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## *APPROPRIATENESS IN HEALTH CARE SERVICES*

Report on a WHO Workshop

Koblenz, Germany  
23–25 March 2000

2000

EUROPEAN HEALTH21 TARGET 18

## EUROPEAN HEALTH21 TARGET 18

### DEVELOPING HUMAN RESOURCES FOR HEALTH

By the year 2010, all Member States should have ensured that health professionals and professionals in other sectors have acquired appropriate knowledge, attitudes and skills to protect and promote health

*(Adopted by the WHO Regional Committee for Europe at its forty-eighth session, Copenhagen, September 1998)*

### ABSTRACT

The Workshop, held with the support of the German Ministry of Health, reviewed evidence of appropriate and inappropriate services, and exchanged information on the meaning of appropriateness, methods of identifying appropriate and inappropriate services, and strategies for increasing the proportion of services that are appropriate.

Appropriateness is a complex, fuzzy issue that defines care that is effective (based on valid evidence), efficient (cost-effective), and consistent with the ethical principles and preferences of relevant individuals, communities or society.

Progress will require a greater alignment of the expectations of patients, professionals, provider organizations, purchasers, politicians and the public at large. Governments, and other organizations responsible for the provision of quality health care, will need to invest in participatory research on effectiveness and cost-effectiveness, support the dissemination of research results, encourage public debate on the ethical principles of prioritization and promote consensus on the principles on which to base the goals of a health care service.

DELIVERY OF HEALTH CARE  
QUALITY ASSURANCE, HEALTH CARE  
HEALTH SERVICES RESEARCH  
APPROPRIATE TECHNOLOGY  
HEALTH ECONOMICS  
HEALTH SERVICES NEEDS AND DEMAND  
PRACTICE GUIDELINES  
UNITED KINGDOM  
GERMANY  
BELARUS  
EUROPE

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## **1. Background to the workshop**

Appropriateness in health care services has not often been the subject of meetings and workshops, since it has been assumed that services delivered are appropriate until proven otherwise. In view of recent discussions on cost-effectiveness, quality of care and rationing, the appropriateness of the health care delivered has become a key issue. Studies in the 1980s, such by the RAND Corporation, were among the first in the field of appropriateness evaluation and were followed by research on subjects such as geographic variations in treatment, appropriateness of interventions, definition of criteria for appropriate care and methods to assess appropriateness. It was therefore timely to review evidence of appropriate and inappropriate health care delivery and methods for detection.

The World Health Organization (WHO) Regional Office for Europe convened the workshop following the suggestion, and with the financial support, of the German Ministry of Health. The meeting was organized in cooperation with the Project Management Organization at the German Aerospace Center (DLR) represented by Dr Dorothea Bronner and Dr Stefanie Gehring. Academic and content support was provided by Professor Karl Lauterbach (Institute for Health Economics and Clinical Epidemiology of the University of Cologne) and Professor Christian Ohmann (Department of Theoretical Surgery of the University of Düsseldorf). Professor Rodney Jackson from the University of Auckland, New Zealand acted as rapporteur and Dr Afshin Gandjour (Institute for Health Economics and Clinical Epidemiology of the University of Cologne) as German co-rapporteur. Dr Hermann Schulte-Sasse (German Ministry of Health) welcomed the participants on behalf of the host country and emphasized the importance of the meeting in the current political context in Germany.

## **2. Purpose of the workshop**

Dr Herbert Zöllner (WHO Regional Office for Europe), the Secretary of the meeting, introduced the scope and purpose for the multinational group: to present and analyse results and exchange experiences (see list of participants in Annex 1). More specifically, the workshop aimed to encourage the exchange of national and international information and knowledge on the meaning of appropriateness, methods of identifying appropriate and inappropriate treatments, interventions (see programme in Annex 2) and strategies able to increase the share of appropriate treatments and interventions.

## **3. Main conclusions of the workshop**

### **3.1 Definitions of appropriateness of health care practice**

Appropriateness is a complex issue with various dimensions and definitions and these differ between countries. However, most definitions of appropriateness address a number of key requirements: that care is effective (based on valid evidence); efficient (cost-effectiveness); and consistent with the ethical principles and preferences of the relevant individual, community or society. The priorities given to each of these dimensions vary in different populations.

Appropriateness contains a judgment regarding care at different decision levels (such as health care delivery, health care policy, and research and development) that summarizes clinical, public health, economic, social, ethical and legal considerations. It is therefore important to consider who makes the judgment, on what evidence and following which process of consultation.

### **3.2 An economic interpretation of appropriateness**

In order to not make appropriateness appear more value laden and qualitative than efficacy, effectiveness, efficiency (cost-effectiveness) and empowerment, economists have attempted to introduce quantitative definitions of inappropriateness. From this perspective, “underuse” occurs when an intervention which has a proven net benefit and is cost-effective is not performed, “overuse” occurs when an intervention which is of unproven net benefit or which is not cost-effective is performed; and “misuse” occurs when an intervention which has a negative net benefit is performed.

### **3.3 Variations in appropriate health care practice**

There remain substantial variations in health care practices both within and between countries. These variations represent overuse, underuse and misuse of health care practices. Examples of such practices presented at the workshop include: percutaneous transluminal coronary angioplasty (PTCA); hernia repair; diagnostic procedures for abdominal pain; management of diabetes mellitus and of hypertension; and cutting-edge technologies.

### **3.4 Research on appropriateness**

There is a general paucity of research on appropriateness of health care, even in those countries where there is active public debate. However the degree of appropriateness considerations in practice and public debate appear to be greatest in countries with active research programmes on effectiveness of health care.

### **3.5 International activities around appropriateness**

Between and within countries major differences exist in activities around appropriateness, including the level of public debate, research activities, quality improvement activities, measurement and consideration of patient preferences (e.g., patient satisfaction), and integration of appropriateness considerations into practice.

### **3.6 Appropriateness and ethics**

Ethical values play a central role in determining the priorities given to components of appropriateness and it must be accepted that defining appropriateness is, to a large degree, a socio-political process, involving multiple players and preferences.

### **3.7 Individual versus population priorities in determining appropriateness**

There is a significant tension between macro and micro level considerations in determining appropriateness. While there will always be some conflict between these levels, real progress will require a greater alignment of the expectations of all those involved including patients, professionals, provider organizations, purchasers of health services, politicians and the public at large. This will only occur if there is open and widespread public and professional debate around these issues.

### **3.8 Rationing of appropriate health care practice**

It is not possible at present, and is unlikely to be possible in the future, for any country to reimburse all services that are effective. In this regard, not all available and effective practices can be recommended for routine clinical practice. Evaluation research, including on appropriateness, has, on the whole, not yet been able to inform and support priority setting and rationing. Cutting-edge technologies should be confined to scientific research and development of evidence before introducing and tailoring them to routine use.

### **3.9 Consumers and appropriateness**

Individual consumers will be more interested in the effectiveness of interventions than appropriateness from a societal perspective. Reviews of the effectiveness of practices, such as Cochrane reviews and other meta-analyses will become more targeted at consumers to help them make more informed choices. However, policy-makers will increasingly demand appropriateness assessments that consider costs as well as effectiveness. Therefore, there is potential for tension between informed consumers with knowledge of effectiveness and practitioners using clinical practice guidelines and other decision guides based on efficiency.

### **3.10 Progress in refining the dimensions of appropriateness and taking action**

While the dimensions of appropriateness and the methods for determining appropriateness (particularly those based on effectiveness, cost-effectiveness and ethical principles) discussed at the workshop remain relatively crude, they are likely to be the primary determinants of the appropriateness discussion and activities over the next 10 years. There is still limited knowledge, awareness, or research on these fundamental components of appropriate health care. If any real progress is to be made over the next decade, governments and other organizations directly and indirectly responsible for the provision of quality health care will need to make substantial investments in research on effectiveness and cost-effectiveness. They will also need to support dissemination of research and public debate on the ethical principles of prioritization. Until there is public consensus on the principles on which to base the goals of a health care service, the meaning of appropriateness will remain implicit and confused.

## **4. Aspects of appropriateness in health care**

Over the three days of the workshop the major component of the programme was a series of presentations on key issues related to the dimensions of appropriateness both at a generic level and in relation to specific health care practices. In addition there were a number of brief presentations on recent activities in the different countries represented at the meeting and two working group exercises were held. The first working group exercise required participants to consider the dimensions of appropriateness in determining the management of two hypothetical patients with gastroesophageal reflux disease. The exercise illustrated the importance of explicitly considering the various components of rational decision-making and demonstrated the many different assumptions individual decision-makers implicitly make. In the second group exercise, groups undertook a priority setting exercise in relation to treatment of series of chronic diseases. Participants had considerable difficulty assessing priorities. In addition they had difficulty assessing thresholds using criteria based on costs per quality-adjusted life-years saved. While these indicators were of considerable interest, they require further development before they can be used as major criteria for prioritizing care. In conclusion, both groups demonstrated the complexity of appropriateness in scientific analysis and policy-making.

In the sections throughout the remainder of the report the key topics discussed during the meeting are summarized. Their content is generally based on the written papers prepared for the meeting as well as on their verbal presentations and the comments and discussions during the workshop. The names of the presenters for each topic are listed in the programme (Annex 2).

### **4.1 Appropriateness of care in various dimensions: an introduction**

“Appropriateness” has been described as “the next frontier” in the development of health care.<sup>1</sup> The growing interest in appropriateness has been fuelled by the dramatic growth in expensive medical technologies and services that have reduced our ability to give everybody access to

effective care. Moreover, the sheer volume and complexity of available services has made it virtually impossible for clinicians to practice good medicine without ongoing decision support. This has led in turn to an explosion in the development of clinical guidelines. However few of these guidelines are user-friendly or evidence-based, and it is generally accepted that between 20–60% of patients either receive inappropriate care or are not offered appropriate care.<sup>2</sup>

### ***Definitions of appropriateness***

The Rand Corporation has defined care as appropriate when “for an average group of patients presenting to an average US physician ... the expected health benefit exceeds the expected negative consequences by a sufficiently wide margin that the procedure is worth doing ... excluding considerations of monetary cost.”<sup>3</sup> This generic definition has significant shortcomings. However, it is one the most widely quoted in the appropriateness literature, and is a useful starting point.

### ***The dimensions of appropriateness***

#### **– Effectiveness**

While the dimensions of appropriateness in health care are greater in scope than those inferred by the Rand Corporation, this definition focuses on the one absolute requirement of appropriate care; that is “effectiveness.” Unless the benefits of care exceed the harms, care is clearly inappropriate. However, assessing the effectiveness of care is not straightforward and involves a number of complex steps. The relevant outcomes of a health care intervention (risks and benefits) must be identified; appropriate comparisons (e.g. no care or alternatives) must be defined; the magnitude of the effects of health care on the chosen outcomes must be quantified from the external evidence; the relative importance of the different outcomes must be assessed and weighted; and the individuals or groups to whom the finding apply, must be defined. These steps, in effect, describe the principles of evidence-based health care, which unfortunately is still in its infancy and is not yet the dominant paradigm of health care practice.

#### **– Efficiency**

As no health care system can afford to provide access to all effective care, the effectiveness per unit of cost is an important dimension of appropriate care. However the priority that should be given to efficiency, compared to other objectives of health services, is extremely contentious.

#### **– Ethical principles and priority setting**

It is now generally acknowledged that priority setting in health care is primarily a socio-political rather than clinical process. Over the last five years there has been an international trend away from a search for priority setting systems based on micro-level rational decision rules and algorithms, towards the development of “meta-rules” that inform the process of priority setting.<sup>4</sup> This is commonly known as the principles-based approach to priority setting. The Scandinavian countries have been very active in this debate recently. In Sweden, for example, a national Priorities Commission has established three ethical principles to inform policy on priority setting.<sup>5</sup> These were, in order of importance: human dignity (equal rights for all); need and solidarity (identifying those at greatest need and supporting those less able to exercise their rights) and lastly cost-efficiency. It is of interest that effectiveness is simply assumed in the debate.

### ***Challenges for the future***

Over the past decade there has been considerable pressure on health care policy-makers to deliver a complete set of rational rules that decision-makers can use to determine what care is

considered appropriate. While it is reassuring that more recently their expectations have become more realistic and they are developing meta-rules to inform decisions rather than micro-rules to determine decisions, the basic assumption that effective health care must be prioritized is not universally accepted. The first challenge is therefore to convince health professionals and the public that priorities of effective health care must be discussed; given resource limitations it is inevitable that some effective health care must be rationed.

Secondly, it is questionable whether we yet have the necessary expertise to determine the effectiveness of care on a widespread basis. Health care professionals are only just beginning to seriously address the components of effectiveness in a systematic way and the second challenge is to make this process more rigorous and explicit. The pioneering activities of groups like the Rand Corporation have identified many of the key processes required to develop measures of appropriateness however much of their work still relies on subjective and implicit decisions about the balance and weightings of benefits and harms. There is a pressing need for more external evidence on the effectiveness and efficiency of health care practice using outcomes that are relevant to patients. Health professionals require training in the steps of evidence-based decision-making (i.e. more education), they require better access to user-friendly decision support (i.e. more tools for implementing evidence) and the process will require on-going assessment (i.e. more evaluation).

Thirdly, in parallel with this process of identifying effective and efficient care, the health professionals who are charged with implementing priorities and the public who are affected by them need to be involved in a more transparent and explicit debate about the principles on which to inform the setting of health care priorities.

The final challenge will be to align the micro-rules used by health professions and patients with the meta-rules used by purchasers and managers, so that the different priority setting mechanisms follow the same principles.

#### **4.2 Variations in the appropriateness of health care delivery: an ecological model**

The goal of the “ecological” approach to identifying appropriate and inappropriate treatments and interventions is to understand and involve recipients of care and to understand how people become effective and adaptive in varied social environments. A principle fundamental to ecological approaches is the need to use multiple methods to understand the complex qualities of relationships and systems. One such ecological method for increasing our understanding of that which we claim to know is the collaborative relationship between the researcher and the study participants. Inappropriate health care can occur when there is a lack of attention to ecological issues in assessing and implementing health care services.

Biases in our understanding of certain health care disorders can lead to invalid findings that limit our ability to assess health care issues and to intervene appropriately. When appropriate and more ecologically sound research methodologies are used (and we listen to patient concerns), more valid evidence can be found, and used for more appropriate health care planning. Ecological principles should be used by professionals to join in long-term collaborative relationships with persons and settings. By involving participants actively in the planning of interventions, the recipients of the programmes receive support, learn to identify resources, become better problem-solvers, and are more likely to manage future problems and issues.

Interventions that have been generated from collaboratively defined, produced, and implemented efforts are more apt to endure. By involving participants in the design of the research, investigators may gain a greater appreciation of the culture and unique needs of the community, and this may increase the possibility of the research findings being used to benefit the community.

## **5. Examples from different areas of health care**

In order to derive valid conclusions, a number of health care interventions were discussed as tracers and concrete examples.

### **5.1 Appropriateness in health promotion: treatment of tobacco dependence in the United Kingdom**

Smoking is the United Kingdom's single greatest cause of preventable illness and premature death with over 120 000 cases per year. In England the National Health Service (NHS) treatment costs for smoking are estimated to be £1.7 million per year. Other costs to society are huge, for example: fires; absenteeism; etc.

Investment in tobacco dependence treatment has become a priority because a significant proportion of existing smokers must quit in order to reduce predicted deaths in next 20–40 years. Cost-effective and clinically effective treatments are now available and without support annual quit rate is only about 1.5%.

A recent World Bank report estimates that by 2030 tobacco will be world's biggest cause of deaths, with 10 million deaths each year or 1 in every 6 deaths. Seven out of 10 of these deaths will be in low to middle income nations and half of all long-term smokers will be killed by tobacco, with half dying in middle age, losing 20–25 potential years of life.

A number of strategies are required to curb the epidemic. Increased tobacco taxes provide increased revenue in short to medium term and reduce consumption. Smoking cessation efforts are cost-effective. Bans on tobacco advertising and promotion, public education campaigns and smoking restrictions in public and workplaces have been demonstrated to reduce consumption.

The increasing evidence on effective treatment of tobacco dependence has stimulated the development of the United Kingdom Smoking Cessation Guidelines (published December 1998), which have received wide professional endorsement and have been extensively peer reviewed. A new Royal College of Physicians Report on Nicotine Addiction in Great Britain was produced this year demonstrating that the effectiveness of tobacco dependence treatments is doubled by use of nicotine replacement therapy. Up to £50 million over three years has recently been allocated in the United Kingdom for a public education media campaign. The key slogan is "Don't give up giving up." The next phase will focus on the young, pregnant women and ethnic groups.

The treatment of tobacco dependence in the United Kingdom is one of the few examples of an appropriate health promotion programme. A comprehensive evidence-based programme has been developed and is being implemented. Given that tobacco addiction is a major cause of preventable premature death, and effective and cost-effective treatments are now available, they should be a routine part of health service provision worldwide.

## **5.2 Appropriateness in diagnosis: abdominal pain – one symptom and 1001 diagnostic means**

Acute abdominal pain is the most frequent emergency in surgical hospitals and more than 6% of cases seen in general practice are related to acute abdominal pain. Approximately 250 000 cases of appendicitis, accounting for more than one million hospital days per year, have been documented in the United States alone. Lifetime risk for appendectomy, one of the major diagnoses in acute abdominal pain, is 12% for males and 23% for females. Acute abdominal pain is responsible for considerable morbidity and mortality; for example, up to 15% short-term and 3% long-term complications have been registered after appendectomy.

More than 100 diseases can cause acute abdominal pain, however approximately 90% of the cases are covered by 7 to 10 diagnoses. Nonspecific abdominal pain and acute appendicitis amount to more than 60%. Other frequent diagnoses are acute cholecystitis, small bowel obstruction, acute pancreatitis, renal colic, perforated peptic ulcer, diverticulitis, and dyspepsia. In women there is a major differential diagnostic problem related to various gynaecological diseases. Different forms of abdominal cancer, but also rare diseases such as ruptured aortic aneurysm, mesenteric vascular occlusion, myocardial infarction or pneumonia can cause acute abdominal pain.

In acute abdominal pain there is a necessity for urgent decision-making. It is essential to distinguish between patients needing an emergency operation (e.g. ruptured aortic aneurysm), an urgent operation (e.g. intestinal obstruction) or a scheduled operation (e.g. acute cholecystitis). The indication for operation has to be weighted against other therapeutic means such as medical treatment or no treatment at all (e.g. nonspecific abdominal pain).

Despite the magnitude of this problem, there is only limited evidence available on appropriate diagnostic approaches, from high quality diagnostic studies. Only a few guidelines have been formulated by scientific societies and the majority of these guidelines are not evidence-based. There is major variation in diagnostic work-up between different countries and centres. Several studies have shown that good clinical practice with a structured standardized history and clinical examination and a good education of doctors with specific teaching programmes improves diagnosis.

Radiological procedures may be “overused”, especially if based on broad indications. There will be significant potential for overuse of specific diagnostic techniques in selected subgroups or cases such as computed tomography in suspected appendicitis. While more high quality diagnostic studies are required, existing guidelines on the diagnosis of acute abdominal pain could be improved based on currently available evidence. Special diagnostic procedures, such as radiological techniques or special laboratory evaluations should be restricted to indications where there is evidence that they are effective and cost-effective. Evidence-based guidelines on diagnosis of acute abdominal pain should be implemented and evaluated.

## **5.3 Appropriateness in treatment: invasive cardiac procedures in Germany – is there a risk of overuse?**

Compared to coronary bypass surgery, percutaneous coronary interventions (PCI) are attractive procedures for patients and physicians. They are, in the majority of cases, fast and effective. Coronary lesions prior to and after a procedure are measurable and the patient generally experiences an increase in exercise tolerance and freedom of pain. Since 1977, when the method

was first described, there has been an unparalleled increase in the use of this procedure worldwide.

In Germany more than 200 institutions perform PCI. The Arbeitsgemeinschaft Leitender Kardiologischer Krankenhausärzte (ALKK), a working group of hospital-based cardiologists, performs approximately 35% of all PCI procedures, predominantly in non-university-based institutions. In 1992, the ALKK established a PCI registry, which now includes approximately 180 000 entries.

Each PCI procedure is entered into the data bank on an intention to treat basis, with baseline demographic and angiographic data, indication for PCI, angiographic results and complications during the initial procedure. Outcomes and possible complications during the hospital stay are also documented. Each site is visited twice/year in order to compare local records with the entries to the registry to insure completeness.

Random samples in the order of 2% of the caseload of each participating institution are selected for review during a local site visit by a team of two experts. Single diagnoses are obtained independently by local operators and site visitors and are in agreement in about 60% of the cases. The appropriateness of indications are divided into 4 categories with the following results: necessary 38.3%, appropriate 40.8%, uncertain 15.5%, inappropriate 5.4%.

In Germany the appropriateness of indications for PCI correlates well with the results from the United States or Canada. However the criteria for the diagnostic indications for PCI, classification of arterial disease, and use of stress tests prior to PCI need standardization.

#### **5.4 Appropriateness in long-term treatment – diabetes care in Belarus**

Since 1993 a national group of diabetologists, in association with the Ministry of Health and other Ministries, has developed a series of strategies aimed at improving diabetes prophylaxis and care, in line with the St Vincent Declaration. This has included a reorganization of endocrinological care, the creation of regional specialized centres (for example: “Diabetes and pregnancy” and “Diabetic foot” centres), and the establishment of “Diabetes schools”. In 1998, a comprehensive interdepartmental programme on “Diabetes Mellitus (DM)” was accepted and approved by six ministries (Ministry of Health, Labour, Finance, Education, Light Industry and Food Industry). The main directions of the programme included: registration and follow up of DM patients/cases and DM complications; training in diabetology foundations; provision of free treatment; and the provision of specialized health care for DM patients (for diabetic patients with retinopathy, renal disease, diabetic foot syndrome, and for diabetic women planning pregnancy).

Since the introduction of any health programme into practice is impossible without the appropriate knowledge, an initial priority was to improve professional training in diabetes care. A special series of lectures has been introduced into postgraduate training and general training of physicians with contiguous specialties. “Special training schools” were established and by the end of 1999, there were more than 100 schools. A 3-level system of professional education has been introduced. At the district level, “schools” for noninsulin dependent (NID) DM have been created where nurses are working. In large cities (regional centres), medical “schools” for insulin dependent (ID) DM patients have been organized at the hospitals. In outpatient clinics, IDDM patients are being taught by medical nurses under the guidance of a physician. In addition, a “Centre of Rehabilitation” has been created in Minsk, which is a reference centre for training the medical personnel in diabetes schools.

Education of the general population is also one of the key strategies. A supplement to the journal "Health and success" is being issued under the title "Life with diabetes," a series of television programmes has been arranged; and special leaflets have been published. One of the most important tasks of the programme has been the registration and follow-up of DM patients. In the first instance a computer database was created in Minsk (1995) based on the results of a WHO questionnaire of 12 000 patients. The software has now been developed for the creation of a National Registry to follow trends in diabetes mellitus prevalence and its complications, to perform comparative analysis through different regions of the Republic and medical facilities and to develop policy.

The programme is already showing significant signs of success. The ratio of different levels of amputation has changed dramatically. Almost half of all amputations (48.8%) are now performed at the level of a toe. Secondly, a significant decrease has occurred in absolute and relative number of amputations among the patients referred to national diabetes centres. There has been a change in the ratio of different modes of childbirth in diabetic women, with a decrease in prenatal child and maternal mortality and a rise in the indices of neonatal evaluation.

At regional centres, qualified ophthalmologist select patients who need retinal laser photocoagulation, and the patients are referred to a specialized Republican Centre for treatment. During 1999–2000 about 70 diabetic patients have been undergoing haemodialysis and there have been two recent successful kidney transplantations in patients with diabetes.

In commenting on the Belarus programme, Professor Michael Berger noted that this successful programme was based around the development of an integrated and coordinated series of national strategies to support simple, proven interventions. However he cautioned that evidence of effectiveness is lacking for many common activities included in diabetes management programmes in western countries. Examples include annual retinopathy screening in diabetic populations with low prevalence of retinopathy, annual assessment of albuminuria, regular lipid and HbA<sub>1c</sub> measurement in the elderly, blood glucose self-monitoring and vaso-active drugs for the prevention of retinopathy. While there is a need for new studies to examine the effectiveness of many currently routine therapies, a number of major recent studies should now be used to develop more effective management strategies.

### **5.5 Appropriateness in surgical treatment: surgical treatment for inguinal hernia**

Inguinal hernia repair is a very common surgical procedure worldwide with over 600 000 operations each year in the United States alone. While it is a relatively safe operation, there is an associated mortality and there is evidence of a high recurrence rate from general population studies. It is questionable whether all inguinal hernias should be repaired and there are a range of operative approaches with different levels of associated recurrence, morbidity and cost. The operative rates and the type of operation vary significantly between countries suggesting that inappropriate care is both common and widespread. There has been considerable interest in recent years in laparoscopic repair and it has become the most frequent operative approach in some countries. While the laparoscopic approach has an intuitive appeal, the evidence of its effectiveness compared with more traditional approaches remains poor.

The management of inguinal hernia is one of many examples of common health care problems which have been inadequately evaluated. Based on the current evidence, it is difficult to ascertain the appropriateness of management in different countries, however given the significant variation in practice, inappropriate management is likely to be common.

## **5.6 Appropriateness in non-invasive treatment: hypertension treatment in Germany**

Arterial hypertension is the most common diagnosis in primary care in Germany. Since it is a risk factor for several major diseases including stroke, cardiovascular disease and dementia, appropriate hypertension care should be a national health care goal. Anti-hypertensive medication is also the leading drug group, with respect to cost, for a single disease in primary care in Germany. Nevertheless, according to the Deutsche Herz-Kreislauf Präventionsstudie, DHP-Study, only 28% of the hypertensive patients receive pharmacological treatment and only 5% are adequately treated.

In order to detect over- or underuse in hypertension treatment in Germany a questionnaire has been developed to measure the following two items: (i) the percentage of patients with (systolic) hypertension who have an indication for drug treatment; (ii) the percentage of patients with (systolic) hypertension actually treated with drugs.

Too few patients are currently treated according to evidence-based guidelines (referral blood pressure less than 140/90 mm Hg or even lower). Professor Lauterbach explained that those who are treated appropriately are often treated with expensive medications with no proven additional benefit in comparison to their cheaper alternatives. Isolated systolic hypertension (ISH) is an important predictor of death from coronary heart disease, stroke, and cardiovascular disease. The prevalence of ISH is increasing in elderly hypertensive patients and although their absolute benefit from anti-hypertensive therapy is greater than that in younger patients, this population often is neglected. Thus, in Germany both under- and overuse of anti-hypertensive drug treatment seem to be widespread.

## **5.7 Appropriateness of new diagnostic and therapeutic technologies: cutting-edge technologies and education**

During the last 50 years technology has progressed in a linear fashion, and for the physician it has not been easy to participate in this process. Over the next 5–10 years it is likely that change will be exponential. The best comparison is with the computer industry; by the time you buy a personal computer it is obsolete. But, a computer costs a few thousand dollars whereas medical technologies are much more expensive, costing hundreds of thousands to millions of dollars, and the need for change is so fast that it is difficult if not impossible to make well informed decisions about new technologies.

A crucial problem is how to adapt health systems economically and educationally to prepare for and develop appropriate new technology. In order to do this it is necessary for key decision-makers to have an awareness of the likely direction of new medical technology. While specifics are difficult to predetermine, it is important to have a general framework to enable health care practitioners to understand where cutting-edge medical technology is going and in which areas investments should be made. Dr Orenstein projected new technologies, including:

- real-time anatomical transparency;
- real-time functional transparency;
- minimally invasive surgery will become totally non-invasive in the future;
- real-time 3D imaging of the viability of tissues or the metabolic effects and the effects of treatments, such as heating/cooling, as well as drug therapies;

- automation, where 3D imaging and treatment will be coupled together under computer control, while the surgeon sits like a pilot in an automatic flight under his direction, without ever holding a scalpel.

The workforce needs for this high-tech future are likely to differ from current needs. Much greater teamwork will be required between physicians, basic scientists, engineers, computer experts and economists. Medical schools should consider introducing incentives to increase the number of physicians taking higher research-based degrees in preparation for this techno-future. A research-trained workforce will be better equipped to respond to future changes and will share a common language with other professionals in industry and technology. As an interim solution, local health care systems, including hospitals and health maintenance organizations (HMOs), should begin the re-education of key physicians and other healthcare professionals.

## **6. Appropriateness in an international context**

The meeting was briefed by means of country and international reports about strategic activities concerning the evaluation of appropriateness of care.

### **6.1 Country reports on appropriateness activities**

The range of appropriateness activities reported in the countries represented at the workshop was diverse and fragmented, which reflects the current relatively initial state of awareness, knowledge and research in the field. Activities reported included public debate around prioritization and rationing, research, development of clinical guidelines and evidence-based practice centres, quality improvement and audit programmes, and patient centred activities for patient satisfaction surveys and the development of consumer-focused health care report cards (in the United States). There were no obvious reasons for many of the differences, although the economic problems in eastern Europe have limited opportunities for research and the development and implementation of clinical guidelines. Some countries with integrated health care systems, such as Finland and the Netherlands have well developed research and development programmes on appropriateness. In both Canada and the United States there is considerable activity at both government and voluntary levels in research and health technology assessment, although coordination of activities is poor given the multitude of funders (i.e. insurance companies in the United States and the provinces in Canada). In New Zealand, the need to balance the national budget has led to considerable public debate about how to prioritise health care practice. In Germany, where health care expenditure accounts for 10–11% of GNP, the intention is to prevent any further rise in spending, and this has stimulated debate on research into appropriateness here, too. In the United Kingdom, which has a relatively under-funded health care system, the government is now taking strong leadership in developing a high quality service and is making resources available for new developments. The international Cochrane collaboration was first established in the United Kingdom and the government initiated the NHS research and development strategy in the early 1990s which has significantly increased funding for health services research and development, particularly for health technology assessment. Most recently the National Institute for Clinical Excellence (NICE) has been established to improve health care quality.

### **6.2 Related appropriateness and health technology activities at WHO**

For more than two decades, WHO has been active in health technology assessment, partly by linking it to the quality of health services. Since its inception in 1948, WHO has been involved in worldwide public health efforts to improve quality, safety, and efficacy of medicinal products,

performing its normative function and supporting countries in drug regulation and assurance. Later, responding to the major problems of availability and use of drugs facing developing countries, the concept of essential drugs was introduced.

Since the late 1970s, the WHO Technical Reports series has included reports prepared by different groups of experts and study committees on the appropriate selection, rational use, and quality control of the various health promotion, disease prevention, diagnostic, and therapeutic technologies.<sup>6</sup> Since 1991, WHO has held several meetings of experts on health technology assessment and a working group to promote health technology assessment in the developing countries formulated specific proposals in 1994.<sup>7 8</sup>

In 2000, WHO's global approach to health technology assessment can be divided into a macro-assessment approach including assessment of the performance of health systems<sup>9</sup> and health services, and a micro-assessment approach, which focuses on the assessment and quality of specific procedures and technologies.

The WHO Regional Office for Europe stated that by 1990 all European Member States should have established a formal mechanism to systematically assess the appropriate use of technologies and verify that they respond to the national health programmes and the countries' economic means.<sup>10</sup> By the mid-1990s, most of the countries of western Europe had met that objective while the majority of central and eastern European countries had not.

Health technology and appropriateness assessment at the WHO Regional Office are reflected in activities on the development of quality and cost-effectiveness of patient care and public health services<sup>11 12</sup> as well as on health care systems development and reform in Europe,<sup>13</sup> under the broader umbrella of Health for All in the 21st century.<sup>14</sup>

## **7. Strategies to improve appropriateness of health care**

### **7.1 Overview of strategies**

The goal of health services is to provide effective care to persons who can benefit from it in a manner that is acceptable to the consumer and the provider, at a cost that is acceptable to those who pay for it. In this context the term "appropriate care" is interchangeable with evidence-based care and a number of strategies are now available to improve appropriateness.

The development and use of clinical practice guidelines have been demonstrated to improve the appropriateness of care. Guidelines can be used to shape decisions about access, costs of care and coverage of services. Numerous government agencies and health-related organizations now develop evidence-based clinical practice guidelines.

A number of United States health care organizations now produce health report cards covering measures of: physician quality related to credentials, interpersonal skills and management; utilization data on screening/prevention, surgery and hospital morbidity and mortality rates; enrollee satisfaction; access and convenience; and plan structure. In some cases, report cards have been published widely in the lay press, which has provided incentives for organizations to improve the quality of care.

Other more indirect strategies to improve the appropriateness of care include the assessment of variations in health care with feedback to practitioners. Numerous studies have demonstrated

significant variation in care and feedback to practitioners has been shown to influence practice. League tables of cost-effectiveness of interventions have been developed to help identify appropriate priorities in health care, however these are still very crude decision aids. The evidence needed to shape decisions about appropriate access, costs of care and coverage of services, and appropriate priorities for care is increasing but remains very limited.

## **7.2 Introducing economic considerations**

With respect to the “health economy”, appropriateness is about “value for money.” There are four levels where economic considerations come into play: (i) choosing among alternative appropriate treatments for a given condition or patient; (ii) choosing which not-necessary treatments to include in a package of benefits; (iii) choosing which necessary treatments to ration within the health budget; and (iv) choosing how much money to put into the health budget.

Choosing among alternative appropriate treatments is the ideal case for a cost-benefit comparison. By definition, benefits are about the same and in the current economic environment it is negligent to pay more than is needed. The methods for such analysis are well developed; unfortunately the situations in which these analysis can be used are generally limited.

As cost control becomes more pressing, moving payment down to the level of the consumer has driven choices about which not-necessary treatments to include in a package of benefits. However, it is necessary to know utilization rates and price elasticity in order to formulate effective policies. Again, methods for analysis are standard practice; easy examples include dental care for adults, but other examples are less clear-cut, for example, birth control pills for adults.

Choosing which necessary treatments to ration within the health budget is a more difficult task. Ideally social consensus and a way to measure it is needed, which has proved to be problematic. Comparisons among different diseases in benefit-cost terms are not straightforward, for example, choosing between two new technologies. Comparisons within one disease, for example, prioritizing transplantation patients can also be very difficult.

Choosing how much money to put into a health budget has rarely been discussed, but may be arising in the current economic environment. The current government, for example, wants to bring United Kingdom health expenditures up to the GDP percentage level of other EU Member States. This is a simplistic approach, however, as one needs to trade off health benefits against other benefits.

“Appropriateness” is in reality a filter that precedes considerations of the health economy. Within the realm of appropriate care, the health economy can be considered on multiple levels. Lower levels are relatively straightforward, and the methods to deal with health economic problems are relatively well developed. Higher levels are not all straightforward, and methods to deal with health economic problems need to be developed. The health economy problem cannot be left to the health economists alone but requires integrated work by multiple disciplines.

## **7.3 Introducing ethical considerations**

Numerous definitions have been proposed to describe appropriate and inappropriate health care. From an economic perspective, “underuse” occurs when an intervention which has a proven net benefit and is cost-effective is not performed, “overuse” occurs when an intervention which is of unproven net benefit or which is not cost-effective is performed; and “misuse” occurs when an

intervention which has a negative net benefit is performed. On one level it could be possible to distil health care decisions down to a choice between different degrees of cost-effectiveness, in which case the key question would be determining an acceptable level of cost-effectiveness. However, at a societal level the more relevant issue is the goal or goals society hopes to achieve by appropriate health care, which could include, among others, maximizing life-years saved or quality-adjusted life-years saved, or increasing equity between social groups in services or life expectancy.

A range of theories of social justice have been proposed to help develop a set of principles on which to base health care goals but few countries have encouraged this debate and there is no general societal consensus about the most appropriate approach. However, until the principles on which to base health care goals are agreed and made operational, the meaning of appropriateness will remain implicit and confused.

#### **7.4 Professional education and training to increase awareness of appropriateness**

The American health care system has responded to the public's growing concern over the quality of care by focusing its attention on health care organizations. The National Committee for Quality Assurance (NCQA), for example, accredits managed care organizations and has developed a set of performance indicators that health plans can use to assess their quality. Despite the presence of continuing professional development consisting mainly of a highly developed continuing medical education (CME) system that is required for many, a vast divide remains between these efforts and the needs for quality improvement (QI). Further, there are few, if any, explicit links between demands for accountability made by organizations (e.g. accreditation) and assessment of knowledge, skills or performance. A number of programmes that are now being developed within the United States and internationally suggest that improved alignment between professional education and QI will help to improve appropriateness of care.

The current system employed in the United States and throughout much of the rest of the world gives credit for the quantity rather than the quality or relevance of the educational activities, resulting in a "bums on seats" approach by both participants and providers of courses.<sup>15</sup> Although CME comes in many different formats, conferences, seminars and workshops predominate. According to a review by Davis and others in 1995, such "formal CME" was ineffective: six studies of conferences lasting one day or less demonstrated negative or inconclusive effects on physician performance and patient outcomes.<sup>16</sup> A meta-analysis by Beaudry demonstrated that even with longer programmes, ranging from 2–6 days, performance was more than half as likely to change as knowledge. Even this improvement in knowledge, however, deteriorated with time.<sup>15</sup> Some possible underlying causes for the lack of effectiveness include a system that is often disjointed and influenced by industry, and caters to convenience and enjoyment rather than educational needs and outcomes. Also, many of these courses occur out of the context of daily practice, making it less likely that content will be directly relevant and reinforced.<sup>16</sup>

A number of programmes are now being developed that addresses some of the weaknesses of our present system. The state of Virginia does not have a CME requirement, presently, to retain licensure. Under proposed legislation, however, physicians will have to identify their educational goals every two years and then state whether they accomplished those goals at the end of the two-year period. As evidence of accomplishing their goals, the physicians will have to track their

activities in those areas including consultations with peers, reading, teaching and writing as well as traditional lectures and conferences.

The use of individual learning portfolios is gaining attention across the field. The portfolio enables physicians to identify learning and personal development plans as a basis for appraisal and peer review.<sup>15</sup> Mathers and others showed that learning portfolios are more effective than traditional CME for fulfilling clinically applicable educational objectives.<sup>17</sup>

In the United States, the unexamined assumption has long been that all paths to quality improvement and appropriateness of care directly traverse the doctor's cerebral cortex. Davis's review of CME is a cogent reminder that knowledge is necessary but not sufficient to lead to practice change. The only CME interventions in their review that were associated with changes in practice were those that were specifically linked with a supportive practice environment and incentives for change. The power of information technology now makes it possible (at least in theory) for doctors to access "just in time" information to enhance clinical decisions – but barriers to the universal adoption of computerized patient records continue to keep this vision on the horizon of possibility.

In an increasingly complex health care system, efforts to improve quality must be applicable to the context of practice. This includes expanding the focus of efforts beyond the purely clinical realm to areas that include information technology, communication, management and team building.<sup>15</sup>

### **7.5 Information in guiding appropriate health care delivery: beyond guidelines**

The process of defining appropriateness for clinical practices is hard, and it is tempting to stop after formalizing the conclusions as guidelines. However, guidelines must be regarded only as a stepping stone to appropriate practice innovation. Guideline recommendations should be used as a basis for local projects, designed to reflect and respond to local barriers at the levels of individual practitioners, teams and organizations. The identification and the resolution of such barriers can be guided by Green's PRECEDE model.<sup>18</sup> Taking the PRECEDE view that innovation means predisposing, enabling and reinforcing change, emphasizes that patients, carers and the local population often have a significant role to play in the clinical innovation process.

Many different clinical innovation techniques have been developed and studied, most of which work some of the time. Fortunately, the large but heterogeneous body of research evidence in this area is being reviewed by the Cochrane Effective Practice and Organizational Change (EPOC) group. The findings of Cochrane systematic reviews and others published in medical journals (e.g. Davies<sup>16</sup> or Hunt's review of decision support systems<sup>19</sup>) identify innovation techniques that are likely to be appropriate in bringing about a specific innovation.

*Annex I*

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*Annex 2*

**PROGRAMME**

**Thursday, 23 March 2000**

- 12:00 – 14:00 Arrival and registration of participants  
14:00 – 14:30 Opening statements (Hermann Schulte-Sasse and Herbert Zöllner)

**1. Aspects of appropriateness in health care**

- 14:30 – 15:00 Definition of appropriateness in various dimensions (introduced by Rodney Jackson)  
15:00 – 15:30 Variations in health care delivery (introduced by Leonard Jason)  
15:30 – 16:00 *Coffee break*

Working groups on appropriateness in decision-making

- 16:00 – 17:30 Appropriateness in the process of decision-making (working groups, introduced by Christian Ohmann)  
17:30 – 18:00 Continued (group reports and discussion)

**Friday, 24 March 2000**

**2. Examples from different areas of health care**

- 09:00 – 09:25 Treatment of tobacco dependence: a stepchild of “health delivery”? *Appropriateness in health promotion* (introduced by Dawn Milner)  
09:25 – 09:50 Diagnosis of abdominal pain: one symptom and 1001 diagnostic means? *Appropriateness in diagnosis* (introduced by Christian Ohmann)  
09:50 – 10:15 Invasive cardiac procedures: is there a risk of overuse? *Appropriateness in treatment* (introduced by Martin Gottwik)  
10:15 – 10:40 Treatment of diabetes: hindrances and hitches in long-term treatment? *Appropriateness in long-term treatment* (introduced by Tatjana Mokhort with comment by Michael Berger)  
10:40 – 11:15 *Coffee break*  
11:15 – 11:40 Simple surgical treatment for inguinal hernia: are local conditions important? *Appropriateness in surgical treatment* (introduced by Abe Fingerhut)  
11:40 – 12:05 Hypertension treatment: does it prevent cardiovascular events? *Appropriateness in non-invasive treatment* (introduced by Günay Aydincioglu)  
12:05 – 12:30 Cutting-edge technologies: how soon will they become appropriate for routine practice? *Appropriateness of new diagnostic and therapeutic technologies* (introduced by Arie Orenstein)  
12:30 – 13:30 *Lunch break*

### **3. Appropriateness in an international context**

- 13:50 – 15:00 Steps in practice: brief presentations from various countries (speakers to be named from among participants)
- 15:00 – 15:30 Appropriateness and health technology assessment in international programmes (briefing on WHO by Elke Jakubowski)
- 15:30 – 16:00 *Coffee break*

#### Working groups on priority setting

- 16:00 – 17:30 Where to start in setting priorities? (Parallel working groups, introduced by Karl Lauterbach)
- 17:30 – 18:00 Continued (group reports and discussion)

### **Saturday, 25 March 2000**

#### **4. Strategies to improve appropriateness of health care**

- 09:00 – 09:30 Introduction into appropriateness methods in the light of the health economy (introduced by James Kahan)
- 09:30 – 10:15 Overview on strategies to improve appropriateness of health care within the decision process (introduced by Jack Williams)
- 10:15 – 10:45 *Coffee break*
- 10:45 – 11:30 Ethical considerations and implications for appropriateness (introduced by Karl Lauterbach with comment on economic aspects by Tom Sackville)
- 11:30 – 12:00 Professional education and training to increase awareness of appropriateness (introduced by Daniel Stryer)
- 12:00 – 12:30 Information in guiding appropriate health care delivery (introduced by Jeremy Wyatt with comment by Anna Korotkova)

#### **Conclusions and farewell**

- 12:30 – 13:00 Conclusions and recommendations (Karl Lauterbach and Christian Ohmann)
- 13:00 – 13:30 Concluding session (Hiltrud Kastenholtz and Herbert Zöllner)

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