach a high level of well-being, even without nutritional abundance or physical comfort.
- Health should be considered in an individual or group context; social inequalities have a major influence on health.
- A differentiation between sensitizing and definite concepts clarifies the frequent confusion in the discussion. Sensitizing concepts are broad, abstract and difficult to define, but are generally recognized as a direction in which to look. Examples are intelligence, love, faith or health. Definite concepts provide a description and operationalization of such concepts, like the 'intelligence quotient' for intelligence, or 'indicators of health' for health. In this realm a hierarchy or framework of indicators can be developed.
- Operationalization of the concept of health is necessary for measuring purposes, to provide an evidence base for policies and interventions and to enable appropriate evaluations. Monitoring can be cross-sectional or longitudinal.
- Health can be deciphered and rated in underlying components, but these should not simply be summarized on one scale. However, interrelations can be studied and supply valuable information.
- Health can be studied on a group level, but should be distinguished from health studied on the level of the individual.
- Health can be studied by objective indicators, or by the subjectively experienced state and appraisal of health. These two areas do not necessarily overlap. Age-related impaired functioning does not strongly influence self-rated quality of life.
- Perceptions of health seem to reflect basic structural and cultural differences in power relationships in societies.
- Combining popular and lay knowledge, e.g. about meanings related to health and behaviour, with professional knowledge, results in innovative science which is valuable for social action.
- From the perspective of health care and public health it has been emphasized that the individual's capacity for self-management, participation, empowerment and increase of resilience, are of major importance for efficacy in health care and public health contexts, and should be stimulated and trained.
- However, professionals can never take responsibility for the total well-being of an individual.

In discussions about health, specific *contexts* will influence the content of the discussion differently. Examples of such contexts include:

- The domain of the primary process of medicine & healthcare requires measurable determinants and outcomes to evaluate interventions in the realm of *pathology*.
- The domain of health promotion and disease prevention touches upon the need to evaluate improvements within the realm of the healthy state, e.g. increase in *resilience*.
- The domain of research and research funding (*Netherlands Organisation for Health Research and Development; ZonMw*) requires sound and efficient scientific determinants and outcomes of research to provide an evidence base for practitioners and policymakers.
- The domain of scientific advice on health issues (*Health Council of the Netherlands; Gezondheidsraad*) is facing new and controversial topics, like 'enhancement', and is obliged to take very different perspectives into consideration.
- The domain of health insurance & social security coverage is confronted with the need to define limits, from a cost-effectiveness and cost-benefit point of view, in the coverage of health interventions as desired by individuals.
- Occupational health interfaces with the domain of employers and employees, and concerns the impact on health of economic participation in relation to individual limitations.
- The industrial-pharmacological domain displays a financially-driven tendency to diagnose and then eradicate increasingly refined aspects of abnormality.
- The domain of health policy & politics operates in a societal context, where major societal interests might encounter great scientific uncertainty, but decisions still need to be taken.

These different contexts may present conflicts of interests. Most obvious is the conflict between the domain of the primary process of care and prevention and related research, where optimisation of the outcome is in the direct interest of individuals and groups, *versus* the domains of industry, policymakers and employers, where the operationalization of health may conflict with the interests of individuals and groups.

**Knottnerus concludes** that these two days of discussion have been very fruitful.

A re-definition has not been reached, but this was not in fact to be expected. However, many of the domains involved have been explored and become more visible, and the contours of possible frameworks of health indicators have been sketched. Generally, there was clear support for a dynamic view of health, including aspects of ability to adapt and to self-manage. It has been suggested that the discussion be continued, involving other stakeholders, including patients.

#### **Outlook: prospects for a connected Research Agenda**

- Define the basic problems and issues that should be addressed in a conceptual framework of health.
- Elaborate which particular domains need to be served by related definitions and health indicators, where the current definition is implicit, and which favour particular perspectives, research questions, etc.
- Define determinants of favourable health outcomes for specific domains.
- Expand the evidence base concerning the impact of elements of the concept of health that are assumed to be important.
- Elaborate a multi-method approach: both quantitative and qualitative/anthropological.
- Elaborate practice-based evidence in relation to specific health indicators.
- Elaborate the protective aspect of 'resilience', e.g. in people who do well despite difficulties.
- Elaborate how to reinforce protective factors and empowerment and to increase resilience.

#### **The follow-up to the Conference will consist of:**

- Dissemination of the report (national, international)
- A position paper on the topic
- Presentation of the combined documents to the Executive Board of the WHO



## APPENDIX

### Participants at Invitational Conference on Health on December 10<sup>th</sup> & 11<sup>th</sup> 2009

Professor Trudi van den Bos	Academic Medical Centre Amsterdam, NL
Dr. Jeanet Bruil	Netherlands Organisation for Health Research and Development (ZonMw), NL
Dr. Somnath Chatterji	World Health Organization, Health Statistics and Informatics, Geneva, Switzerland
Professor Lawrence Green	University of California, San Francisco, USA
Professor Peter Groenewegen	National Institute for Health Services Research (NIVEL), NL
Lejo van der Heiden	Ministry of Health, NL
Dr. Nancy Hoeymans	National Institute for Public Health and the Environment (RIVM), NL
Margreet Hofstede	Ministry of Agriculture, Nature Management and Fisheries, NL
Professor Henriëtte van der Horst	VU Medical Centre, NL
Machteld Huber, MD	Netherlands Organisation for Health Research and Development (ZonMw) & Louis Bolk Institute, NL
Professor Alex Jadad	University of Toronto & University Health Network, Toronto, Canada
Professor Joop de Jong	VU University Amsterdam, NL
Professor André Knottnerus	Health Council of the Netherlands (GR), NL
Professor Daan Kromhout	Health Council of the Netherlands (GR), NL
Professor Brian Leonard	University of Ireland, Galway, Ireland
Cecilia Ljunggren	Netherlands Organisation for Health Research and Development (ZonMw), NL
Professor Kate Lorig	Stanford University, Palo Alto, USA
Professor Maria Isabel Loureiro	National School of Public Health, Lisbon, Portugal
Professor Jos van der Meer	Radboud University Medical Centre Nijmegen, NL
Johan Melse	National Institute for Public Health and the Environment (RIVM), NL
Professor Pauline Meurs	Netherlands Organisation for Health Research and Development (ZonMw), NL
Professor Annemarie Mol	University of Amsterdam, NL
Dr. Nico de Neeling	Health Council of the Netherlands (GR), NL
Professor Jennie Popay	Lancaster University, Lancaster, UK
Dr. Jacomine Ravensbergen	Netherlands Organisation for Health Research and Development, (ZonMw) NL
Atie Schipaanboord	Netherlands Patients and Consumers Federation (NPCF), NL
Professor Paul Schnabel	Netherlands Institute for Social Research (SCP), NL
Eert Schoten	Health Council of the Netherlands (GR), NL
Professor Marieke Schuurmans	University Medical Centre Utrecht, NL
Henk Smid	Netherlands Organisation for Health Research and Development (ZonMw), NL
Professor Richard Smith	United Health Chronic Disease Initiative, UK
Professor Mirjam Sprangers	Academic Medical Centre Amsterdam, NL
Professor Anne Stiggelbout	Leiden University Medical Centre, NL
Professor Jan Swinkels	Academic Medical Centre Amsterdam, NL
Professor Chris van Weel	Radboud University Medical Centre Nijmegen, NL
Professor Rudi Westendorp	Leiden University Medical Centre, NL
Marja Westhoff	Netherlands Organisation for Health Research and Development (ZonMw), NL
Professor Dick Willems	Academic Medical Centre Amsterdam, NL
Jan van Wijngaarden	Netherlands Health Care Inspectorate, NL



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