Value-Based Competition among hospitals: theory & practice

Health Economics, Policy & Law Master Thesis

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Abstract

Background

Competition in health care is often centered on volume and costs. This actually hinders a focus on the quality of care and results in a fragmented health care system. The solution to this problem is seen in Value-Based Competition, in which hospitals compete on the value that they deliver for their patients. This value is created by improving health outcomes against lowering costs of treatment. However, the role that Value-Based Competition plays in practice as well as its empirical effects aren't evident yet in the Netherlands. This thesis will fill up this knowledge gap by conducting a systematic literature review on the effects of Value-Based Competition and explore its possible contributions for the Dutch hospital market.

Methods

The systematic review was performed by searching for the available literature on the topic in two different databases. Only empirical studies that complied with the search criteria for examining Value-Based Competition or the role of competition within Value-Based Health Care (VBHC) were included in the review. In total, eight articles were reviewed for the evidence of the empirical effects of Value-Based Competition.

To test the findings of the literature review against the practice of the Dutch context, also four semi-structured interviews were conducted with different stakeholders.

Results

Empirical evidence on the specific effect of Value-Based Competition was found to be limited. The retrieved articles remarkably showed competition to play an insignificant role within VBHC and was often not mentioned as a component of the strategy. The eight articles that did research the empirical effects of Value-Based Competition showed ambiguous results. The role that competition played in these studies also showed different mechanisms of Value-Based Competition. The finding of an underrated role of competition and the differing views on its mechanism within VBHC was also found to be applicable to the Dutch hospital market from speaking with the different stakeholders.

Conclusion

Value-Based Competition seems to be lagging behind with regard to the uptake of VBHC. The role that competition should play to create valuable care remains a topic of discussion and its empirical effects need further investigation in order to be persuasive. Nevertheless, the stakeholders in the Dutch hospital market are optimistic that Value-Based Competition can contribute to a more efficient and patient centered health care system that is sustainable for the future.

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Chapter 1: Introduction

Competition is present in many health care systems around the world (Siciliani et al., 2016). In most of these systems, hospitals compete based on their volume and costs in order to get contracted with the government or a private health insurer. However, the American academic Michael Porter has diagnosed that this system seems not to work properly (Porter & Teisberg, 2004). He concluded that over the last few decades the health care systems have become fragmented. As a result, inefficiency and high costs are increasingly making up important problems within health care (Porter & Lee, 2013). The current health care landscape would not be sustainable for the future according to Porter. But hope is not lost as he mentions his strategy called VBHC that promises to '*fix health care*' (Porter & Lee, 2013). The fundament of his vision is the needed change of the present competition principles between health care providers and health insurers. The current competition on volume and costs is actually insufficient to ensure high and equal quality of care. In order to improve health care, hospitals should start competing on what really matters for the patient. The reform is therefore largely based on creating Value-Based Competition, in which providers measure and compete on health outcomes that are relevant for the patient (Porter & Teisberg, 2004)

Porter's strategy has gained a lot of attention over the years. A fragmented health care system hasn't only been diagnosed within the United States (US), but also in many other countries around the world. The same is the case for the Netherlands, as there have been alarming signals of rising costs and unequal quality of care for several diseases (NFK, 2019). In order to tackle these problems, the implementation of VBHC among Dutch hospitals has started over the last few years. However, there have been indications that part of the theory about Value-Based Competition may be lagging behind (Steinmann et al., 2020). When key stakeholders fail to consider the importance of Value-Based Competition, the impact of the theory may be influenced. Therefore, it would be interesting to look into the current experiences with Value-Based Competition in practice and its possible contributions that it could offer to health care.

1.1 Societal and scientific relevance

Porter has written extensively about his vision on Value-Based Competition. Now that his strategy is spreading, it's important to know whether the concept is being implemented the way he originally intended to. If this is not the case, it could be that the strategy may be working out differently than he aimed for. As a consequence, Value-Based Competition may then not be able to deliver on its promises. A systematic literature review hopefully helps to give more insight in the role that competition plays within VBHC and explore the evidence on the empirical effects of Value-Based

Competition. These findings could add on to the existing literature and help support the possible gaps between theory and practice.

1.2 Objective and research questions

This thesis will aim for researching the current implementation of Value-Based Competition among hospitals in the Netherlands. There will be strived for a comparison between the theorical design and practical experiences on Value-Based Competition. In order to explore possible recommendations for the enactment among Dutch hospitals, the following research question will be the cornerstone of this thesis:

"*How can Value-Based Competition in health care contribute to the functioning of Dutch hospital markets?*"

To be able to provide an answer to this question, the following sub-questions will help to carry out a deeper analysis of the topic:

1. What is Value-Based Competition in health care and what are, from a theoretical perspective, its crucial preconditions?
2. What does the international health economic literature tell about the effects of Value-Based Competition in health care?
3. What are the experiences with Value-Based Competition in the Dutch hospital market?
4. What lessons can be learned from both the international health economic literature and additional stakeholder interviews for improving Value-Based Competition among Dutch hospitals?

1.3 Structure of the thesis

The different chapters of this thesis will be structured as followed. Sub-question one will be answered in chapter three by defining Value-Based Competition and its crucial preconditions in a theoretical framework. Subsequently, chapter four will present the evidence on the empirical effects of Value-Based Competition that result from a systematic review on the international health economic literature. This gives insight in the findings of sub-question two. Chapter five will then go into the experiences of Value-Based Competition in the Dutch health care market which answers sub-question three. Ultimately, chapter six will collect all data to formulate possible

recommendations for implementing Value-Based Competition within the Dutch hospital markets to answer sub-question four. In this final chapter, also the final discussion and conclusion will be presented.

Chapter 2: Research methods

In this chapter, the performed research methods for this thesis will be clarified. First off, a theoretical framework on Value-Based Competition and its crucial preconditions has given insight in the first sub-question of the thesis. The analysis of the empirical effects of Value-Based Competition as formulated in sub-question two has been performed through a systematic review of the international health economic literature. Semi-structured interviews have been conducted to complement the empiric results and provide supplementary insights in respect to the third sub-question. An analysis of the collected data has resulted in the recommendations for the Dutch hospital markets that are formulated in sub-question four. Overall, these findings have made it possible to provide an answer to the central research question of this thesis.

2.1 Theoretical framework

To examine the possible contributions of Value-Based Competition to the Dutch hospital markets, it's of first importance that the theoretical essence of the subject is being explained. Knowledge on the origin and content of Value-Based Competition helps to understand the practical application of the concept. Therefore, a theoretical framework will help to outline the theory on Value-Based Competition and its crucial preconditions for implementation. The literature for the theoretical framework will especially draw upon the work of Porter and Teisberg as the initial founders of the concept. However, also other authors will contribute to this chapter of the thesis. The content of the theoretical framework will help to guide the conducting of the systematic review of the empirical literature and will advance the comprehension of successful implementation of Value-Based Competition.

2.2 Systematic review

The second sub-question of the thesis has been answered by performing a systematic literature review. The international health economic literature was explored for the evidence on the empirical results of the implementation of Value-Based Competition in practice. The search process of the relevant literature followed the principles of the PRISMA Flow Diagram. This diagram sets out the process of gathering and analyzing the retrieved articles after performing searches in the databases with the relevant search criteria (PRISMA Statement, 2021). In the light of this thesis, the databases of Pubmed and Econlit were searched for the empirical literature on Value-Based Competition. The search criteria that were used for this purpose were *Value-Based Competition, Value Competition Porter, Outcome Competition Porter, Value Competition Hospitals* and *Value-Based Contracting.*

The inclusion criteria for analyzing the literature started with articles that looked into the role of Value-Based Competition or competition within VBHC and researched its empirical effects. The inclusion criteria were eventually expanded to articles that researched the role of one or more crucial preconditions of Value-Competition without explicitly mentioning the term in itself. This was determined after detecting that many articles only indirectly related to Value-Based Competition or only researched certain components of the theory. This allowed articles to be included that researched competition through increased patient choice on PROMs. The PROMs in these articles function as an indirect proxy for value.

Since Value-Based Competition originates from 2004, articles that were written in the period before the publishing of Porter's and Teisberg's book were also excluded. In addition, articles that researched other markets than hospital care have also been left out of the systematic review, since the findings of these studies can't directly contribute to answering the research question of this thesis.

Since the systematic review examined the international health economic literature, articles have been included that research different countries with incongruent health care systems. Therefore, it has been important to accurately distinguish the context of the study as well as the role that competition plays in each article. Also the measured outcome variables are essential to be outlined as it helps to analyze the effects of Value-Based Competition and transfer the findings to the Dutch health care setting.

After performing the literature searches in the databases, the records were scanned based on their title and abstract. The articles that remained were analyzed more thoroughly based on the inclusion criteria. In addition, also articles have been retrieved by assessing the references of the studies found from the databases, which is also known as '*snowballing*'. This resulted in the final eight studies that were included for reviewing the effect of Value-Based Competition.

2.3 Experiences Dutch hospital markets

In order to explore the experiences of the Dutch hospital markets with Value-Based Competition, semi-structured interviews have taken place with several stakeholders from the field. The stakeholders that were interviewed included the Dutch Health Care Authority (NZa), health insurer Menzis, pharmaceutical company Amgen and a PhD researcher that is currently investigating VBHC in the Netherlands. These stakeholders were chosen for their active engagement with Value-Based Competition in the Netherlands. The NZa is an important regulating actor within the Dutch health care system that is engaged in developing a change in the purchasing of health care between

providers and insurers. Their ambition is to shift away from agreements that are based on volume and move to contracts and funding arrangements that are focused on value.
There are several health insurers in the Netherlands, of which Menzis is one of the largest four (Zorgwijzer, n.d). Menzis is actively involved in Value-Based Competition by starting initiatives to introduce value as an important component in their care contracts with hospitals.
Amgen is in cooperation with several hospitals in the Netherlands occupied with evaluating and improving health care processes in line with the principles of VBHC. They are also involved in advancing the process of measuring and comparing health outcome data between hospitals.
The PhD researcher is currently examining the uptake of VBHC in the Netherlands by performing research on the topic and has gained extensive knowledge of the Dutch perspectives on the concept.
Unfortunately, it appeared not to be feasible to arrange an interview with a hospital. As a consequence, the hospitals' perspective on Value-Based Competition couldn't be included in the thesis. The situation around COVID-19 during the writing of the thesis put a high pressure on the hospitals in the Netherlands. Even though multiple contact requests were sent out to different hospitals, no response was given to the interview invitations.

A topic list was created in advance to outline the most important topics to be discussed. This topic list is enclosed in Appendix B. The unrestrictive structure of the interviews also allowed the conversations to be steered based on the answers of the respondents. The formulated topics were primarily composed based on the results from the systematic literature review, which is the cornerstone of this thesis. The few interviews can be seen as an "add-on" aimed at collecting supplementary insights on the experiences of Value-Based Competition in the Netherlands and to preliminary test the findings obtained from the systematic review of the empirical literature. In addition, the interviews could also provide an answer to the current obstacles and future ambitions with regard to the implementation of Value-Based Competition in the Dutch hospital markets.
The interviews took place via the online platform Zoom and lasted approximately 45 minutes.

The different perspectives helped to shed a light on the current developments of Value-Based Competition in the Netherlands and provided an answer to sub-questions 3 and 4. Since the interviews were aimed at supplementing the results from the systematic review and weren't supposed to present a self-contained qualitative research method, the conversations of the interviews had no need to be transcribed word for word. Instead, the recordings were carefully listened to afterwards while notes of important passages were made for answering sub-questions 3 and 4.

Chapter 3: Theoretical framework

This chapter will go into the origin and content of Value-Based Competition by elaborating on the theory of Porter and Teisberg in a theoretical framework. In addition, the crucial preconditions of the concept will also be distinguished.

3.1 Value-Based Competition

In many countries around the world, it's readily becoming apparent that the current health care system is not sustainable for the future. Over time, costs are ever rising while the quality of care is not proportionally improving (Porter & Teisberg, 2004). As in other markets, competition is often seen to be an adequate mechanism to lower costs and improve quality (Siciliani et al., 2016). However, as health care suffers, among other things, from the presence of information asymmetry and numerous heterogenous products in the market, the appropriate design of competition can be difficult to establish (Dranove & Satterthwaite, 2000).

The American academics Michael Porter and Elisabeth Teisberg have recognized that in the context of the US, the organizational notion of competition is actually causing many problems of the health care system nowadays (Porter & Teisberg, 2004). It has resulted in a fragmented health care system in which the benefits of an actor are the result of another one's losses. Porter calls this unhealthy form of competition '*zero-sum*'. Zero-sum competition in health care can be recognized by several features. Currently, each actor refrains from the responsibility to pay the costs of provided care by passing on the bill to another actor. This may allow for their individual costs to remain as low as possible, but doesn't reduce the total expenses. In fact, the passing on of costs only complicates billing and adds on to overall costs and administrative load (Porter & Teisberg, 2004).

Moreover, this kind of competition stimulates health providers and insurers to consolidate in order to gain a stronger bargaining position in the market (Porter & Teisberg, 2004). The consolidations in itself often don't have quality improvements as their objective and are regularly associated with causing higher prices (Beaulieu et al., 2020).

In addition, health plans are currently saving costs by restricting certain treatments or health providers for their patients. This leaves the patient evidently with less choice for its care. These difficulties are all unwanted consequences that are the result of an inappropriately designed system (Porter & Teisberg, 2004).

Even though competition is currently showing to result in a zero-sum environment, Porter and Teisberg argue that with the right focus competition can actually be the solution to many present problems within health care. They reason that competition should have a central focus on delivering

valuable care for its patients. The authors refer to this form of competition as '*positive-sum*' or '*Value-Based Competition*' (Porter & Teisberg, 2004).

Porter and Teisberg have tried to identify the underlying problems that have led to zero-sum competition and need serious reform in order to move towards Value-Based Competition.
First of all, bargaining between hospitals and health insurers in zero-sum competition often takes place on their produced volume and costs. Hospitals generally receive money for the amount of activities they perform (Figueras et al., 2004). This results in an environment where efficiency isn't appropriately awarded and actually encourages wasteful care. Subsequently, subject like quality are sometimes failed to keep sight of during the contract negotiations between hospitals and insurers (Porter & Teisberg, 2004).
Alternatively, as Porter and Teisberg (2004) state, competition should center around the value of care that is being delivered to the patient. Value is in this context being defined from the patients' perspective as the relevant health outcomes of treatment divided by the costs to achieve those health outcomes (Porter & Lee, 2006). This measurement should encompass the whole cycle of care at a disease specific level. By competing on the value of treatment, health providers will need to adequately perform on the measured health outcomes in order to attract patients. The incentive then rises to constantly improve on these outcomes, which will be beneficial to the quality of care (Porter & Teisberg, 2004).

Competition in a zero-sum environment has resulted in excessive attention to keep costs as low as possible. In order to reduce the own expenses, unbeneficial behavior like cost shifting is taking place. Cost shifting between for example hospitals, health insurers and patients only makes costs rise and undermines value. Even though keeping costs low is important to keep health care sustainable, the quality of care should not be overlooked. Solely concentrating on cost reduction should therefore shift to the main focus of Value-Based Competition to provide valuable care. All patients should be guaranteed of high quality care at a minimum level of costs (Porter & Teisberg, 2004).

In general, health insurers seem to be selective and have a preference for healthier patients to be within their network. Meanwhile in the US, it has also been made difficult for insured to go to providers outside the network as they often face additional charges. Both of these matters are the consequence of the insurers' aim to save costs. However, such behavior creates no value for their insured. Value-Based Competition therefore encourages that valuable care should become accessible for the entire population and to let patients have free choice for their provider (Porter & Teisberg, 2004).

In the US, competition in health care often takes place locally. This rather narrow area for rivalry can however prevent an effective amount of competition. With a sole focus on the own region, differences might prevail in costs and quality across the nation. In order to advance to an equal and high level of quality, health providers and insurers shouldn't be bound to their own network. A national level of competition would not only allow for a sufficient number of competitors in the market, but also provides the opportunity to work together and learn from best practices in the field (Porter & Teisberg, 2004).

A fifth weakness of zero-sum competition that Porter and Teisberg (2004) diagnose is the current limited level of competition as a result of the consolidating of health providers. Consolidations are often pursued to gain more leverage power against health insurers. However, these mergers are regularly not associated with beneficial effects to quality of care and eventually lead to higher prices (Beaulieu et al., 2020). The merged entities are less vulnerable for rivals because of their large market power and therefore limit competition in the market. With the aim of maintaining sufficient rivalry between hospitals, Value-Based Competition therefore discourages consolidations and pleads for critical assessment of such requests (Porter & Teisberg, 2004).

Information is crucially lacking for patients about the quality of care that is being delivered by different providers (Porter & Teisberg, 2004). Progression has been made over the years, but on a disease specific level it's hard to discover which hospital provides the best treatment. However, it would be favored if patients made informed choices for their health care provider based on quality. Value-Based Competition advocates for accessible information for all patients about the health outcomes of treatments provided by health care providers. As it will be able for patients to choose their hospital based on its performance, competition will drive the pursuit of delivering high quality care (Porter & Teisberg, 2004).

Ultimately, Porter and Teisberg observe that both health providers and insurers are currently facing the wrong incentives in the US.
Health providers are now used to provide a variety of care for all its patients. However, research has proven that a broad focus holds back from the opportunity to specialize in certain areas of care (Porter & Lee, 2013). When health providers are able to focus on certain treatments or facets of care, they will develop more experience and proficiency. This will significantly benefit the quality of care. Therefore, physicians in Value-Based Competition should focus on becoming experts in the treatments that they provide for their patients. This also highlights the importance for national

competition, as hospitals might need to collaborate more to secure full coverage of expertise care for all patients across the country (Porter & Teisberg, 2004).
Health insurers face the wrong incentives as restricting certain treatments or providers for its clients saves costs for the insurer. However, free patient choice is necessary to find the best care that fits the need of the insured (Porter & Teisberg, 2004).

The problems of zero-sum competition aren't only present in the US. Also other countries seem to be struggling with the same difficulties of a fragmented health care system and zero-sum competition. For example, a highly concentrated hospital market is also present in the Netherlands. This has resulted in limited competition and has made it more difficult for health insurers to close contracts with the hospitals (Schut & Varkevisser, 2017). In order to tackle these problems, attention for Value-Based Competition has swiftly spread out around the world, hoping to provide an answer to zero-sum health care systems.

3.2 Preconditions Value-Based Competition

Moving from zero-sum to Value-Based Competition will seemingly require multiple changes within health care. From a theoretical perspective, introducing or strengthening Value-Based Competition therefore requires several preconditions to be fulfilled in order to deliver upon its promises. In total, eight crucial preconditions can be distinguished.

1. Center on value

The first precondition includes the need to focus on creating value for patients. This means that performed treatments should result in the best health outcomes against low costs. In this context, value is defined from the patients' perspective and especially health outcomes that are meaningful from their point of view are of most importance. Activities that don't contribute to beneficial effects for the patient should therefore be discouraged and remain limited. The value of care is what should be the center of competition between health care providers (Porter & Teisberg, 2004).

2. Measure results of care

In order to quantify the results of treatment, health outcomes have to be measured. Porter and Teisberg (2004) argue that currently too much attention is being paid to process indicators, while outcome measures can actually be most informative on the performance of health providers. Therefore, Value-Based Competition pleads for the use of outcome indicators to measure the results of provided treatments. Not only clinical outcomes have to be taken into account, but also the

effects on the quality of life are of great importance for the patient. Insight in the functioning on these aspects gives hospitals the opportunity to critically reflect on their own practices and allows to identify bottlenecks and improve results (Porter & Teisberg, 2004).

3. Measure over the full cycle of care for medical conditions

The treatment for a patient can be performed by varying professionals that fall under different specialties. Therefore, integrated care should be stimulated by measuring health outcomes and costs over the full cycle of care on the level of the medical condition. By measuring over the whole treatment cycle, all performed activities can be monitored as one ongoing procedure. A focus on the level of the medical condition also allows to better align the different treatments around the patients' needs (Porter & Teisberg, 2004).

4. Focus on costs

Being able to achieve high quality care is often associated with expensive investments. However, according to Porter and Teisberg (2004) the opposite can be true. They argue that improvements in quality can actually lead to less costly care as it reduces errors and prevents unnecessary procedures. The implementation of innovations and other improvements will therefore outweigh their costs by time. Focusing on improving the quality of care should thus result in positive value as health outcomes will improve while costs reduce (Porter & Teisberg, 2004).

5. Learn through experience

Value-Based Competition highlights the importance of physician experience as a necessity to deliver high quality care. Treating a sufficient number of patients with the same medical condition will help providers to improve in their experience with the disease, which will lead to better health outcomes for the patient. In order to guarantee a sufficient amount of patients, certain volume standards could be introduced to ensure a minimum of patients that providers need to treat in a specific time span. This will facilitate enough expertise of health care providers. This approach may also mean that hospital have to choose certain focus areas in which they want to excel. With more narrow specialization, it becomes easier to improve the quality of care for the area of attention (Porter & Teisberg, 2004).

6. Ensure regional or national competition

Competition that merely occurs on a local level has previously been identified as one of the causes of zero-sum competition. A more extensive area for rivalry between health care providers and insurers

is necessary to ensure sufficient competition in the market. Additionally, the sharing of expertise and collaboration between actors can better be accomplished with a more nationwide approach. Value-Based Competition therefore supports an expansion of the competitive environment to a regional or national level to facilitate the necessary level of rivalry (Porter & Teisberg, 2004).

7. Make results of care transparent

The next step of measuring health outcomes is to make these results widely available for the public. Accessible information on the performance of health care providers should be available over the whole cycle of care on a disease specific level. Patients are then given the opportunity to choose their hospital based on its performance on the measured health outcomes. The increased relevance of patient choice will result in a healthy competitive landscape where providers will feel the incentive to better perform on their health outcomes. This will accelerate quality improvements in the health care system.

The transparent outcome data can also be of use for health insurers. Information on the performance of hospitals makes it possible for insurers to settle contracts with the providers based on the health outcomes they achieve. Negotiations on quality of care or financial incentives based on the performance on health outcomes can further facilitate a central focus on value (Porter & Teisberg, 2004).

8. Reward initiatives on Value-Based Competition

Ultimately, initiatives that improve valuable care and lead the way in the transformation to Value-Based Competition should be honored appropriately. This will also encourage other actors to innovate and involve in the process. One example that could for instance be thought of is by accreditation of the delivered care (Porter & Teisberg, 2004).

3.3 Different roles for different actors

There are several steps that have to be undertaken in order to realize Value-Based Competition. Different stakeholders can be of great influence in this development.

3.3.1 Providers

According to Porter, physicians can contribute to the fulfillment of Value-Based Competition by defining and measuring the relevant health outcomes of their provided treatments (Porter & Teisberg, 2007). Competition on value between hospitals requires comparable standardized outcomes that need consistent reporting. An international consortium has been established to

initiate this development, abbreviated as ICHOM. The consortium of health care providers and other stakeholders are occupied with developing a set of standardized outcome measures and making them accessible for all countries. This will facilitate uniform implementation of Value-Based Competition (Deerberg-Wittram et al., 2013).

3.3.2 Health insurers

Health insurers can steer Value-Based Competition by shifting the attention from volume and costs to value in their contract negotiations with hospitals. They can settle agreements on a minimum level of health outcomes that need to be achieved while cost remain within the approved budget. These negotiations should be made on the level of medical conditions and have to cover the whole cycle of care with the aim of contracting integrated care (Porter & Teisberg, 2004).
In addition, health insurers can also be of large influence for the process of making health outcomes publicly available. The insurers can request hospitals to provide information on their performances in order to make contract agreements and inform their insured with this data (Porter, 2009).

3.3.3 Government

The government can play an important role in providing a guiding policy on how to achieve Value-Based Competition. Developing a framework with overarching goals can stimulate different actors in the health care field to participate in the process. There are a few actions that the government could think of for establishing Value-Based Competition. For example, Porter and Teisberg (2006) support regulations such as licensing providers based on their results. The government could set up certain minimum levels of health outcomes as a necessary threshold to deliver appropriate care. The providers that perform below standards could then be restricted from access to the market (Porter & Teisberg, 2006).
The government should ultimately ensure and protect a healthy competitive environment. As has been stated before, an evidently large number of consolidations have occurred of the last years. These consolidations are often seen to increase prices, while at the same time have dubious effects on quality (Beaulieu et al., 2020). While hospitals will also need to work together to share knowledge and expertise, enough rivalry should be present in order for the market to remain competitive (Porter & Teisberg, 2006).

3.3.4 Patients

When the performance of hospitals on the measured health outcomes has been made public, patients are given the tool to choose their health provider based on the transparent quality

information. Value-Based Competition aims to stimulate patients to let their hospital choice depend on the value that they can deliver for the individual patient. This approach may ask patients to travel further than the closest hospitals. If patients are willing to do so, effective competition will cause hospitals to provide the highest quality of care (Porter & Teisberg, 2004).

Chapter 4: Results literature review

This chapter will analyze the evidence for the empirical effects of Value-Based Competition. The examination is based on the available health economic literature after performing a systematic review of the relevant articles.

4.1 Identification of studies

VBHC has become a widespread topic that has received substantial interest over the last few years. This can be recognized by the extensive literature that is written on the topic. This thesis will deviate from these publications by focusing in particular on the origin of the theory, namely Value-Based *Competition*. For this purpose, there is special interest in researching the role that competition plays within VBHC and what the effects are of this form of rivalry. A systematic review of the international health economic literature is performed to examine the evidence for this topic. Relevant articles that are included, research Value-Based Competition or the role that competition plays in VBHC. Only articles that studied its empirical effects were assessed to be appropriate.

The systematic literature review followed the PRISMA Flow Diagram, of which figure 1 presents the search process. The literature search with the search criteria in the databases of PubMed and Econlit resulted in a total of 714 records. When the duplicate articles where removed, this led to a number of 675 records. These articles were screened on their suitability based on their titles and abstracts. The titles or abstracts needed to refer to Value-Based Competition or competition within VBHC and needed to research its empirical effects. After this screening process, only 29 records remained. These articles where assessed by analyzing their full text again for the mention of Value-Based Competition or competition to play a role within VBHC. Only articles that revealed empirical effects could be included. The final step of the PRISMA Flow Diagram resulted in eight records that were ultimately included for the analysis of the evidence for empirical effects of Value-Based Competition.

Figure 1 displays the search process through the PRISMA Flow Diagram.

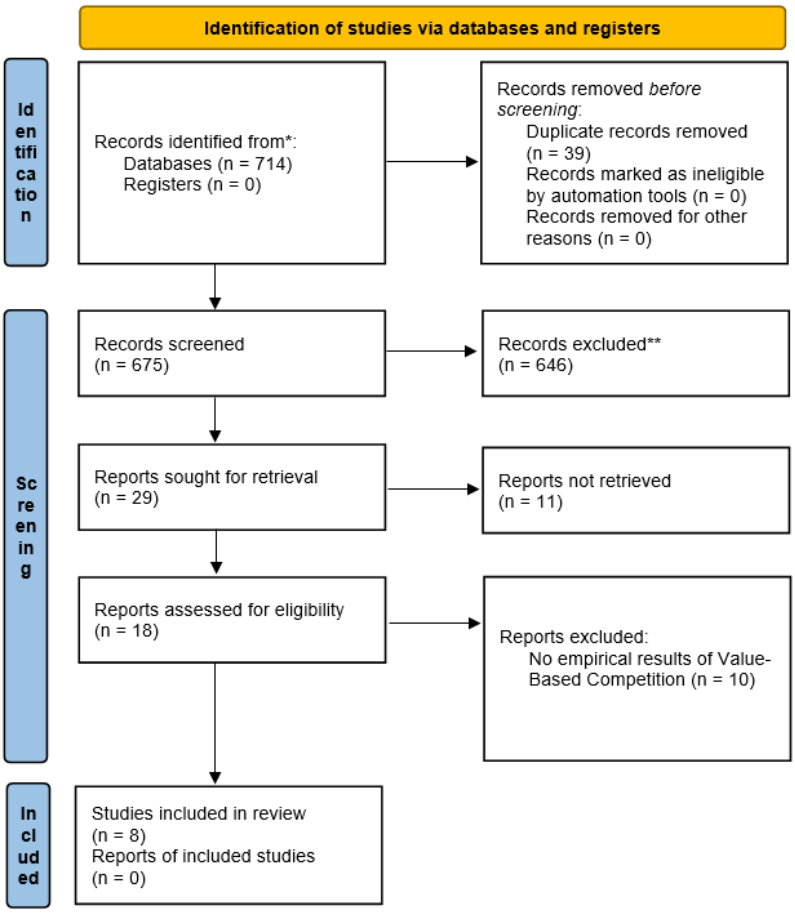

Fig. 1. The PRISMA Flow Diagram used for the systematic literature review

4.2 The mention of Value-Based Competition

As previously mentioned, the available literature was reviewed for the evidence of the empirical effects of Value-Based Competition. During the literature search, it appeared quite rapidly that rather few articles explicitly mentioned the term Value-Based Competition, even though the initial searches resulted in a substantive number of records. While scanning the titles and abstracts of the records that were a hit to the search criteria, it showed that the majority of the articles still had a focus on VBHC without explicitly addressing the role of competition. In these articles, competition was seen to play an underrated role or the term was actually not mentioned at all. This is surprising due to the fact that Porter and Teisberg (2004) highlight that competition with the wrong focus is causing many of the current problems within health care and that Value-Based Competition could solve many of these issues. However, other authors' writing about the topic seem to regularly describe the implementation of VBHC without creating an adequate basis of competition. When articles mentioned Value-Based Competition, the term was most often used as a reference to Porter and Teisberg's book *'Redefining Health Care: Creating Value-Based Competition on Results'*. The

actual explanation of the concept remained limited and didn't recognize the importance of Value-Based Competition.

Because of this unfolding, the literature search of the systematic review expanded to also include articles based on the mention of one or more of the preconditions of Value-Based Competition. This resulted in the inclusion of articles that didn't explicitly mention Value-Based Competition, but did focus on certain components of the concept. To illustrate, the measuring and publicly publishing of health outcome data comprises a preconditions of Value-Based Competition which was to a greater degree present in the available literature. However, it remained of importance that the literature was indirectly about Value-Based Competition. For example, the mention of PROMs in articles could function as a proxy to indicate that the literature was related to Porter's strategy. Articles have therefore been included that haven't explicitly mentioned the term value. This has resulted in the total of eight articles that were included in the systematic literature review.

4.3 Findings from the literature

In order to organize the findings from the literature review as well as to support the analysis of the relevant empirical work, a summary table was developed that outlines the most important findings and institutional factors of the international health economic literature. This table includes the mention of the authors, the objective of the studies, performed research methods and context, the role of competition, the measured outcome indicators and the main findings of the effects of Value-Based Competition.

Table 1. Empiric literature table

AUTHOR(S)	OBJECTIVE	METHOD	ROLE OF COMPETITION	QUALITY INDICATORS	OVERALL FINDINGS
SKELLERN. (2017).	To measure the effect of hospital competition by increased patient choice on value-added indicators measured by PROMs within NHS hospitals in the UK.	Regression analysis.	Competition by increased patient choice, i.e. through NHS Choices website. The price of care remained fixed, which caused hospitals to compete on quality.	Two different outputs: emergency care through mortality indicators and elective care through PROMs: the Oxford Hip/Knee score and the Aberdeen Questionnaire and the EQ-5D score.	Hospital competition on quality, through increased patient choice, showed negative effects on the experienced quality of elective care, indicated by worse outcomes on the measured PROMs after the reform.
GOUDE ET AL. (2021).	To examine the effects of increased patient choice on the experienced quality of care for hip patients in Stockholm, measured by PROMs.	DiD-analysis with one and six year follow-up.	Hospital competition by increased patient choice, eased entry on the market for health providers and bundled payments for hip surgery.	PROMS were measured for health status improvement, pain reduction and patient satisfaction by the use of the EQ-5D and a VAS.	The increased hospital competition didn't show any statistical impact on the experienced quality of hip surgery. The health outcomes of the hip patients were comparable before and after the implementations as well as to other patients that were not involved in the reform.
VAN VEGHEL ET AL. (2016).	To measure the effects of sharing outcome data between providers and the spread of best practices on PROMs for cardiovascular care in heart centers in the Netherlands.	Logistic regression analysis.	The measuring and transparent reporting of health outcomes over the whole cycle of care and sharing of best practices for twelve Dutch heart centers.	Multiple PROMs were collected: survival, degree of health/recovery, time to recovery and return to normal activity, etc. Quality of life was measured by the (SF)-36 or (SF)-12.	The collection and publishing of health outcomes of the Dutch heart centers was successful and encouraged improvement processes of the provided treatments. The transparent outcomes allowed professionals to evaluate their own processes and also compare with best practices. Overall, this resulted in quality improvements.
HALEY ET AL. (2016).	To research the effect of hospital competition after the Value-Based Purchasing Programme on the quality of care for heart and lung patients in the USA.	Multivariate regression analysis.	Increased hospital competition induced by the Value-Based Purchasing Programme. A Total Performance Score (TPS) indicated the performance of the hospitals and allowed patients to select their provider based on quality.	30-day death rate for patients suffering from a heart attack, heart failure or pneumonia.	The increased hospital competition showed to lower the 30-day rate for all three diseases. A hospital environment with more rivalry resulted in better outcomes than markets with less rivalry. This shows the beneficial impact of increased quality competition on mortality rates for the specific patient groups.
FENG ET AL. (2015).	To examine the effect of hospital competition on measured PROMs of elective hip surgery for NHS hospitals in the UK.	Regression analysis	Hospital market concentration measured by HHI as a proxy for hospital competition.	PROMs for patients undergoing hip replacement surgery, measured by the Oxford Hip Score and EQ-5D.	There was no statistical effect of hospital market concentration on the measured PROMs for hip patients. This indicates that hospital competition doesn't result in changes in the perceived quality of care for hip surgery.

LARSSON ET AL. (2012).	To examine the role of disease registries in making patient outcomes publicly available for practitioners and patients and to quantify the improvements in health outcomes and cost in order to create value.	Analysis of thirteen registries in five countries. No empirical design was explicitly mentioned, besides interviews with thirty-two health care professionals.	The registries collect data and make them transparent to practitioners and the public in order to facilitate competition.	Health outcomes that are measured in the registries, like mortality rates, quality indexes, etc.	The several examples of improvements in health outcomes due to the collecting and publishing of data demonstrate the beneficial effects of disease registries. Improvements in value were the result of making quality data transparent.
FEELEY ET AL. (2010).	To assess the fulfillment of the preconditions of Value-Based Competition in a multidisciplinary head and neck care center in the USA	Descriptive case study.	Aligning the care process of the center with the preconditions of Value-Based Competition.	Outcomes based on Porter's hierarchy: survival, ability to speak and swallow, treatment being on time, completion of treatment and costs.	The head and neck center showed to fulfill the preconditions of Value-Based Competition. Multidisciplinary care was given and teams were established to improve results. Overall, the health outcomes and costs of the center were satisfactory. However, there was no comparison with other centers or a comparison of the results before implementing Value-Based Competition.
VAN VEGHEL ET AL. (2018).	To explore the effects of an outcome-based purchasing contract between a hospital and a health insurer on the quality of care for heart patients in the Netherlands.	Logistic regression analyses with a study cohort and a historical reference cohort.	An outcome-based purchasing contract between a hospital and health insurer, where the hospital receives financial incentives for quality improvement on the measured health outcomes.	Outcomes based on Porter's hierarchy: different mortality rates, surgical re-exploration, myocardial infarction, etc.	The health outcomes that were measured, improved for the care of the heart patients in the Netherlands. In addition, also the process of treatment was critically reflected on and led to several beneficial changes in the procedures. Overall, the value of care was able to be increased.

4.3.1 Study characteristics

The eight articles that were reviewed for the empirical effects of Value-Based Competition differed fairly within context. This could impact the results that are found in the literature and therefore need to be distinguished correctly. Of the total, one study was conducted in Sweden (Goude et al., 2021), two in the Netherlands (Van Veghel et al., 2016, Van Veghel et al, 2018), two in the United Kingdom (UK) (Skellern, 2017, Feng et al., 2015) two in the US (Haley et al., 2016, Feeley et al, 2010) and one study researched five different countries simultaneously, namely Australia, Denmark, Sweden, the UK, and the US (Larsson et al., 2012).

The differences in context could impact the results that are being found in the articles. It's important to keep this in mind when generalizing the findings to the Dutch context.

The heterogeneity of the articles could, however, also be of an advantage since the applicability of Value-Based Competition can be assessed for different health care systems including their results.

With consideration to the research methods that have been used, Goude et al. (2021) performed a DiD-design in which they conducted a follow-up after 1 and 6 years. Within their DiD-analysis they used weighted regression modeling. By comparing the results of hip replacement surgery both before and after the reform, as well as between hospitals situated in more and less competitive environments, the precise effects of the reform were able to be analyzed.

Both Skellern (2017) and Feng et al. (2015) performed regression analysis with available cross-sectional data. This made it possible for the authors to examine the correlation between the measured variables, but it doesn't allow to indicate a causal relation.

Van Veghel et al. (2016) and Van Veghel et al. (2018) conducted logistic regression analyses in their studies. This allows to examine the relationship between multiple independent variables on the dependent variable of interest. However, the regression method may wrongly consider linearity between the variables. Haley et al. (2016) mentioned in their article to perform a multivariate regression analysis, without explicitly stating which particular analysis was used.

Feeley, et al. (2010) performed a case study. For this purpose, they provided a descriptive analysis of the setting and measured the individual health outcomes and costs of the center. This made it possible to assess how the preconditions of Value-Based Competition were applied in the center. However, an important disadvantages of this method is that the results were not compared to a control group that hasn't implemented Value-Based Competition. Also no comparison was made to the results of the individual center before the implementation of the preconditions.

Larsson, et al. (2012) conducted an analysis of the thirteen registries, but haven't explicitly stated the used research methods. It is therefore hard to assess the validity of the found results as well as the causal relation between the registries and the measured outcomes.

4.3.2 Quality indicators used

The studied effects of Value-Based Competition showed a variety in chosen quality indicators. Therefore, an overview will be given in the next paragraphs on the used outcome measures for the researched treatments.

An apparent number of the articles studied the effect of competition on PROMs as the outcome indicator. These indicators quantify the value of treatment by measuring the patient experience of care. Therefore, these studies could be included in the systematic literature review on the effect of Value-Based Competition. The authors of the articles that studied PROMs as outcome measure were Goude et al. (2021), Feng et al. (2015), Van Veghel et al. (2016) and Skellern (2017).

Both Goude et al. (2021) and Feng et al. (2015) studied PROMs for hip replacement surgery, while Skellern (2017) researched PROMs for hip/ knee surgery, groin hernia repair and treatment of varicose veins. Van Veghel et al. (2016) studied different PROMs for cardiovascular care.

Furthermore, Skellern (2017) also researched mortality measures in addition to the studied PROMs. By using different outcome measures, he tried to research different outputs of care, namely emergency care and elective care. The examination of two varying kinds of health care could provide more insight into the possibility that competition could have a diverse impact on different outputs. Haley et al. (2016) also studied several mortality rates as outcome measures for heart and lung patients.

Two studies mentioned to measure health outcomes specifically based on Porter's hierarchy. This hierarchy consist of different levels of indicators that all have another meaning for the patient (Porter & Lee, 2013). First of all, Feeley et al. (2010) studied health outcomes based on this typology. The first tier, that examines achieved health status, was captured by survival and quality of life indicators such as ability to swallow and ability to speak. The second tier, that assesses the process of recovery, was examined by process indicators regarding the fulfillment of multidisciplinary care. Ultimately, the third tier, that includes sustainability of health, was measured by Feeley et al. (2010) as the time between the diagnosis and the end of complete treatment.

Van Veghel et al. (2018) also studied health outcomes based on the hierarchy of Porter and they divided the outcome measures into three tiers. The first tier captured different mortality rates as outcome measures. The second tier was examined by assessing treatment on surgical re-exploration, deep sternal wound infection, urgent CABG and cardiac tamponade. The third tier captured the level of myocardial infarction, re-intervention, target vessel revascularization and re-PVI.

Larsson et al. (2012) studied the health outcomes that were present in the thirteen disease registries they examined. These outcomes include mortality rates, but also the hospital quality index score was measured in the registry of Sweden for example.

4.3.3 The role of competition

The eight articles that were included in the literature review surprisingly showed both differing and indirect forms of Value-Based Competition. Since these differences could possibly have an influence on the results that are being presented in the articles, the role of competition in each of the studies will be specified further.

Four of the eight articles examined Value-Based Competition by explicitly increasing patient choice for treatment. The expanded autonomy of the patient was in all articles combined with publicly available information on the quality of the specific treatments provided by the hospitals. With this quality information becoming available, hospitals needed to start competing on the health outcomes it could deliver in order to attract patients.

First of all, Goude et al. (2021) studied Value-Based Competition through a health care shift that occurred in Sweden in 2009 and stimulated hospital competition for treatment of hip patients. One of the changes included increased patient choice for hip treatment. At the same time, the possibility to entry the health care market for new health providers became eased. This caused more rivalry between hospitals to attract patients and subsequently increased competition. In combination with these implementations, also Value-Based Payments were introduced for treatment of hip replacement surgery.

The two studies (Skellern, 2017 & Feng et al., 2015) that were performed in the UK, both researched hospital competition after patient choice was increased for elective surgery for NHS hospitals in 2006. From this year on, patients received more free choice for treatment, while the prices remained fixed. During the reform, patients got offered more information on the performance of the hospitals and were also supported to base their decision on this available quality data. The reform therefore stimulated hospitals to compete based on their quality in order to attract more patients. Skellern (2017) and Feng et al. (2015) examined hospital competition in their articles as market concentration through measuring the HHI of the hospitals.

One of the two studies (Haley et al., 2016) that was conducted in the context of the US looked into the introduction of a Value-Based Purchasing Programme. The programme initiated to assign hospitals a Total Performance Score (TPS) which became available for patients. With the scores becoming public, patients could choose their provider based on its performance. This ensured rivalry between hospitals in order to advance their Performance Score and attract patients to choose for

their services. In addition, hospitals that didn't meet the minimum level of health outcomes were also faced with financial disadvantages.

Two other articles researched the competition mechanism of Value-Based Competition from a different perspective. Both studies evaluated Value-Based Competition by researching initiatives of publicly publishing outcome data. However, in contrast to the previously discussed articles, the transparent health outcome data didn't explicitly facilitate increased patient choice. Instead, other mechanisms of competition encouraged improvements in the performance of the hospitals.
To illustrate, Van Veghel et al. (2016) researched the measuring and spreading of health outcome data of treatments for Dutch heart centra in order to improve cardiovascular care. The study mentions the possibility to see competition as a manner to learn from other providers by the spreading of best practices. The comparison of data with other providers should lead to critically assessing the individual treatment processes and set up improvements to advance care.
Also Larsson et al. (2012) studied the publicly publishing of health outcome data. They did this by researching thirteen disease registries in five countries. These registries collect information on the health outcomes of most hospitals in a country. This data is not only collected by the registries, but they also make the outcome data transparent. However, they didn't mention a direct responsibility for patients to choose based on this data.

Another form of Value-Based Competition was also investigated by Van Veghel et al. (2018). One of the preconditions mentioned by Porter and Teisberg captures Value-Based Contracting. When insurers are given the possibility to selectively contract hospitals based on their performance on both quality and costs, hospitals will feel the incentive to improve on their health outcomes and treatment processes. Van Veghel et al. (2018) examined the implementation of this type of contract in the Netherlands. One insurer and one hospital reached an agreement on an outcome-based purchasing contract to depend the payment for treatment on the quality of care that the hospital delivered in the arranged time period. For this purpose, the health outcomes of treatment were measured for the treated heart patients at the hospital.

Finally, Feeley et al. (2010) performed a case study at a head and neck center in the US. They studied Value-Based Competition by evaluating how the center complied with the preconditions of the theory. Feeley et al. (2010) researched the fulfillment of each precondition and also measured the achieved outcomes and costs of the patients treated at the center. However, the results of the head and neck center in the case study were not compared with other centers.

4.3.4 Effects of Value-Based Competition

The eight articles were reviewed for the effects of Value-Based Competition on the quality indicators it measured.

When analyzing the evidence for the empirical results, Value-Based Competition showed to have ambiguous effects. Five of the eight articles showed overall beneficial effects of Value-Based Competition. They presented that the role that competition played in the context of the study improved the measured health outcomes or quality indicators. However, also two articles found no significant effects of Value-Based Competition on patient outcomes. Even more in contrast, one study found a negative effect of the competition mechanism on the measured quality of care.

The effects that are found in the literature review will be discussed in the upcoming paragraphs. Also an explanation of these effects will be provided to shed some light on the working of the competition mechanism to clarify the findings.

First of all, there will be elaborated on the empirical results from the articles that investigated Value-Based Competition through increased patient choice in combination with transparent quality data.

The study of Haley et al. (2016) found that the induced hospital market competition by the Value-Based Purchasing Programme reduced 30-day mortality rates for heart and lung patients. With the TPS of hospitals being released and patients choosing their care based on quality, especially hospitals that were subject to more rivalry improved their mortality rates.

Two studies found no statistical effects of the role of competition. Both of these studies focused on hip replacement surgery. Goude et al. (2021) showed that the introduction of increased patient choice for hip surgery, accompanied with eased access to the market for health providers and the introducing of bundled payments had no significant effect on the measured PROMs. Therefore, no changes could be indicated in the experienced quality of care for hip patients after the reform.

The other study that didn't find significant results was performed by Feng et al. (2015). They found no explanatory association when they tried to research the increased competition through hospital market concentration. There was no effect found of hospital competition on the measured PROMs for hip replacement surgery.

One study (Skellern, 2017) actually found a negative effect of hospital competition on the measured PROMs for elective surgery. The competition that was stimulated by increased patient choice caused the experienced quality of care to decrease. Skellern (2017) stated that after quality data became more publicly available, in combination with increased patient choice, the PROMs for elective surgery showed worse outcomes than before the reform.

Remarkably, it's noticeable that the studies that revealed no significant effects or even unfavorable results all researched Value-Based Competition through increased patient choice with available

performance data on quality. This finding could indicate that this mechanism of competition may have another impact than previously thought. Haley et al. (2016) give their own explanation that may clarify these results. They argue that it's hard to distinguish whether patients actually use the quality information to base their decision of treatment on. In addition, it may also be that patients use information in another unexpected way. Skellern (2017) explains that patients may not choose based on the quality data of the specific treatment, but focus more on the general quality or status of the hospital. This could lead to the finding that Value-Based Competition through patient choice doesn't necessarily lead to overall improvements of care.
In addition, there is also the possibility when hospitals have the incentive to improve health outcomes to attract patients, an inappropriate focus is laid only on the quality that is being measured. This could however come at the expense of other domains of care that are not publicly published and therefore lower overall quality of care (Skellern, 2017).

The results of Value-Based Competition that solely focused on the measuring and reporting of health outcome data showed more beneficial results. Van Veghel et al. (2016) discovered that the analysis and comparison of health outcomes between Dutch heart centers caused them to critically assess and improve their treatment processes. The transparent performance of the centers also allowed to share knowledge of best practices. The study provided evidence that the sharing of health outcome data stimulated to learn from their own results as well as from each other.
Larsson et al. (2012) mentioned several examples of improvements in health outcomes because of the quality information that was spread by the disease registries. To highlight one of these examples, they analyzed the effect of making performance scores transparent in Sweden. Prior to the information that became transparent, hospitals with already sufficient quality actually increased more in performance over the years than hospital with relatively lower initial quality. However, when the scores were published, the health providers with inferior results increased their performance to a relatively greater extent than the high performing hospitals. This made it possible to lift the overall quality of care in the hospital markets in Sweden.
In both studies of Van Veghel et al. (2016) and Larsson et al. (2012) it isn't necessarily assumed that the reporting of quality data also involves increased patient choice. The mechanism of competition works more as an intrinsic motivation to critically assess the own treatment process and learn from other providers. It could also be that prior to the actual choosing of patients based on the available data, hospitals already feel the incentive to improve care to establish a good reputation. Whether patients really choose based on the health outcomes is of less importance. This makes the performance of hospitals also depend on the intrinsic motivation of the hospital (Skellern, 2017).

When researching Value-Based Contracting, Van Veghel et al. (2018) found that the outcome-based purchasing contract led to improvements of the health outcomes that were measured. Also the processes of provided treatment were reflected on and improved to provide efficient care. There was also more focus on the realization of multidisciplinary and integrated care. Overall, the value of care increased for the treated heart patients at the hospital.

Feeley et al. (2010) performed a case study. They described how the specific head and neck center fulfilled the preconditions of Value-Based Competition. Feeley et al. (2010) examined several beneficial improvements that were implemented. For example, the center worked with a team of health care professionals that monitor and analyze data of treatments and set up improvement cycles. The focus in the center is on high valuable care that is constantly improving and that is provided according to the latest scientific evidence. With regard to the measured health outcomes, they found remarkably high percentages of survival and recovery rates. These results are specific for the center itself and could be interpreted as satisfactory results. However, there is no comparison of the results with other similar centers or with its own performance before the introduction of Value-Based Competition.

To evaluate the overall effect of Value-Based Competition, Goude et al. (2021) also mention the possibility that the role of competition may have heterogenous effects on different dimensions of care. This is affirmed by Skellern (2017) as they researched that competition may have different effects on different kinds of care. This could perhaps also be supported by the fact that the two studies of the systematic review that didn't find significant effects both examined the same type of care, namely hip surgery. Also Skellern (2017) investigated hip surgery and actually found negative effects.
Of the studies who found positive results, also an overlap in type of patients can be distinguished. Namely, Haley et al. (2016), Van Veghel et al. (2016) and Van Veghel et al. (2018) investigated heart related diseases and they all found positive effects of Value-Based Competition. This could indicate that releasing performance data is better suited for certain treatments and the effects depend on the type of care concerned.

4.4 Key findings

Searching for Value-Based Competition in the available international health economic literature quickly revealed the topic to be snowed under by the many articles that discuss VBHC (Cattel & Eijkenaar, 2019). The articles covering VBHC showed to have little to no focus on the importance of

the role of competition within the concept. Only a limited number of studies revolved around researching Value-Based Competition and its impact. Even though the book of Porter and Teisberg was regularly used as a reference, the actual functioning of competition was often not a discussed issue and authors didn't award competition to play a significant role in the overarching theory of VBHC.

The evidence that was available on the empirical effects of Value-Based Competition showed competition to have ambiguous effects on the quality indicators measured by the articles. The analysis of the literature indicated that the effect of Value-Based Competition may depend on the chosen competition mechanism. Especially the articles that examined competition through increased patient choice showed contrasting results. This may be explained by the fact that patient don't actually use the quality information or use it in a different way than actually desired. The articles that solely examined the measuring and publishing of health outcome data showed beneficial effects, presumably demonstrating that the comparison of outcomes by the health providers themselves encourages initiatives to reflect on their own care processes and improve on their provided treatments. Overall, it can be concluded that there are currently different perspectives on what role competition plays within Value-Based Competition, while at the same time this choice may have serious implications for its effects.

Chapter 5: Dutch experiences with Value-Based Competition

This chapter will try to better understand the role of Value-Based Competition in the Dutch hospital markets by speaking to several stakeholders from the health care field. This makes it possible to test the findings that resulted from the systematic review against the practical implications of the Dutch health care setting.

5.1 Actors and their initiatives

Porters' work has received a significant amount of attention over the last few years. A curiosity for the theory is also currently expanding in the Netherlands. Several stakeholders in the Dutch health care system have been occupied with putting the theory into practice. With the aim of exploring the current experiences of Value-Based Competition in the Netherlands, interviews haven taken place with different actors who are from varying perspectives working on Porter's theory in the Netherlands. In total, four interviews have taken place with the NZa, health insurer Menzis, pharmaceutical company Amgen and a PhD researcher on VBHC. Their role in relation with Value-Based Competition will be explained further.

The NZa is an important regulating actor within the Dutch health care system. The organization is involved in the formulation and monitoring of agreements on the performance and costs of health care providers and insurers. Furthermore, they are also in close contact with the ministry of Health, Welfare and Sport in the Netherlands. In the light of VBHC, they are pursuing the ambition to move away from volume agreements in the contracts between health care providers and insurers and change to negotiations on value. According to the NZa, providers and insurers should make agreements on achievable health outcomes that are linked to payments between the two actors. The NZa therefore also supports that funding of health care should center on the value that can be created for patients.

Health insurer Menzis is actively involved in testing and implementing the first outcome-based contracts with hospitals. These contracts include negotiations on the achievement of certain health outcomes and costs for specific medical conditions. The insurer is currently in dialogue with health providers about their delivery of care quality and aims to connect its payments for hospitals to their functioning on the health outcomes agreed upon within the outcome-based contracts.

Amgen is also involved in realizing Value-Based Competition in the Netherlands. The company is cooperating with several Dutch hospitals to evaluate and improve their care processes in line with VBHC. In addition, they also try to play an active role in developing health outcome data sets that can be used to measure and compare quality of care between hospitals.

The respondent who is currently working on his PhD on VBHC has been performing research on the uptake of the concept in the Netherlands over the last few years. Within his research he has been examining the different perspectives on VBHC. For this purpose, he has spoken to a large number of different stakeholders in the health care field that are involved with VBHC.
As has been mentioned in paragraph 2.3, it hasn't be feasible to include a hospital as a respondent for the interviews. Therefore, the hospitals' perspective on the role of Value-Based Competition is missing in the exploration of the experiences with the topic in the Dutch hospital markets.

In the next paragraphs of this thesis the actors will be referred to as respondent 1, 2, 3 or 4. This is for the purpose of remaining a clear overview of the arguments given when discussing the relevant topics. The classification of respondents is presented in Tabel 2.

Table 2: Respondent overview

Respondent	**Representative**
Respondent 1	NZa
Respondent 2	Health insurer Menzis
Respondent 3	Amgen
Respondent 4	PhD researcher

5.2 Findings from the interviews

Perhaps the most important finding of the systematic literature review is that the role of competition within VBHC is often overlooked. The importance of rivalry between hospitals to deliver value isn't necessarily recognized as a cornerstone of the work of Porter and Teisberg. If competition did play a role in the articles, there seems to prevail ambiguity on the mechanism that should create value. As a mean to test the findings of the empiric literature, the different respondents of the interviews were asked for their perspectives on the role of Value-Based Competition in practice.

The literature review showed that competition could appear in different ways. While in some studies the spread of health outcome data was simultaneously accompanied with increased patient choice, other articles described the spread of information on performance with the aim of mutually learning between providers and assessing the own treatment processes. Also Value-Based Contracting could be seen as a way to facilitate agreements on health outcomes and costs between health insurers and providers.
During the interviews, similar findings of differing competition mechanisms could be discovered. A uniform acknowledgement of the measuring of health outcome data was present in the ambitions of

the respondents. However, how this data should subsequently be used differed in perspectives. These dissimilarities showed a different view on how competition should play a role within VBHC. All four respondents acknowledged the importance of measuring health outcome data of treatment processes on a condition specific level. The same consensus was present about the fact that this data shouldn't only be gathered for internal use of each individual hospital. All respondents agreed that the information should also be used to compare the performances between health care providers. However, a disagreement can be recognized between the respondents for which purpose this comparison of health care should be used. In congruence with the empiric literature this regards especially the role of patient choice.

Respondents 1 and 4 mention the importance of the involvement of patients in creating Value-Based Competition. Both actors argue that the information on health outcomes provided by the hospitals are especially needed for the purpose of informing patients. With this data, patients are given the possibility to critically asses which hospital is the best fit for their needs. Therefore, respondent 1 and 4 recognize the importance of the role of patients to be involved in Value-Based Competition by using their ability and capability to choose for the right health care provider. Hospitals will feel the need to improve their health outcomes in order to attract patients. This is how rivalry between hospitals should create high valuable care.

Also respondent 3 perceives patient choice to facilitate competition between hospitals, but at the same time nuances this view from the previous two actors. From his perspective, patients should eventually have insights in the performance of hospitals on their delivered treatments. However, the comparison of hospitals for the patient should revolve more around the goal to match the right care to the right patient instead of competition resulting in one leading hospital that receives most patients. Respondent 3 argues that the rivalry should encourage joint learning between health providers and value is created by mutual care improvements across hospitals in the market.

Value-Based Competition could also ensure high value care without the involvement of patient choice according to respondent 2. The health insurer agrees that hospitals should progress in measuring and evaluating their care processes in order to improve health outcomes. However, a responsibility for the patient to critically asses the performance of hospitals is seen to be too much to be asked from the average population. From his point of view, the health insurer should function as an agent for its insured and already contract hospitals that provide high quality care. By negotiating with professionals and setting agreements on a minimum level of health outcomes that need to be achieved, value can be stimulated for patients. Health insurers should settle contracts in which the outcomes of care are also linked to the payments the provider receives. In contrast with the other

respondents, respondent 2 is of the opinion that the actual performance of hospitals on the health outcomes shouldn't necessarily be insightful for patients. Competition therefore functions more in an indirect way in which hospitals that participate in Value-Based projects receive more attention from general practitioners and other colleagues. The involvement with VBHC presents a certain level of ambition of the hospital and therefore allows to distinguish itself from other similar providers. This ambition is seen by respondent 2 to be linked to the amount of referrals a hospital receives. This way, patients can stay away from the responsibility to assess health providers and still end up with the high valuable care.

Even though the stakeholders have expressed their opinions on the development of Value-Based Competition, the respondents also acknowledged the fact that competition is a topic within VBHC that overall is not of the highest priority. The results from the systematic review already hinted that Value-Based Competition was being overshadowed by the widespread believes on VBHC and that the role of competition was being brushed aside. A possible explanation for this finding was given by respondent 4. He reasoned that at present day, hospitals don't feel the consequences of the competition mechanisms yet. For example, in the current situation, hospitals aren't directly penalized by financial incentives for the delivery of low value care. The providers also receive more or less the same patient population regardless of their performance on value. In order to stimulate competition, respondent 4 therefore argued that more direct consequences should be implemented within the Dutch hospital markets to encourage rivalry on value. This is where respondent 1 can fulfill an important part of the transition to Value-Based Competition. The regulating actor within the Dutch health care system is already engaged in encouraging contracts between insurers and providers based on value. They are also busy with developing funding of health care on measurable and transparent health outcomes. This should increase the financial incentives for hospitals in order to enroll sufficient competition. Also respondent 3 agreed to the importance of the need for adequate funding on value. Value-Based Competition can really move a step further when these funding arrangements and financial incentives are in place.

However, in relation to the implementation of these plans, some hurdles are experienced in practice. As has previously been mentioned before, an overall agreement can be distinguished on the vital role of measuring health outcomes within Value-Based Competition. But the practical initiatives have shown that with regard to the measuring of these health outcomes it is often difficult to discern who is responsible for which part of the results on the health outcomes. All four respondents mentioned some challenges are experienced to assign the results of treatment to specific parts of the process and its related specialists. In order to make agreements on the health outcomes, it is thus necessary

that these responsibilities are assessed thoroughly. Who is accountable for which part of the health outcomes should according to all respondents be discussed plenary with the physicians. Respondent 3 also added the importance of the need for sufficient correction for underlying patient characteristics treated at each hospital with regard to the measured results of treatment. Hospitals that treat more severe patients for example, are likely to achieve worse health outcomes. This should appropriately be adjusted for when comparing the performances between different providers. Otherwise, the hospitals with more difficult or severe patients are disadvantaged to compete against other providers that have relatively healthier patients.

Actor 2 also mentioned the difficulty that part of the results of the improved care processes may only be measurable after some time. Especially when comparing the results with the US, the contextual factors of the system have to be taken into account. The US is known for its high health care costs and has a higher baseline of producing unnecessary care. Therefore, in comparison with the US, it can be likely that the implementing of Value-Based Competition leads to less direct results and may take longer time for them to reveal. This could make it difficult to align interests between different actors for a longer period of time. In the interviews, all actors have emphasized the importance of integrating all actors and discuss ambitions plenary. This should help to set goals for the long term and overcome the problems of reduced efforts to implement Value-Based Competition.

Despite the hurdles, all respondents mentioned to believe in the beneficial effects that Value-Based Competition could offer to the Dutch hospital markets. Both respondent 1 and 4 acknowledged that Porter's strategy might be the solution to keep health care sustainable, since it encourages the delivery of high quality care against low costs. They also highlighted the importance to focus on value and to center on patient experiences in health care. Respondent 2 added that being in conversation with health providers about quality of care can already be seen as a progression, regardless of the quantifiable results that can be measured. As an overall conclusion, respondent 3 stated that the process of Value-Based Competition in the Netherlands has started undeniably and there is probably no going back to a health care system in which value doesn't play a significant role.

Chapter 6: Discussion and conclusion

This final chapter will highlight the findings from the systematic review and the additional stakeholder interviews and assess the possible contributions of Value-Based Competition to the Dutch hospital markets by formulating research and policy recommendations.

6.1 Discussion

This thesis aimed to research how Value-Based Competition can contribute to the functioning of the Dutch hospital markets. The concept of Porter and Teisberg has firstly been explained in a theoretical framework which also outlined the crucial preconditions of the theory. Furthermore, a systematic review was performed on the international health economic literature to gather the evidence for the effects of Value-Based Competition and evaluate its results. Additionally, as an add-on, semi-structured interview with several stakeholders helped to complement the findings on the current experiences with Value-Based Competition in the Dutch health care sector. The results of each chapter will be highlighted in the upcoming paragraphs by answering each of the sub-questions formulated in chapter 1. Next on, research and policy recommendations will be formulated in order to ultimately answer this thesis' main research question how Value-Based Competition can contribute to the functioning of the Dutch hospital markets.

6.1.1 What is Value-Based Competition in health care and what are, from a theoretical perspective, its crucial preconditions?

Competition that is focused on volume and costs has shown to be unsuitable for health care. It has resulted in a fragmented system that fails to deliver high and equal quality of care. Therefore, a change is needed to shift away from volume to value. Value-Based Competition addresses the importance to center rivalry between hospitals to be about the value they can deliver for its patients. Value is in this context being defined as ensuring the best health outcomes of treatment for patients against costs that are as low as possible. In order to create a system that can facilitate this approach, several preconditions are of importance to successfully implement Value-Based Competition. The first precondition comprises the focus on the delivery of high value care for patients. In order to achieve this, the second precondition is that health outcomes should be measurable. These outcomes should be measured across the whole cycle of care to fulfill the third requirement. Fourthly, it's essential that there is also a focus on maintaining low costs of treatment. With regard to the fifth precondition, providers should be able to gain enough experience with a sufficient number of patients. To ensure a sufficient level of rivalry, competition on a national level is also necessary to

fulfil the sixth requirement of Porter and Teisberg's theory. When hospitals have succeeded to measure health outcomes, the next step should be to make this data transparently available for the public. Ultimately, to reward the transition to Value-Based Competition, initiatives in this area should be honored appropriately.

6.1.2 What does the international health economic literature tell about the effects of Value-Based Competition in health care?

The international health economic literature was explored by performing a systematic review on the evidence of empirical effects of Value-Based Competition. The search process quickly revealed that the importance of establishing competition was often unrecognized in articles that discussed VBHC. In many studies, the role of competition was either left out of Porter's strategy or only received little attention. This discovery is surprising considering the fact that a wrongly designed competition system was recognized by Porter and Teisberg to be the cause of many problems in health care. Rivalry on value should actually be of considerable importance when establishing VBHC.
The studies that met the inclusion criteria were included in the systematic review. This resulted in a total of eight articles which showed to have ambiguous findings on Value-Based Competition in practice. First of all there was a variety to be distinguished between the observed competition mechanisms. In several articles, Value-Based Competition was observed to consist of rivalry based on transparent quality information accompanied with increased patient choice. However, there were other articles that also described the importance of transparent quality information, but supported mutual learning and improving care rather than involving patient choice as competition mechanism. Other articles also covered the initiative of a Value-Based Contracting agreement and a case study of the complying of a head and neck center with the preconditions of Value-Based Competition.
Of the eight articles, five observed beneficial effects of the introduced competition on the health outcomes it measured. Two studies however found actually no significant changes in quality, while also one author discovered a negative impact of competition on the health outcomes.
The mixed findings could be explained by the differing competition mechanisms that were investigated.

6.1.3 What are the experiences with Value-Based Competition in the Dutch hospital markets?

Several stakeholders within the Dutch health care sector are actively involved to establish Value-Based Competition in the Netherlands. However, dissensus seems to be present on how this competition should be designed. The importance of measuring health outcomes of treatment is

agreed upon by all respondent. How this available data should subsequently be used is where divergent opinions come into place. Similar to the findings from the literature review, incongruency can be distinguished whether or not to involve patient choice to play a role in competition. Two of the spoken stakeholders underline the importance of available health outcome data for patients to make an appropriate choice for their care. Another stakeholder acknowledges the benefits of transparent quality information for patients, but addresses that the comparison on health outcomes should be focused more on mutual learning between providers than actually ensuring competition in which certain hospitals outperform the rest. Contrastingly, the other respondent is hesitant in involving patient choice on quality information as the responsibility could be too demanding for patients. The measurement of health outcome data should primarily be used to formulate contracts with negotiations on value. Health outcome data can then be used to have insights in the own performance of the provider and should stimulate improvements of the own treatments.
Even though the first initiatives have started to implement Value-Based Competition, competition is also observed to be lagging behind in the uptake of VBHC in the Netherlands. A possible explanation can be found in the lack of currently present incentives to provide valuable care. Since hospitals are not confronted yet with financial consequences or a decrease in patient population when delivering low value care, competition is being hindered. When the contract negotiations and funding on value are being introduced in the Netherlands, Value-Based Competition is likely to integrate quickly within the Dutch hospital markets.

6.1.4 What lessons can be learned from both the international health economic literature and additional stakeholder interviews for improving Value-Based Competition among Dutch hospitals?

The systematic review on the empiric literature has revealed important findings of Value-Based Competition. During the semi-structured interviews, the current experiences with the concept in the Dutch hospital markets could be explored. These findings can help to put forward possible improvements within the health care system to advance the process of Value-Based Competition in the Netherlands. With the intention to facilitate this progression, research and policy recommendations will be formulated in the upcoming paragraphs. The recommendations have been composed after analyzing both the results from the systematic literature review and the additional stakeholder interviews. The interviews were aimed at testing the findings from the literature review and revealed the current experiences with Value-Based Competition in the Dutch hospital markets. The comparison between literature and practice on Value-Based Competition resulted in the

research and policy recommendations for the Dutch hospital markets mentioned below. These suggestions are of relevance for all actors in the Netherlands that are currently involved in Value-Based Competition or are planning to in the future.

6.1.4.1 The need for more research

One of the main conclusions that can be drawn from the empiric literature review is that competition often appears to be an overlooked aspect within VBHC. The current studies don't recognize the importance of the role of competition and haven't investigated its influence on health care quality extensively. This minimal attention for competition has ultimately resulted in limited evidence of the effects of Value-Based Competition. The scarcity of research on Porter and Teisberg's idea on competition makes it hard to draw clear conclusions on the effects of Value-Based Competition. Especially when the studies are subject to different contextual factors, the findings are difficult to be compared. Therefore, this thesis would like to stimulate increased research on Value-Based Competition. Future studies should focus on examining which mechanism of competition is best suitable to create value. By conducting more research on Value-Based Competition increased evidence will become available on its empirical effects. This will help to create a better understanding of the role of competition within VBHC and also helps to improve implementation of Value-Based Competition.

6.1.4.2 Uniform agreement on Value-Based Competition

Both the literature review as well as the conducted interviews showed that ambiguous perspectives exist on how Value-Based Competition should appropriately be designed. There continues to be no uniform agreement on how to effectively structure competition as a way of creating value in health care. As revealed by the stakeholder interviews, the explicit role that competition should pay is currently a topic of discussion in the Netherlands. Especially the controversy on awarding a role for patient choice shows unclarity about the concept. An inconsistent view on what actually should entail Value-Based Competition forms a burden to consistently implement the theory. For example, agreements have to be made on the measurement and use of health outcome data. A differing implementation of Value-Based Competition among stakeholders can cause the results of the strategy to be affected. The pursuit of Porter and Teisberg's concept may then end up to not be as successful as it could be. Therefore, it's of great importance that it becomes clear how to progress in the implementation of Value-Based Competition. A necessary condition that stems from this observation is to align perspectives on what role competition should play in practice. Uniform agreement is likely to also help increase the overall attention for competition within VBHC. This can

be achieved for example by setting up plenary brainstorm sessions between different actors that are involved with Value-Based Competition. It can also help to establish more nationwide initiatives for developing Value-Based Competition, instead of individual and fragmented projects across the country. Especially the government can play a role in this process by formulating overarching policy goals and stimulating actors to involve in the initiatives. This will allow Value-Based Competition to play an increased role in the Dutch health care system.

6.1.4.3 Involve all actors

The first initiatives to ensure Value-Based Competition in the Netherlands are currently being carried out. While these projects are a good start of establishing competition on value, the conducted interviews for this thesis revealed that it is of importance that many other actors get involved in the transition to Value-Based Competition. For example, in order to establish outcome-based contracting, the participation of hospitals and insurers to come to agreements is of great importance. Also the comparing of measured health outcomes is most useful when many hospitals participate in this process. With nationwide collaboration the largest steps can be taken to implement Value-Based Competition.

Also patients need active involvement in Value-Based Competition. When they are given increased patient choice to choose their hospital based on its performance, this requires the active informing of patients in the Dutch health care system. When patients are included to ensure competition, they should be well informed and stimulated to choose correctly for the care that provides the best value for them. Otherwise the right incentives for hospitals to compete on value will not fall into place.

General practitioners can also play an important role in encouraging Value-Based Competition. By referring their patients to hospitals that provide high value care, providers will directly feel the incentive to improve their treatment processes and relating health outcomes. This, however, does require general practitioners to have access to accurate information on the hospital performances. A collaboration between the hospitals, general practitioners and health insurers will help to share the necessary information to send patients to the best hospitals. This process will stimulate the rivalry between hospitals to actually compete on the value that they deliver and thus improve Value-Based Competition.

6.2 Limitations

This thesis and its research methods has been exposed to several limitations. First of all, the search process for empiric evidence on Value-Based Competition was proven to be challenging as the available literature on the topic was limited. Therefore, the search criteria for relevant articles

expanded to also include studies that didn't explicitly mention the term Value-Based Competition, but did relate to this topic by focusing for example on the effect on PROMs. All articles were critically assessed for their inclusion within the literature review, but the eased criteria has resulted in the inclusion of studies that examined Value-Based Competition in a more indirect way. This could be of influence on the results that were found within the literature.

The articles on Value-Based Competition that resulted from systematic review revealed a variety in chosen competition mechanisms and outcome measures. This allowed to give a comprehensive overview of the current perspectives on Value-Based Competition, but also causes the unfavorable consequence of difficult comparison between the articles on the effect of competition. The results that come forth from the studies are therefore hard to be compared and weighted against each other.

In addition, the studies also differed in context of health care systems and countries. This created the limitation of a more difficult assessment of the found results to the Dutch hospital markets.

The semi-structured interviews that have taken place in light of this thesis were also subject to limitations. The main research question is focused on the possible contribution of Value-Based Competition to the Dutch hospital markets. To explore the current experiences with the concept, the NZA, an health insurer, a pharmaceutical company and a PhD researcher have been interviewed. A noteworthy weakness of this thesis is the missing of the hospital perspective on Value-Based Competition. Several stakeholders from different hospitals were contacted in order to arrange an interview. Unfortunately, after several contact requests it has not been feasible to arrange an interview with a Dutch hospital. During the time period of this thesis, the Corona virus was of large impact on the health care system in the Netherlands. This may likely have affected the ability to speak to actors working in hospitals. The absence of a respondent from the hospitals' perspective is of course an omission. However, as a second-best alternative, the hospital perspective is still tried to be included indirectly through the pharmaceutical company Amgen. This organization is actively involved to implement VBHC within hospitals, innovate their care processes and develop uniform health outcome data sets for transparent measurement and publication.

6.3 Conclusion

The four sub-questions of this thesis, which are separately answered in section 6.1, helped to carry out an in-depth analysis on the topic of Value-Based Competition. This has made it possible to answer the main research question on how Value-Based Competition can contribute to the functioning of the Dutch hospital markets.

Porter and Teisberg developed a promising theory that could be the solution to worldwide problems of fragmented health care systems and unequal quality of care within countries. According to them, competition should shift away from a focus on volume and costs and move towards a health care system that is based on creating value. The first evidence that is available on the current effects of Value-Based Competition in practice showed for the larger part promising effects of competition on the researched quality of care. However, this proof hasn't really been persuasive yet as other studies also found insignificant or even negative effects of Value-Based Competition. Overall, it can be concluded that the empirical evidence on the impact of Value-Based Competition is still limited.
In the literature as well as in the interviews with the Dutch stakeholders, a variety in opinions can be recognized in how competition should create value. While there seems to be uniform agreement on the crucial role of measuring health outcomes, less consensus is present on how to use this data. The lack of current competition on value could be stimulated by achieving negotiations with regard to contracts and the funding on health outcomes. This way, hospitals will feel incentivized to improve their health outcomes by critically reflecting on their treatment processes. When this is being achieved, Value-Based Competition can encourage a health care system that is actually revolved around efficient care with a focus on patient needs. This will be necessary to create a health care system that is sustainable for the future and help to limit the ever rising costs and fragmentation of care. Even though the current initiatives and the known effects of Value-Based Competition are limited, further implementations with the right competition design are therefore likely to create a patient-centered health care system that ensures valuable care within the Dutch hospital markets.

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Appendices

Appendix A : Search strings

Pubmed

1. (Value-Based Competition)
2. (Value Competition Porter)
3. (Outcome Competition Porter)
4. (Value-Based Contracting)

Econlit

1. (Value-Based Competition)
2. (Value Competition Porter)
3. (Value Competition Hospitals)
4. (Outcome Competition Porter)
5. (Value-Based Contracting)

Appendix B: Topic lists

Topic list interviews Amgen, Menzis, NZa

1. How is your organization occupied with VBHC?
2. Does competition play a role within VBHC from your point of view?
    2.a How does this role of competition look like?
    2.b How do you experience this competition?
    2.c In which way should value be created?
    2.d How would you describe Value-Based Competition?
3. In which way are you occupied within the organization to implement Value-Based Competition?
    3.a Is there a certain implementation strategy?
    3.b Are you in collaboration with other actors occupied with Value-Based Competition? If yes, with who?
    3.c Which goals or agreements have been made for this purpose?
    3.d Because of which ambitions are you occupied with Value-Based Competition?
    3.e What is the advantage of Value-Based Competition according to you?
4. To which results has Value-Based Competition led for your organization?
    4.a How and by who are these results measured?
    4.b Are these results being shared or compared with other relevant actors?
    4.c What agreements are made on the results that need to be achieved? Are there consequences for not achieved results?
5. Do you experience certain hurdles in implementing Value-Based Competition?
6. What are the organizations' future ambitions with regard to Value-Based Competition?
7. Do you have any advice from your experience for the future developments on Value-Based Competition?
    7.a What is necessary for the future developments of Value-Based Competition?

Topic list interview PhD researcher

1. How would you describe the current situation of VBHC in the Netherlands?
2. What are the current key players in the Netherlands?
3. What are your findings on the different perspectives of VBHC?
    3a. Do certain actors have related perspectives?
4. How can the role of competition within VBHC be seen in the Netherlands?
    4a. Do you have an explanation for this?
5. How can the role of transparent health outcomes be seen in the Netherlands?
    5a. Have you noticed a certain resistance in the publicly measuring and publishing of health outcomes?
6. Should competition play a larger role within VBHC according to you?
7. Do you have insights in the achieved results of Value-Based Competition in the Netherlands?
8. Are you aware of certain hurdles in the implementing of Value-Based Competition in the Netherlands?
9. Do you have any recommendations for implementing Value-Based Competition from your experiences with research?
    9a. Which future ambitions are present for Value-Based Competition in the Netherlands?
    9b. What is necessary to achieve those ambitions?