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The contribution of economic evaluation to decision-making in early phases of product development: a methodological and empirical review

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ABSTRACT AND KEY WORDS

Background: Economic evaluation as an integral part of health technology assessment is today mostly applied to established technologies. Evaluating health care innovations in their early states of development has recently attracted attention. However, while it offers a number of benefits, it also holds methodological challenges. ***Objectives***: The aim of our study was to investigate the possible contributions of economic evaluation to the industry's decision making early in product development and to confront the results with findings from an empirical review of economic assessments using early data or covering emerging technologies. ***Methods***: We conducted an explorative literature research to detect methodological contributions as well as economic evaluations that actually used data from early phases of product development. Complementarily, horizon scanning reports were investigated for emerging technologies that were researched for available economic evaluations. ***Results***: Economic analysis can be beneficially used in early phases of product development for a variety of purposes including early market assessment, R&D portfolio management and first estimations of pricing and reimbursement scenarios. A number of analytical tools available for these purposes have been identified. Numerous empirical works were detected, but most do not disclose any concrete decision context and could not be directly matched with the suggested applications. ***Conclusions***: Industry can benefit from starting economic evaluation early in product development in a variety of ways. R&D efficiency is enhanced, potentially successful products can be identified in time. Empirical evidence suggests that there is still potential left unused.

Keywords: economic evaluation, early data, research and development, innovation

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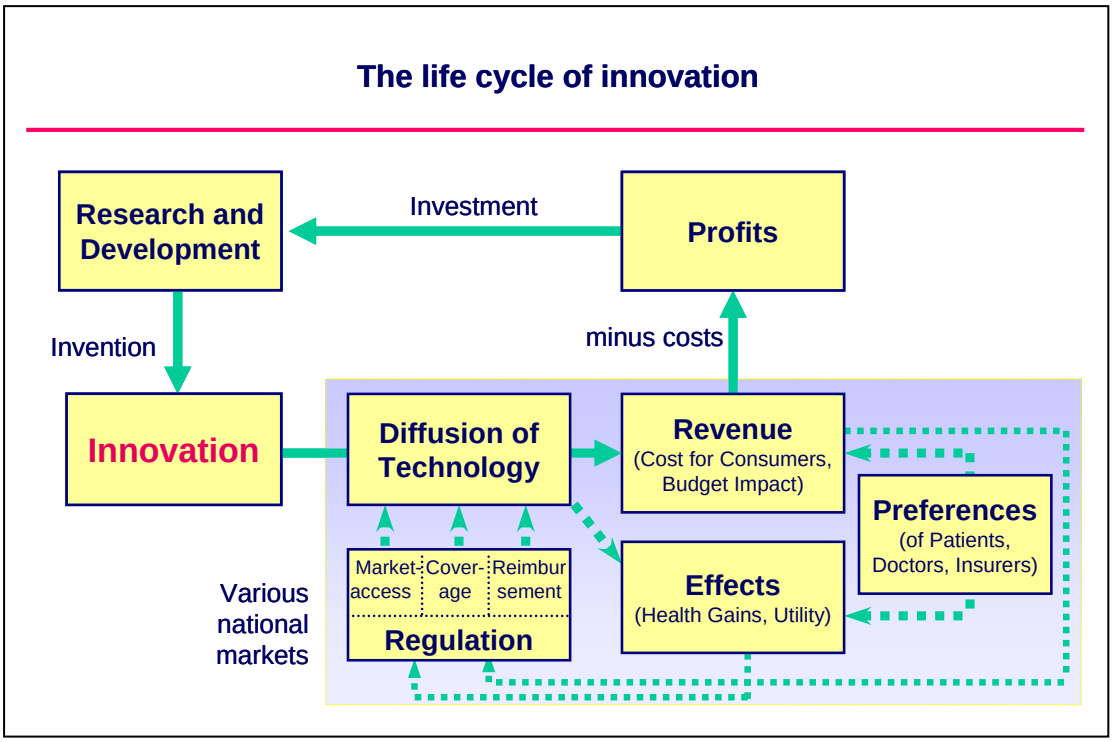
INTRODUCTION

Innovation is a strong force in health care development and has a major economic impact on the health care system. In the research-based industry, innovations generate revenues that are part of the companies' profits and thus impact on further investments in research and development (R&D), giving way to new innovative products. Innovations are subject to public regulation of market access, while coverage and reimbursement by health insurance again impact directly on the manufacturers' attainable revenues [1]. This innovation cycle is illustrated in figure 1.

Figure 1: The life cycle of innovation



Source: [1]

Economic evaluation is particularly relevant for new technologies and is becoming increasingly important. After having demonstrated quality, safety and efficacy for market approval, in numerous countries so-called fourth hurdle institutions require new technologies to show evidence of cost-effectiveness before national health services or insurance systems provide coverage [2, 3].

For the manufacturer of an innovative medical technology, coverage and adequate reimbursement are the key to a wide application of a new product that is essential for economic success. Applied timely in the product development process, economic evaluation provides the manufacturer with useful information on the future economic viability of the new product.

This study forms a part of the EU-funded Inno-HTA research project that aims at developing a methodology for the evaluation of health innovations to broaden the scope of classical HTA. It sets out to explore the potential and actual role of economic evaluation in early phases of product development. We investigated methodological studies supplemented by an empirical review to see in how far the suggested applications can be encountered in practice. After a short introduction on the methodology, the conceptual contributions of early economic evaluation from the pharmaceutical and medical device industry perspective are presented. Modelling and technical concepts available for these purposes are shortly outlined. We then confront the insights gained with the results of our empirical review before we discuss major results.

METHODOLOGY

As the research question of the use of early data – defined as either phase I/II data or data of technologies described as emerging or investigational - in economic evaluations was too unspecific and broad to employ a specific search algorithm, we conducted an explorative literature research in February 2007 to detect methodological contributions of early economic assessments as well as economic evaluations that actually used data from early phases of product development. Databases researched were PUBMED, The Cochrane Library, CRD (including DARE, HTA and NHS EED), MEDLINE, DAHTA, EconLit, Embase, BIOSYS Previews, the UK Department of Health Database publications library and the Cost Effectiveness Analysis Registry, by various text words and MESH terms (phase II, randomized controlled trial, controlled clinical trial, clinical trials, clinical trial phase I, clinical trial phase II, economic evaluation, early pharmacoeconomics, early technology assessment, healthcare evaluation mechanisms, economics, cost, cost analysis). Online available issues of potentially relevant journals were researched (International Journal of Technology Assessment in Health Care, Expert Opinion on Investigational Drugs, Pharmacoeconomics). References of relevant publications were tracked, an additional internet research was conducted via Google Scholar, and websites of institutions related to innovations in health care were investigated (acatech association, EUROSCAN, NHS National Innovation Centre). In addition, reports of international horizon scanning agencies published in 2004 were investigated in April 2007 for emerging technologies which were researched for available economic evaluations. The year 2004 was chosen to account for the lag in scientific publishing, to enhance chances to find economic evaluations for the identified technologies.

More than 1000 titles and abstracts were reviewed. Publications in English, German, French and Spanish were considered when they covered a healthcare delivery context, used early stage data and presented at minimum a cost assessment or comparison. In total, 111 potentially relevant empirical studies have been identified, out of which 83 fulfilled the inclusion

criteria, while 28 publications were excluded on these grounds. The research also yielded more than 70 methodological contributions.

RESULTS

Strategic R&D decision-making

Drug research and development is a long, costly and risky undertaking. In the early stage, the manufacturer is ignorant of which project is going to be successful, so he has to take decisions under considerable uncertainty. Early economic assessments help to reduce this uncertainty, promoting more economically solid products and avoiding costs for potentially unsuccessful products, thus enhancing efficiency, productivity and return on investment [4, 5]. This is essential as the incentives to engage in R&D critically depend on the expected costs and returns of successful innovations, which in turn depend on development expenses as well as on the proportion of drug candidates that fail and at what point of time these failures happen – the later, the more expensive [6, 7].

Pre-clinical preliminary market assessment

A pre-clinical preliminary market assessment encompasses the investigation of disease state, target population and epidemiological factors as well as associated costs and current treatments to get a picture of the disease impact and therapeutic benchmarks. For each of these factors, the use of a distribution of likely values takes into account the inherent uncertainty of the parameters and shows the robustness of the results. Costs and effectiveness of available therapies have to be assessed - the less effective current treatments are, the higher the potential for a new therapy to be cost-effective [8]. Available data sources at this stage comprise literature reviews, claims data or national health surveys. The results offer a benchmark for the minimum performance required as well as a forecast of market potential that can be used in a business opportunity assessment [2, 4, 9, 10].

This is illustrated in a case study by Poland and Wada (2001) who combine drug-disease and economic models to explore different dosage regimens for an HIV protease inhibitor in development. The drug-disease model predicts efficacy as a function of regimen, patient adherence as well as pharmacokinetic and pharmacodynamic parameters, which the economic model translates into a net present value measure for decision-making, based on development and commercial costs, market size, market share and price. For uncertain input parameters, probability distributions were assessed, yielding a distribution for the resulting net present value. The results enable decision-makers to assess complex trade-offs between possible options, thus maximising the value from strategic development decisions [11].

Go/no-go decisions, identification of potentially successful and unsuccessful projects

First data available from phase I/II clinical trials can be fed into the business opportunity assessment, yielding more precise estimates of market shares and sales over the product life cycle which can serve as basis for R&D priority setting and "go/no-go decisions", determining whether drug candidates will be further developed and proceed to phase III trials. As especially large phase III trials require substantial investments, it is important to evaluate the economic prospects of new products beforehand [10, 12, 13]. Empirical findings support these results. DiMasi (2002) finds substantial reductions in costs of up to 8% per approved drug if decisions to abandon failures were shifted from phase II to phase I, and even more so when shifted from phase III to phase II or I [6].

Pharmaceutical companies often realize a huge part of their sales and profits with a small number of products and depend on these so-called blockbusters to cross-subsidize other products, so that it is essential to focus on the development of drugs that can earn long-term, positive returns and to terminate uneconomic projects in time. These portfolio management decisions can contribute to the allocative efficiency of the R&D process and reduce total R&D spending, whereas falsely terminated projects do not only impact on costs, as already development expenses occurred, but also on revenues in the sense of forgone earnings. It is thus important to identify successful and unsuccessful projects as accurately as possible [5, 10, 14].

Including economic assessments in go/no-go decisions is crucial as they do not only reflect the clinical performance of a product, but also incorporate the altering market competition. The future market position of a product can not only be threatened by its own clinical performance and projected cost-effectiveness, but also by a newly introduced competitor product [4].

Empirical evidence shows that the participation of pharmacoeconomic departments in R&D decision-making is still rather limited. While most have at least sometimes been involved in go/no-go decisions, this happens on an occasional rather than regular basis [15]. In contrast, a look at the empirical evidence of development projects discontinued for economic reasons is interesting, though publications are limited - companies can be suspected of not loosing many words on failures, especially not when the cessation is not purely for efficacy or safety reasons [16]. DiMasi (2001) investigated reasons for research abandonment in a study on 350 new chemical entities (NCEs) and found that after efficacy, economic factors (comprising e.g. insufficient market potential or return on investment) were the second leading cause for research termination, which in addition occurred rather late in the development process. Of all NCEs that were abandoned in phase III clinical testing, over 26% accounted for economic

reasons [17]. These results underline the potential for optimisation of R&D decision-making that can still be exploited.

In two contributions discussing discontinued drugs in the year 2005 in different fields of indication, respective evidence was rather scarce. Out of the roughly 40 examined compounds, one was terminated after a phase II trial as the company preferred the development of other products “that have a higher commercial potential” [16, p.1498], four were stopped for “strategic reasons” (in one case, the manufacturer discontinued the development “because other priorities required a shift in resources”) [16, p.1498, 18, p.1491], and one drug discontinuation is mentioned “but the reasons for this are commercial in confidence” [18, p.1489].

Impact on future trial design

With the planning of the clinical trial phases, particularly from phase II onwards, health economic evaluation has an important impact on the development of study design and protocols, further improving R&D resource allocation [5].

The choice of the comparator is crucial, as is the choice of outcome parameters - intermediate or final, patient-relevant endpoints or quality of life. For the latter, it is essential to determine what kind of instrument is required, as developing an instrument takes considerable time and efforts [19]. Instruments and data collection methods can be tested in phase II studies before entering large, expensive phase III trials. The selection of outcome parameters depends mainly on where the results are to be presented, as different institutions have varying informational needs and data requirements. [4, 9, 20].

Health economic modelling in early stages can indicate to which parameters the estimated cost-effectiveness of a new technology is particularly sensitive, e.g. dosage and formulation schemes, so that these key items can be prioritized in the data collection in phase III trials. Modelling results can help to determine the optimal statistical power [8, 12, 21], which is vital when economic data are to be collected in phase III trials. As particularly cost data usually exhibit a greater variance and are more skewed than efficacy data, a larger sample size is required to come to statistically significant results. In earlier trials, the intended trial design can be tested and first data on costs can be collected for a preliminary estimate of cost data features, so that future trials can be designed accordingly [22].

Assessment of future reimbursement and pricing scenarios

With early data, a preliminary evaluation of the cost-effectiveness at different pricing scenarios and in different patient populations and indications can be carried out. The pricing of the product has to match the clinical value to avoid an unfavourable reimbursement scenario,

which means that a new product ends up in a niche market or is restricted e.g. by prior authorization or third-tier drug formulary positioning.

With first clinical results, a preliminary reimbursement dossier can be prepared according to the guideline format of the third party payer in the target market. The cost-effectiveness of the product in key market segments can be simulated under different assumptions. Setting up reimbursement data early also helps to identify gaps in the evidence needed, so that when it comes to the actual reimbursement application, the required economic data is already at hand and the probability of success should be high [2, 4, 5].

Price determination

The actual price determination process of a new product starts early in development. On the one hand, it is central to take its future value to the projected customers and their willingness-to-pay (WTP) into account, which means understanding the customers' value perceptions and integrating them into R&D decisions. To determine the value of a new intervention, cost effectiveness analysis has emerged as one of the most frequently employed methods. Its result, expressed as a ratio of additional costs per additionally gained benefits, can directly be confronted with the payer's willingness-to-pay. On the other hand, a company needs to make sure that a new product yields a sufficient return on investment (ROI), so that the price usually ranges between the minimum ROI requirements and the maximally attainable price on the market.

The placement of the new therapy in terms of target patient group and indication has essential value and pricing implications, so that the positioning within the current market situation should be considered thoroughly. To develop a global pricing strategy, additional factors have to be considered, including price differentials and parallel imports, public policy issues that impact on pricing as well as public opinion and patients' copayments. These factors have to be contemplated to determine the commercial potential of a new product [23, 24].

An early economic model can be used to determine which efficacy or clinical profile has to be attained for a given price so that the product is cost-effective, or, for given clinical and economic outcomes, to calculate the cost-effectiveness under different pricing scenarios [23].

The major problem with early pharmacoeconomic research is the uncertainty of the available data. Outcome data might not be fully at hand yet, future manufacturing costs are difficult to assess and relevant environmental factors, especially public policy decisions, are hardly foreseeable [23].

With only two publications encountered, empirical evidence on pricing issues for technolo-

gies in early stages of development is scarce. Dranitsaris and Leung (2004) explore the use of health economic modelling to estimate a product price for a given cost-effectiveness threshold [25], and Tanneberger et al. (2002) discuss dosage reductions as the high price of the drug in question limits its broad application [26].

Methodological publications show that early health economic evaluation offers helpful support. Besides informing R&D decisions, it helps establishing market potential and feasible pricing and ensures that later requirements in target markets are met, thus paving the way for reimbursement [4]. Empirical evidence points to the fact that in recent years, the use of early economic assessments was picking up – one study reported that none of the sampled compounds that entered clinical testing from 1990 to 1993 was subject to economic evaluation initiated during phase I, while this was the case for 15% of those compounds that entered clinical testing in 1994 [17].

Tools encountered for early economic evaluation

In this section, we aim to discuss a number of technical concepts encountered in the context of early economic evaluation. Economic modelling provides a useful framework to summarise available data but is not without drawbacks, Bayesian techniques as well as value of information analysis are useful when it comes to update information, while clinical trial simulation is particularly apt to enhance trial design and thus R&D efficiency.

Early economic modelling

Health economic modelling plays an important role in early economic analyses. It serves as a synthesis of all available clinical and economic evidence, as a framework for the analysis of various scenarios and as an interface to external decision-makers. Modelling is recommended to deal with the uncertainty that unavoidably comes along with early data, to account for parameters likely to vary and to combine data from different sources [8, 27]. Unlike late phase economic models, early economic modelling has to cope with data scarcity. Available data are mainly derived from literature, expert opinion or early clinical evidence which should be treated with caution, as it has a major impact on the cost estimates and the final economic results [12]. The use of data from small, early phase clinical trials entails a number of limitations, as frequently intermediate instead of patient relevant endpoints are used, follow-up times are short so that long-term effects remain undetected, small sample sizes and unrepresentative study participants complicate gaining statistically significant results, and study settings might not reflect routine practice. It is crucial which costs are taken into consideration. Limiting cost measures to cause-specific costs can make small variations more detectable, but masks what happens to other or overall costs [28].

Economic modelling is frequently criticised for a lack of standardization and the inherent uncertainty, but even if a company does not want to base its decisions on modelling results, it has not much to loose. The costs of doing an early modelling analysis are moderate compared with the costs of realizing large clinical trials, and these trials can even be optimized with the modelling results [10, 23].

The Bayesian analytical framework

The Bayesian analytical framework, which is basically concerned with updating a-priori probabilities with new information into a-posterioi probabilities, has been suggested for the use in pharmacoeconomics in R&D, as it allows to synthesize pieces of information obtained at different points of time into an updated knowledge valuable to decision-makers [5]. Bayesian decision theory has also been recommended to optimize phase II trial design to support go/no-go decisions. In recent studies, costs and financial gains have been included to account for the increasing importance of economic evaluation of emerging therapies [29]. The inclusion of a cost function into go/no-go decision-making has been further evaluated by Yan and Chen (2004), who also take into account erroneous decision-making [30]. Schachter et al (2007) take the Bayesian framework one step further in an innovative application to predict the clinical success of a new chemical entity (NCE) based on early stage development data. The employed Bayesian network model demonstrated substantial improvements and proved suitable to help eliminate unsuccessful projects early and thus enhance efficiency of the R&D process [14].

Value of information (VOI) analysis

Together with Bayesian decision theory, value of information analysis provides an analytical framework to determine the value of obtaining additional information to support a decision. Founded on statistical decision theory, the underlying principle is the comparison of costs and benefits generated by additionally gained information, thus assessing the value of investing in further research. It has long been used in other areas and has only recently been applied to priority setting in research and the evaluation of healthcare technologies [31, 32].

The expected value of perfect information (EVPI) is calculated based on prior information, derived e.g. from literature reviews or expert opinion, which can be combined and updated with the Bayesian methodology. In the context of clinical research, decision problems can be identified where the costs of uncertainty are highest, so that additionally gained information will be most valuable, thus supporting R&D prioritizing decisions. Given a fixed research budget, it helps to rule out research that is not cost-effective. Likewise, the cost-effective sample size can be determined by the expected value of sample information (EVSI) to se-

cure the technical efficiency of research and to allow prioritisation across technically efficient research projects. [31-33].

Coverage and reimbursement decisions are closely linked to VOI analysis, as the decision to adopt a new technology implies the consideration of whether the evidence available is sufficient to support the decision. A recent work informs on two opportunities where VOI analysis has been used in pilot studies in the UK. Even though the VOI analysis provided suitable results, decision-makers appeared to be unfamiliar with the methodologies and were reluctant to base their decisions on such evidence [32].

Clinical trial simulation

Clinical trial simulation (CTS), the computer simulation of clinical trials, uses mathematical synthesis to integrate simultaneously models of pharmacokinetic and pharmacodynamic drug action, disease progression and placebo effects as well as patient variability. The main objective is to increase the efficiency of drug development by improving trial protocols, maximizing the probability to meet the trial's targets and enhancing the quality of data gained. Key requirements such as dosage or statistical power can easily be established by simulations. Different assumptions about parameters and intended trial design can be tested to detect weaknesses and limitations. The impact of protocol deviation on the desired outcomes can be explored by conducting various "what-if" scenario tests, as the virtual trials can be repeated under different conditions. CTS helps to prevent trial failures, uninformative or unnecessary studies. Costs can be incorporated into the simulation to minimize trial expenditure given a specific study design [5, 7, 34-36].

Early economic evaluations depend on clinical outcomes data which at early stages might still be unavailable or fraught with uncertainty. Efficacy estimates obtained as outputs from CTS are suggested to supply information otherwise unavailable at this stage [5, 36]. In addition, CTS output data allows population projections by integrating distributions of individual covariates, thus identifying patient subgroups that particularly benefit from a treatment or that demonstrate a favourable cost-effectiveness profile [36].

Empirical examples show that CTS is used to answer a variety of different questions, ranging from dosage optimization or the adaptation of trial design to selecting the appropriate test statistics or the optimal sample size. Data from phase I or II trials can enter a simulation to evaluate the planned phase III design [34, 37].

Empirical review of early economic evaluation studies

The central interest in this empirical review was to explore the actual use of early data in

economic evaluations and to see to what extent the suggested conceptual applications can be encountered in practice. Identified publications were classified as trial-based studies when the evaluation is based on concurrently conducted or published phase II trials; as model-based studies when health economic modelling is employed, or as HTA reports which were listed separately as they mostly combine reviews including early phase trial data and modelling, are more standardised and supposedly destined for policy information. The intervention examined in 56 of the totally 83 publications is medication, including treatments combining medication with other interventions, whereas 27 studies cover procedures, including surgery, imaging, diagnostic or therapeutic measures and novel products or systems, such as the MARS liver support system or drug-eluting stents. Only six studies describe diagnostic procedures, all other interventions are curative. The majority of the studies concern cancer, covering a wide range of diverse malignancies headed by breast and lung cancer. Other indications encountered comprise diseases of the circulatory system, HIV, diabetes and rheumatoid arthritis. 32 studies were found to be industry-sponsored, while 51 publications either did not state any conflict of interest or funding body or were supported with public means. The main characteristics of the included studies are summarized in table 1. A full reference list and the results of a more detailed analysis of the study characteristics are available from the authors upon request.

Table 1: Summary of main characteristics of the included studies

Intervention	Intention		Study type			Industry-sponsored		Indication (according to ICD classification)*								
	curative	diagnostic	trial-based	model-based	HTA	yes	no	I	II	III	IV	V	IX	XI	XIII	diverse
Medication total: 56	56	--	24	22	10	25	31	4	38	2	1	1	1	1	3	4
Procedure total: 27	21	6	21	6	--	7	20	1	7	--	2	1	7	5	2	3
Total: 83	*77*	*6*	*45*	*28*	*10*	*32*	*51*	*5*	*45*	*2*	*3*	*2*	*8*	*6*	*5*	*7*

* Fields of indication according to the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Version for 2007 [38]:

I Certain infectious and parasitic diseases
II Neoplasms
III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
IV Endocrine, nutritional and metabolic diseases
V Mental and behavioural disorders
IX Diseases of the circulatory system
XI Diseases of the digestive system
XIII Diseases of the musculoskeletal system and connective tissue

The decision contexts in the empirical studies mostly proved to be not clearly identifiable. Most papers either offered information or discussed the state of a technology, recommending its use or suggesting further research, while, apart from a few examples, the actual purpose of the study or the potential use of its results was generally not disclosed. This is mainly true for the trial-based and model-based studies, whereas the HTA reports can be assumed to have been compiled as policy decision support consistent with their original purpose. Among the exemptions, one study touches the reimbursement of a surgical procedure with Medicare in the United States [39], a second work offers a preliminary cost-effectiveness estimation in the context of the German healthcare system [40], and another paper explicitly mentions its purpose as using modelling for a price estimation [25].

In general, we could not clearly assign the empirical works to the proposed uses, but the very number of studies found shows nevertheless that the idea of starting economic evaluations early in the product life cycle has gained considerable momentum in the past few years.

DISCUSSION

A number of methodological contributions were identified and analysed, but it proved difficult to clearly capture what significance decisions-makers actually attribute to early economic data in practice. In the industry, the reasoning for a decision is hardly accessible – internal strategic decisions are scarcely published, and this holds particularly for information on project failures – even more so if for economic reasons. Nevertheless, empirical evidence hints to the fact that economic factors do play a dominant role in strategic R&D decisions [17].

Apart from this publication bias, it has to be acknowledged that a diversity of other factors affect decision-making, ranging from the political and institutional environment to personal experience, motivation and attitude towards a technology, which of course can be even less transparent [41]. It is thus difficult to discern what weight economic data have had or will have in an individual decision, as it is only one part of all available information and other factors that build the basis for a decision.

Certainly the generation and use of early economic evidence in the industry would be fostered if it would play a greater role in health policy decision making, be it in the context of horizon-scanning activities or in early reimbursement communications. While now being a useful but rather supplementary information, this would put a stronger emphasis on early economic data.

One shortcoming of our work is that the rather broad research question led to a more explorative nature of our research, so that our review cannot claim to be comprehensive and can only spotlight the current use of early economic evaluation.

The reviewed early economic evaluation studies were not analyzed according to one of the various lists of quality criteria (e.g. [42], [43], [44]), as the purpose of the review was not the assessment of the studies' quality. Besides basic information on indication and intervention and criteria used to identify economic evaluations, e.g. the description of costs and effects, the studies were rather analysed for information regarding the use of early data in accordance with our research subject. We included studies generously even if they would not qualify as proper economic evaluations, as our intention was to explore to what extent economic considerations were actually undertaken with early data. It has to be mentioned that for a few of the trial-based studies, it was difficult to discern whether the described trial was indeed a phase II study. In these cases, we included the study when we felt that it would fit in the context of our research as we considered it an early trial examining a new or emerging technology.

CONCLUSION

For the pharmaceutical and medical device industry, there are numerous beneficial applications for early health economic assessments. They support the determination of market potentials and possible price ranges, helping to gain a sound estimation of market opportunities and reimbursement probabilities. Strategic R&D decisions are backed, so that resources can be directed to potentially profitable projects, enhancing resource allocation efficiency and ultimately profitability. They also deliver valuable inputs to optimize the design of further clinical trials.

Even though the idea of starting economic evaluations early in the product life cycle seems to have gained popularity in the past few years, its use holds a great potential for the industry that seems to be not fully exploited yet. This impression could be attributable to a considerable degree of publication bias, as companies supposedly do not publish on failed projects and company-internal information is hardly accessible. The reasons for abandoning a new product are rarely published, especially if economic reasons are involved.

We identified methodological contributions adapting existing analytical concepts to the particular use in early economic evaluations, e.g. clinical trial simulation or value of information analysis. This variety of tools readily at hand can be supposed to facilitate and further promote the use of early economic assessments.

Problems with early economic data stem from their preliminary character, the fact that they cover only a relatively short period of time and are likely to differ from real-world practice, so that the conclusions drawn cannot be taken as “hard facts”. This uncertainty has to be accounted for in the decision.

The economic evaluations found in practice can mostly be characterized as studying a new technology without disclosing a concrete decision context. Most studies are based on data from early phase clinical trials supplemented by literature reviews. The majority of publications have been found in the field of cancer therapeutics. Regarding the type of intervention, most studies cover medication treatments with overwhelmingly curative intent.

Our report summarizes the uses, benefits and problems of early economic evaluation. Confronted with the current use in practice, there still seems to be considerable potential that decision-makers are invited to take advantage of. The way is paved as today techniques are available to mostly overcome the inherent difficulties of conducting economic analyses with early data.

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