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What is 'best practice' in health care? State of the art and perspectives in improving the effectiveness and efficiency of the European health care systems☆

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Abstract

A framework for the classification of information on maintaining or improving effectiveness and efficiency in health care systems is proposed. Activities, disciplines and methods that are available to identify, implement and monitor the available evidence in health care are called 'best practice'. We reviewed the literature in order to (1) establish a definition for 'best practice' in the health sector, (2) develop a framework to classify relevant information, and (3) synthesise the literature on activities, disciplines and methods pertinent to the concept. Health care, public health activities and health policy should be advised by the best available evidence. Currently, the concept can be broken down into three activities (Health Technology Assessment (HTA), Evidence-Based Medicine (EBM), Clinical Practice Guidelines (CPGs)) by which evidence is synthesised either as an evidence base (EBM and most HTA) or in the form of recommendations (CPGs and some HTA) for different decision purposes

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in health care. These activities gain input mainly through four disciplines: clinical research, clinical epidemiology, health economics and health services research. The different disciplines are related to each other in three 'domains': (a) input, (b) dissemination/implementation and (c) monitoring/outcome. These provide evidence on (a) the (potential) effects of health care interventions and policies; (b) on ways to implement them; and (c) on ways to monitor their actual outcome. None of these separate approaches and activities exclusively forms a successful and all-embracing strategy to ascertain 'best practice'. A collective approach in the management of information is expected to add value to individual efforts. Resources should be devoted to increase quality and quantity of both primary and secondary research as well as the establishment of networks to synthesise, disseminate, implement and monitor 'best practice'.

Keywords: Technology assessment; Biomedical; Clinical practice guidelines; Evidence-based medicine; Health care system; Effectiveness; Efficiency

1. Background

The Member States of the European Community are facing common challenges in delivering efficient, adequate and high quality health services at affordable costs. Among the challenges are demographic changes and technological developments increasing the cost of health care provision, but equally new opportunities to secure improvements in individual and population health, the increase of knowledge and clinical advances potentially enable more effective health care delivery and more efficient use of resources, as well as opportunities to circulate information on health and health care more rapidly.

These developments — alongside with the growing economic interdependence and free movement of goods, capital, services and people between the EU countries — need to be recognised when reviewing the new public health provisions in the Treaty of Amsterdam and the expected expansion of the Community towards Central and Eastern Europe [1]. The new article 152 aims at improving public health, preventing human illness and diseases, and obviating sources of danger to human health.

In view of the need to develop a new European public health policy, it is necessary to establish guidance on which activities can be taken at Community level to assist Member States in maximising the performance of their health systems. This article draws on the findings of a project that is one of several studies funded by the Commission in order to obtain advice on 'best practice' activities in the health sector.

Various activities and health research are available to assist public health policy and clinical decision making with the purpose to organise and provide health services more effectively and efficiently. Few attempts have been made, however, to categorise this information and integrate the many different pieces of knowledge into one theoretical framework. In this respect, this article focuses on three major activities all of which have gained recognition for health policy and clinical

decision-making processes within the past decade: Health Technology Assessment (HTA), Evidence-Based Medicine (EBM) and Clinical Practice Guidelines (CPGs). With 'activity' we mean a set of actions that are related to the health care system or parts of it in terms of advice and recommendations developed through systematic research. Starting from different perspectives, the common aim of these activities is to improve the health care systems' performance measured by criteria related to for example safety, efficacy, effectiveness, costs, cost-effectiveness and appropriateness of health care interventions as well as the quality of health care and the perception of the public.

2. Methods

Definitions of 'best practice' in the health sector were extracted through a comprehensive literature search and consultation of experts. This was followed by the development of a framework for the collection of information on best practice. Information for the different activities, disciplines and methods of best practice was obtained through different sources, mainly by searching the major medical and health-related databases and by interviews and key references provided by the consulted experts.

3. Definitions of best practice

Best practice, alongside with 'benchmarking', is an organisational concept deployed in the industrial sector and increasingly related to management and administration. In this context, 'best practice' is referred to as a process-oriented concept to achieve improvements within individual agencies or settings over time, hence a term related in essence to quality [35,36]. The Best Practice concept in the New Zealand Hospital and Health Services Knowledge Network for example has the purpose 'to share information on Best Practice and Benchmarking'. Best practice in this context means: 'doing things smarter, practices which led to superior performance, achieving consistent quality in what is done, and evidence-based practice'. As another example serves the 'Best clinical practice' project ('assessment of processes of care and of outcomes in the US Military Health Services System') as an initiative within the National Quality Management Programme of the Military Health Services System of the United States [2]. In sum, 'best practice' is a term that is used in the context of medical services provision, but seems less common in other areas of the health sector such as, for example, health care financing and health care organisation.

In this article, we use a more comprehensive definition of 'best practice' for health care systems that goes clearly beyond quality issues. We define best practice in health care as the 'best way' to identify, collect, evaluate, disseminate, and implement information about as well as to monitor the outcomes of health care

interventions for patients/population groups and defined indications or conditions. Information is required on the best available evidence on safety, efficacy, effectiveness, cost-effectiveness, appropriateness, social and ethical values and quality of the health care interventions.

The process of finding a framework for the definition of 'best practice' in the health sector will therefore refer to the duly weighted use of all valid and relevant information for health interventions and monitoring of the outcomes of health care interventions.

The framework combines the 'best ways' of (A) systematically identifying, collecting, and evaluating information (= input domain); (B) disseminating and implementing reviewed information (= implementation domain); and (C) monitoring the effects of health care interventions and policies (= outcome domain). The basic approach is to link research findings (input domain) more closely with policy (as part of the implementation domain) and to allow for a monitoring process (outcome domain) of these stages (Fig. 1).

The prime objective is improvement of population health resulting from the use of effective and cost-effective health care interventions. Thus, evaluation is a central function in all three domains for improving the health systems' performance. Evaluation is based on immediate *objectives* (e.g. improving safety, efficacy, appropriateness) and on long-term outcomes, such as life-expectancy.

4. Input domain

The health care sector faces a rapidly increasing turnover of knowledge and individual time constraints do not allow us to keep track with every single piece of scientific fact. In turn, health care, public health activities and health policy should be advised by the best available evidence to be effective and efficient. This framework is concerned with three related activities, namely Health Technology Assessment (HTA), which is predominately policy-oriented, Evidence-Based Medicine (EBM), which is an activity that focuses on the individual patient, and Clinical Practice Guidelines (CPGs) for population and individual health. Related disciplines are focused on either single or a number of aspects of health care and provide tools that are essential for the three activities (for example: economic evaluation of health care interventions constitutes one essential method in HTA) [38]. Results from health services research (e.g. geographic variations in the use of health technologies) often form the basis for evaluations by providing additional input information. It has to be noted, however, that a clear classification is not possible because many activities, disciplines and methods are overlapping.

For all research results that are obtained in one specific health care system or setting (e.g. tax financed versus insurance-based setting, ambulatory care setting versus hospital care setting, etc.), the framework will have to consider transferability of results.

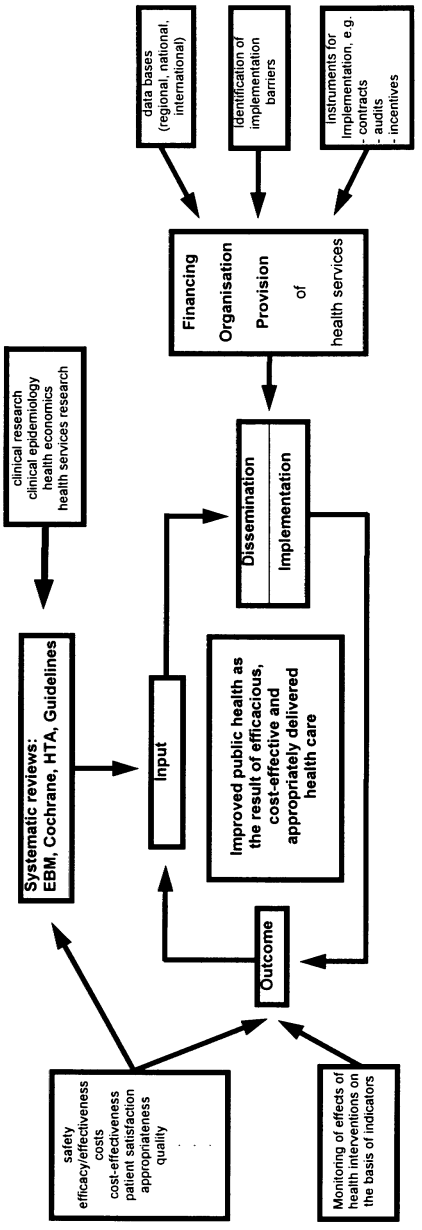

Fig. 1. Framework for defining best practice in the health sector. The input domain provides information on the potential effects of health care interventions. The implementation domain consists of information on ways to disseminate and implement reviewed health care interventions. The outcome domain allows for monitoring the implementation of health care interventions and at the same time delivers information on the real effect of health care interventions.

4.1. Health Technology Assessment (HTA)

HTA defines a multidisciplinary activity that systematically (and independently) examines technical performance, safety, clinical efficacy and effectiveness, costs, cost-effectiveness, organisational impact, social consequences, legal and ethical aspects of the application of a health technology [3]. Health technologies according to the former US Office of Technology Assessment 'are the drugs, devices, procedures, and the organisational support systems within which health care is delivered' [4]. Given this broad context, HTA is not defined by a set of methods, but by its intention: to provide evidence-based information ensuring value for money in health care [3]. HTA is a structured analysis activity that relies on primary studies, such as for example prospective randomised trials, small area variation studies and technology diffusion studies, but also on systematic reviews, economic evaluation studies, and decision analysis. The purpose is to provide input into a policy decision, while taking different perspectives ideally in combination (e.g. clinical, societal, economic, etc.) [4]. For this purpose, HTA can be technology-oriented (e.g. magnetic resonance imaging), health problem-oriented (e.g. diagnostic procedures for breast cancer), or project-oriented (e.g. planning for procurement of equipment).

The standard (ideal) HTA process comprises a set of steps [3]:

1. *identification* of technology, health or health care problems and possible assessments to address these;
2. *priority setting* of possible assessments;
3. *assessment*;
4. *dissemination* of the findings and conclusions to assessments;
5. *implementation* of findings and conclusions in policy and practice; and
6. *impact assessment* of resulting change.

Primary studies are assessed and synthesised, which is the core activity in HTA, and is precisely the method of systematic reviews [3].

HTA in Europe is organised and implemented somewhat differently in every country so that HTA might primarily be linked with coverage (e.g. in the Netherlands and in German ambulatory care) or regulation (e.g. France) [34]. International co-operation is promoted by the International Society of Technology Assessment in Health Care (ISTAHC), founded in 1985, and the International Network of Agencies for Health Technology Assessment (INAHTA), founded in the early 1990s. The European Union funded projects EUR-ASSESS (finished in 1997) and HTA Europe (finished in 1998) have substantially increased the basis for co-ordination and information transfer of HTA activities throughout the European Union and Switzerland [3,34].

However, there is a number of studies published in different countries indicating that the actual impact of HTA in health policy decisions on a political level has been as yet limited (for example: see [5,6]). It has also been proposed to increase activities into studies addressing the actual impact of HTA results into health policy making [6]. [7] found that HTA results exert impact when they were in fact the result of a request from decision-makers.

4.2. Evidence-Based Medicine (EBM)

'Evidence-Based Medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients' [8]. EBM is an activity that promotes the utilisation of scientific evidence on the efficacy and effectiveness of interventions *in combination* with the clinical experience/expertise ('judgement') of health professions. The definition of EBM, however, also leaves space for the adjustment of care to the patients' choice because 'judgement' is not restricted to the decision of the health profession.

EBM implies five essential operational steps:

1. The (re-)formulation of clinical problems as answerable questions.
2. The efficient search for the best evidence that addresses those questions.
3. The critical appraisal of that evidence.
4. The application of the results of that appraisal in clinical practice.
5. The evaluation of the ensuing clinical practice.

EBM tends to focus on information on efficacy (effects of interventions under trial conditions) based on studies with a specified hierarchy of evidence, ranking studies (randomised controlled trials, RCTs) or systematic reviews of RCTs with minimal chance of bias highest and statements based merely on opinion lowest.

The study design for RCTs is considered the optimum study design within the notion of EBM. This, alongside with systematic reviews and meta-analyses of RCTs, is seen as the 'gold standard' (or best evidence) for the measurement of efficacy. RCTs produce a high standard of internal validity because inclusion and exclusion criteria are explicitly defined and the effects of one experimental intervention are compared with the effects of another intervention for randomly assigned subjects, which results in equal distribution of baseline and prognostic criteria. However, RCTs tend to have a lower external validity in comparison to non-randomised study designs because many subjects to which the intervention would subsequently be applied are excluded either by the study protocol or *de facto*. This limits the use of RCTs for policy-making. An effective way to challenge generalisability is by replication or the organisation of large simple trials. Non-randomised studies tend to be more open to selection and other forms of bias [9].

There are grey-zones of medical practice for which evidence is conflicting or not existing, in which case decisions will have to rely on health professional experience, judgement and the choice of the patients [10]. EBM can not and does not promise to solve every clinical problem occurring in clinical practice, but helps to identify obsolete and unnecessary medical practice. However, many questions are still waiting to be resolved (e.g. implementation of evidence into practice, payment for systematic reviews) [11].

EBM starts from a micro-perspective, which considers health care problems (e.g. variations of practice) and health system problems (e.g. rising health care costs) as products resulting from many thousands of individual clinical decisions [12]. From this perspective, health care problems are regarded as symptoms of imperfect clinical decisions rather than symptoms of imperfect health system design [13]. EBM, by focusing on the individual decision irrespective of the regard to available

resources, can cause a conflict between the individual and the population ethic [14]. There are a number of reasons why this approach to tackle health system problems would be incomplete if used in isolation. Decision-making is not only up to the most effective clinical choices but also dependent on resources. This applies to the individual clinical decision as well as to population-based decisions in health care, such as for example for insurance coverage decisions. The latter furthermore rely on many factors other than health care. The variety, intensity, and availability of health services are often considered relatively unimportant in explaining differences in mortality between developed countries [15,16] but these observations are usually based on cross-sectional studies whereas longitudinal studies produce larger effect estimates [17].

4.3. Clinical Practice Guidelines (CPGs)

Clinical guidelines aim at supporting clinical decisions of health care professionals (including providers) and patients on interventions for specific clinical conditions, discouraging inappropriate practices and improving co-ordination between different providers. Guidelines are 'systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances' [18]. Guidelines are usually based on (1) scientific evidence and (2) expert professional consensus for good medical care. The methods of developing CPGs rely increasingly on the tools endorsed by the EBM movement.

CPGs are more likely to be evidence-based the more rigorous the review methods used are, and the higher the quality of primary research that is synthesised [19]. They can serve as instruments to improve effectiveness in clinical medicine and as instruments for quality assurance, by being primarily designed to improve processes and outcomes of health interventions. Costs are less frequently considered to date, but there are more powers to develop guidelines that would also consider economic aspects of health care interventions and also powers to cost outcomes attributable to the guidelines implementation in practice alongside with health outcomes [20–22]. Most CPGs recommend the use of certain technologies/procedures for certain indications, starting from a defined clinical conditions or clinical symptoms (e.g. back pain). Guidelines developed in the countries of the European Union are usually not legally binding or sanctioned.

With EUR-ASSESS and HTA Europe, HTA activities have moved towards a more standardised process. The Cochrane approach has led to a standardisation for conducting systematic reviews. There are increasing activities into an exchange of information between those concerned with the development of local and national guidelines, as well as between countries. The actual formulation of clinical guidelines will have to take into account local circumstances, health needs and preferences of those that are affected by the guidelines, and thus actual formulation of guidelines will have to be a decentralised process.

Guidelines are applied as clinical policies in the form of practical working documents on prevention, diagnosis, treatment and rehabilitation and through incorporation into continuous medical education programmes. Adaptation of na-

tional guidelines in local audits is a promising way of implementing the recommendations of guidelines currently practised in different countries [23].

The attempt to standardise care potentially ignores the heterogeneity of patients and the complexity of medical decisions. CPGs might even be 'inappropriate for specific individuals' [24]. Guidelines could therefore be regarded as suitable to direct health care decisions to ensure population rather than individual health. Guidelines do allow for different individual decisions. Guidelines can supplement, but do not supplant individual decisions that have to take into account specific clinical circumstances and patient preferences.

It has been noted that guidelines might drive costs upwards because they recommend effective treatment for symptoms or conditions that previously have been untreated [4,25]. This may be especially true for elderly and disabled persons.

To be effective in changing clinical practice towards optimal medical care, guidelines have to be coupled with effective implementation strategies that also consider barriers to implementation.

Table 1 summarises the main characteristics and weaknesses of the three activities, thereby highlighting both commonalities and differences.

5. Dissemination/implementation domain

The framework for defining what constitutes best practice in health care will also take into account that produced evidence has to be adopted and used by clinicians and decision-makers. The framework will thus consider different methods to effectively translate evidence into practice, that is dissemination and implementation of evidence for practical use. This domain of the framework will also consider barriers to implement evidence (Fig. 2).

Dissemination is the process of spreading, making available and marketing evidence-based information or increase the accessibility of research results. Dissemination and implementation of best practice information can be overlapping processes because, in many instances, the terminology is not sharply defined and delimited. This is, for example, true for educational strategies to disseminate information about best practice, which at the same time may be considered a tool for implementation. Information about best practice can also be disseminated without inevitable consequences for health care interventions. This is to say that research findings are only one of several input factors (besides values, emotions, expectations, available resources, etc.) for a health care decision.

The EUR-ASSESS project has made specific proposals to increase the impact of HTA findings through dissemination [26]:

1. Dissemination is an integral part of the HTA process, organisations should therefore devote resources and attention to the dissemination of their results.
2. HTA organisations should consider dissemination in an early stage of planning of the HTA process.
3. Organisations should target their dissemination to special groups and tailor their messages to meet specific needs.

Table 1
Summary overview of activities

	HTA	Clinical Practice Guidelines	EBM
Target audience	Decision-makers	Clinicians, decision-makers	Clinicians
Target population	Population health	Individual and population health	Individual health
Prime aims	Licensing; coverage; investment/procurement decisions	Clinical decision-making; disease management	Clinical decision-making
Methods	Systematic reviews; meta-analyses; analyses and modelling of costs and cost-effectiveness; ethical, juridical and social considerations	Systematic reviews and consensus methods	Systematic reviews; meta-analyses; primary studies; expert opinions; patient preferences
Particular weaknesses	Limited assessment of social and ethical aspects of health technologies; variability of methodological standards among HTA agencies	Often weak evidence base; missing links between evidence and recommendations; expert panels sometimes not multidisciplinary; often poor reporting quality	Often weak evidence base; lack of clinical epidemiological skills of clinicians

4. Organisations should evaluate the cost-effectiveness of their dissemination strategies.

It has been proposed to increase activities into studies addressing the actual impact of HTA results into health policy making [6]. The HTA Europe project has concluded that 'health care policy and health technology assessment must interact with each other more than in the past' [34]. HTA results should be used to implement technologies more effectively [6]. In this context, focus should also be directed to traditional, cultural, economic or prestigious reasons to change practice by decision makers, health professionals and the general public.

Implementation is the process of getting evidence or information on best practice translated into clinical practice, public health interventions and policy-making in general. This has been one of the weaker links in the scheme for best practice activities, in spite of increasing interest in basing clinical and policy decisions on research findings [27,28].

The prerequisite for a targeted strategy for a change (or support) of clinical or policy practice is to tackle social, organisational and institutional barriers for

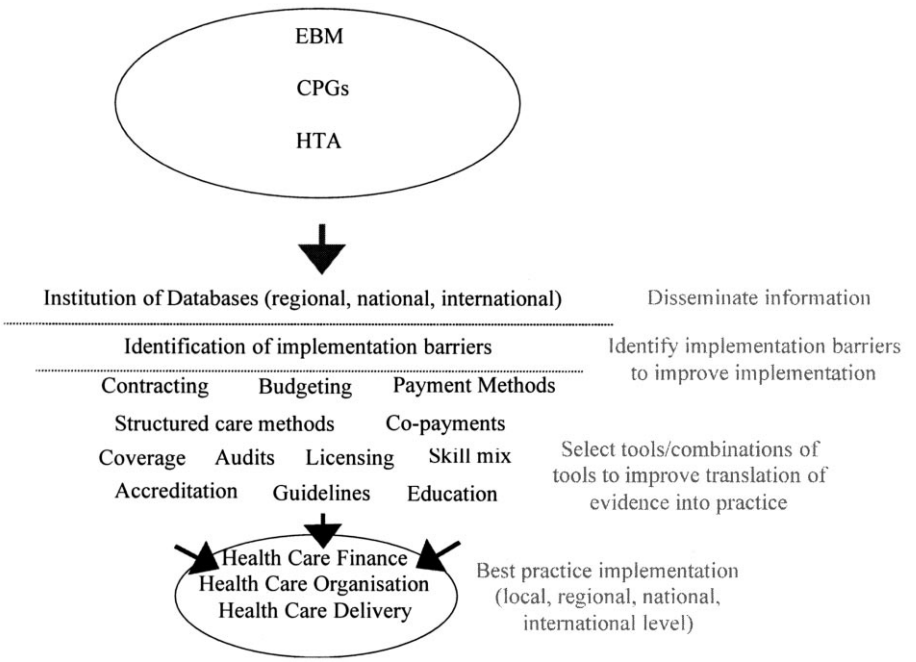

Fig. 2. Implementation domain for Best Practice. This domain provides information on the dissemination of evidence, for the identification of implementation barriers and for the implementation of evaluated health care interventions.

implementation and change [28]. These barriers need to be differentiated between the perspective of patients, the general public, health professionals and policy decision makers. Most of the research undertaken in this field has focused on the health professional target group, little research has focused on changing the behaviour of policy decision makers or the public [26].

Barriers can be subdivided into environmental – including organisational – barriers, personal characteristics or behavioural barriers, social barriers, and barriers through prevailing opinions [26,28].

A fundamental barrier to evidence-based change is lack of scientific evidence. This barrier not only applies to clinical, but also to health policy practice. Other barriers include conflicting evidence or inconsistent interpretation of existing evidence, limited access to scientific evidence prior to the decision-making process, lack of a suitable infrastructure to translate evidence into practice, influence from interest groups as well as patient preferences [26].

5.1. Implementation tools

Several concepts exist in order to improve the adoption of best practice (see Fig. 2). Of importance are professional educational concepts such as small group interactive learning, problem-based and self-structured learning and 'academic detailing' (one-on-one educational outreach most commonly used for pharmaceutical prescribing patterns). A further step is building of intermediate expert structures (multipliers) to bridge the gap between best practice and real practice in policy and clinical settings. These educational approaches can also be supported by quality management systems [37].

Structured care methodologies are instruments to manage health care delivery. There are two predominant concepts in implementing best practice evidence by structured care methodologies: (a) Disease management is a tool to optimise the provision of health care of individual conditions through determining (managing) health care throughout each disease stage and throughout each institutional level of the health care delivery process. Disease management requires an information basis on costs and guidelines on health care. (b) Clinical pathways are an approach to structure care for uncomplicated patients according to the time and capital resources spent. Clinical pathways organise, sequence, and time the care given to a patient [29]. A pathway is divided into time intervals during which specific goals and the expected progress are defined.

Among the implementation tools that institute regulations upon providers are contracting and (mostly financial) incentives. Contracts may contribute to the decentralisation of management and extent the financial accountability of providers for an agreed level of service volume and quality at specified prices [30]. Financial incentives may steer provider behaviour by encouraging the appropriate use of health technologies, enhance compliance with guidelines and possibly improve patients' outcomes.

6. Outcome domain

The outcome domain (see Fig. 1) will consider methods to monitor effects of health care interventions. This implies that indicators of performance at different levels of health care have to be identified that could serve as measures of success of the implementation of components considered to be 'best practice'. The outcome domain will also produce information for the input domain as part of an iterative process.

Best practice monitoring is referred to as the evaluation of impact of best practice activities. According to the concept of the best practice framework, the outcome domain integrates the monitoring approach as a prerequisite for the continuity of the iterative loop. From monitoring the impact of best practice, information is obtained that will allow to critically re-appraise the methods that constitute best practice. One of the problems of this approach is the issue of attributability of a certain outcome to a specific intervention.

Cultural, social, political and ethical issues impact on the implementation of health interventions that are based on best practice. Thus, on an international scale, evaluation of measures will cause methodological problems but provide the opportunity to learn from the experiences of the different countries. Therefore, information-sharing should be promoted in regard to international experience on the effects of implementation strategies for best practice evidence.

Alongside this statement on information sharing, there is very limited literature available on the evaluation of implementation of best practice. It has been recognised that such evaluations are often extremely difficult to carry out, for example in HTA [7]. Evaluation is recommended at three levels: (1) change, maintenance or innovation of a policy (e.g. within an analysis of legislation); (2) distribution and utilisation; (3) effect on health and cost-effectiveness outcomes.

A growing number of studies is undertaken into the evaluation of practice guidelines that tend to focus on the medium-term impact on health care practice. Most of these studies are focused on identifying changes in ambulatory care practice with regard to the guidelines development process, dissemination and implementation. In general, guidelines seem to be more efficacious when users are targeted in the development process, when they are disseminated within a specific educational programme and when specific tools for their implementation are used (e.g. reminder systems, incentives) [31,32]. There is evidence that multiple dissemination and implementation strategies produce a higher change in clinician behaviour [33,37].

7. Conclusion

None of the activities to organise research findings, and disciplines, methods and tools provides an all embracing-concept to maximise value to health. Each activity has to be supplemented with others. The choice of combination depends on the nature of the problem, the perspective of the decision and the availability of

Table 2
Research recommendations

Area	Data	Methods
Primary data/basic information	Improve and increase quality and quantity of primary research: – stimulate and launch prospective studies, including economic evaluations alongside clinical trials – promote prospective studies on the effects of health system financing and organisation on population health as well as of consumer choices, personal behaviour and socio-economic factors on health	Improve quality of and access to information: – promote (compulsory) registration of all RCTs and (mandatory) publication of results in order to minimise publication bias – index integrated sources (e.g. systematic reviews) – educate users about sources and impact of bias Increase transferability of results from randomised controlled trials by conducting large *simple* trials in community settings and modifying units of randomisation (e.g. practices or geographic areas)
Synthesis	– increase number and quality of systematic reviews – pool information from different sources, in particular regarding Public Health interventions such as prevention (including immunisation, screening), health protection and promotion, and health education	– refine and standardise literature retrieval, assessment and synthesis methods in order to minimise bias in systematic reviews – establish disease-specific integrative networks
Dissemination and implementation	Increase quantity and quality of studies on dissemination and implementation methods and barriers: – collect evidence on the most effective ways of dissemination and implementation through experimental and observational studies (including issues of transferability of study results)– initiate/ support prospective studies into reducing barriers to change clinical and policy to promote 'good' (or best possible) practice – explore the potential of mass media to promote information for consumers and patients	Develop a systematic methodology to address barriers to the implementation of EBHC on all levels of health policy and service provision
Monitoring/evaluation	Conduct studies on the effects of best practice activities, increase activities into studies addressing the impact of HTA, EBM, CPGs etc. on health policy making and population health	Develop criteria to measure impact of research findings on policy and practice

evidence. As these activities are primarily policy and provider oriented, there are now powers to increase the use for and strengthen the role of consumers in health care decision-making.

A number of conclusions in regard to future research activities can be drawn (see Table 2). Most importantly, quality and quantity of evidence of the effects on health and costs of health policy, organisation, financing and health care provision need to be increased. There is scope for collection and provision of evidence from primary and secondary studies, dissemination and implementation of findings and evaluation of best practice activities on an international level.

Integrative approaches (such as systematic reviews of heterogeneous pieces of evidence) need support from networks, which allow for exchange of different types of data. Interdisciplinary networks for specific high-priority diseases that develop models for integrating different sources of evidence should be supported.

Activities on the EU level that tackle the research recommendations listed in Table 2 could have a major impact on establishing best practice in European health care systems.

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