Perceptions of practitioners and experts on value-based healthcare: a mixed-methods study

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Abstract

Value-based healthcare is a multifaceted approach that currently is gaining traction in healthcare inspired by the publications of Michael Porter. This study aims to provide a comprehensive framework for value-based healthcare. We conducted a multiple case study, a Delphi study and focus groups. We identified four categories: Patient value; Costs; Organisation of care; and, Steering of quality. In addition, we included 29 elements that are considered as (very) important by the experts. Value-based healthcare is a distinctive approach that adds to existing approaches by its focus on outcomes and costs, data-driven improvement and better ways to pay for healthcare.

Keywords: Value-based healthcare, performance measurement, outcomes and costs

Introduction

Since the turn of this century, Michael Porter has been inspiring healthcare practitioners, healthcare providers, healthcare insurers and politicians with stimulating ideas on how to reform the healthcare system. His papers on value-based healthcare have introduced a multifaceted concept that is currently embraced by many Dutch hospitals. At present, in most healthcare systems worldwide, healthcare providers are paid predominantly by volume (on a basis of fee-for-service), instead of by value. While unintended, this has turned out to be one of the drivers of rising costs in healthcare. This is why Porter (2010) accentuates that we needed a shift in focus from volume to value.

Value is defined as “health outcomes achieved per dollar spent” (Porter, 2010, p. 2477). Measuring healthcare performance still lacks a focus on outcomes in healthcare. Most of commonly used measures deal with process indicators that measure compliance to key interventions proposed in guidelines, while the few outcome indicators that are used are rarely related to costs (Porter et al., 2016). In addition, the need for transparency of the quality of care has led to excessive data collection and data delivery to various stakeholders. As a consequence, this leaves little room to use these measurements for improvements. The attention for accountability and improvement respectively seems to be considerably out of balance (Meyer et al., 2012). Porter and Lee (2013, p. 51) contend that we need “a strategy that will fix healthcare”. Focussing on value requires reforming the fragmented, siloed organisation of healthcare delivery governed by an equally partitioned healthcare purchaser. It calls for a transformation to an organisation of “orchestrated multidisciplinary teams” (Bohmer, 2016, p. 710) that take responsibility “for the combined efforts over the full cycle of care” (Porter, 2010, p. 2478).

Value-based healthcare is a highly ambitious and promising concept. In this study, we set out to explore the meaning of this concept: how do practitioners and experts perceive this concept? Further, what elements are particularly seen as important in developing value-based healthcare? Finally, what are the main categories of a value-based healthcare framework?

Porter’s prior work offers profound notions on measuring value. Outcomes and costs should cover the full care cycle for diagnosing and treating a medical condition, involving multiple specialties from different care providers in the patient’s journey. This journey could be organised into “integrated practice units” (IPUs; Porter and Lee, 2013, p. 55). Bohmer (2016) similarly refers to multidisciplinary teams, led by clinicians and supported by business intelligence managers and change experts who are continuously improving processes and creating well-functioning microsystems focussed on the patient’s needs. A supportive information technology platform should enable the IPU to access, display and link outcome and cost data. Furthermore, Porter proposes a normative value agenda, a roadmap of transformations in the way healthcare is organised into IPUs (including their support), the way we measure quality and costs and the way the healthcare provider gets paid for the value delivered. This agenda will stimulate to move towards a “high value healthcare delivery system” (Porter and Lee, 2013, p. 52).

This study will offer a comprehensive framework derived from the perceptions of practitioners of four hospitals (three Dutch and one American; all with experience with value-based healthcare) and which comprises the elements rated on importance by experts. The framework contributes to prior work on value-based healthcare (VBHC). The findings will also add to the existing knowledge on performance measurement in healthcare (e.g. Elg et al., 2013). Elg et al. (2013) argue to achieve a balance between the dimensions of regulation (e.g. the pressure of public transparent reporting) and exploration (e.g. the need to improve clinical practice). Value-based healthcare might help to restore this balance.

Theoretical background

In this section, we will first discuss the measurement of value. Then, we explain the contents of the value agenda proposed by Porter and Lee (2013).

Measuring value: outcomes and costs

Porter (2010) argues that outcomes should be related to health gain and to what matters for patients concerning their health. He proposes a “three-tiered hierarchy” with the tiers 2 and 3 being dependent on tier 1. Outcomes include: the health status achieved or retained (tier 1), the process of recovery (tier 2) and the sustainability of health (tier 3) (Porter, 2010, p. 2479). Consider for example patients who have to undergo liver transplantation surgery. Outcomes on tier 1 may include the thirty-day and one-year graft and patient survival rate and the percentage of patients with re-interventions. On tier 2, one can measure the length of intensive care stay or stay in the hospital (in days), the time to return to work, and the percentage of patients with hospital acquired infections as these indicators measure the process of recovery of the patient. Tier 3 is concerned with the sustainability of health. This can be measured with indicators, such as the three-year patient survival rate and the percentage of patients with a dysfunction of other organs as a consequence of liver transplantation. These examples all represent the patient’s clinical status. In addition, indicators that inform of the functional status can be important as well (Porter et al., 2016). These indicators encompass the patient reported outcome measures (PROMs). These give an account of the experienced health condition or quality of life and concern activities that can be carried out by the patient. An example is the percentage of patients having the energy to practise sports, which can be compared before and after liver transplantation. Patient reported experience measures (PREMs) are included in questionnaires that compile questions about, for example, experienced capabilities and the instilled trust of the physicians and other caregivers. These can be questions on a Likert 5-point scale, such as “doctor treated me with respect, took me seriously, listened carefully, explained things clearly, spent enough time” (Stubbe, Gelsema, Delnoij, 2007, p. 6). All in all, both clinical (on tiers 1, 2 and 3) and patient reported or experienced indicators are considered as outcomes in value-based healthcare.

Costs can be measured based on the activities performed in the full cycle of care. An analysis of the process might reveal non-value-added activities, which can be eliminated without any reduction of value (Porter, 2010). At present, costs can be subject to inaccurate cost allocations (Kaplan et al., 2014) that can vary from one hospital to another. Time-driven activity-based costing (TDABC, Kaplan et al., 2014) might be a (labour-intensive) solution to the inaccurate cost allocation, it requires the estimate of: (1) dollar-per-minute cost of the capacity of resources used, (2) the time spent on each resource, and (3) any consumed supplies (e.g. medication). If a disease team would like to use the costs data for benchmarking reasons, they can better use standard cost prices for activities.

Value agenda

Porter and Lee (2013) discuss a strategic value agenda. This roadmap basically is about transformation in: (1) the way healthcare is organised into IPUs (including their support), (2) the way we measure quality and costs, and (3) the way the healthcare provider gets paid for the value delivered.

As a principle, IPUs are organised around a group of patients with similar needs. Based on these needs, their care can be explicated in a clinical programme or care pathway. For example, the diagnosis and treatment of diabetes require the involvement of a multidisciplinary team of GPs, internists, diabetes nurses, endocrinologists, nephrologists, ophthalmologists and dieticians. The transformation toward a value-based healthcare system according to Bohmer (2016, p. 710) needs an “orchestrated team-based redesign”, where the redesign emerges in “a long series of local experiments”. The teams take care of delivering the right care for the patient at the right place in the supply chain. Preferably, volume will be concentrated, as concentration is considered to indicate quality (“the more experience a surgeon has in removing a rectum carcinoma, the better he will perform”). IPUs need to be supported by an IT platform, data support and implementation expertise.

In the previous sub-section, we discussed the kind of indicators that a team will need in order to steer outcomes and costs. These measures can be standardised. This creates the possibility to benchmark the performance of teams and learn from good practice elsewhere. Currently, expert groups from the International Consortium for Health Outcomes Measurement (ICHOM) are working to standardise outcome sets (Porter et al., 2016). At the time of writing (April 2018), ICHOM has 23 standardised condition-based sets of indicators. These cover about 50% of the disease burden.

In healthcare, the dominant way of paying the providers is fee-for-service. This transparent way to pay for healthcare is considered as fair and helps in reducing a possible gap between demand and supply. However, it rewards quantity, instead of quality. This leads to under-investment in non-reimbursed care delivery and might perpetuate poor outcomes. For example, in this approach, readmissions get paid when these might have been a consequence of substandard care the first time around. As such, fee-for-service payments offer ineffective and, occasionally, even perverse incentives. Porter and Kaplan (2016) suggest a shift away from fee-for-service and propose a capped, risk-adjusted bundled payment for the full cycle of care. When linked to outcomes, such a bundled payment will incentivise collaboration and reduce inefficiency. A possible downside to this may be that payment for patients, such as the elderly, with several co-morbidities can be rather complex.

Methodology

The first step of this study was a *multiple case study with interviews*. We conducted 21 explorative, semi-structured interviews in six teams of three Dutch hospitals and one American hospital (average duration 44 minutes 58 seconds, average word count 7,944 words). All the teams and interviewees involved had to have some experience with value-based healthcare. The six cases covered conditions related to oncology, palliative care, medicine use, cardiology and haematology conditions. One interview was with respondents who covered more than one condition (referred to as 'several'). Table 1 shows the respondents per case.

Table 1. Respondents of the multiple case study

Case name	Respondents
Oncology	1. Case manager; 2. Unit head; 3. Quality policy officer; 4. Medical specialist; 5. Diagnostic medical specialist; 6. Medical specialist
Palliative care	1. Medical specialist/ consultant
Medicine use	1. Manager; 2. Medical specialist; 3. Controller; 4. Coordinator care department; 5. Manager medical support departments; 6. Coordinator sales; 7. Medical specialist; 8. Pharmacist
Cardiology	1. Programme manager; 2. Medical director of the programme; 3. Operations director of the programme
Haematology	1. Medical specialist
Several	1. Manager of quality and safety; 2. Manager of medical departments (simultaneously interviewed)

We used an interview protocol (available on request) to enhance the reliability of our data collection. The unit of analysis was the way value-based healthcare was perceived in each team. We applied the Gioia methodology (Gioia et al., 2013) to analyse the data inductively. In determining the first-order 'informant-centric' codes, we stayed close to the informant's meaning of value-based healthcare. All relevant data used to answer the research question about practitioner's perceptions of value-based healthcare received codes. Then, by seeking similarities among the first-order codes, we created second-order concepts and aggregated dimensions within our data structure.

In parallel, we created a list of 39 elements (available on request) derived from the literature on value-based healthcare. Ten experts (consultants, scientists, project leaders) participated in a *Delphi study*. They were selected based on their experience and expertise. The experts completed questionnaires during two Delphi rounds. As Porter's publications already provided a clear overview of the intentions and aims of value-based healthcare, it did not make sense to start our study with a 'blank slate' (tabula rasa). Examples of elements are: Assessing the success of a treatment cycle by measuring the achieved health status; Creating integrated practice units (IPUs); and, Learning from relating outcome data to costs data. This approach of starting with a prepared list of elements is not unusual in Delphi studies. The experts then rated the importance of each of our identified elements on a four-point Likert scale. In line with previous Delphi studies (e.g. Minkman et al., 2009), we retained elements after each round that were rated as important, or very important, by at least 80% of the experts, and excluded those rated as not, or only moderately important, by more than half the experts. Panel size was ten experts. This is more than the minimum panel size of seven suggested by Linstone (1978). Experts had to rank each element and also had the possibility to reformulate it, or to add new elements to the initial list when someone felt that we had missed important value-based healthcare practices.

Finally, step 3 involved a *focus group study* facilitated by the ‘Digitable’ tool. This is, in effect, a giant tablet the size of a table one and a half square meters that facilitated focus group discussions; for example, by categorising ‘digital cards’. Using the Digitable gave rise to a rich dialogue with good group dynamics. The two focus groups were conducted in another hospital where four teams were preparing to start a value-based healthcare project. The focus groups involved four clinicians and four non-clinicians. The inputs for the focus group discussions were the second-order concepts (step 1) and the elements derived from literature (step 2). The discussions focussed on clustering the elements and helped to validate the aggregate dimensions of the multiple case study.

Results

Multiple case study with interviews

Figure 1 shows the value-based healthcare framework and includes second-order concepts and aggregate dimensions which are derived from the interview data. We will briefly discuss each of the dimensions and illustrate the richness of these concepts with interview quotes. The quotes refer to case and respondent number, which was presented in table 1.

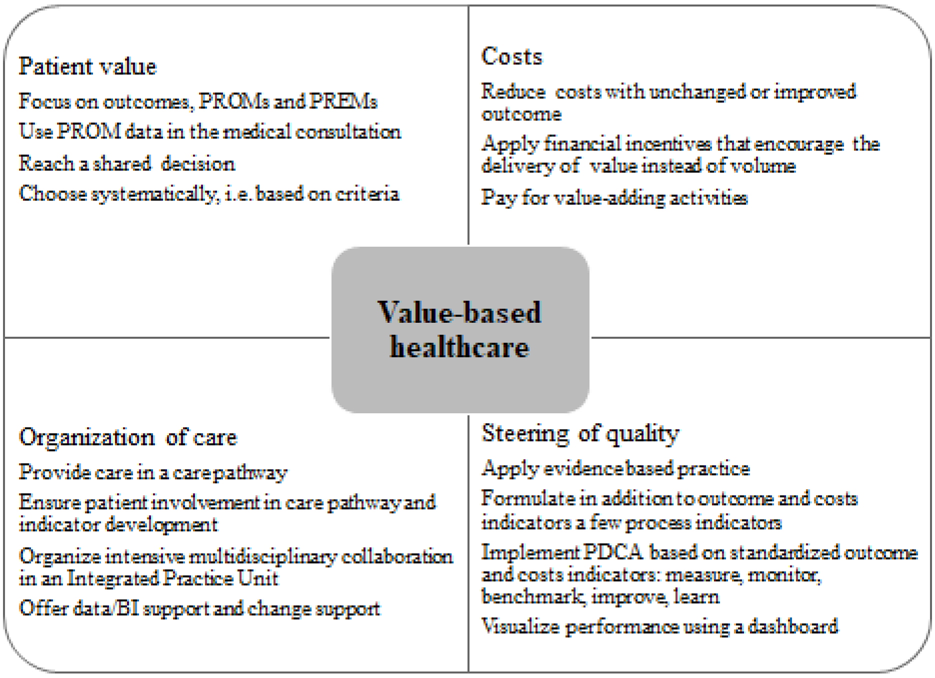

Figure 1. A value-based healthcare framework

The first category is ***Patient value*** with four second-order concepts.

Based on the interviews, we found that both clinical and patient reported outcomes, their determinants and patient experienced outcomes were pivotal measures to assess value for the patient in a coherent way.

> "So we've had people say, even though I lost my child, I can't believe the care that I received. Even though my mother-in-law passed away there, it was such a professional environment, the setting was so kind and considerate and quiet. And so those are the types of things that we're striving for. […], and, yes outcomes matter but the experience is also there, even when the outcomes,[..], are less than, […] ideal" (Cardiology-1)

Patient reported outcome measures (PROMs) indicate a change in the functional status of patients. These indicators reveal the benefits of treatment experienced by the patients. On an aggregated level, these indicators can be used to benchmark and learn. However, PROM data of the individual contains valuable information for the treatment that needs to be discussed during the medical consultation.

> "But what important is as well, is that this also is discussed in the consulting room. That what the patient has raised, […] related to the PROMs […] also reaches the consulting room, and that the doctor also knows the other indicator outcomes of this patient."(Several-2)

Respondents perceived the discussion of doctor and patient about treatment options with their pros and cons preceding a shared decision as an important characteristic of value-based healthcare. This moves away from a traditional, more paternalistic attitude of the doctor in which he/she knows what is best for the patient.

> "You notice that if you take time for it, people dare to decide to say: I think I will not start that treatment. […] So for me that is value-based healthcare." (Oncology–4)

The diagnosis and treatment of patients was expected to be evidence-based in order to deliver value. This means that diagnostics and treatment are chosen systematically (i.e. based on criteria).

> "Oftentimes they [physicians] just don't know which is the right test. And so, we design our order sets, our electronic medical record, in a way to help guide them based on the current assessment of a patient. It's a decision tree, that leads them down to the proper test, and when we do that, we save a lot of money." (Cardiology-1)

The second category of the framework is about ***Costs*** with three second-order concepts.

The first is about reducing costs with an unchanged or even improved outcome. A hospital can realise savings by, for example, negotiations with pharmaceutical companies. This is hotly debated at a country or European level. Additionally, there are opportunities for savings within arm's reach by close monitoring the effects of medication.

> "Evaluate whether it works […] if it […] has no effect […] it all doesn't make sense to continue a certain medication that generates nothing for the patient and […] extra costs." (Medicines – 2)

The respondents considered value-based healthcare as a shift from volume to value. This requires the application of financial incentives that encourage the delivery of value instead of volume. Moreover, the healthcare purchaser should pay for only the value-adding activities. At present, reimbursements still are based mainly on services delivered, and do not incentivise non-treatment, non-face-to-face-contact or longer conversations when needed.

> "You have to take time for that, and […] that time should be appreciated." (Oncology – 4)

The third category concerns ***Organisation of care*** and comprises four second-order concepts.

The respondents mentioned that the patient's journey should be organised as an integrated care pathway with a clear sequence of activities and clear roles. Hence, care should be provided in a care pathway.

> "We said every time: we make the care pathway from the patients perspective and that is value-based healthcare." (Oncology – 2)

Patient involvement was considered as important in the design of the care pathway and in the corresponding indicator development.

> "We have had […] also […] with the start of the Breast clinic a patient advocate of the BVN […] involved, this is a former breast cancer patient who works for the breast cancer foundation and whom you can consult in this kind of […] when you want to set up this kind of things […] we have twice a year […] a meeting with him or her." (Oncology – 3)

In line with the concept of organising care in a care pathway, value-based healthcare requires intensive multidisciplinary collaboration. This relates to Porter's concept of Integrated Practice Units. Data/BI and change support is needed to make the IPU effective in quality improvement.

> "Normally you act as department A who handles the consultation and refers to department B. But now, the patient does not visit department A or B, the patient visits the Breast clinic, we collaborate, which means that we want to organise all encounters with the patient as efficiently as possible." (Oncology-4)

Finally, the fourth category identified in the value-based healthcare framework is ***Steering of quality*** with four second-order concepts.

Steering of quality implies applying the best available evidence. As was identified in the Patient value category, shared decision-making might lead to refraining from care, although it is suggested by the guideline.

> "When hormone therapy does make sense, so then you do apply it […] if it does not make sense than you basically won't give it. […] the other way around, it does happen […] theoretically you could give chemotherapy to this patient, but that you find out jointly with the patient […] that you refrain from the chemotherapy." (Oncology – 6)

In the Patient value category, a focus on outcome indicators is promoted. However, it might be beneficial to know the determinants of outcome as well. Respondents in one of the cases mentioned the value of a few process indicators to get more insight in these determinants.

> "Yes, basically you use ICHOM as a guidance for selecting both patient-driven and real outcome indicators. But a physician might say, […], 'I would like to know about […] the length of stay, of patients with prostate cancer, and why, well because we do these operations robotically-assisted, and I would like to see over time whether this length of stay has been reduced. Then you decide, well fine, we include this in the dashboard. This may be of less importance for the outcome-side, as it is a process indicator, but you want to have this insight as it reflects the care that you deliver." (Several-2)

Steering of quality essentially is about implementing a plan-do-check-act (PDCA) cycle. By receiving feedback information on outcome, process and costs indicators, the disease team can monitor, benchmark, improve and learn in a data-driven way. A dashboard to visualise performance could be helpful in showing where performance exceeds the expectations or where it falls short.

> "Those are just some of the key KPIs that we evaluate or look at. […], and that's part of what our team does here at the cardiovascular clinical program. We provide […] those reports for all of the sites that do those specific […] surgical procedures or […] other procedures. So, we just have a

> report that, […] we have a web-based […] data portal, that anyone can go in and look to see where they're at. It's updated every Monday, so real time." (Cardiology-1)

Delphi study

Table 2 shows the flow of the Delphi Study depicted. In the first round, 20 elements were included, as these were assessed as important or very important by at least 80% of the participants of the Delphi group. Six elements were excluded. In the second Delphi round another nine elements were included, seven were excluded. The number of reformulated, unchanged and new elements was zero and the number of suggestions saturated as well. The list with the 29 accepted elements is available on request.

Table 2 Results Delphi rounds 1 and 2

Response	**Round 1 (90 %)**	**Round 2 (80%)**
Number of Elements	39	16
Included	20	9
Excluded	6	7
Reformulated	8	0
Unchanged	5	0
New	3	0
Suggestions for reformulation (Average per expert, SD)	62 6.89 (22. 16)	4 0.5 (1.00)
Priority: Number of scores	351	128
Very important	146 (41,6%)	54 (42,2%)
Important	124 (35,3%)	54 (42,2%)
Moderately important	60 (17,1 %)	15 (11,7%)
Not important	21 (6,0%)	5 (3,9%)

Focus groups

Table 3 shows how the two focus groups clustered the inputs. The four dimensions of the multiple case study were confirmed by both focus groups. However, both focus groups also reported that they missed a perspective they felt related to value-based healthcare. The focus group of clinicians missed a population-based approach. They seek to improve care by strengthening collaboration with other care providers in the region, after segmentation of the population in a data-driven approach. The focus group of non-clinicians missed in both the second-order concepts of the multiple case study, and the elements derived from literature as input for the Delphi study, the role of an open and safe culture with the professional in the lead.

Table 3 Results focus groups

Dimensions interviews	**Clinicians**	**Non-clinicians**
Patient value	Patient perspective	Patient value central
Costs	Costs perspective	Outcome funding and financial incentives
Organisation of care	Process/care pathway	Process efficiency Work chain-oriented according to guidelines and standards Personalised care

Steering of quality	Data (management)	Information for steering and improving
New suggestions of the focus groups:	Use a population-based approach	Strengthen an open and safe culture with the 'professional in the lead'

Discussion

As reflected in literature, value-based healthcare conceptually is still in its infancy and largely shaped by the papers of Porter. Ours is the first study to explore how practitioners and experts perceive this concept, and how this links our understanding of the concept to the literature on performance measurement.

Our research questions were: how do practitioners and experts perceive this concept? Further, what elements are seen as important in developing value-based healthcare? Finally, what are the main categories of a value-based healthcare framework? We delivered a framework with four categories: Patient value, Costs, Organisation of care and Steering of quality. These categories can be considered as robust, since both focus groups confirmed the dimensions derived from the data of the multiple case study.

The Patient value category emphasises the focus on clinical outcomes, PROMs and PREMs. PROM data is seen as important input for shared decision-making. Doctors need support systems to choose systematically in the interest of the patient. The Costs category accentuates the need for costs reduction and for the introduction of payment systems that include incentives that drive value. The third category is about Organisation of care and promotes care pathway development with patient involvement and data and change support, based on a close and flourishing multidisciplinary collaboration. Finally, the Steering of quality category points out the importance of evidence-based practice, of linking outcome to its determinants and of implementing a PDCA cycle.

The approach has similarities with existing mature approaches for integrating healthcare supply chains, such as care pathways. However, the approach is distinctive because of its focus on outcomes and costs, data-driven improvement and better ways to pay for healthcare.

Value-based healthcare definitely is a comprehensive approach. We contribute to the papers on value-based healthcare by suggesting that the following elements should be included in the approach: (1) the use of PROM-data as the subject of the medical consultation and as an important input for shared decision-making, (2) the strengthening of an open and safe culture with the professional in the lead, and (3) the use of data to manage segments or target populations on a regional level.

Elg et al. (2013) studied how performance measurement drove improvements. They suggested an analytical framework, in which two purposes of performance measurement were discussed: exploration and regulation. Elg et al. (2013, p. 1627) argued, "an appropriate balance between these two dimensions is essential". A versatile concept, such as value-based healthcare, might restore this balance, as it links the excessive number of external triggers for transparency and benchmarking to the internal need to improve within a clinical context. There are strong indications that, after the era of accountability, we might arrive in the 'moral era' (Berwick, 2016, p. 1330) where delivering value for the patient always comes first.

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