VINTURA

Value-Based Healthcare:

The answer to our future healthcare challenges?

THE SENSE AND NON-SENSE OF VBHC TODAY, WITH RECOMMENDATIONS FOR TOMORROW

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FOREWORD

Our healthcare challenges today and tomorrow

Assuring increasingly better care that is sustainably available and affordable for everyone, that is what drives Vintura. Based on our conviction that Value-Based Healthcare (VBHC) can make a major contribution to improving outcomes for patients and to efficient use of scarce healthcare resources, we wrote our 2017 report 'Value-Based Healthcare: working together for real change'. In that publication we examined the VBHC principles and how they can be put into practice. We described that, in addition to a focus on outcomes and the integration of care, a third focus is indispensable to make VBHC a success. The additional required focus is change management.

Now, in 2021, almost four years later, the challenges in healthcare have not diminished. On the contrary! We live in a strongly ageing society in which the demand for care is growing and changing, while the number of people who can provide that care is not increasing correspondingly. High-quality innovations that offer prospects of quality of life for people who did not have them before are becoming available, but all these different options also potentially increase costs. All kinds of technology and the personal involvement of patients make more and more information available, enabling customised or integrated care pathways for a single medical condition. However, the care sector is still organised in a traditional manner, which stands in the way of realising this personal and integrated care.

The above-mentioned developments present us with the following important questions. Can we adequately organise and fund care? Is it feasible to realise customised personal care? Is our healthcare system sustainable in the long term? Can VBHC be the solution for these issues and if so, how? Or should we look for other paradigms in order to guarantee the sustainability of our healthcare systems?

In this publication, we are looking for practical answers. Because we care about the future of healthcare, we will also question some seemingly untouchable truths. After all, desperate diseases require desperate remedies. We will separate the sense from the non-sense. We will show where VBHC can work in practice, what is needed to achieve that success, and in which cases VBHC is not the solution. In short: we will reveal new insights about VBHC that allow us to concretely tackle current and future healthcare challenges.

We wish you much inspiration and reading pleasure!

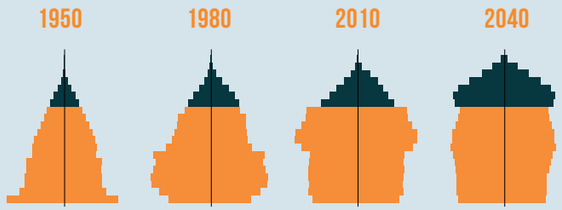
CHAPTER 1

INTRODUCTION TO URGENT HEALTHCARE ISSUES

DEMAND

SUPPLY

❶ AGEING POPULATION



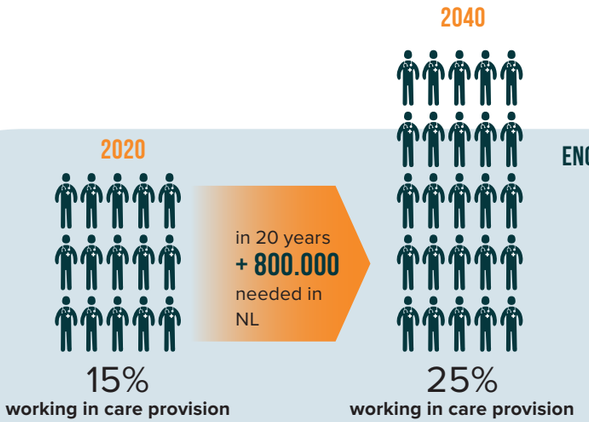
❷ CONTINUING DEMAND FOR NEW AND TARGETED THERAPIES

- MINIMAL INVASIVE
- ROBOTICS
- PERSONALISED THERAPIES
- NEW MODES OF ACTIONS
- NANO TECHNOLOGY

❸ STRONG DIFFERENCES IN THE INFORMATION POSITION OF PATIENTS

TRANSPARENCY · AFFORDABILITY · ACCESSIBILITY · QUALITY

❹ ENORMOUS SHORTAGE OF STAFF



❺ CLASSIC FUNCTIONS WITH OWN DATA AND FINANCING

❻ LIMITED OVERVIEW OF QUALITY, EFFICIENCY AND OUTCOMES

VBHC, WHAT IS YOUR ANSWER TO THIS?

1.1 HEALTHCARE DEMAND POSES US WITH A CHALLENGE

1.1.1 AGEING POPULATION

Most European countries have a strongly ageing population. The generation that was born in the decade after the Second World War is now getting older. In 20 years' time, their children will also be retiring. Never before has the population of our western societies consisted of so many elderly people, both in absolute numbers and as a percentage. This poses major challenges to our European healthcare systems, because in these ageing societies the demand for care is increasing dramatically. In the Netherlands, for example, the National Institute for Public Health and the Environment (RIVM) expects the number of people with dementia to increase by 96% in 2040 compared with 2019, the number of over-85s visiting an emergency room to increase by 128%, and expenditure on elderly care to increase by 126%[1]. These staggering increases are putting enormous pressure on the availability and affordability of the healthcare system.

1 https://www.rivm.nl/infographic-impact-van-vergrijzing

At least as important as the increase in the volume of needed care is the change in nature of required care in an ageing population. A rising number of people are chronically ill or have accumulated chronic complications. As a result, the focus is shifting from curing to coping with illness and focussing on quality of life. Consequently, the healthcare that best suits the patient is becoming a blend of primary and secondary care, or in other words, care and cure. More and more, it is also combined with prevention and social interventions, for example, in the area of housing and loneliness. Informal, non-professional care also plays an increasingly important role.

Is our healthcare system, which is primarily organised around functions and the targeted treatment of specific conditions, sufficiently set up to manage this? How does one determine the best treatment for a patient with an accumulation of both chronic and acute health issues? Who is the best person to make that assessment? And once this assessment has been made, how does one ensure that the patient receives the right intervention at the right time? How does one then guarantee the coherence between all the interventions?

These are all complex questions that are becoming more and more pressing every day, particularly while we have less and less time left to answer them. After all, the ageing of populations has already begun and the impact and intensity of this will only increase over the next 20 years. In chapter 4, we will specifically look in more detail at the challenges and possible solutions regarding care for the elderly.

1.1.2 CONTINUING DEMAND FOR NEW AND TARGETED THERAPIES

Alongside the needs of the ageing populations, the demand by other patients for highly specialised care remains high. At present, large groups of patients still cannot be helped, or can only be helped to a certain extent, such as patients with rare diseases or diseases for which we are still lacking proper solutions, for example Alzheimer. These patients hope that technological and pharmaceutical developments will give them a chance of a cure, or at least a significant improvement of their quality of life. Moreover, as increasingly effective diagnostic techniques are being developed, such as the targeted search for mutations in patients' genomes, the treatment of common diseases such as cancer is also changing.

Until a few years ago, tumours were mainly characterised by their primary location in the body (e.g. colorectal cancer, breast cancer, lung cancer) and treatments were tailored to this. However, nowadays, extensive genetic diagnostics enable highly targeted, personalised therapies to be developed. Personalised therapies offer a great deal of perspective for the patient being able to derive the best treatment possible, but put both the organisation and financing of care under pressure. After all, how does one organise care around patient subgroups that become more and more precisely defined? And how does one allocate the development costs of a patient-focussed therapy to a rather small subgroup?

For various groups of patients, it is of life-saving importance that specialists continue to focus on finding new targeted curative interventions, and that healthcare systems remain to have an open mind to these innovations. Patients will continue to bang on the door of national payers or insurers to persuade them to pay for new innovations, even if the price of those innovations is very high. For these patients, even though the healthcare budget in their country will have its limits, the value of their life is inestimably high.

What is more, there is an unstoppable flow of innovations that fight the diseases that plague us, thereby prolonging our life expectancy - thanks to the relentless efforts of scientists and doctors. These experts will always be driven to find therapies for diseases that at present cannot be treated, or that are insufficiently treated. As a result, patients, developers and care providers will keep putting pressure on our healthcare systems to admit and finance these new innovations.

To pave the way for these innovations, we need to take a holistic view at the quality (effectiveness) and cost (efficiency) of our healthcare systems. On the one hand, because effective innovations could positively influence total quality and costs. On the other hand, we might need to achieve efficiency gains in one area to free up resources for innovation in another area. A helpful factor is that patents of older innovations eventually expire, meaning that development costs no longer weigh in on the price, leaving only the production costs, which gives headway for new innovations.

1.1.3 STRONG DIFFERENCES IN THE INFORMATION POSITION OF PATIENTS

The time of the omniscient doctor and the obedient patient is behind us. In fact, a growing number of patients come to the doctor with a large amount of health data about themselves, combined with the results of extensive online research. Wearables and apps that allow everyone to monitor their own health are becoming increasingly popular and reliable. People who are actively promoting and monitoring their health can easily and independently collect and assess reliable data on a daily basis, for example about their weight, heart rate and blood pressure. Patients can also use an app for more complex issues, such as assessing whether a birthmark is malignant. The assessment is partly done by the patient often combined with a remote assessment by the doctor. Such assessments are becoming more reliable fast, as the smart technology and artificial intelligence used by these apps is developing rapidly.

Patients who actively monitor their health in this way can be a great partner for doctors, who can include the information gathered by the patient in their diagnosis and treatment plan.

When that partnership blossoms, the real value for the patient comes into view and the medical professional can focus on realising that value. Unfortunately, this does not always work out in practice. Firstly, there can be a mismatch between the informed patient and the healthcare professional, who still takes a classical position. Secondly the healthcare professional has to invest time to separate sense from non-sense, because an informed patient is not necessarily a well-informed one and not always able to interpret everything correctly by themself.

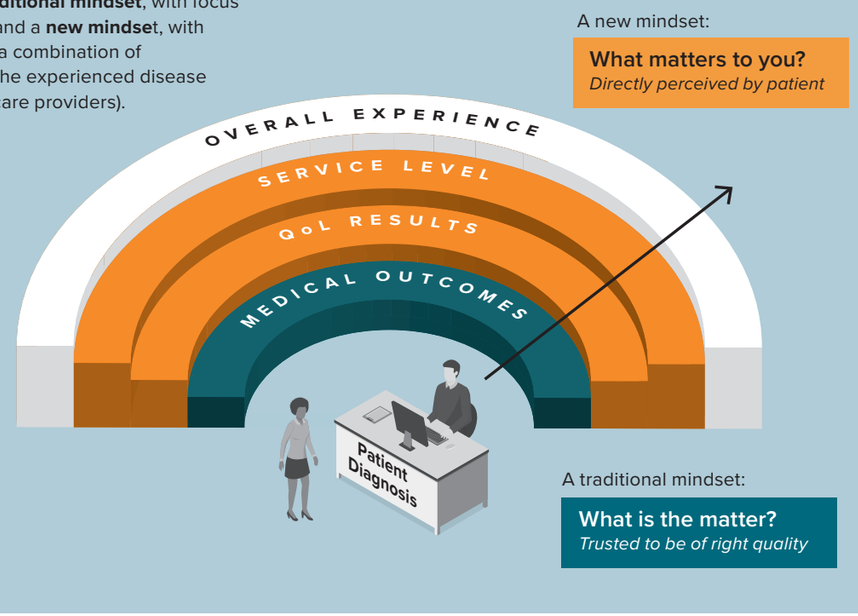
Nevertheless, it is really worthwhile to make the most of the dialogue between the practitioner and the patient, focusing in particular on the question: 'Patient, what matters to you?' (see Figure 1). Determining together which outcomes are relevant for the patient (patient value) is not only important for the vigilant patient who has surrounded themself with apps and wearables. Particularly with elderly people, who have several chronic and acute health issues, it is important to proactively seek the patient's needs. After all, for these patients, treatment is not primarily aimed at curing diseases, but at achieving the highest possible quality of life. To achieve this, it is crucial that the doctor knows and understands what specific factors contribute to the patient's quality of life.

This is very different from a classic medical diagnosis. When the patient's needs are insufficiently highlighted and the doctor's clinical expertise is leading, a patient with multiple health issues soon ends up in a sub-optimal treatment process – treatments that may be medically appropriate in the eyes of individual specialists often, when combined together, do more harm than good for the patient's quality of life.

FIGURE 1

MINDSET CHANGE

The difference between a **traditional mindset**, with focus on diagnosis and treatment, and a **new mindset**, with focus on patient experience (a combination of quality-of-life outcomes and the experienced disease support and service level of care providers).



The ageing population and the great increase in knowledge among patients about possible treatments are changing the demand for care tremendously. Healthcare providers need to adapt to this change in order to continue to offer the right treatment for the right patient (at the right price). Although the clinical expertise of the doctor will always remain relevant, the challenge is to learn to trust the information of the articulate and active patient, and to actively seek out the information of the less articulate patient, and to involve patients in relevant considerations and the decision making.

1.2 HEALTHCARE DELIVERY ALSO PRESENTS US WITH A PROBLEM

1.2.1 ENORMOUS SHORTAGE OF STAFF

The ageing population does not only impact the nature and volume of the demand for care but also has a direct effect on the number of care professionals needed to provide that care. Care delivery is and remains people's work. As the demand for care increases, so does the demand for care professionals. This happens so quickly, that it will be virtually impossible to meet that demand.

For example, the Dutch Ministry of Finance calculated in their 'Broad Social Review 2020' that 40,000 additional care professionals will be needed in the Netherlands each year until 2040[2]. This means 770 extra healthcare professionals per week, i.e. more than 100 per day, including weekends. This number of professionals is simply not there and, because the population is ageing, will never be.

At the same time there are justified concerns about the rising cost of care. However, money can still be raised if absolutely necessary by cleverly deciding what we spent our money on and/or through higher taxation or premiums, albeit within limits and of course with considerable consequences. On the contrary, the shortage of staff in the care sector cannot be solved with simple interventions. Merely maintaining the current number of professionals in the care sector over the next 20 years would be a tremendous achievement in an ageing society! Yet, it would require a completely different organisation of care, otherwise it will be at the expense of the availability and quality of the overall care delivery.

2 https://www.rijksoverheid.nl/documenten/rapporten/2020/04/20/bmh-2-naar-een toekomstbestendig-zorgstelsel

If we do not want to end up with a healthcare deadlock, the increasingly scarce care professionals must be deployed where they deliver the most value for patients. This forces us to focus fully on labour-saving innovations, such as telemonitoring and e-health, and on combating all forms of inefficient care.

1.2.2 CLASSIC FUNCTIONS WITH OWN DATA AND FINANCING

Now that the demand for care is changing and increasing rapidly, the care delivery will have to change at a similar pace. It is very doubtful, however, whether that will be possible. For decades, the structure of healthcare delivery has been broadly the same. It follows classic divisions of delivery lines (1st, 2nd and 3rd-line) and functional expertise that have a long and deep-rooted history. For the majority of simple disorders, primary care is available in the form of general practitioners, dentists, paramedics, pharmacists and (district) nurses. This care delivery nearby is mostly generic in nature. As soon as more complex conditions arise, patients are referred to the hospital for secondary, or even tertiary, specialist care. This is usually organised according to anatomical and physiological areas of expertise. What happens when the demand for care becomes so significant and continuous that curing is no longer possible, and the conditions become chronic? In that case, care is available in a nursing home, where once again the care delivery is more generic in nature.

What is more, in most healthcare systems the various lines of care delivery each have their own specific reimbursement system and data infrastructure. The financing of healthcare across the boundaries of the various care domains and exchanging patient data across these boundaries both lead to major challenges.

Healthcare providers tend to avoid these kinds of challenges, because they are already under enormous workload and pressure, and this workload is only going to increase.

As long as a patient receives care from only one of the care domains, this usually does not lead to major problems. However, as soon as the medical condition becomes more complex and a patient needs care from different domains, the existing reimbursement systems and data infrastructures proof to be insufficient or not fit for purpose. In today's rapidly ageing population with many co-morbid and chronically ill patients, it becomes more and more the rule rather than the exception that a patient needs a combination of care from different domains, in a mix of cure and care.

There is little chance that current healthcare systems, which are segmented, organised and financed in the classic silos, can make the best contribution to the integral quality of life outcome for most patients, especially for those with complex diseases. However, the need to be able to deliver integral patient relevant outcomes is becoming more and more important every day. The current organisation and governance of care delivery fall short in this respect.

1.2.3 ONLY LIMITED OVERVIEW OF QUALITY, EFFECTIVENESS AND OUTCOMES

When the demand for care is rising sharply and becoming more complex in a society where the number of available care professionals is under constant pressure, it is crucial to use the available care efficiently. Herewith, insights into the quality, effectiveness and outcomes of healthcare are essential. There is no lack of individual initiatives in this area, however in most cases there is a lack of uniformity and scale.

Insights into the quality and efficiency of healthcare is not only important for administrative purposes. The articulate patient who is looking for the best treatment and the best care provider ends up in a labyrinth, in which finding the best option is an unprecedented challenge, if at all surmountable.

Partly because of this, the number of patients that are actively seeking the best treatment and care provider is not really picking up, even in the case of life-threatening diseases such as cancer. The Dutch Federation of Cancer Patient Organisations (NFK) found in December 2019 that 51% of cancer patients do not actively consider what should be their hospital of choice. One in five patients indicated that they would have chosen a different hospital in hindsight. Of those patients:

- nearly half would have put more effort in finding out what the right hospital would have been;
- 35% would rather have chosen a specialised hospital (earlier);
- three out of ten would have gone for a second opinion (earlier)[3].

The NFK indicates that inadequate and too limited information about quality, expertise and outcomes is one of the main reasons why patients do not choose sooner and more specifically.

If for life-threatening conditions, such as cancer, the active selection of the best and most effective care is not taking place at large scale, mainly due to a lack of transparency, it can be expected that this will be even more the case for less life-threatening conditions. This puts proper use and availability of our increasingly scarce resources, money and staff, at risk. Improving transparency and insights into the quality, effectiveness and outcomes of care is not a luxury but a bitter necessity!

3 https://nfk.nl/nieuws/helft-kankerpatienten-staat-niet-stil-bij-keuze-ziekenhuis

1.3 VBHC, WHAT IS YOUR ANSWER TO THIS?

VBHC touches on some of the challenges mentioned above. In particular, the VBHC principles focus on improving our healthcare delivery, i.e. patient outcomes delivered versus costs incurred, but give little indication on how to deal with an increasing demand for care. VBHC can therefore be part of the answer. It can help to improve the care delivery, and we will focus on that in this report. However, within this sub-domain of 'improving the delivery of care', VBHC unfortunately still does not appear to be the answer to everything.

We therefore discuss the applicability of VBHC in the following chapters and distinguish the sense from non-sense through case studies (chapter 2) and a theoretical model and frameworks (chapter 3). We will then zoom in on the application of VBHC within two specific care delivery challenges: the increasing care for the elderly (chapter 4) and the increasing pressure on pharma (chapter 5). To conclude, we will give some very practical recommendations for the future, outlined in a number of possible scenarios, resulting in more coordination and transparency within healthcare (chapter 6).

CHAPTER 2

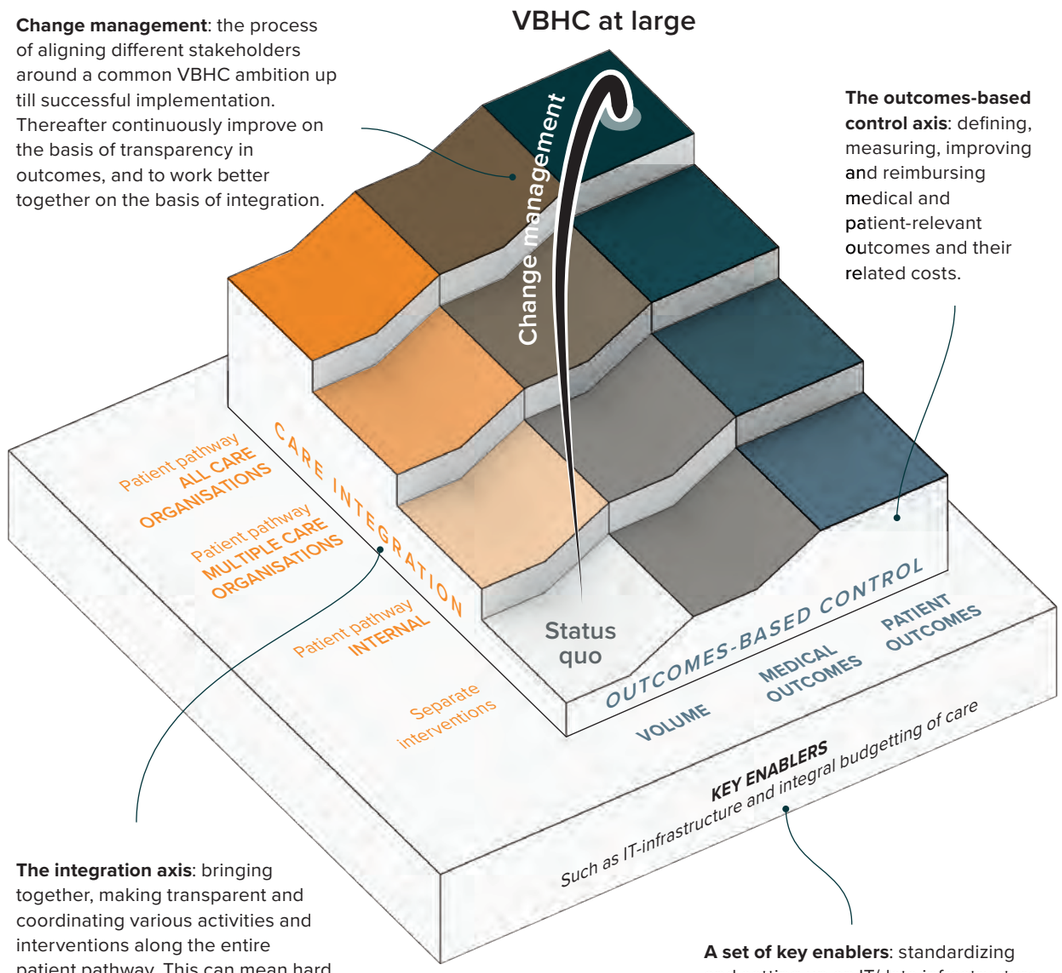
THE SENSE AND NON-SENSE OF VBHC IN PRACTICE

VBHC: A BIG CONCEPT PUT TO PRACTICE

VBHC REQUIRES FOCUS ON 4 KEY ELEMENTS

VBHC is regarded a big concept. However, applying a sub-set of VBHC principles and/or taking in-between steps can also create value in terms of better quality and/or lower costs.

Change management: the process of aligning different stakeholders around a common VBHC ambition up till successful implementation. Thereafter continuously improve on the basis of transparency in outcomes, and to work better together on the basis of integration.



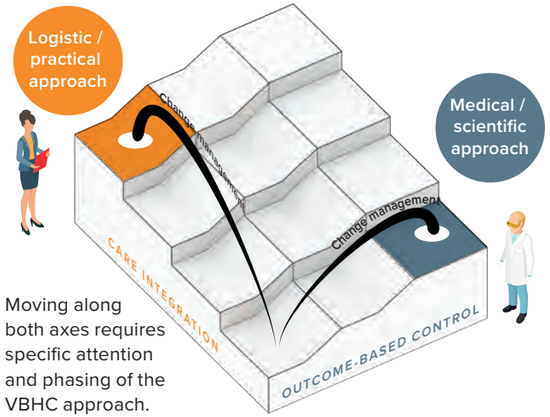
The outcomes-based control axis: defining, measuring, improving and reimbursing medical and patient-relevant outcomes and their related costs.

The integration axis: bringing together, making transparent and coordinating various activities and interventions along the entire patient pathway. This can mean hard integration by physically linking processes and information systems or coordination by means of aligning processes and communication.

A set of key enablers: standardizing and setting up an IT/data infrastructure to optimally measure and record outcomes and costs. As well as setting up the right legal frameworks and reimbursement systems to reward innovation and enable cooperation, data exchange and transparency in the first place.

WITHIN THE BROAD SCOPE OF VBHC THERE ARE TWO MAIN APPROACHES

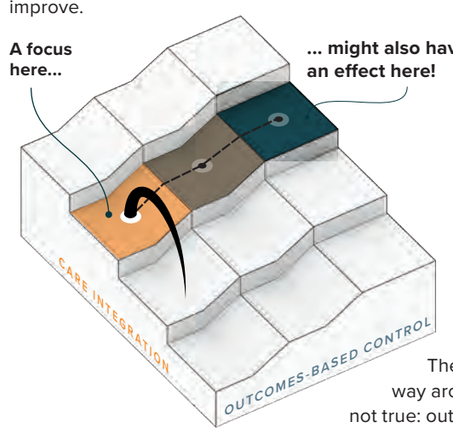
We can distinguish two main VBHC approaches: the outcomes focused 'medical/scientific approach' and the cooperation/integration focused 'logistic/practical' approach. Whichever direction an organisation chooses, one should put the patient at the centre of the endeavour.



Moving along both axes requires specific attention and phasing of the VBHC approach.

FOCUS ON CARE INTEGRATION ALSO AFFECTS OUTCOMES CONTROL

Moving along the care integration axis can also have an effect on better (control of) outcomes. Due to aligned processes and protocols, avoidance of duplication, better information exchange & communication, fewer errors etc., both transparency and outcomes can improve.



The other way around is not true: outcomes measurement does not affect care integration.

THE CASE STUDIES PROVIDE 10 LESSONS LEARNED

1. Outcome definitions can result in lengthy exercises
2. Translating outcome insights into improvement actions is not always easy
3. Integration of care appears to lead to faster results
4. There is usually no hard integration, as we often see coordination
5. Data infrastructure is an important precondition
6. Direct link with reimbursement is often missing
7. Silos in the budgets stand in the way of innovation and scalability
8. Make tangible improvements transparent to drive an improvement culture
9. Keep it manageable
10. Broaden the support base among healthcare professionals

VBHC AT LARGE IS NOT APPLICABLE EVERYWHERE, IT IS NOT ONE STORY FITS ALL

Applying a subset of VBHC principles can also create value.

2.1 VBHC: WHERE DO WE COME FROM?

In 2006, the book '*Redefining Health Care'* by Michael E. Porter and Elizabeth Olmsted Teisberg was published. This gave a vision of the healthcare market and introduced a number of key principles to make care more transparent and more focussed on quality, with the ultimate goal of increasing patient value. A beautiful ambition!

Porter and Teisberg wondered why care is not much more patient-oriented and value-driven. Inspired by other industries and markets, they came up with an extensive set of principles and recommendations. These included the definition that patient value equals patient-relevant outcomes realised per unit of money invested (or simply health outcomes over costs), and with that the plea to measure this patient value and make it transparent in order to stimulate market mechanisms and continuous improvement cycles within healthcare.

In 2017, Vintura published its vision and insights based on the market study 'Value-Based Healthcare: working together for real change', in which we elaborated on what different stakeholders think about VBHC, what experience they have with it and what role it plays within their organisation. Did stakeholders believe in the vision and the underlying principles as set out by Porter and Teisberg? And what were important barriers for them to implement and put these principles into practice?

Based on these insights and our own reflections, we came to the conclusion that the VBHC principles, as defined by Porter, can be clustered into two main axes of movement, with one set of key enablers. And also that one important element was missing: *change management*.

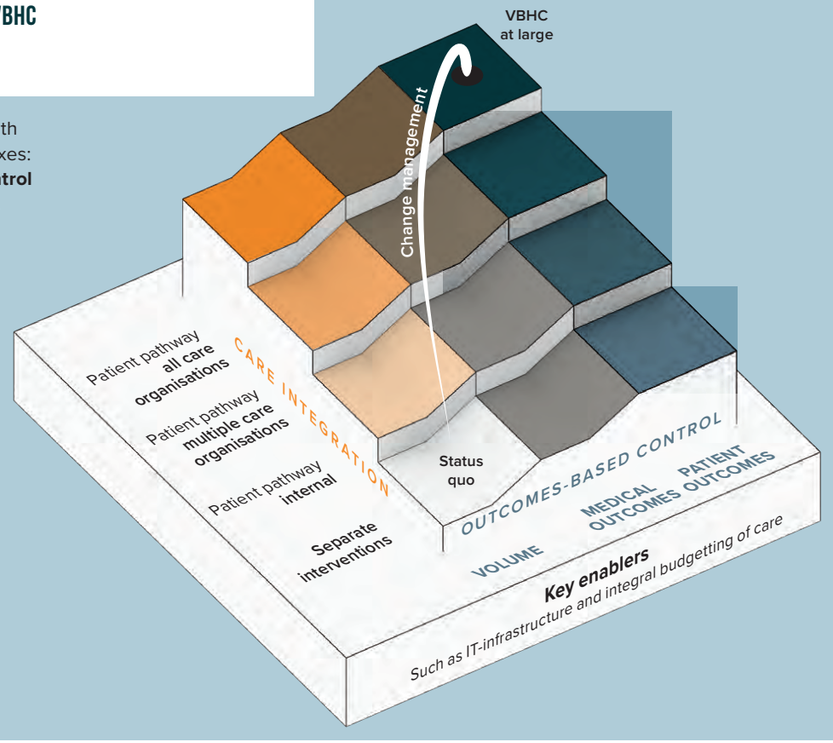
This helped us define a VBHC growth path model (see Figure 2) consisting of the following four core elements:

1. **The outcomes control axis:** defining, measuring, improving and reimbursing medical and patient-relevant outcomes and their related costs.
2. **The integration axis:** bringing together, making transparent and coordinating various activities and interventions along the entire patient pathway.
3. **A set of key enablers:** standardizing and setting up an IT/data infrastructure to optimally facilitate integration and the uniform recording of results. As well as setting up the right legal frameworks and reimbursement systems to enable cooperation, data exchange and transparency in the first place.
4. **Change management:** the deployment of processes, tools and leadership to continuously improve on the basis of transparency of outcomes, and to work better together on the basis of integration.

The model shows that it is not necessary to jump to the ideal end state of Porter and Teisberg all at once. As an organisation, it is also possible to take your first steps along one of the two axes, whilst not forgetting about change management. After all, VBHC is largely about behavioural change within and between care providers. In addition, the mentioned key enablers, the preconditions for VBHC, remain a point of attention in many countries in Europe. As a result, the implementation of VBHC is not really picking up at large.

FIGURE 2

GROWTH PATH TO VBHC



The VBHC growth path along the two main axes: **outcomes-based control** and **care integration**.

Now more than three years have passed by and VBHC has been celebrated and vilified, there have been successes and setbacks, and there are believers and non-believers. In some cases, VBHC has led to scientific and heated discussions without an end. Therefore, there are reasons enough to take a closer look at the sense and non-sense of VBHC, as introduced by Porter and Teisberg. Where does it work and where does it clearly not? What is the best way to approach and apply VBHC? Not all principles may apply, but perhaps some of them can make a difference for the patient. It appears that both believers and non-believers are partly right.

The remainder of this report contains practical and theoretical explanations about the sense and non-sense of VBHC, together with a plea for common sense, pragmatism, and last but not least, courage. After all, every change requires vision, perseverance, and the courage to overcome obstacles and handle resistance the proper way.

2.2 VBHC, A BIG CONCEPT: A VISION ON THE ORGANISATION OF CARE AND NOT A METHOD

We would like to start with clearing up a common misunderstanding: VBHC is not a method, such as LEAN, Six Sigma or Total Quality Management (TQM), but an integral vision of how to organise healthcare delivery on the basis of a number of key principles. VBHC is therefore a reflection on the organisation of care and not a reflection on the medical field as such. VBHC focusses in particular on the improved organisation of care delivery (quality and costs) and says little about how to better control and manage an increasing care demand (volume), for example through prevention or self-care.

In addition, an important element for success is missing, namely structural and proactive *change management*[4]. We must acknowledge that VBHC is a big concept that organisations, must deploy in a targeted and timely manner, based on logical steps, and implement to the extent that it is beneficial and feasible. In doing so, an organisation can move along the axes of outcomes control and care integration individually, or along both at the same time.

4 Change management has already been discussed extensively in our earlier 2017 VBHC report. 42% of those interviewed indicated that change management is an important point of attention. In this report we provided concrete points for attention and guidelines on how to better manage the change process.

2.2.1 CHANGE BASED ON COOPERATION AND INTEGRATION

The case studies in this report illustrate the sense and non-sense of VBHC when it comes to better organising healthcare delivery. Our hypothesis is that many improvements in healthcare can be achieved through cooperation and (virtual) integration (see vertical integration axis, Figure 2).

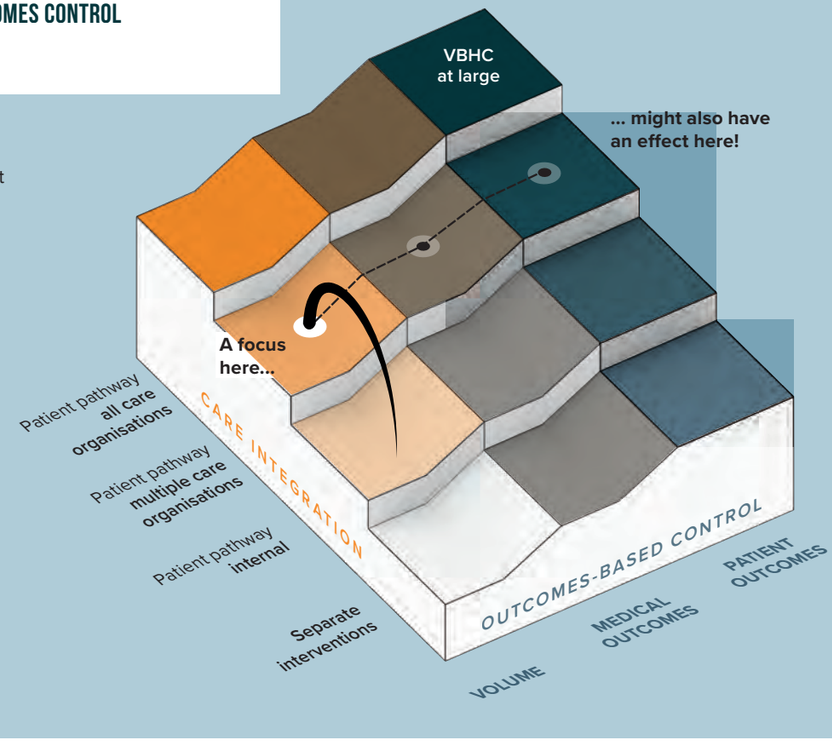
Approximately 80% of care is a logistical issue[5] and it is precisely here that a lot is going wrong in communication and streamlining of processes. Apart from measuring outcomes, one can already know that one can prevent a lot of duplication, errors, miscommunication and planning issues, purely by integrating and improving the patient diagnosis and treatment process (along with the surrounding communication and IT systems). Simply tackling this will quickly lead to improvements in outcomes and patient experience. We do not always need outcome sets for that. It is good to realise that movement along the integration axis, in addition to efficiency improvement, usually also leads to better outcomes and control of outcomes (see Figure 3). On the other hand, the bare implementation of outcome control has of course no effect on the integration of healthcare. The above does not mean that outcome measurement is not a sensible thing to pursue (see section 3.2 for more details), but rather that we should not always put outcome measurements first and foremost as the only reason or way to change.

5 Annual conference on Strategic Process Innovation 2020, Lucien Engelen

FIGURE 3

INTEGRATION VS OUTCOMES CONTROL

Movement along the integration axis usually also has an indirect effect on outcomes (control).



2.2.2 CHANGE BASED ON OUTCOMES MEASUREMENTS AND IMPROVEMENTS

Outcomes measurements are relevant if we want to better understand the efficiency and effectiveness of different interventions and their relationship to patient value. This allows us to subsequently monitor and improve care delivery on that basis (the outcome axis, Figure 2). To arrive at the correct outcome definitions and supported measurements, medically and/or scientifically driven discussions are required. These are usually harder and longer discussions compared to streamlining existing logistic and communication processes.

Experience has shown that attempts to define outcome sets can sometimes get bogged down in lengthy scientific and medical discussions, which ultimately result in questionnaires that are too long, and also unusable, for professionals and patients. To prevent this, it is highly recommended to make use of existing and validated ICHOM[6] datasets, which are now available for many medical conditions. This prevents constant reinvention of the wheel and promotes uniformity and comparability between care centres at a national, and even international, level.

6 International Consortium for Health Outcomes Measurement, https://www.ichom.org/

In addition to defining, measuring, and improving patient-relevant outcomes, the ultimate step is to reimburse based on these outcomes, rather than based on volume. This provides an extra incentive for innovation and continuous improvement. In practice, it shows that care providers and payers are only applying outcome-based reimbursement at a small scale. Challenges in this respect include the unambiguous and timely measurability of the result, lack of clarity about the correlation between patient outcomes and the intervention(s), and silos in healthcare budgeting.

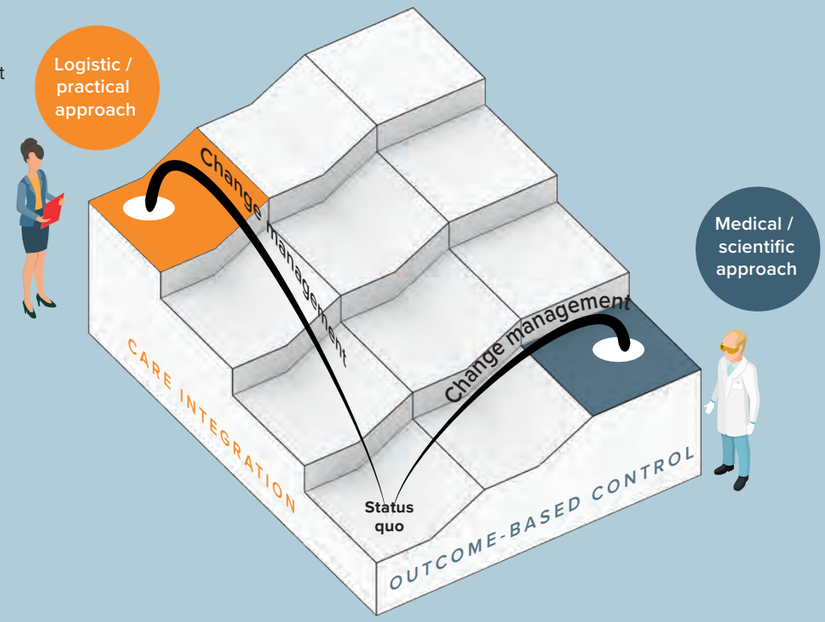
2.2.3 CHANGE MANAGEMENT AS A CRUCIAL LINK

The case studies (in section 2.3) teach us that VBHC-related changes only succeed if change management is also sufficiently incorporated, both in terms of mindset and change process. As far as mindset is concerned, we see that there are two directions from which VBHC can be approached (see Figure 4):

FIGURE 4

TWO MAIN APPROACHES

The two main approaches of VBHC with change management as a contstant factor.



1. Focus on integration and cooperation - *the logistic/practical approach*
2. Focus on measuring and improving outcomes - *the medical/scientific approach*

Whichever direction an organisation chooses, the overarching mindset must be to put the patient at the centre of the endeavour and improve care from that point of view. Moving along both axes at the same time seems unwise. Both movements call for different approaches and involve different stakeholders, especially if the aim is to integrate across multiple healthcare providers. In that case, focus and phasing of the approach is recommended from a change management perspective.

2.3 WHERE DID VBHC PROVIDE SOLUTIONS? SEVEN REAL-LIFE CASE EXAMPLES

CASE #1

Cardiologie Centra Nederland (CCN)

Igor Tulevski

CASE #2

Punt voor Parkinson (PvP)

Teus van Laar and Elien Steendam - Oldekamp

CASE #3

Nederlandse Hart Registratie (NHR)

Dennis van Veghel

CASE #4

Volante

Jos Brinkman

CASE #5

Xpert Clinic

Rob van Huis

CASE #6

Karolinska University Hospital

Jan Engelen

CASE #7

Novartis

Janneke van der Kamp

CASE #1

Categorisation	Qualification
Context	
Disease	Cardiovascular
Complexity	Low and high
Patient group	Heterogeneous
Disciplines involved	Multi
Organisation of own healthcare offering	Network
VBHC	
Measuring results	Yes
Internal integration	Integration
External integration	Coordination
Change management	Structural
Preconditions	
IT infrastructure	Present
Link with financing	Indirect
Result	
Progress of implementation	Scaling up
Impact on patient value	High

"We are constantly looking for new outcomes that we can measure and benchmark. For us, this is the only way to improve ourselves and our services."

- IGOR TULEVSKI

CARDIOLOGIE CENTRA NEDERLAND (CCN)

IGOR TULEVSKI

POSITION: CARDIOLOGIST CO-FOUNDER CEO
TYPE OF ORGANISATION: CARDIOLOGY OUTPATIENT NETWORK CLINIC

Cardiologie Centra Nederland (CCN) is an organisation of independent treatment centres for patients with cardiovascular diseases. To organise low-complex care for patients with heart problems, CCN works together with general hospitals, academic hospitals and general practitioners. CCN acts as a network organisation. Last year, CCN treated 35,000 unique new patients. This makes the organisation the largest in the Netherlands in the field of (outpatient) cardiology. CCN distinguishes itself by its low cost of care: the total costs of CCN (the entire patient journey, including admissions and complex interventions) are 20 to 40% lower than those in the field.

Patients are being referred by general practitioners and their primary question is: is there something wrong with my heart? If the heart is the cause of the complaints, the patient will be treated accordingly within the network. The network provides cardiac care across the board.

Improving care outcomes through measurement is the central principle of CCN. For example, the organisation has drawn up a number of KPIs that are continuously measured, including accessibility of care, time spent in the clinic, patient satisfaction, unique new patients, diagnosis accuracy and doing things first time right. The organisation is managed according to the results of these KPIs. Across the CCN, the KPIs are sacrosanct.

The integration of care is also a critical objective of CCN. From the outset, the organisation has been working in a network with other healthcare providers. CCN believes that the integration of care and the composition of various care pathways are essential. According to the organisation, there must be someone who takes control of the patient's journey during the entire treatment process. CCN assumes this responsibility for cardiac issues. For high-complexity interventions, the patient is referred to one of the partner hospitals.

After treatment by the partner hospital, the patient returns for follow-up or chronic care. In this way, CCN supervises the patient throughout the entire care process.

"I believe that a patient should be helped by different care providers at different stages of their illness. And that this has to be done in a network. After all, there is no single organisation or care provider that can cover the patient's entire pathway.

In addition, change management is seen as an important connecting link in the organisation. As with any healthcare organisation, CCN is a dynamic environment in which continuous adaptation is required. Technological progress, and changes in different legal, political, regulatory and finance issues require constant adaptation. Commitment to change management helps CCN to maintain its versatility. The mindset of its employees is essential in this respect.

Adding value for the patient is central and part of this mindset. Internally, CCN has a culture that encourages its employees to be open to change. Everyone is allowed to provide input, but approving proposals without substantiated input is not an option.

The initiator must be able to demonstrate that their proposal is better than the status quo. Lastly, CCN factors in a number of external preconditions to implement its working method. CCN is in a unique position because it works with a proprietary IT platform developed by its own IT department. As a result, it can implement adjustments and improvements immediately, for example, its recent successful telemonitoring product Hartwacht (Heart Monitor).

This program has yielded great results to CCN. It enables the organisation to scale its care and treat a large number of patients each year and improve access to the healthcare system to a consistently high standard at a relatively low price. In addition, CCN's working method has increased the job satisfaction of its employees. The medical staff know that they add value for the patient and see the innovative results in practice.

Ultimately, the idea behind VBHC is in the interest of all parties: the patient, the doctor and society. As an organisation, CCN believes that the optimal working method is the one that is best for the physician and the patient. Persistence is required to make change happen. To overcome resistance strong arguments are needed, and to have strong arguments, tangible and measurable facts are required.

By monitoring KPIs that are supported by stakeholders, it becomes possible to bring about changes from within the sector.

"As long as you stick to your most important principles and do what you promise, explain what you are doing and create value for the patient and society, then you will win in the end.

In order to keep healthcare in the Netherlands affordable, a lot of work needs to be done. For CCN, it is necessary that organisations are provided with a rock-solid and uncompromising opportunity to make care in the Netherlands scalable. Innovative parties that can change care must also be involved. This does not happen enough at the moment –there is too little action.

"What you call VBHC is the justification for existence, for us. It is not just a nice slogan that we are all going to talk about. If you are not able to create value for patients, for society, for clients, but also for staff members, you have no place in healthcare."

CASE #2

Categorisation	Qualification
Context	
Disease	Parkinson
Complexity	Very high
Patient group	Heterogeneous
Disciplines involved	Multi
Organisation of own healthcare offering	Network
VBHC	
Measuring results	Yes
Internal integration	Coordination
External integration	Coordination
Change management	Ad hoc
Preconditions	
IT infrastructure	Present
Link with financing	Under development
Result	
Progress of implementation	Scaling up
Impact on patient value	High

"Parkinson's disease as a well circumscribed entity does not exist. Parkinson's disease is a progressive and very heterogeneous syndrome with multiple causes"

- TEUS VAN LAAR

PUNT VOOR PARKINSON (PVP)

TEUS VAN LAAR AND ELIEN STEENDAM - OLDEKAMP

POSITIONS: NEUROLOGIST/MEDICAL DIRECTOR AND RESP. PHYSICIAN ASSISTANT/RESEARCHER
TYPE OF ORGANISATION: HIGH-COMPLEX JOB-SHOP MODEL

'Punt voor Parkinson' (Point for Parkinson, PvP) Groningen is a cooperative expertise centre, founded in 2016 by the University Medical Center Groningen, the Martini Hospital and Zorggroep Groningen to improve care for patients with Parkinson's disease. PvP's ambition is to coordinate regional Parkinson care, such that standard care is delivered locally as much as possible, and more specialized advanced and complex care is delivered at PVP. The idea is to start a PVP centre in every county of the Netherlands. PvP strives to offer patient care at the highest level (top 25% of the field). PvP collaborates with all the hospitals in the direct vicinity, usually with 1–2 Parkinson neurologists in every hospital. The organisation is on its way to becoming an independent treatment center, in order to facilitate independent decision-making and contracting. By applying VBHC, the organisation has succeeded in reducing the costs of care for Parkinson's disease patients while improving their quality of life. For example, it has achieved a delay in nursing home admission by 2.7 years after clinical rehabilitation in PVP, versus a matched control group.

Parkinson's disease (PD) is a complex disorder, which not only causes the characteristic motor symptoms, but also involves many non-motor symptoms, such as sleeping problems, mood disorders, cognitive disorders, and autonomic failure. Therefore, Parkinson's disease requires a multidisciplinary approach, in which up to 20 different professionals may collaborate about a single Parkinson's disease patient. PD is also very variable with respect to its symptoms and progression.

"After three years, we only had a response rate of about 20%. So, we had to stop this quality network. Now, we have started again with value-based assessments in PvP, however with a much shorter questionnaire, based on the outcomes of PD focus groups."

-TEUS VAN LAAR

Therefore, the application of VBHC is very challenging, especially as the definition of measurable and valuable endpoints for all patients is very difficult.
An earlier attempt to establish a Dutch quality

network for patients with Parkinson's disease failed because the measurements were too extensive and did not differentiate between the participating centres. As a result, it did not make sense to ask patients to complete questionnaires on patient outcomes twice a year.

PvP opted to use a focus group of patients to compile a select number of indicators for quality of care. PvP monitors these indicators via a dashboard and determines, on the basis of the data, whether earlier appointments are necessary. This prevents unnecessary care appointments and therefore saves costs. The indicators also provide an impression of the progression rates, enabling the definition of subgroups within the overall PD population.

"Approximately 30% of the consultations in an outpatient department starts with the statement of patients: 'Well, I'm doing quite well', which means that the consultation is not serving a specific goal and was not planned at the right moment'. However, these 'unnecessary' consultations are responsible for waiting lists at the same time, potentially obstructing patients who urgently need care"

- TEUS VAN LAAR

PvP coordinates the care of PD patients on a regional level, and employs specialized nurses acting as case managers. If cases are complex and in need for advanced therapies, such as Deep Brain Stimulation (DBS), PvP is in the lead. If problems are more basic, PD centres in the direct region around Groningen provide care, collaborating with general practitioners (GPs) and/or district nurses. Particularly in the very early and final stages of PD, the general practitioner (GP) can play an important role, in combination with district nurses.

"Before we started with PvP, professionals involved in PD care were focussed on their own targets, but without multidisciplinary interaction, and therefore without overall targets for the patient"

- TEUS VAN LAAR

PvP invests in dedicated rehabilitation programs, to enable patients to live independently at home for longer periods. Their research data show that overall costs decrease and quality of life increases, caused by a significant delay in definite nursing home admissions – a win-win situation.

"We also have real evidence that our concept works. If patients are able to live at home longer, the overall costs of care actually decrease."

- ELIEN STEENDAM – OLDEKAMP

However, because the savings are covered by the Long-Term Care Act (governmental budget) and the costs are incurred under the Healthcare Insurance Act (budget of insurance companies), there is no incentive to save costs across the entire care chain. The first step in bridging the gaps between the various payers is to create insight in the overall process. To this end, PvP has developed a dashboard, in collaboration with one of the big health insurance companies. This dashboard provides the basis for future structural financing of the PvP care concept.

"The current care for patients with Parkinson's disease is reimbursed by different parties, with separate budgets. This is a huge hurdle to achieve efficiencies across the total care chain. VBHC in Parkinson's disease therefore should focus on the total chain."

- TEUS VAN LAAR

PvP also values change management. PvP was started by neurologists, who initiated the transition of hospital care to a nursing home. The nursing home proved to be a perfect environment for chronically ill people, offering time, rehabilitation facilities and dedicated people, which however had to be trained intensively, to reach an academic level of PD care. At the same time, nursing homes can be exploited with a significantly lower overhead compared with general or university hospitals.

At PvP, a proper IT structure has been crucially important to implement regional coordination of care, creating the basis for communication between all professionals involved. Setting up this IT organisation has taken a significant amount of time and money. PvP has created a central PD electronic patient dossier (EPD), which is accessible for all participating professionals. This platform also enables feedback on therapeutic interventions, updated medication lists and questions of patients and professionals.

According to PvP, the art of VBHC is to unravel the Gordian knot: how to organise care more efficiently and at the same time improve quality of care. This requires a helicopter view of the total patient care and new financial structures, to really reward the created value in the overall care-chain. The PvP concept is a very good model for other chronic diseases, such as rheumatoid arthritis, diabetes, and COPD, which now take place in very expensive hospital environments. Reorganising chronic care, within a regional perspective, in collaboration with GPs among others, will create value for money. However, although the potential of this concept is recognised generally, it is still hard to implement these concepts, owing to a very fragmented reimbursement system.

CASE #3

Categorisation	Qualification
Context	
Disease	Cardiovascular
Complexity	High
Patient group	Homogeneous
Disciplines involved	Multi
Organisation of own healthcare offering	Line
VBHC	
Measuring results	Yes
Internal integration	No
External integration	No
Change management	No
Preconditions	
IT infrastructure	Present
Link with financing	No
Result	
Progress of implementation	Broad roll-out
Impact on patient value	High

"We found that many doctors were unable to assess the quality of their own work regarding outcomes that matter most to patients. Quality of care was considered in all sorts of ways, but the outcomes that are most important to the patient weren't."

- DENNIS VAN VEGHEL

NEDERLANDSE HART REGISTRATIE (NHR)
DENNIS VAN VEGHEL

POSITION: BOARD MEMBER
TYPE OF ORGANISATION: SUPPORTING THE MEASUREMENT OF OUTCOMES

Nederlandse Hart Registratie (NHR) is an organisation that collects care outcomes of patients with cardiovascular diseases in cooperation with hospitals and cardiac centres. Since its establishment, the organisation has been working with a VBHC programme to improve the quality of care. Every year the data of approximately 80,000 patients is collected. NHR arose from a merger between three healthcare organisations that were previously active in the field of data collection: the Dutch Cardiovascular Interventions Monitoring Committee (BHN), Dutch Cardiovascular Data Registration (NCDR) and the scientific programme Meetbaar Beter (Measurably Better). The merger prevents the fragmentation of quality registrations in the field of cardiology. NHR has succeeded in gathering insights in the form of outcomes that are most important to the patient.

NHR's VBHC programme began with the aim of providing doctors with new insights. By structurally comparing the care outcomes of different care organisations, the programme enables doctors to make better decisions and achieve better care outcomes together with the patient.

NHR's VBHC programme covers more than 90% of complex cardiac interventions, for example, treating coronary artery disease with bypass surgery or percutaneous coronary intervention, or treating aortic valve disease with aortic valve surgery or transcatheter heart valve intervention. The treatments that are analysed are almost all invasive interventions that are performed on the day itself. In addition to the intervention, other activities that generate value for the patient are also carried out, such as the rehabilitation programme and outpatient follow-up. Care outcomes are measured along the entire chain, including follow-up measurements 3 to 5 years after the intervention.

The organisation selected its outcome measurement parameters in cooperation with, among others, patient panels, medical specialists and board members. In drawing up the parameters, NHR took the following criteria into account:

1. Are the outcomes relevant to the patient?
2. Do the outcomes occur often enough?
3. Can the outcomes be influenced by adjusting care processes?
4. Is the collection of the data by all parties involved feasible?
5. Is accurate definition available to facilitate high-quality data collection in each hospital?

For NHR, it is essential that doctors are in the lead when measuring and improving patient value. Medical specialists are the only ones with the expertise to interpret the data properly and to make the translation to medical practice. This varies from changing technical factors during an intervention to adjusting care processes in the aftercare.

"From the outset, we used the principle that doctors are in the lead in measuring and improving patient outcomes."

NHR does not explicitly commit itself to projects aimed at improving care processes in the care chain.

After delivering the collected data, it facilitates registration committee meetings where physicians discuss outcomes and process differences. Also, NHR facilitates projects for sharing good practices but, in essence, leaves quality improvement to the hospitals or care centres concerned.

The VBHC program is growing without active acquisition. With heart centres joining on their own initiative, NHR believes that support for VBHC is high from the start and doctors are intrinsically motivated. Doctors find it valuable that participation in NHR gives them feedback on quality and creates quality indicators that are truly relevant for the patient and the practice.

"We have said: this is not perfect yet, but we are doing our best to improve it further and further and we believe this is the right direction."

The results of NHR are reported publicly, so that insurers and other stakeholders have insight into the quality of the care provided. To ensure the process of transparency and improvement, it is desirable that insurers do not use NHR data to punish those who lag behind. The will to be transparent about the outcomes delivered and the intention to improve should be more important than the care outcomes at a specific moment in time.

CHAPTER 2 - THE SENSE AND NON-SENSE OF VBHC IN PRACTICE

"It is important that all stakeholders understand that this is a process in which all of us want to work towards transparency and improvement. This requires a constructive approach and a learning environment."

An important precondition for the design of VBHC is that the care parties involved collect relevant data. Historically, quality departments of hospitals often primarily focus on the collection of other indicators than patient-relevant outcomes. This can be detrimental to the quality of the data, making it impossible to use the data at a later stage to improve care outcomes. Another important obstacle that NHR faces when applying VBHC is the translation of patient data into practical opportunities for improvement. Differences in outcomes can often be explained in different ways. For example, on account of differences in patient populations or random fluctuations in time. The inclusion of patient characteristics prior to treatment helps here, but does not always provide sufficient concrete tools for improvements.

"What method do you use to decide when a trend in the outcomes is important enough to take action for improvement? How do you make an analysis of what you want to do differently? I see this element of methodology as one of the most crucial points that still needs to be implemented."

Various methods can be devised to bridge the translation of data into practical adaptations. For example, one can investigate outliers through dossier research, one can map out best practices through literature research and centres can learn from the working methods of the best performing centres. But the question remains: what is the right strategy for which scenario?

"I think that if we spend a few minutes formulating different research strategies, we can come up with as many as 10 methods. But we will simply have to learn in which situations we can best apply certain research strategies."

Commitment to measuring and improving care outcomes poses a risk, when a robust method for translating data into practice is lacking. There is a risk is that a lot of data is analysed without improving the quality of care or initiating improvement actions. Measuring then becomes a goal in itself. Neither the care sector nor the patient is helped by this.

"These are very complex issues, which have not yet been answered. They are crucial to maximise the impact of VBHC."

Categorisation	Qualification
Context	
Disease	Mental healthcare
Complexity	High
Patient group	Heterogeneous
Disciplines involved	Mono
Organisation of own healthcare offering	Tailor-made interventions
VBHC	
Measuring results	Yes
Internal integration	Coordination
External integration	No
Change management	Ad hoc
Preconditions	
IT infrastructure	Partly
Link with financing	No
Result	
Progress of implementation	Starting up
Impact on patient value	Not yet

"Acute psychiatry is not widespread, but this form of psychopathology does have a high impact on society. It is for a good reason that the discussion about individuals with severe mental illness regularly reaches the media."
- JOS BRINKMANN

VOLANTE
JOS BRINKMAN

POSITION: DIRECTOR
TYPE OF ORGANISATION: HIGH-COMPLEX JOB-SHOP MODEL

Volante is a partnership involving the Dimence Group, Lentis, GGzE and GGZ Noord-Holland-Noord and was founded in December 2017.
In view of their different locations, the four cooperation partners are not direct competitors. Together, they offer mental health care to 10% of clients in the Netherlands. In total, approximately 10,000 employees work at the four institutions. This gives the organisation sufficient scale to achieve true national impact.

Volante focuses on measuring and improving the quality of care in mental healthcare. It does this by agreeing on joint areas of expertise with a project team for each area. Volante now has three project teams: one for anxiety and depression, one for autism and one for acute psychiatry. In the selection of the joint areas of expertise, social impact and personal impact were taken into account.

In mental health care, there is a wide variety of treatment paths and processes. Volante sees that the complexity of disorders in mental healthcare is very high compared with somatic disorders. This is particularly true in specialist mental health care, where patients seldom register with a single type of disorder and there are often problems in several areas of life. In addition to psychological problems, patients may have problems with housing, working and relationships. In addition, there are sometimes addiction and personality problems, or a patient may have somatic complaints.

"If you ask: what is the most complex element of mental healthcare? Is it psychological, physical or social? Then I think it is mostly a combination of these three factors."

Measuring care outcomes in mental health care is notoriously difficult, because of the many limitations in using this data. There are practitioners who believe that recovery and psychological suffering cannot be measured with empirical research methods. In addition, various factors influence the data.

For example, it has been shown that socio-economic status and location influence the measured care outcomes. This can lead to unreliable results.

"You may call it value-based healthcare. But the question is whether that is the right term. We ourselves speak of meaningful outcomes. And that means: we want to contribute to meaningful outcomes for our patients This means that they should really benefit from these outcomes in their lives."

When measuring and improving care outcomes, Volante focuses on what it has learned from the Santeon hospitals and uses Santeon's working method as an example. The choice was made to give the healthcare professionals the lead in measuring and improving the outcomes. In addition, Volante chose to involve patients in this process.

"The client perspective is often forgotten, but when you combine the perspectives of the client and the practitioner, this combination can be very valuable."

The project group for anxiety and depression is furthest ahead compared with the other project groups. This project group has now collected care data over a longer period of time and is trying to compare these results between the four care institutions. The data still needs to be normalised before a comparison can be made.

As a collaborative venture, Volante does not focus on the integration of care pathways within an organisation, between organisations or across the entire chain. That is not by definition an explicit goal of the organisation. However, all four healthcare institutions do apply internal integration.

Volante has been organized top-down, initiated by the directors of Volante. By involving professionals in the organisation who believe in the idea, they have succeeded in giving the project sufficient momentum.

CHAPTER 2 - THE SENSE AND NON-SENSE OF VBHC IN PRACTICE

According to Volante, important preconditions of VBHC are sufficient time to initiate projects and a joint IT platform. Well-coordinated IT infrastructures are needed to collect the data and minimise the administrative burden.

Volante is still at the starting point of VBHC. The organisation has not yet succeeded in demonstrably improving healthcare outcomes or reducing healthcare costs. But the potential for quality improvement in care for mental health is great. Improving care outcomes, even when this leads to higher healthcare costs, could lead to overall cost savings. Particularly when patients are able to return to society more quickly, and the period in which patients do not have to return is extended.

"It is important to bear in mind that improving quality in mental health care can lead to earlier participation of patients in society, thus saving costs in the long term."

In the future, Volante hopes to be able to use implementable and meaningful outcomes while also reducing its variation in care practice, so that it can actually make statements about its outcomes. In addition, it wants to be open to new changes and, when proven effective, to implement different ways of providing care in its practice.

"I think we are really still in the early stages. We are just getting a taste and trying to get a hang of it. We also have to learn how to improve. We definitely don't have a complete pathway yet and we are certainly not as far advanced as, for example, the Santeon hospitals. But we do think that we are heading in the right direction."

CASE #5

Categorisation	Qualification
Context	
Disease	Hand and wrist
Complexity	Low/mid
Patient group	Homogeneous
Disciplines involved	Multi
Organisation of own healthcare offering	Line
VBHC	
Measuring results	Yes
Internal integration	Integration & coordination
External integration	No
Change management	Structural
Preconditions	
IT infrastructure	Present
Link with financing	No
Result	
Progress of implementation	Broad roll-out
Impact on patient value	High

"Both axes (control and integration) yield great benefits. Both axes are absolutely essential. As far as I am concerned, merely measuring and improving results and improving your internal organisation doesn't bring about an organisation that really creates value for the patient across the board."

- ROB VAN HUIS

XPERT CLINICS HAND & WRIST CARE
ROB VAN HUIS

POSITION: FOUNDER OF XPERT HANDTHERAPIE (FORMERLY HANDTHERAPIE NEDERLAND)
TYPE OF ORGANISATION: LOW/MID-COMPLEX JOB-SHOP MODEL

Xpert Clinics hand & wrist care is an independent treatment centre for hand and wrist problems. From the outset, Xpert Clinics has focused not only on surgery, but also on the supply of care for hand and wrist disorders across the entire chain. For the treatment of patients with hand and wrist problems at primary care level, Xpert Clinics cooperates with Xpert Handtherapie (formerly Handtherapie Nederland). The organisation started with one branch in Hilversum in 2008. Xpert Clinics now has 28 branches throughout the Netherlands. The number of patients increases every year. By applying VBHC, Xpert Clinics achieves lower costs per patient than other healthcare providers.

Xpert Clinics treats a relatively low/mid-complex patient group. The patient population is fairly homogeneous, because the organisation focuses on a small component within somatic care. By classifying over 100 different treatments into eight patient groups, Xpert Clinics minimises the variation within its treatment pathways and treatment outcomes.

As a result, the patient's care pathway is fairly predictable.

Xpert Clinics was established with the aim of providing high-quality care for the patient across the entire chain. The organisation has defined the quality of care on the basis of relevant clinical outcomes, patient-reported outcomes and patient-reported experiences. In carrying out VBHC, the organisation focused on both the control axis and the integration axis.

Xpert Clinics actively focused on the control axis and opted to structurally measure care outcomes from the outset. The organisation has strictly implemented the measurement and registration of care outcomes.

Measuring care outcomes involves translating over 100 different treatments into eight measurement paths: wrist regular, wrist extended, finger regular, finger extended, thumb regular, thumb extended, nerve compression and Dupuytren.

Xpert Clinics uses its data for an internal improvement cycle, in which the organisation aims to continuously improve its internal care processes. The centre also uses its data for external purposes, such as publishing scientific articles and drawing up best practices.

Xpert Clinics also actively invests in the integration axis by integrating the care of various care providers related to hand and wrist disorders. The organisation has done this according to a one-stop-shop model.

"Our one-stop shop model essentially means: you come in, you are diagnosed in a multidisciplinary setting and you go home with a treatment plan across the entire chain."

With the one-stop-shop model, Xpert Clinics aims to prevent patients from having to make multiple appointments with different healthcare providers in order to arrive at an accurate diagnosis and a good treatment plan. In addition, the organisation works with a hub-and-spoke model, with five locations for more complex surgical interventions and other locations for minor interventions and therapeutic interventions.

In this way, the organisation deals efficiently with the various patient flows, which saves costs and makes it possible to provide hand and wrist care across the entire chain.

"We use a hub-and-spoke model, so that we can cluster our offering and do not need to be fully facilitated at every location."

When applying VBHC, Xpert Clinics makes use of a supporting IT platform called PULSE, an open-source platform developed in cooperation with the Erasmus Medical Centre.

"PULSE has helped us enormously. We are the leading organisation for our dataset in hand/wrist. We have taken the initiative for developing this within ICHOM. The ICHOM standard set for hand & wrist conditions is ready to implement now. It is very noteworthy that an independent treatment centre is in the lead there to compile the worldwide dataset."

VBHC cannot be applied without experiencing and identifying problems. Measuring and recording care outcomes places a considerable administrative burden on the patient and care providers.

In practice, this administrative burden can lead to resistance on the part of staff and patients.

"Patients now live in a society, where you have to fill in a questionnaire for everything. But it means nothing when this doesn't represent value. What's in it for the patient? Measuring care outcomes therefore remains a continuous challenge."

Xpert Clinics considers it important to inspire and train care providers effectively and to continue to emphasise the importance of measuring care outcomes to create value. Measuring outcomes should therefore be fully implemented in the primary process. An efficient and well-functioning IT platform can help reduce the administrative burden associated with measuring care outcomes. Despite the investments in IT, Xpert Clinics has found that there is still a lot of missing data. Further development in the field of IT is therefore essential for Xpert Clinics, with the aim of integrating the various IT systems involved into a single platform and allowing them to work together.

A barrier for creating value in the full range of hand and wrist care are the ceiling agreements with health insurers.

Because of these financial ceilings, Xpert Clinics can only take on a limited number of clients, despite increasing referrals, demonstrably better care outcomes and lower healthcare costs per patient. This hampers the organisation's ability to treat a larger number of patients and generate even more patient value.

"When we discuss this with insurers, the starting point is that we can reduce the healthcare costs per patient in the entire chain. In return, we would like to be able to grow. In my opinion, that is what it is all about in the end: more patients against a lower price."

According to Xpert Clinics, it is about making choices from a different perspective. This requires all stakeholders in the healthcare system to be more decisive and to specifically choose to facilitate and to finance care across the entire chain. In the end, this could lead to a system in which specific care is carried out by specific healthcare providers.

Looking to the near future, Xpert Clinics sees scope for further value enhancement in the hand and wrist chain, such as predictive modelling, online triage and remote therapy in a blended care model.

CASE #6

Categorisation	Qualification
Context	
Disease	Various
Complexity	Very high
Patient group	Heterogeneous
Disciplines involved	Multi
Organisation of own healthcare offering	Line & network
VBHC	
Measuring results	Yes
Internal integration	Integration & coordination
External integration	Partly
Change management	Structural
Preconditions	
IT infrastructure	Planned
Link with financing	Yes
Result	
Progress of implementation	Broad roll-out
Impact on patient value	High

"We want to improve care. We want the patient to be the starting point. And we want to see the consequences of this. That's the story."

- JAN ENGELEN

KAROLINSKA UNIVERSITY HOSPITAL (KUH)
JAN ENGELEN

POSITION: DIRECTOR LEADERSHIP
TYPE OF ORGANISATION: HIGH-COMPLEX JOB-SHOP MODEL

In 2010, Karolinska University Hospital (KUH) started the New Karolinska Solna (NKS) project, moving the hospital to a new building in 2017 and 2018 and simultaneously implementing VBHC organization-wide. With a budget of 2.19 billion euros, KUH initiated the largest VBHC project in the world. Despite controversy in the Swedish media, the Karolinska University Hospital managed to fully implement the changes based on VBHC organizational principles. In addition, KUH managed to return to the top 10 best universities worldwide in the field of medicine (QS World University Rankings). Even after leadership altered in 2019, the changes within the KUH have largely been retained.

The central theme of the NKS project was Patient First. This refers not only to the patient who is currently being treated, but in general to developing the best treatment and protocols from the patient's perspective. Moreover, Patient First concerns the whole patient pathway.

In the implementation of Patient First, the patient pathway was the starting point, identifying the patient journey through a hospital and ensuring to include all relevant steps in the care process. Approximately 400 patient groups were identified within the KUH, which were then integrated into 140 patient flows. Under Patient First, each patient flow is linked to a patient flow manager, who is responsible for the quality of care on the basis of the integrated care pathway.

"Leadership with overall responsibility across the patient pathway is needed to be able to implement improvements efficiently. Having access to resources is part of this: staff, finance, research.... That is the core of the change in the operating model."

When setting up 140 patient pathways, an organization must avoid unnecessarily fragmenting the supporting infrastructure. For example, not every patient pathway needs its own imaging infrastructure.

A number of supporting functions, such as radiology, laboratories and paramedical care, are organized centrally at the KUH and are deployed in the patient pathways (hub-and-spoke model). Hospital partners gradually adapt to the organization of patient pathways at the KUH. After all, when assessing costs and quality of care, the overall comprehensiveness of the care pathway is paramount. In addition, the patient's perspective is incorporated into the selection of outcome indicators. KUH chooses to measure patient-relevant care outcomes in addition to traditional indicators.

"In the future, care will be organized on the basis of patient interests and a comprehensive view on the care pathway, increasingly towards an Integrated Practice Unit (IPU) with clear leadership in charge."

Thanks to the new organizational structure, different disciplines will work closely together. You can also see that practitioners in supported disciplines, for example psychologists, are starting to focus on different pathways instead of clustering their discipline. In addition, the new organizational structure enables integrated changes that are valuable for the patient in the decision-making process.

"Imagine being responsible for a patient pathway and having opportunities to improve it, then you will look at quality of patient care in a completely different way. Much more integrated."

Applying the Patient First principle has been a step-by-step awakening, with KUH drawing on ongoing VBHC projects. Once the NKS project was introduced, the organization decided to change the organizational structure. The scope of the project created quite some resistance. A gradual change, for example of selected departments or patient groups, was not an option in the NKS project. Safeguarding VBHC within an organization means an integrated change that affects not only the specialist functions, but also general and supporting functions, such as radiology and the ORs. In addition, warranting VHBC has an impact on administrative and financial processes and systems. Such generic functions, processes and systems must be aligned to the care processes.

"It has been a very dynamic process of change – because of the size, the importance of the institute, the complexity and the nature of the change."

When dealing with resistance, it is important to consistently return to the starting point: *Patient First*.

"We want to improve health care. That is our ambition. What made the changes successful? It's in all those moments that you stand up for your cause: Patient First!"

To implement a project on this scale, external consultancy was needed. A new organizational structure had to be devised, new patient pathways had to be mapped out and various relevant financial indicators had to be defined. The relocation to a new building also had to be supervised.

In addition, leadership is an important theme in the implementation of *Patient First*. It is important to clarify the patterns and dynamics of an organizational change and to ensure the leadership are aware of them. It is also important to communicate what effective leadership behaviour is (i.e. which behaviour is helpful and which choices are effective).

Managing a major change such as that in the NKS project makes great demands on leadership. First of all, personal leadership is essential, with leaders personally committing themselves to the ambition and continually endorsing it, especially when there is resistance.

"It starts with the ambition to really improve care and to commit yourself to it. Showing that it is your personal drive, communicating it consistently and being loyal to it when fulfilling your role. That is the essence of leadership."

It is clear that a major change such as Patients First will encounter resistance. As a leader, you need to be aware of that, by accepting resistance and managing it proactively where possible. The leaders of Patients First have consistently expressed their views and ideas internally and sought dialogue with the medical professionals. At one point, the dialogue has become quite intense both internally and in the media. Once again, this emphasises the importance of proactive communication: what are we doing and why are we doing this? Going through complex changes is difficult. One must accept this and, where possible, anticipate it through proactive communication, both internally and externally.

"If you throw a stone into a pond, you know you will be making waves. You have to accept this, otherwise don't even bother to get started on a change."

Categorisation	Qualification
Context	
Disease	Various
Complexity	varies per TA
Patient group	homogeneous per TA
Disciplines involved	multi
Organisation of own healthcare offering	routine intervention
VBHC	
Measuring results	yes
Internal integration	N/A
External integration	coordination
Change management	ad hoc
Preconditions	
IT infrastructure	partly
Link with financing	under development
Result	
Progress of implementation	upscaling
Impact on patient value	high

"As the largest pharmaceutical company in Europe, we believe that in addition to providing the right medicines and informing health care professionals about them, we can play a role in helping to speed up patient journeys in the therapeutic areas in which we operate."

- JANNEKE VAN DER KAMP

NOVARTIS
JANNEKE VAN DER KAMP

POSITION: HEAD REGION EUROPE
TYPE OF ORGANISATION: ROUTINE INTERVENTION MODEL

Novartis is a Life Science multinational company based in Basel. Novartis develops, produces and makes available medicines. In 2020, Novartis realised sales of $48.7 billion, with 105,000 employees worldwide. Novartis' mission is to reimagine medicine to improve and extend people's lives, by bringing more transformative medicines to patients in Europe and around the world. In Europe, Novartis is the largest pharmaceutical company. Novartis is a market leader in Europe, both in innovative medicines as well as in generic and biosimilar medicines, through Sandoz. In addition, Novartis has a broad manufacturing and R&D network across the European region, manufacturing from starting materials to finished products.

Novartis' medicines are used in approximately 180 countries. In 2019, Novartis delivered 72 billion doses to 800 million patients. Some well-known medicines developed by Novartis are: Cosentyx, Entresto, Zolgensma, Promacta/ Revolade, Kisqali and Kymriah.

The organisation has developed many other medicines and is involved in a large number of therapeutic areas.

As a pharmaceutical company, Novartis is in favour of defining and calculating the value of a medicine based on output rather than input. Instead of basing the price of a medicine on development and production costs, Novartis aims to refer to a combination of four types of values, which are: 1) clinical value, 2) patient value, 3) healthcare system value,, and 4) societal value . In this context, clinical value stands for improving the effectiveness, tolerance and safety of a medicine, patient value for improving outcomes that are important to the patient (e.g. Quality of Life), healthcare system value for improving outcomes that are beneficial to the healthcare system in question (e.g. reduction in number of hospitalizations), and societal value for improving outcomes that are beneficial to society (e.g. labour, productivity, care giving).

In practice, the principal factors taken into account when determining the price of a medicine are clinical value and healthcare system value. Societal value is actually rarely taken into account. It is unfortunate that, as a result, the full value of a medicine is not included or weighed in the valuation. For example, medicines that can improve the work productivity of a 40-year-old have more societal value than medicines that can only increase the work productivity of a 70-year-old. It is a societal choice to what extent such a difference should be included in the assessment of the price of a specific medicine; which should not be impacted by the silos between budget holders.

Measuring patient outcomes is fully integrated in the Novartis organisation, from fundamental research to medicine development. Over the past 5–10 years, the measurement of patient value in the form of PROMs (Patient-Reported Outcomes Measurements) has been included in clinical research.

Novartis observes that, in almost every therapeutic area, there is still too much time between first symptoms and optimal treatment. It therefore has demonstrated high willingness to collaborate with healthcare system stakeholders to speed up patient journeys for the patient's well-being.

Novartis is committed to this: e.g. of the approximately 8,000 employees of the Pharma Division in Europe, more than 500 are fully dedicated to achieving this. In order to achieve optimization for a particular disease, Novartis charts the entire patient journey: from first symptoms to treatment adherence. It then examines which key elements of the patient journey cause the most delay and how Novartis can contribute to reduce them.

As such, Novartis aspires to position itself in the healthcare sector as a reliable cooperation partner and an engaged stakeholder. By collaborating with a very large number of care institutions all over the world, Novartis has a unique international perspective and understands what works well and what does less. The organization also has specific knowledge and expertise in certain therapeutic areas (complementary to the expertise of other healthcare providers). With this approach and substantive background, Novartis enters into partnerships with healthcare institutions all over the world to improve the quality of care.

To contribute to the optimization of patient journeys, Novartis collaborates with various care institutions with a customer-in approach.

CHAPTER 2 - THE SENSE AND NON-SENSE OF VBHC IN PRACTICE

For example, the organization recently entered into a partnership with the National Health Service (NHS) in England to reduce the risk of cardiovascular disease at population level. Currently around 64,000 people in the United Kingdom die of cardiovascular diseases. Novartis has just received EU approval for a new medicine, which reduces ‘bad’ cholesterol levels. Partnering with the NHS England, Novartis is trying to make this drug available to the high-risk population as quickly as possible, which may eventually save many lives of patients with cardiovascular disease.

“It is refreshing to see that other stakeholders, such as the NHS, are also concerned about fighting against the low uptake of medication among high-risk patients and are willing to work together in this area.”

In Europe, Novartis has a strategic objective for the future: to accelerate patient journeys in therapeutic areas where Novartis has knowledge and expertise and for that, partnering with different stakeholders to develop new ways of creating wider access to medicines Novartis has entered into partnerships with various healthcare institutions in Europe. Novartis hopes to engage in more such collaborations in the future.

COVID-19 has caused a great deal of suffering in this world, but currently also offers opportunities for healthcare organisations to improve, because it provides insight into what does and does not work well.

“COVID-19 has brought many inefficiencies of care systems to the surface. This gives the various stakeholders involved and Novartis the opportunity to look for win-win adjustments.”

Novartis hopes to be able to prove itself in the future as a reliable cooperation partner, by successfully concluding various value-driven care agreements with different stakeholders. COVID may unintentionally have created the opportunity to clarify several bottlenecks and win-win situations, and may act as a catalyst in this context. There is also the hope that the example set by the NHS England will be followed in other countries, so that together more value can be generated for patients.

Article link: https://www.novartis.co.uk/news/media-releases/novartis-announces-intent-collaborate-nhs-england-tackle-burden-cardiovascular

2.4 WHAT DO THE CASES TELL US?

Based on the cases, we can state that VBHC principles have been applied in a variety of situations and for various medical conditions and that, in most cases, they have led to increased patient value (see Table 1).
So that's good news!

TABLE 1

CASE OVERVIEW WITH CONTEXT, VBHC APPLICATION, KEY ENABLERS, AND RESULT

	CASE #1	CASE #2	CASE #3	CASE #4	CASE #5	CASE #6	CASE #7
Categorisation	**CCN**	**PvP**	**NHR**	**Volante**	**Xpert**	**Karolinska**	**Novartis**
Context							
Disease	Cardio-vascular	Parkinson	Cardio-vascular	Mental healthcare	Hand and wrist	Various	Various
Complexity	Low and high	Very high	High	High	Low/mid	Very high	Varies per TA
Patient group	Hetero-geneous	Hetero-geneous	Homo-geneous	Hetero-geneous	Homo-geneous	Hetero-geneous	Homogene-ous per TA
Disciplines involved	Multi	Multi	Multi	Mono	Multi	Multi	Multi
Organization of own healthcare offering	Network	Network	Line	Tailor-made interventions	Line	Line & network	Routine Intervention
VBHC							
Measuring results	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Internal integration	Integration	Coordination	No	Coordination	Integration & coordination	Integration & coordination	n/a
External integration	Coordination	Coordination	No	No	No	Partly	Coordination
Change management	Structural	Ad hoc	No	Ad hoc	Structural	Structural	Ad hoc
Preconditions							
IT infrastructure	Present	Present	Present	Partly	Present	Planned	Partly
Link with financing	Indirect	Under development	No	No	No	Yes	Under development
Result							
Progress of implementation	Scaling up	Scaling up	Broad roll-out	Starting up	Broad roll-out	Broad roll-out	Upscaling
Impact on patient value	High	High	High	Not yet	High	High	High

However, there are also some learnings to be found in these cases:

1. **Outcome definitions resulting in lengthy exercise (scientific approach)**
   In practice, we see that outcome definitions can lead to a scientific endeavour of one or two years, without any substantial change in the short term. The case of Punt voor Parkinson (case 2) shows, for example, that lengthy discussions in this regard resulted in an unworkable questionnaire. After three years, they had a response rate of not more than 20% of the patients surveyed. In the end, with the help of patient focus groups, Punt voor Parkinson succeeded in reducing their outcome set to a select number of useful indicators that put the patient at the centre of care. This ultimately resulted in a workable situation that adds value for patients and healthcare professionals.

2. **Translating outcome insights into improvement actions is not always easy**
   Once an outcome set has been defined and measured, it turns out to be difficult to translate new insights into concrete improvement actions – definitely if the patient group is very heterogeneous or several uncontrollable factors influence the result. According to the Dutch Heart Registration (NHR) (case 3), there is the risk of analysing a lot of data without improving the quality of care or initiating improvement actions. If patient outcomes only manifest themselves in the long term, steering and improving based on outcomes is even more difficult, if not impossible. Similarly, Volante's case (case 4) shows that it is a challenge to translate outcome measurements into care control and improvements.

Their care data collected over a longer period of time still need to be normalised before it can be compared. All in all, if outcomes are not unambiguous, or if underlying correlations are unclear, it takes a lot of effort to demonstrably improve healthcare outcomes or reduce healthcare costs.

3. **Integration of care appears to lead to faster results (pragmatic approach)**
   In the cases featuring integration of the care pathway, organisations seem to achieve rapid results because miscommunication, overtreatment and undertreatment are quickly identified. In addition, patients are put more quickly on the right treatment pathway, thanks to a better overview by and between the parties involved. Clear examples of this are Punt voor Parkinson (case 2), Cardiologie Centra Nederland (case 1), and Xpert Clinics (case 5). The Karolinska Institute (case 6), which has internally integrated 140 patient pathways, also states that a single person who has an integrated vision and full overview of the pathway is needed to ensure changes are implemented efficiently and effectively.

4. **There is usually no hard integration, as we often see coordination**
   In many cases, there is no single patient pathway and we see that hard integration (i.e. transformative integration in which all processes and systems are fully interconnected) between departments and/or care providers is impossible or not beneficial. A heterogeneous patient group leads to coordination of care rather than integration of care.

In the case of co-morbidity (Punt voor Parkinson (case 2)) and/or multidisciplinary interventions within or outside of the healthcare provider organization (Cardiologie Centra Nederland (case 1) and Xpert Clinics (case 5)), coordination certainly seems far more obvious than integration. A company such as Novartis (case 7) also focusses on better alignment and coordination of the care provision for disease areas they have in focus, by working out patient pathways and entering into partnerships.

5. **Data infrastructure is an important precondition**
   In all cases, a data infrastructure is present; in some cases, this is a proprietary self-developed application or functionality (Cardiologie Centra Nederland (case 1), Xpert Clinics (case 5)). Although, for most parties the data infrastructure is mainly limited to their own organisation, it is a very important precondition and the basis for the success achieved. So far, we have seen only a few examples of a broader data infrastructure within the entire care chain or care network. Integration of data infrastructures across multiple healthcare providers naturally becomes more difficult when parties have specific proprietary data infrastructures and solutions. Although, technical problems here often can be overcome, the largest bottleneck is the use of different datasets and definitions.

6. **Direct link with reimbursement is often missing**

   Only few organisations are already trying to directly link reimbursement with outcomes. The only case where there is concrete evidence of this is Punt voor Parkinson (case 2). To be able to make comprehensive agreements about the organisation and reimbursement of care for Parkinson's patients, Punt voor Parkinson has given the payer insight into their outcomes and costs dashboard. Sometimes payers try to establish an indirect link with reimbursement by allowing high-quality care providers to grow in volume or to grant them extra volume, but in practice this is not evident either (Cardiologie Centra Nederland (case 1), Xpert Clinic (case 5)). Reimbursement based on outcomes is often difficult for the same reasons that make internal control based on outcomes difficult (see point 2). These are: heterogeneous patient groups, an outcome that depends on several factors, and an outcome that is difficult to measure or only measurable in the longer term. What quality does one measure, what is the link with the delivered performance and intervention, and what is it supposed to cost? These questions prove difficult to answer in practice. This is also hampered by silos in the care budget, which also has another effect, as explained in the next item.

7. **Silos in the budgets stand in the way of innovation and scalability**

   Many cases show that the silos in the healthcare budgets stand in the way of innovation adoption because there is no integral view on the care pathway, and therefore no total cost of ownership. For example, it is quite common that an innovation to be financed with budget 1 will yield a return in an area covered by budget 2, leading to reluctance to make the investment with budget 1 – resulting in opportunities for quality improvement and cost savings being missed.

This is, for example, highlighted by Punt voor Parkinson (case 2). Another effect that plays an equally important role, is the over-reliance on human goodwill. Many improvements are ultimately not financially rewarded due to the lack of communicating vessels between budgets and the lack of an integral quality and costs overview of the medical condition. This makes many VBHC initiatives and innovations dependent on the intrinsic motivation and goodwill of people. In other words, improvements happen *in spite of*, rather than *because of* the reimbursement system. This stands in the way of accelerating best practices and facilitating upscaling, resulting in fragmentation characterised by numerous local pilots and initiatives that never make it to the national level..

8. **Make tangible improvements transparent to drive an improvement culture**

   Making sure tangible improvements are transparent, and linking them to decision-making and behaviour, drives an improvement culture and lays the foundation for change management. Integrating insights into daily care practice and consultation structures provides direction and meaning. In addition, the cases show that the applied methods increase the job satisfaction of employees. If employees know that an organisation creates value for the patient and they see improving results, their motivation increases (Cardiologie Centra Nederland (case 1)). There are examples of care providers who, precisely because of this clear vision, succeed in attracting more motivated staff, because they can relate to the defined ambition. In the large-scale VBHC-driven change that Karolinska Institute (case 6) went through, the project management consistently returned to their *'Patient First'* starting point, to overcome resistance and maintain momentum.

9. **Keep it manageable**

   VBHC initiatives must be implemented from an improvement and change mindset. Change management and communication are at least as important as the right substance and a good design. It is important to define a clear but also manageable ambition. Do not try to boil the ocean, it is not all or nothing, dare to start and build on what you have achieved. Do not get stuck in endless thinking and academic evidence either. Get to work, learn along the way, and dare to adapt. This is how Volante (case 4) started a top-down initiative with a clearly defined scope and sought to involve professionals. The Karolinska Institute (case 6) exemplifies the establishment of an inspiring vision (*Patient First*), but also the complexity of a top-down approach and change at large. Approximately 140 care pathways have been defined and implemented simultaneously. This required a very extensive organisational change effort, which ultimately resulted in a lot of internal and external resistance, great organisational fatigue, and partial regression to the old situation.

10. **Broaden the support base among healthcare professionals**

    In order to arrive at practical solutions and a different way of working, broad support within the organisation (and outside, in the case of chain integration) is essential. It is important to include not only medical specialists but also nursing staff in the change process. On the one hand, an organisation should approach VBHC top-down with a clear vision and endorsement from management. On the other hand, bottom-up opportunities must be sought to put the vision into practice, and here the healthcare professionals play a very important role.

Good communication and finding the right balance between top-down and bottom-up are crucial. It is worth realising that certain tasks or work activities may become obsolete in the search for efficiency and quality improvements. An improvement process very often involves a group of 'losers', at least in the short term. Leadership should accept the fact that this group can create a lot of resistance, must anticipate this situation, and manage this group to prevent obstruction to progress. Dissatisfied people usually make more noise than satisfied ones, creating the risk that the initiative will be discredited, not only inside the organisation but also outside (Karolinska Institute (case 6)). Throughout these change processes, it is important to be in constant dialogue and to identify potential 'losers' in good time and not ignore them. A broader vision that goes further than today, in which 'losers' may be able to play a different role, can be helpful in this. In any case, it is important to develop a proactive internal (and sometimes external) communication and change strategy, next to appropriate scope and content of the programme. A good balance between these aspects is important. Experience shows that the focus is usually 80% on the content of the programme and only 20% on change management. This is an important reason why the intended change often stagnates.

2.5 VBHC IN ITS PURE FORM IS NOT APPLICABLE EVERYWHERE

VBHC is certainly not the answer to everything. We already saw in section 1.3 that VBHC primarily focusses on improving the care delivery and is not so much about optimising the demand for care. In addition, through the case studies, our daily experience and further theoretical considerations, we see that VBHC in its *pure form* is not always applicable in every situation, nor always sensible to deploy. VBHC is not one-story fits all.

In the following chapters, we will examine more closely the applicability of VBHC in its pure and less pure form. We will outline some important frameworks to determine when VBHC is indeed a useful concept to organise the care delivery more efficiently or effectively, and when it is not.

In short, in which situations does VBHC provide the right treatment?

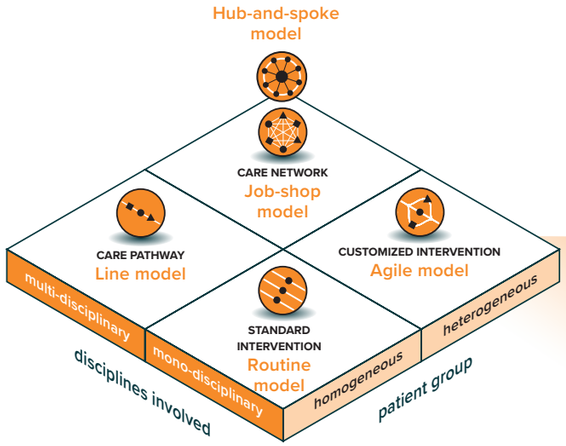
CHAPTER 3

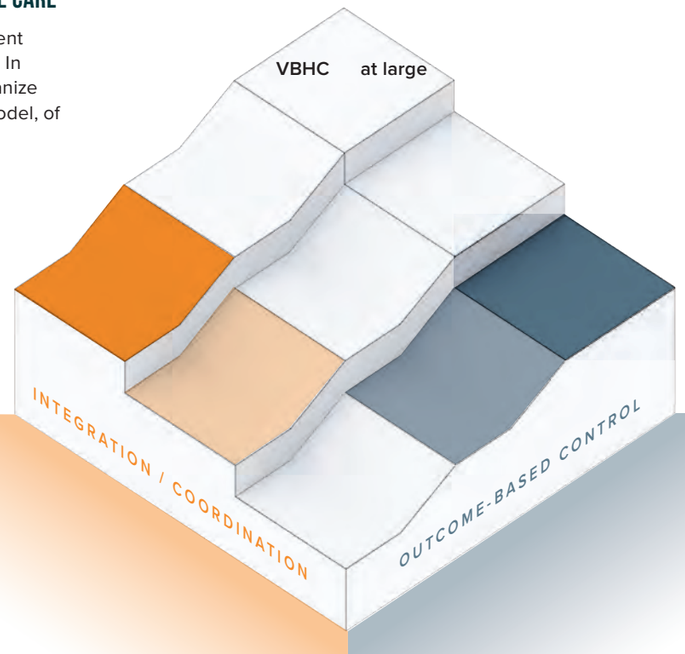
VHBC, WHEN TO APPLY IT AND WHEN NOT

GUIDING PRINCIPLES FOR APPLYING VBHC

DISCIPLINES INVOLVED AND PATIENTS CHARACTERISTICS DETERMINE HOW WE ORGANISE CARE

The determining factors for the most logical care organisation model for a specific patient pathway are: homogeneity of the patient group and the number of disciplines involved. In case of a heterogeneous patient group requiring multiple interventions we cannot organize care in a single pathway, i.e. line model, and we might need the more agile job-shop model, of which the hub-and-spoke model is the improved version.





OUTCOME-BASED CONTROL NOT FOR EVERY MEDICAL CONDITION

Managing, improving, and reimbursing based on patient outcomes is particularly challenging in the following situations:

The patient group is heterogeneous

The patient group is co-morbid

The patient volume is not large enough

Patient-relevant outcomes are influenced by several factors

Patient-relevant outcomes are difficult to attribute to the intervention(s) performed.

The results cannot be measured unambiguously

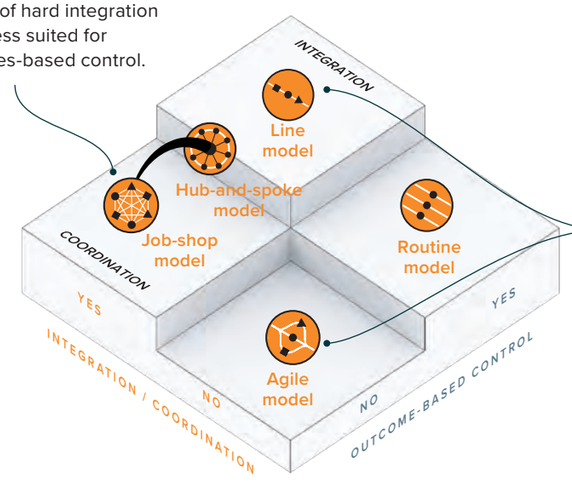
The results will only manifest themselves in the long term

High degree of innovation in diagnostics and/or treatment

ORGANISATION MODELS HAVE DIFFERENT VBHC APPLICABILITY

The different organisational models have different VBHC applicability.

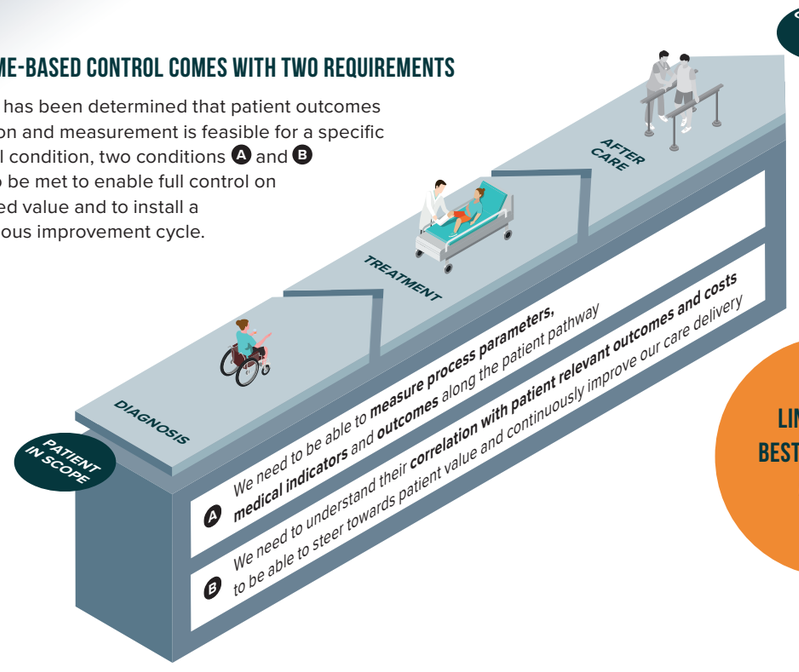
The job-shop model requires coordination instead of hard integration and is less suited for outcomes-based control.



The two extremes are the **agile model**, with limited possibility for outcomes-based control and no need for integration, and the **line model** that lends itself for VBHC application at large, i.e. both outcomes-based control and integration.

OUTCOME-BASED CONTROL COMES WITH TWO REQUIREMENTS

Once it has been determined that patient outcomes definition and measurement is feasible for a specific medical condition, two conditions Ⓐ and Ⓑ need to be met to enable full control on delivered value and to install a continuous improvement cycle.



LINE MODEL IS BEST FIT FOR VBHC AT LARGE

3.1 VBHC: THINK SMART BEFORE YOU START

The most fundamental question an organisation must first ask itself is: is our situation suitable for VBHC in its pure form? In other words, suitable for the control and reimbursement of patient-relevant outcomes and for organising and integrating care around the medical condition, both with the aim of increasing patient value? Or should we limit ourselves to the adoption of a few selected VBHC principles?

Next, an organisation must decide on the purpose and focus of the desired VBHC change. Where can the most patient value be gained, and where is the most patient value currently lost? When answering this, patients should be involved to understand what they find important and what their experiences are. Very often, patients mention other things to be more relevant or important than what one would anticipate upfront. For example, in a study on home administration of chemotherapies, the majority of patients[7] unexpectedly preferred the hospital over home treatment, because of safety and confidence reasons (see Figure 5). It should however be kept in mind that with every care innovation the simple rule applies: unknown makes unloved. The appetite and adoption of an innovation can change once patients and professionals have become more familiar with it.

Lastly, an important question that an organisation must ask itself is: what do people want to change most and where is enthusiasm? Are there anticipated gains and momentum around insights into outcomes (the medical/scientific approach), integration and cooperation (the logistical/practical approach), or both (see Figure 4 on page 31)?

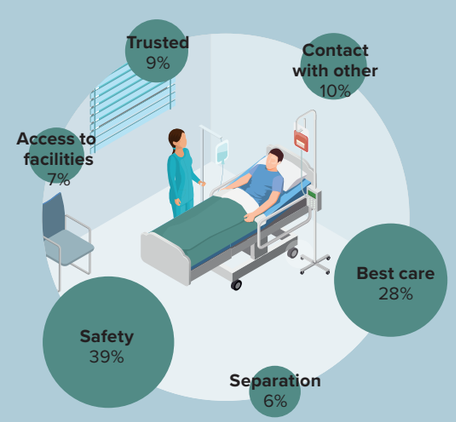
7 Care@Home project with 3 hospitals, Roche and Vintura, 2018 - 2019, and also https://nfk.nl/resultaten/willen-kankerpatiënten-liever-behandeling-thuis-of-in-het-ziekenhuis

FIGURE 5

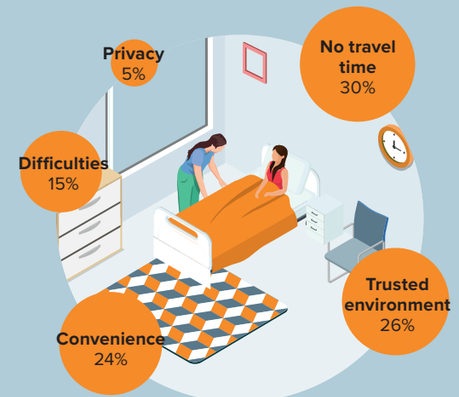
PATIENT PREFERENCE

PRE-COVID

Patient preference for hospital or home treatment with chemotherapy.



Reasons for hospital treatment



Reasons for home treatment

The logistical/practical approach might prove to be a big step to take at once, especially when it comes to hard integration (i.e. transformative integration in which all processes and systems are fully interconnected leading to a fully integrated care pathway). The good news is that a hard integration is not always applicable or necessary – we will discuss this in further detail in section 3.3.

Whether the situation lends itself to VBHC in its pure form, and where the focus should be, strongly depends on the medical condition and the patient group. We will cover this in more detail in the following sections.

3.2 MANAGING PATIENT OUTCOMES: NOT FOR EVERY MEDICAL CONDITION

In the cases in section 2.4, we saw that measuring and controlling patient relevant outcomes can be unruly in practice. Parties can spend too much time on outcome definitions, resulting in long scientific questionnaires that are not useful in practice. If an outcome set is defined and subsequently measured, it is not always an easy straightforward task to translate the insights into actions for improvement or to make a statement about the quality delivered and the corresponding costs involved.

Managing, improving, and reimbursing based on patient outcomes is particularly challenging in the following situations:

1. The patient group is heterogeneous
2. The patient group is co-morbid
3. The patient volume is not large enough
4. Patient-relevant outcomes are influenced by several factors, which are not only related to the intervention(s) made
5. Patient-relevant outcomes are difficult to attribute to the intervention(s) performed.
6. The results cannot be measured unambiguously
7. The results will only manifest themselves in the long term
8. There is a high degree of innovation in diagnostics and/or therapeutic intervention[8] (as a result of which the clinical guidelines, the standard of care, and an eventual best-in-class benchmark are constantly changing)

8 This does not refer to improving an existing intervention, because that is exactly what VBHC is all about.

In these cases it may be helpful not to consider the entire patient pathway, but to isolate the part that the organisation can influence, and to focus on interim results that are relevant to the patient. This can potentially lead to sub-optimalisation, as the sum of the intermediate results may not produce the desired result for the patient. Yet, this is the concession we need to make to be able to steer at all. Nonetheless, it is important to maintain a holistic patient overview and to follow-up on the end result, seeking to understand how it correlates to intermediate results. Managing an interim result with a patient centric focus therefore requires, by definition, coordination and transparency of the end result.

In addition, it is important that medical indicators, process parameters and the intended patient-relevant (interim) outcome can be correlated. If these correlations cannot be made, we are measuring without reason. This is not a sensible exercise, unless we are looking for unknown unknowns – but that would be science and not healthcare. From the onset, it must be clear which concrete method will be used for correlating medical and process parameters with patient outcomes. If the method is unknown, it should be a clear part of the programme to determine or sharpen these correlations. In this sense, the VBHC improvement cycle could require a two-stage process: first, measure to understand underlying correlations; second, measure to positively influence medical and process indicators to continuously improve patient outcomes (see Figure 6). This distinction, and understanding what we know and do not know, is important before an organisation starts with defining and measuring patient-relevant outcomes.

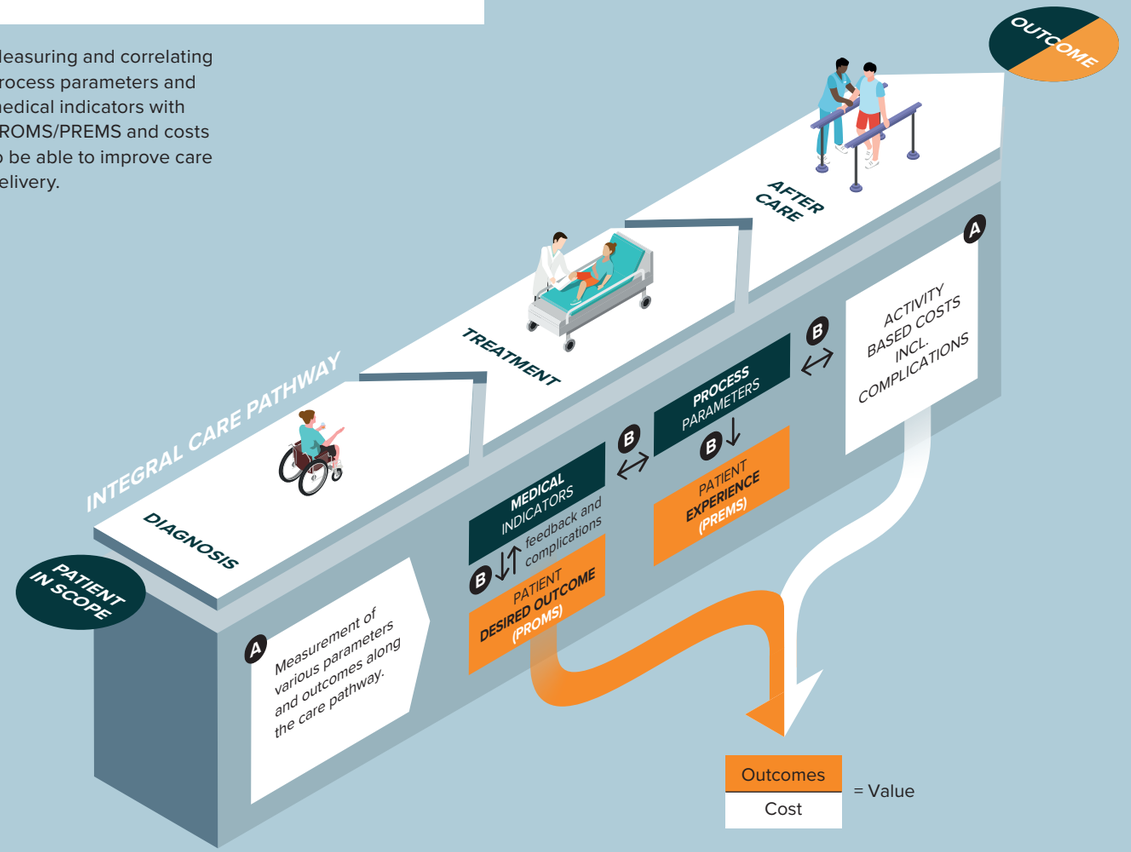
At the start, the following qualifying questions play an important role:

A. How simple and meaningful is it to perform outcome-based control for this medical condition and this patient group (check situations 1 to 8 at the beginning of this section)?
B. What is a patient-relevant outcome, and have we sought patients' input on this?
C. Is there already an outcome set available, for example from ICHOM?
D. Do we know whether the patient outcomes are (directly) influenced by the treatment or the intervention? Are all the patient outcomes influenced, or only some of them?
E. Do we understand the correlation between process and medical indicators and the patient outcome (see Figure 6)?
F. Can we control these indicators? Can they be influenced to achieve the desired patient outcome?
G. Can we already use the measured patient outcomes to fine-tune the individual treatment plan? Or can these measurements and insights only be used to improve the treatment of future patients?
H. Do we need to measure to better understand correlations or to steer towards better patient outcomes? At what level of understanding are we?

FIGURE 6

MEASUREMENT AND CORRELATIONS ALONG CARE PATHWAY

Measuring and correlating process parameters and medical indicators with PROMS/PREMS and costs to be able to improve care delivery.



A We need to be able to **measure process parameters, medical indicators,** and **outcomes** along the patient pathway.

B We need to understand their **correlation with patient relevant outcomes and costs** to be able to steer towards patient value and continuously improve our care delivery.

Hopefully, in the future, artificial intelligence will help us uncover correlations in the complex world of multi-factorial influenced care processes, disease mechanisms and patient outcomes, and thus provide us with new insights (particularly regarding questions D and E). So far, the once promising IBM Watson initiative has not yet delivered its intended result[9]. However, as technology progresses and more advanced algorithms are developed, we will eventually learn more and more about disease mechanisms and correlations between outcomes and (lifestyle) interventions. For now, a broad and integrated application of smart and self-learning algorithms to support diagnostics, treatment choices, process control and disease monitoring is still far off.

Furthermore, we must not forget that, in outcome measurements, it is a significant challenge to ensure that patients continue to fill out questionnaires and do so at the right quality. In particular, when questionnaires are too long, the response rate drops sharply over time (e.g. Punt voor Parkinson (case 2) had a response rate of less than 20% after 3 years). Although this is not disease-specific, it can be said that as a disease becomes more complex (necessitating longer questionnaires[10]) and more chronic (necessitating questionnaires long-term), proper patient response becomes increasingly challenging.

In short, managing care based on patient outcomes sounds like a noble and logical aim. At first sight it is a tempting proposition, and it should definitely be pursued where it makes sense and where it is feasible. Yet, no matter how obvious it may seem, putting this into practice is another matter. It pays to think carefully in advance about what the patient outcome measurement intends to achieve and how feasible this will be.

9 https://spectrum.ieee.org/biomedical/diagnostics/how-ibm-watson-overpromised-and-underdelivered-on-ai-health-care

10 Or multiple questionnaires for different comorbidities, which include partly overlapping questions, asked at different moments

11 An Integrated Practice Unit (IPU) is defined as "organised around the patient and providing the full cycle of care for a medical condition, including patient education, engagement, and follow-up and encompass inpatient, outpatient and rehabilitative care as well as supporting services" (quoted from Turning teams and pathways into integrated practice units: Appearance characteristics and added value, NCBI, WH van Harten, MD, PhD, 2018). Hereby the following applies: "The unit has a single administrative and scheduling structure. The team measures outcomes, costs, and processes for each patient using a common measurement platform. Joint accountability is accepted for outcomes and costs" (quoted from The Strategy That Will Fix Health Care, Harvard Business Review, Michael E. Porter and Thomas H. Lee, 2013). When we look at these definitions, a specialized private clinic or integrated care delivery line (e.g. for hip replacement) is the clearest example of an IPU.

CHAPTER 3 - VBHC, WHEN TO APPLY IT AND WHEN NOT

Both process parameters and medical indicators need to be measured in order to be able to steer the medical process and treatment. However, as we have seen, the translation into patient outcomes is not always obvious. Sometimes a solution may be to consider all underlying correlations (as depicted in Figure 6) as a black-box and, all other things being equal, structurally change one parameter and measure the effect on the end result: the desired patient outcome.

Finally, we would like to point out that, although the direct translation cannot always be made, it may still be valuable to discuss and possibly measure patient-relevant outcomes. Discussing the patient's desired end result helps to raise the awareness of both the practitioner and patient. This awareness helps to maintain the right focus during treatment and recovery, which can have a positive effect on the patient's involvement and experience, and therefore on the result.

3.3 CARE INTEGRATION: THE NATURE OF TREATMENT AND PATIENT DETERMINE HOW WE ORGANISE CARE

The Integrated Practice Unit (IPU)[11], as described by Porter, is an attractive image and once again sounds very logical. However, therapies with a single patient pathway or a few patient pathways are rare. Complex and manyfold patient pathways are the reality in the case of co-morbidities, but also in the case of a heterogeneous patient group within a single disease area. The number of disciplines involved also plays a role. By definition, the more care providers and disciplines that influence the result, the more complicated the patient pathway and the more difficult hard integration of processes and systems becomes.

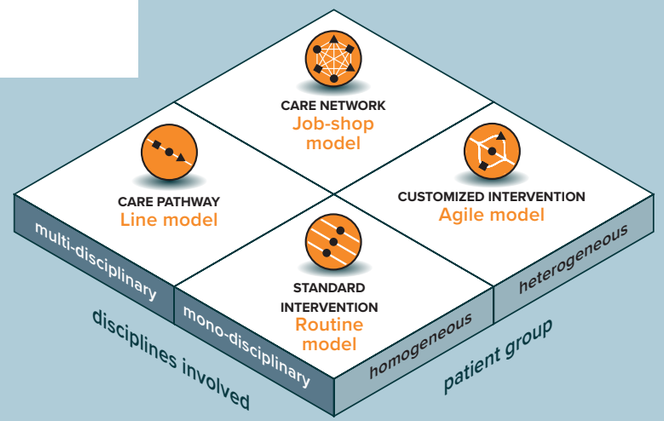
This often results in managing care based on interim results, which requires transparency and coordination around the final patient outcome in order to avoid sub-optimalisation.

The above considerations lead us to a segmentation of medical conditions, based on which the most logical care organisation model for a patient pathway can be determined. The organisation model can be applied internally by a specific healthcare provider if the patient pathway (or relevant part thereof) is located exclusively within the own organization (see cases 4 and 6: Volante and Karolinska). It may also be applied between several healthcare providers (see cases 1 and 2: Cardiologie Centra Nederland and Punt voor Parkinson). The determining factors for the most logical care organisation model of a patient pathway are homogeneity of the patient group and the number of disciplines involved (see Figure 7).

FIGURE 7

CARE ORGANISATION MODELS

The different care organisation models based on patient group characteristics and the number of care disciplines involved.



One would expect that the ease of planning of care also, plays an important role. Since volatility demands flexibility, the intuitive thought is that hard routines and integral processes do not go together well with the unplanned setting. However, it is precisely when one needs to switch quickly between actions, that there is a need to follow known and proven processes and routines. There is no time to reinvent the wheel. The flexibility, in this case, does not come from the process or the underlying routines themselves, but the availability and scheduling of the resources that must run the process.

For example, emergency care is by definition unplanned. In the first part of the process, the patient group is still homogeneous (i.e. non-differentiated emergency patients) and the process is completely routine based. After qualification on arrival at the Emergency Unit, the patient group becomes heterogeneous and there are no longer fixed routines or uniform processes that apply to all patients. It is therefore not the unpredictability of care but the nature of the patient group that determines how the care is organised.

In the following sections, we will further explain the four organisational models depicted in Figure 7 and assess their VBHC applicability.

3.3.1 THE AGILE MODEL IS USUALLY UNSUITABLE FOR VBHC

The extensive variation of a heterogeneous patient population for which tailor-made monodisciplinary interventions are carried out makes setting a care standard impossible. As a result, measuring and comparing outcomes and results is futile.

Unless a specific customised intervention occurs so often within a heterogeneous population that it can be considered a homogeneous subpopulation, in that case normalization could be possible.

An example of a care setting that fits the agile model, is a single occasional intervention by the general practitioner. General practice is organised around pluralism and a multitude of single occasional interventions and referrals. This is in contrast to, for example, the dental practice, which deals with a completely different demand for care and therefore uses a different organisational model – the routine model (see section 3.3.2).

By definition, for an occasional single clinical procedure, there is no need for process integration. The most integration the organisation might expect would be in terms of data infrastructure that facilitates transparency, communication and administration. It is a different situation when the occasional intervention is part of a larger set of interventions and, thus, involves a patient pathway. In such a case, the treatment is no longer monodisciplinary, and integration or coordination with other care providers could make sense (see sections 3.3.3 and 3.3.4).

In short, the VBHC principles are not, or only to a limited extent, applicable in a care setting with an agile model.

3.3.2 THE ROUTINE MODEL IS SUITABLE FOR STEERING OUTCOMES

The situation of a homogeneous patient group receiving a mono-disciplinary intervention can be defined as a routine model. This is a standard intervention that can be optimised with patient outcome measurements, provided that the correlation with the intervention parameters is known or can be established.

In the previous section, we mentioned the dental practice, an example of a routine model. Other examples of routine models involve procedures such as physiotherapy after specific injuries, psychological treatment of single disorders (ADHD, PTSD) and cataract surgery. The pharma intervention is also a routine model, which will be discussed in more detail further down in this paragraph.

Even in care settings based on a routine model, one must consider whether outcome measurement is truly meaningful and unambiguous:

- Most dental procedures have such low complexity that there is hardly any variation in quality. The only reason to apply outcome measurement could be to flag over-treatment or under-treatment (with preventative interventions) or, in the case of more complex interventions, when complications occur.

- In psychology practices, the patient outcome is sometimes difficult to measure and is influenced by many elusive factors. This makes the correlation between treatment and outcome often unclear. Nevertheless, patient outcome measurement (by means of patient-reported outcome measurements (PROMS)) can be useful and is already being put into practice. Given that large patient volumes are involved, it is possible to make statistical assertions without understanding all the underlying mechanisms in detail. In this setting, however, it is important that patient (sub)groups and associated treatments are somewhat standardised and normalised.

- Cataract surgery, and physiotherapy after a specific injury, are examples of routine interventions where outcomes (per sub-indication) can probably be defined and measured most clearly. On this basis, therapies can be continuously improved, and the sense and non-sense of certain treatments can also be revealed.

To summarize, in the case of a single routine intervention, the VBHC principle of ‘measuring and managing patient-relevant outcomes’ is particularly applicable. Control of care consists of intervening in the care process based on continuous monitoring and reimbursement based on patient-relevant outcomes (rather than based on volume). For a single routine intervention, integration does not primarily play a role, but it could play a role. To this end, the healthcare provider will need to proactively look for the line model (see next section) or job-shop model (see section 3.3.4), within which he can add patient value with a stand-alone routine procedure. This could be, for example, a physiotherapist who expands into orthopaedic care (i.e. line model) by offering post-operative rehabilitation or pre-operative rehabilitation therapy.

Finally, a party that is struggling with measuring the effect of a single routine intervention is the pharma industry. With the exception of the currently emerging personalised medicine, pharma companies provide a pure routine intervention. After all, the patient population, the indication and the pharmaceutical intervention are clearly defined. However, the pharmaceutical intervention rarely acts alone, and the patient outcome is often influenced by multiple factors and interventions. This poses serious challenges regarding outcomes definition, measurement, and outcome-based reimbursement of the pharmaceutical intervention (more about this in chapter 5).

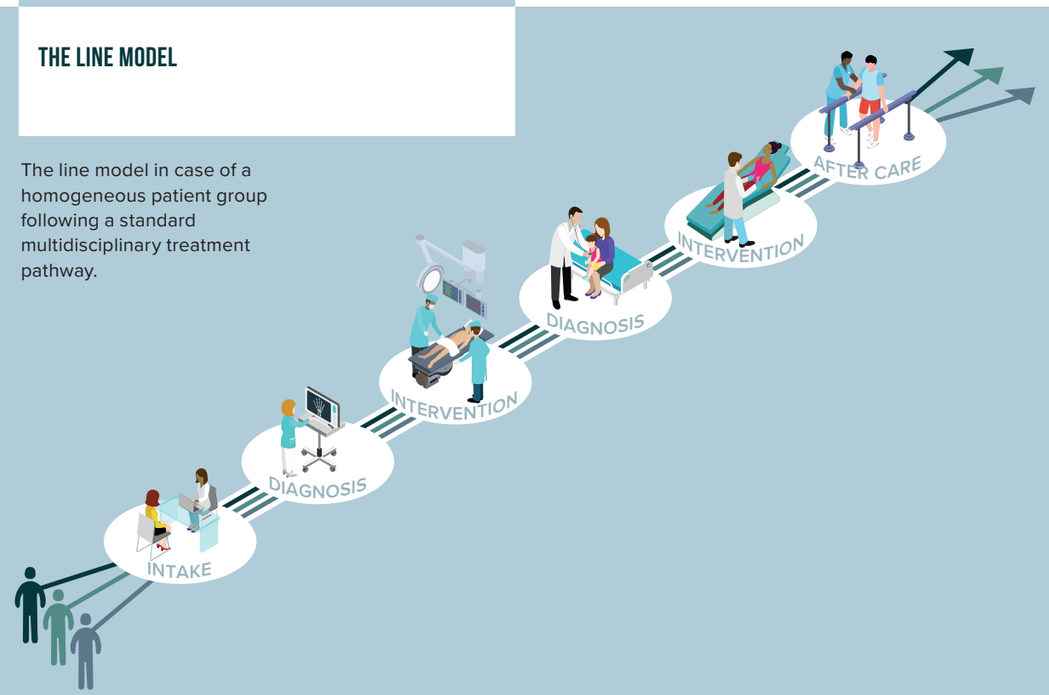
3.3.3 THE LINE MODEL IS THE VBHC 'SWEET SPOT'

A homogeneous patient group, or a collection of homogeneous patient subgroups, that undergoes a series of multidisciplinary diagnostics and medical interventions in an unambiguous and predictable manner, is the ideal setting for VBHC in its 'pure form' (see Figure 8). This setting is characterised by a clearly defined care pathway in what we call the line model. This enables establishment of an integrated care pathway or Integrated Practice Unit (IPU).

FIGURE 8

THE LINE MODEL

The line model in case of a homogeneous patient group following a standard multidisciplinary treatment pathway.



In the line model, it is worthwhile to determine the integral contribution of all interventions by measuring the delivered patient value at the end. Because the (sub-)group is sufficiently homogeneous and all patients follow a pre-defined patient pathway in an (almost) identical way, it is possible to standardize and normalize the interventions. This enables results to be compared, differences to be revealed, and correlations between medical parameters, process parameters and patient results to be identified. With these insights, interventions can be improved and steered towards optimal patient outcomes. In this way, the *effectiveness* of an integrated patient treatment, and therefore the quality, is increased *by doing the right things*.

When a patient pathway follows a route that can be determined in advance, it also makes sense to link the care processes and systems in a far-reaching way through hard integration. This integrated process must be optimally supported by a data infrastructure, so that an integral picture of the patient and the treatment is created on the basis of continuous monitoring. This often results in enormous efficiency gains because, there are no longer any unclear, time-consuming transitions where information may be lost, or where miscommunication or errors might occur between process steps. Moreover, there is no risk that certain steps in the care process are potentially taking place in the wrong order. Hard integration of processes comes at the expense of flexibility, but because of the predictability of the care pathway this is not necessary. It is clear to everyone how the process works, for both practitioner(s) and patient. All these factors together increase the *efficiency* of patient treatment, and thus cost effectiveness, *by doing the things right*.

In addition, insights into outcomes and an integrated process reinforce each other because both ensure that it is much clearer where an intervention is needed or where improvement is possible. It also becomes possible to implement reimbursement based on outcomes in the form of *bundled payments*[12]. This is the ideal scenario for maximum control and improvement of patient value and is fully in line with the VBHC basic principles. Regrettably, such an ideal set-up cannot be applied to every medical condition. Fortunately, though, there are many medical conditions that are suitable, for example, specialised clinics for hip and knee transplantation, hand and wrist surgery (Xpert Clinics (case 5)), prostate cancer (Martini Clinic in Germany) and breast cancer (Alexander Monro Hospital in the Netherlands).

In short, the line model is where the pure VBHC principles can be applied in all their glory! What if a line model is not immediately obvious, though? In that case it would be worthwhile to investigate whether a homogeneous subpopulation with sufficient volume can be defined, for which it makes sense to opt for such a set-up. One example for such an approach is an inguinal hernia pathway in a hospital. Sometimes it may make sense to organise only part of the treatment pathway for the total patient population according to a line model. Of course, this involves risk of sub-optimalisation (see section 3.2). We often see that generic functions, such as radiology, are a shared functionality. For this reason, it is usually not worth configuring these functions specifically for one single care pathway in a line model set-up. A generic function can disrupt the flow of the integrated care pathway, and vice versa, leading to organisational sub-optimalisation. It is important to take this aspect into account when implementing VBHC.

12 A bundled payment is a payment based on upfront agreed quality and costs of a total treatment process. This payment is done to a care provider that acts as main contractor, or to a consortium of care providers. Hereby, the underlying disciplines and/or departments take joint responsibility for the overall costs and end-result, and get compensated based on their individual contribution to this.

In order to justify an organisational set-up according to a line model, a minimum patient volume is required. If the volume turns out to be insufficient, regional or national concentration of treatment is worth considering. Concentration does not always need to take place physically but can also take place virtually through mutual agreements and distribution between centres. Of course, cooperation and (political) support are important preconditions for such a national or regional change. It may be argued that proof for this must first be delivered. However, concentration (assuming that local availability does not play a role) and care organisation according to a line model both naturally lead to higher efficiency and quality, thus such resistance seems pointless. These are examples of change that are intuitively clear and do not need a priori proof or measurements. In addition, there are numerous examples of good practice that have already been implemented (see also the cases described earlier).

3.3.4 JOB-SHOP MODEL, THE INTRODUCTION OF VALUE-MANAGED HEALTHCARE (VMHC)

For heterogeneous and co-morbid patient groups, it is difficult to achieve comparable results and therefore it is also difficult to compare patient-relevant outcomes as a basis for care improvement or reimbursement. There are no outcomes at a holistic patient level, at best we have partial outcomes at underlying line-models or routines, potentially leading to sub-optimalisation (see section 3.2).

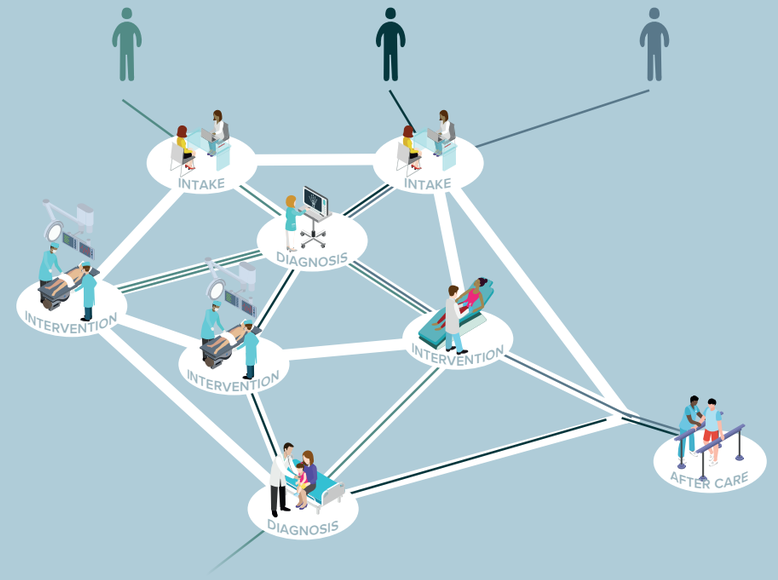
In addition, heterogeneity means multidisciplinary diagnostics and a multitude of interventions that patients go through in many different ways. In other words, there is not a single unambiguous patient pathway, nor even a few.

So, there is no point in implementing hard integration of care steps and processes that disregards crucial differences between patient pathways. The need for flexibility creates a network of customised and routine diagnostics and interventions through which patients move in a criss-cross fashion. From a logistical perspective, such a situation, in which different interventions can be performed in different sequences, is called a job-shop model (see Figure 9).

FIGURE 9

THE JOB-SHOP MODEL

The job-shop model in case of a heterogeneous patient group following a customized multidisciplinary treatment pathway.



A job-shop without a manager becomes chaos. Nevertheless, many care processes are carried out and 'managed' in this way, due to the nature of the patient group and/or the medical condition.

No one has a complete overview, and the patient is potentially sent from pillar to post. Information flows are also unclear, leading to miscommunication or loss of information. In addition, there is no overall responsibility for the end-result. This is not an ideal situation for providing steer on efficiency, quality and patient-relevant outcomes!

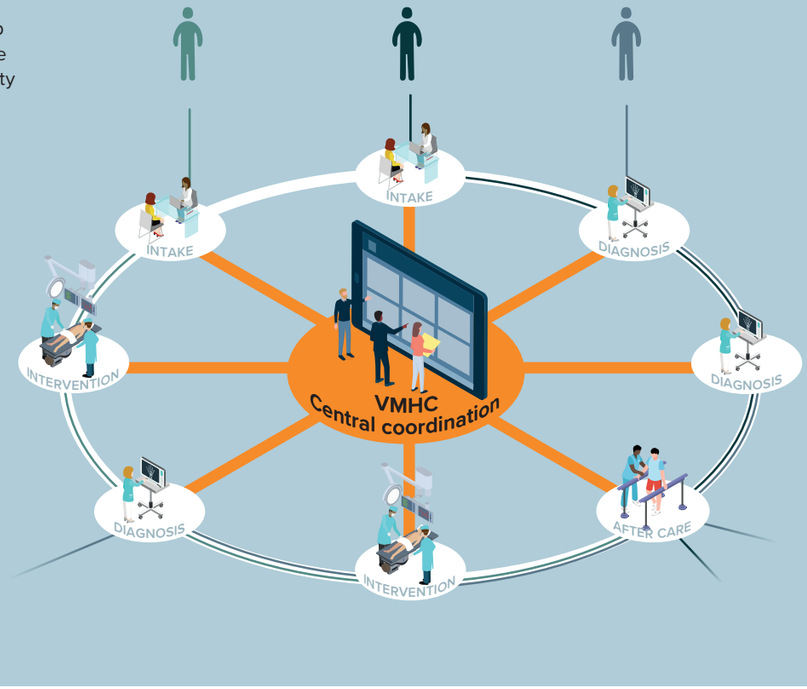
However, if we interpret and position VBHC more broadly, there is a solution for such a care situation in which a great deal can be gained. Instead of hard integration leading to an Integrated Practice Unit (IPU), one should opt in this case for coordination, or virtual integration: the introduction of a ‘job-shop manager' who follows the patient and keeps an overview of the customised patient pathway. Value-Managed Healthcare (VMHC) instead of Value-Based Healthcare (VBHC)! This streamlines all care interventions around the patient’s condition, provides overview, and creates insight into how partial outcomes add up to an overall patient outcome.

In the cases from section 2.3 we see compelling examples of this. Cardiologie Centra Nederland (case 1), Punt voor Parkinson (case 2) and Xpert Clinics (case 5) have all introduced central patient coordination and all talk about the efficiency and quality gains this has provided. In fact, the organic job-shop model is being translated and converted into a structured hub-and-spoke model (see Figure 10).

FIGURE 10

HUB-AND-SPOKE MODEL

Transition from the job-shop model to the hub-and-spoke model creating the possibility for **Value Managed Healthcare** (VMHC).



A central coordination point ensures that consolidation, overview and control are created of the patient population, all individual care process steps for each patient, and all related information flows. In principle, patient pathways and the underlying diagnostics and interventions do not need to be organised differently, which is a great advantage from the perspective of change management. A crucial precondition that does need to be considered is a supporting data infrastructure. Sometimes an extra layer built on top of existing IT systems is already sufficient.

Cardiologie Centra Nederland (case 1) and Punt voor Parkinson (case 2) are good examples of how VMHC came into being and how it works in practice when there is a job-shop-like care delivery situation. Both organisations have introduced a coordination model to organise their care better. Coordination and alignment take place across the boundaries of their own organisation, including primary and secondary care. Cardiologie Centra Nederland does this for a medical condition with low complexity and Punt voor Parkinson for a highly complex patient group.

It should not stop with these examples! It is surprising, and actually unacceptable, that a great initiative such as Punt voor Parkinson has difficulties scaling up their initiative to a national level due to reimbursement issues and conflicting interests. There should be an overarching and accepted vision of how we organise and manage these organic care processes within our healthcare systems. We will describe what VMHC can look like from the point of view of elderly care in chapter 4, and in general terms in chapter 6.

3.4 VBHC OR VMHC: KNOW WHERE YOU STAND AND WHAT YOU ARE LOOKING AT

Regarding the question 'VBHC, when to use it and when not?', we can conclude that three important aspects play a role:

1. **Know what your starting point is (see section 3.1)**
   For what purpose do I want to implement VBHC principles? Where is the potential for the greatest gain in patient value or where do we currently lose most patient value?

In this regard it is important to listen to the wishes and experiences of patients. These can sometimes surprise you! When defining the ambition and focus, it is also important to understand from a change management perspective how ready and willing the organisation is to change, and that of potential other care providers that need to be involved. This assessment determines whether an organisation is going to move along the outcome axis, the integration axis, or both. It is worth noting that a movement along the integration axis usually also has an (indirect) effect on outcomes and the control of outcomes. This does not apply the other way round of course (see section 2.2.1).

Next to knowing what your starting point is, the fundamental question is whether the situation is suitable for VBHC in its pure form or whether the organisation will apply only some VBHC principles:

2. **Know what you are looking at (see section 3.2)**
   Is the medical condition suitable for managing (and reimbursing) based on patient outcomes? Is the patient group sufficiently homogeneous and are the volumes large enough to be able to make sensible judgements?

   It is advisable to go through questions A to H in section 3.2 about the measurability and usefulness of outcomes within the medical condition in question. This determines to what extent an organisation can start with managing care based on patient outcomes, whether this is immediately possible or whether other preconditions need to be met first.

3. **Know where you stand (see section 3.3)**
   Is the care pathway, or are the care pathways, suitable for hard integration, coordination, or neither? Where is the care delivered in the care value chain, and what is the ideal care organisation model (agile, routine, line or job-shop model)?

   Understand where the provided diagnostics and/or interventions are located in the care value chain and how it interacts with other care providers in the healthcare system (Figure 11). What does the patient pathway currently look like? A care pathway analysis can provide insights into where a great deal of patient value is currently lost, where value gains can be made and where dead-end streets may lie. Such an analysis would also determine whether integration/VBHC (for a line model) or coordination/VMHC (for a job-shop model) is the best approach to organise care more optimally.

13 A hub-and-spoke model that only coordinates and controls underlying integrated care pathways (line models), such as Xpert Clinics (case 5), has of course the same applicability of outcome-based control as a stand-alone line process.

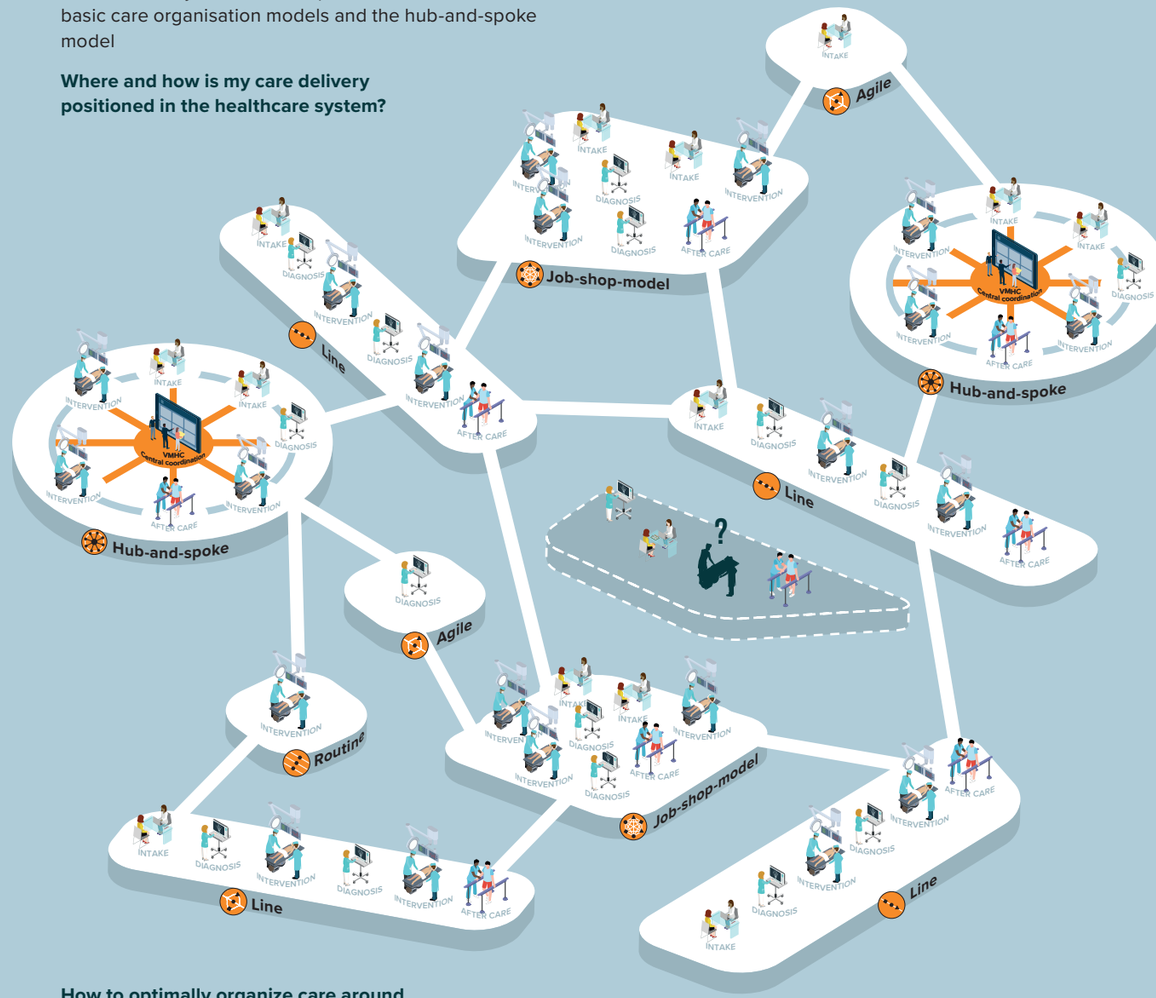
The care organisation models are also relevant to judge the applicability of managing care based on patient outcomes. Applicability is high for a routine model and line model and low for an agile model and job-shop model. The improved job-shop model in the form of a hub-and-spoke model increases the applicability of managing care based on patient outcomes[13]. If we plot the 4 + 1 organisational models schematically on the Vintura VBHC model (2017), we can see the potential VBHC applicability at a glance (see Figure 12).

FIGURE 11

POSITION IN HEALTHCARE SYSTEM

A healthcare system as a complex combination of the four basic care organisation models and the hub-and-spoke model

Where and how is my care delivery positioned in the healthcare system?

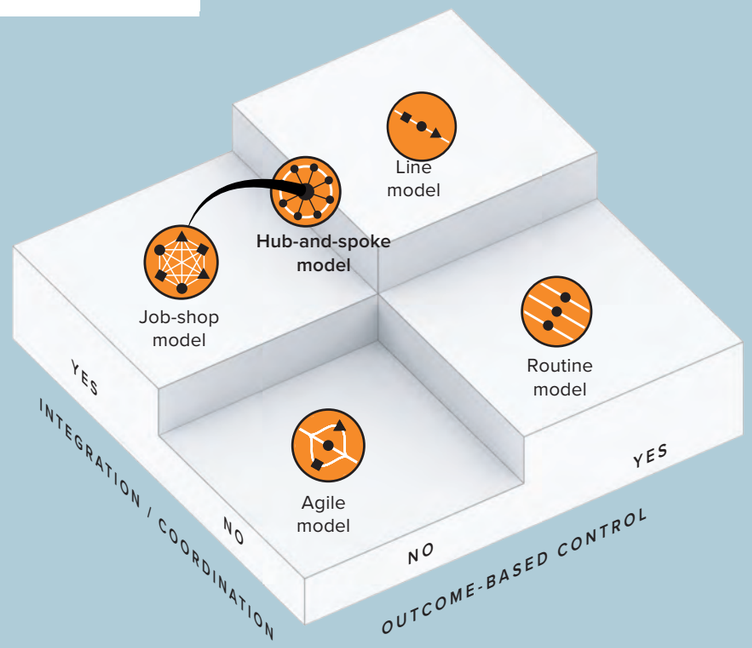


How to optimally organize care around the patient's medical condition? How to interact and cooperate with other care providers?

FIGURE 12

ORGANISATION MODEL

Applicability of VBHC principles for each of the care organisation models.



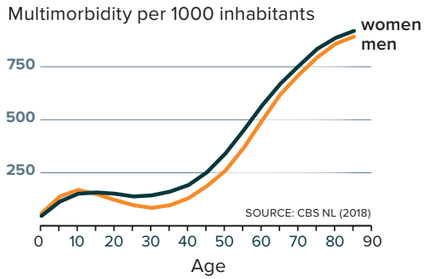
CHAPTER 4

CARE FOR THE ELDERLY: VMHC INSTEAD OF VBHC

VMHC INSTEAD OF VBHC FOR ELDERLY

COMORBID AND HETEROGENE ELDERLY PATIENT NOT FIT FOR PURE VBHC

In order to be able to deal with the complex and growing care demand from multi-morbid elderly patients, we cannot take VBHC as the only starting point to shape the delivery of care. We must be looking for different organising principles.

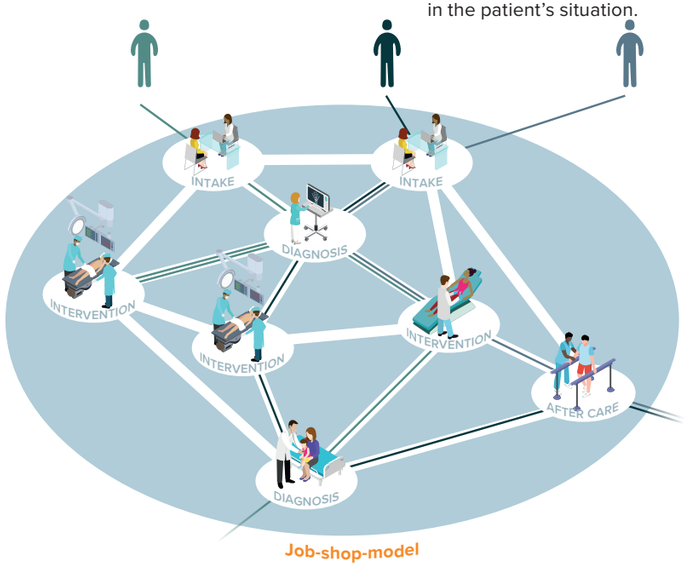


NO SINGLE UNAMBIGUOUS CARE PROCESS

Because of the heterogeneity and comorbidities that characterise the elderly patient, there is never a single medical condition, nor a single care pathway. This means that elderly patients with multiple health issues are by definition part of a layered job-shop model.

NO STANDARDISED OUTCOME

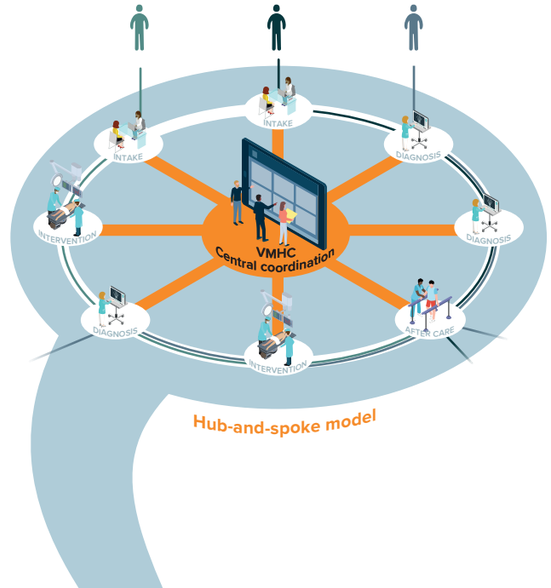
Heterogeneity and co-morbidity makes standardisation and normalisation of outcomes complex. The more complex and older the patient, the more important it becomes not to focus on the best outcome of a single intervention, but on an overall outcome tailored to patient's needs, that considers all factors in the patient's situation.



Job-shop-model

CARE FOR ELDERLY IN MANY CASES ORGANISED ACCORDING TO JOB-SHOP MODEL

Elderly patients in many cases are following care pathways structured according to a job-shop model, with limited oversight and coordination leading to sub-optimal results, mistakes, under- and over-treatment etc. Given the growth of the elderly population we need to look for better solutions to keep our healthcare accessible, affordable and of proper quality: value managed healthcare (VMHC).



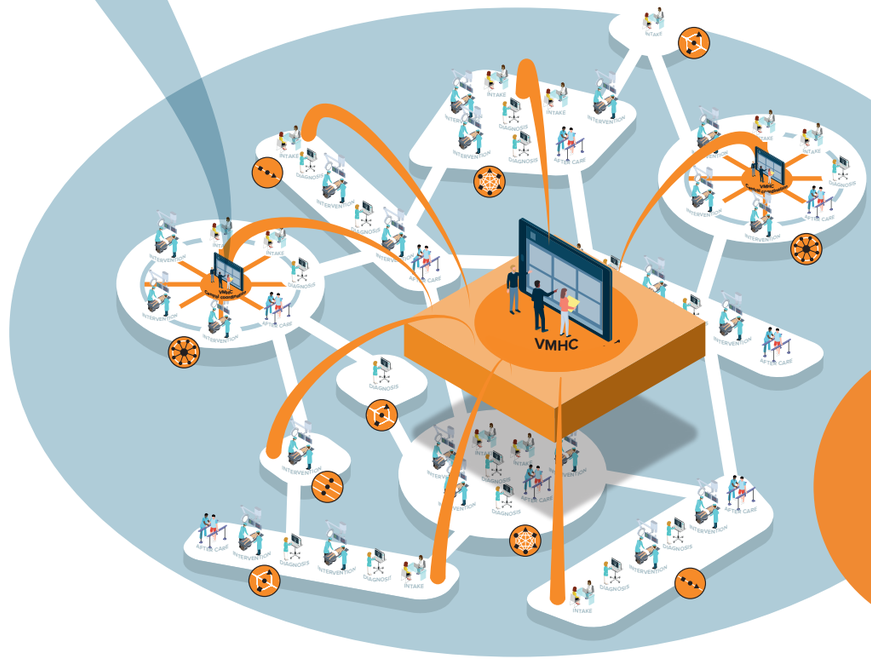
Hub-and-spoke model

VMHC: COORDINATION INSTEAD OF INTEGRATION AROUND ONE MEDICAL CONDITION

VMHC focuses on coordination rather than integration of care (VBHC). The main difference is not the organisation of the care itself, but the coordination to guide the patient in their specific personal situation to the best suited care. In this way the pathway is coordinated and managed towards a tailored relevant patient outcome. One could start with coordinating care around one medical condition of the co-morbid elderly patient, for example Parkinson.

VMHC: COORDINATION OF MULTIPLE MEDICAL CONDITIONS AT MACRO LEVEL

The next level of VMHC is to coordinate multiple diseases at macro level. In this case the central coordination could interact with a disease specific coordination point: VMHC at micro level. Given the heterogeneity and co-morbidity of the elderly patient it is hard to compare an individual patient outcome with a pre-defined benchmark (VBHC). However, as soon as VMHC is organised at large one could derive general correlations and insights on a patient group or population level, herewith improving care for future generations.



IN ELDERLY CARE SIGNIFICANT VALUE CAN BE CREATED WITH VMHC

Coordinating care around one or multiple medical conditions

4.1 SPECIFIC CHALLENGES IN CARE FOR THE ELDERLY: HOW AND WHERE DO WE CREATE VALUE?

We are getting older and older in Europe. In a country such as the Netherlands, the number of people aged 75 and over will increase by 86% between 2019 and 2040. Over the same period, the number of people aged 90 and over will increase by 151%[14]. This increase in ageing comes at a price – with age, the number of health issues that a person has also rises. In 2018 in the Netherlands, more than 85% of people over the age of 75 had more than one chronic disease[15]. And as a person gets older, there is also a strongly increasing chance of developing a non-chronic condition such as cancer.

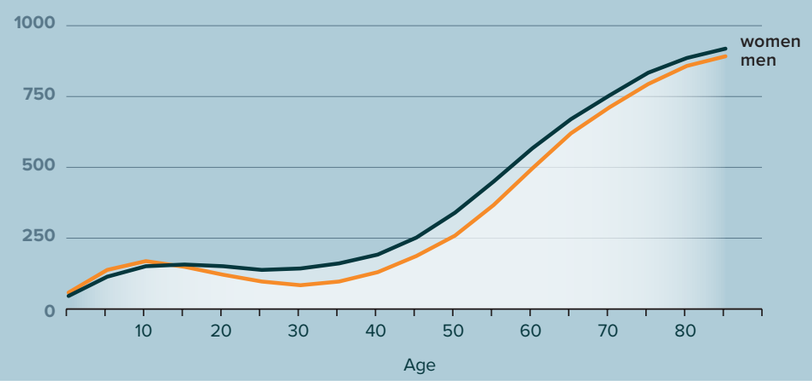
14 https://www.rivm.nl/infographic-impact-van-vergrijzing

15 https://www.volksgezondheidenzorg.info/onderwerp/chronische-ziekten-en-multimorbiditeit/cijfers-context/huidige-situatie

FIGURE 13

MULTIMORBIDITY PER AGE

Number per 1000 inhabitants. Multimorbidity on 1 January 2018 in the Netherlands.



The total sum of all these diseases of the elderly has an enormous impact on the demand for and the provision of care. The demand for care increases in volume and becomes more complex in nature, because diseases affect each other and impact quality of life in different ways. The care delivery – which is still traditionally divided into the silos of primary, secondary care and long-term care - especially on the curative side of the spectrum focuses on single interventions, and therefore is not geared towards coping with the multi-morbid elderly patient.

In addition, the care offer suffers from ever-increasing staff shortages, as we already outlined in chapter 1. If policy and the organisation of care remain unchanged, by 2040, in a country such as the Netherlands, one in four of the total working population will need to be employed in healthcare to be able to meet the healthcare demand. If this were even feasible, it would be so costly and disruptive to the economy that the societal disadvantages would overshadow the benefit of enough hands at the bedside.

It is not only the formal professional care delivery that is struggling with the growing demand of complex care for the elderly. Also, the direct or supportive care of the many informal caregivers (family and friends) is under increasing pressure. In addition, the substantial ageing of the population is leading to a sharp decline in the number of informal caregivers available, as the informal caregivers of today are gradually reaching the age at which they themselves will become dependent on care. In the Netherlands, for example, a potential decrease of no less than 57% in the availability of informal caregivers is predicted between 2019 and 2040[17].

17 https://www.rivm.nl/infographic-impact-van-vergrijzing

The care journey of multimorbid elderly patients is diverse and complex. In practice, the patient suffering from multiple conditions is not necessarily helped by a series of single interventions, each individually optimised according to the principles of VBHC. So, VBHC seems only be able to provide answers to a limited extent regarding questions about dealing with the complex demand and combined care of a rapidly ageing population.

Let us take the example of a hip replacement in a multimorbid, elderly patient. Hip replacements, in which a hip joint is replaced by a prosthetic implant, are a textbook example of the type of interventions that can be optimised via VBHC (as this procedure can be organized according to a line model (see section 3.3.3)). Optimisation of the treatment process is of great value for a healthy or reasonably healthy patient receiving the implant, as it can reassure them that the best result can be achieved for them. However, if the patient is suffering from a complex accumulation of disorders, they are probably facing challenges managing their condition at home and may be making considerable demands on home care. It thus remains to be seen whether VBHC will lead to the best outcome for this type of patient. Can this vulnerable patient cope with the surgery, given the impact that the surgery may have on other conditions? Can this patient receive adequate rehabilitation in the complex home situation? Can informal caregivers and home care create a safe situation at home for this patient? Does the orthopaedic surgeon who decides to operate have the complete medical picture of this patient?

In reflection, there are two important mismatches between the principles of VBHC and optimal care for multimorbid elderly patients:

1. **No standardised outcome**
   As we indicated in section 3.2, defining a standardised outcome for complex heterogenous patients is virtually impossible. The more complex and older the patient, the more important it becomes not to focus on the best outcome of a single intervention, but on an overall outcome tailored to the patient's needs, that considers all factors in that patient's situation. Which disorder is most troublesome for the patient? Which intervention will contribute most to the patient's quality of life at this stage? What interventions can this patient handle? What will the effect of this intervention be on the patient's other conditions? Which interventions can be supported by the patient's environment?

2. **No single unambiguous care process**
   Because of the heterogeneity and comorbidities that characterise the elderly patient, there is never a single medical condition, nor a single care pathway. This means that older patients with multiple health issues are by definition part of a layered job-shop model. And if, within these job-shop settings, integrated care pathways (i.e. line model) have been implemented for specific procedures, elderly patients create exceptions and variation. Whereas an integrated process around a clear pathway is desirable for a regular patient and contributes to the best outcome, this is certainly not always the case for a complex elderly patient.

The optimised process is often ill-suited to a patient who has a complex interplay of conditions and whereby multiple factors, that do not tend to play a role in other patients, must be considered. It may, for example, be necessary to use additional diagnostics to account for different risk factors associated with chronic conditions. The optimised process, where the patient is discharged from hospital as quickly as possible and then rehabilitates at home, is not appropriate for a patient who, due to limited self-reliance, is heavily dependent on an informal caregiver who is also ageing.

Care for elderly multimorbid patients has all the characteristics of a layered job-shop model at macro-level: multiple complex interventions within a heterogeneous patient group.

4.2 VMHC AS A SOLUTION FOR THE ELDERLY

In order to be able to deal with the complex and growing care demand from multi-morbid elderly patients, we cannot take VBHC as the only starting point to shape the delivery of care. We must be looking for a different organising principle. To fit the bill, the principle must ensure that this growing patient group receives appropriate care and, at the same time, prevents formal and informal care providers from becoming overburdened. It must also lead to the right care at the right time and in the right place. Taking these considerations into account, it seems that the right way of organizing elderly care is Value-Managed Healthcare (VMHC; see section 3.3.4)!

Unlike VBHC, VMHC focuses on coordination rather than integration of care. The main difference is not the organisation of the care itself, but the coordination to guide the patient in their specific personal situation to the best suited care.

In an ideal world, the patient, whether or not supported by an informal caregiver, can take charge of their own care coordination. After all, no one knows the patient better than the patient themself. And no one can define the optimal outcome for the patient's quality of life better than the patient themself. But the available care provision is far from transparent. In addition, it requires a high degree of skill and knowledge to be able to make the right choices regarding one's own care. The patient must have insights into their own medical data and situation, and be able to interpret it. The patient also needs to understand the care provision and have sufficient knowledge to select quality and specific requirements. This is a very complex challenge, even for most healthcare professionals.

So, it would be unrealistic to expect that older multimorbid patients (or their informal caregivers) have the necessary knowledge and skills to take decisions and manage their own care situation. This means coordination must be organised in a different way. It requires setting up a central coordination function that, like a buddy, guides the complex and vulnerable patient through the capricious care process, and herewith establishes the concept of VMHC (see Figure 14).

The coordination function in VMHC does not emerge by itself and is dependent on some requirements in the healthcare system and the underlying data infrastructure.

For optimal coordination in the healthcare sector, the coordinator should have access to all relevant patient care data, preferably supplemented with information on the patient's personal situation (relevant to making healthcare decisions). This is of course sensitive from a GDPR and privacy law perspective. Therefore, the coordination function ideally needs to be performed by an independent and data-secured trusted third party. The patient should be the ultimate owner of one's own personal and medical data and should give informed consent for sharing this information with and between the coordination function and care providers[18]. In addition, access is required to relevant process and outcome data from healthcare providers, so that balanced choices can be made about which care can best be provided at which location and at what time.

Gathering all this information is not an easy task in a healthcare system that is divided into functional silos, with each healthcare provider maintaining its own patient file. In such a healthcare system, the exchange of data about one patient between different healthcare providers is already a challenge in both practical and legal terms, and patients themselves do not have integral access to their medical data either.

However, this complexity should not be a reason to delay setting up a proper care coordination function to organise VMHC. By starting to bundle the information that is already available (outcome data and patient data) and by choosing, together with the multimorbid patient, those interventions that contribute the most to the patient's quality of life, substantial improvements will soon be realised.

18 One could argue if current privacy laws when strictly applied within the healthcare sector (e.g. formal informed consent to share information between care providers) are always to the benefit and interest of patients. If such strict rules are applied, it is easier and more transparent to coordinate informed consent via a central coordination function than through a criss-cross network of care providers.

FIGURE 14

CENTRAL COORDINATION FUNCTION

VMHC for care for elderly by establishing central coordination function.

Simply by assisting in the process (such that certain care steps can be streamlined, skipped or performed) already a great deal of value is created, without the process steps themselves (i.e. the interventions) having to be optimised on the basis of outcomes yet (see also Punt voor Parkinson (case 2)).

In short, only if we start, both the added value of care coordination and the existing obstacles within our healthcare systems will become clear to us. We need this start now to initiate a movement in politics, the healthcare sector and the market, and to remove the obstacles impeding the integral bundling and exchange of necessary patient data. In this way, we will be able to achieve more efficient and better care in one go.

4.3 VMHC: WHAT ARE THE BENEFITS?

If we continue on the current path, the care delivery risks getting stuck in a deadlock in which the patient gets lost or is deprived of appropriate care and care providers can no longer cope with the demand. But that deadlock does not have to occur if healthcare organisations start to apply VMHC in a targeted manner now. The benefits are especially great in the care of multimorbid elderly people!

The starting point of VMHC is the individual patient. The aim is to coordinate the care for that patient in such a way (see Figure 14) that outcomes are achieved that offer the patient the greatest quality of life.

In order to achieve this, it is necessary for the coordinator to have access to all (or at least to as much possible) relevant care data and patient data (as we outlined in section 4.2). If an informal caregiver plays a major role in the patient's life, the informal caregiver's information can also be of great value to optimising the patient's care pathway. Based on all the information, the patient's care journey is mapped out by the coordinator, considering all relevant medical, organisational, and personal circumstances.

The patient then only receives the care that is of value to them personally. Interventions that are of objective value but that are not subjectively valued, or have personal side effects that are too serious for the patient, are avoided, of course in open dialogue and consultation with the patient and medical professional. For example, this could be an intensive rehabilitation programme for which the patient's current physical fitness is insufficient.

Coordination not only ensures the right care in the right place at the right time, but also prevents duplication, unnecessary diagnostics, and communication errors in the care process, thanks to an overview and compilation of the care data. Only care and diagnostics that can have added value will qualify. The central coordination around the patient allows professionals to focus fully on the care without being burdened with many different additional coordination tasks and logistical challenges.

By means of VMHC for the elderly, we can optimise the value for the individual patient and relieve the burden on the care system and the ever-decreasing number of informal caregivers. In this way, VMHC makes a substantial contribution to combatting the shortage of personnel.

A system with over- and under-treatment and ineffective decision-making due to a lack of overview becomes a system with appropriate treatments.

Starting with VMHC not only improves the coordination of care. VMHC will gradually change healthcare itself. Care coordination creates a virtual integration of care processes around the patient. At first glance, these appear to be fully customised care solutions. But because care coordination takes place at a central function, the data from those virtual care processes also comes together at a central location. By analysing this data properly, insights emerge that allow for general improvements in the care for multi-morbid elderly people as well. The consolidation of insights from coordinated customized care pathways leads, if analysed properly, to ever better care pathways for a multimorbid elderly population and to continuous improvement of the healthcare system. Having an integral overview herewith leads to insight and improvement.

VMHC offers great benefits. That is why it is important to start implementing it as soon as possible. The start will be far from optimal. However, even in a situation that is not optimal, as we discussed in section 4.2, significant steps can already be taken. In order to ensure that our multimorbid elderly population will quickly receive the care it needs, it is important to start with VMHC and optimise care step-by-step.

As a first step we could start with setting up VMHC around complex medical conditions. Punt voor Parkinson (case 2) shows that care coordination around the complex comorbid Parkinson's patient provides great benefits and also leads to savings in our limited care resources. The next step would be to organise coordination across multiple disease

CHAPTER 4 - CARE FOR THE ELDERLY: VMHC INSTEAD OF VBHC

areas and thus provide truly integrated support for the multimorbid elderly patient (see Figure 14).

An increasingly automated process of data exchange and analysis, an ever-improving process of coordination, and a continuous process of virtual care pathway optimisation are the steps to further optimise VMHC and to offer more value to patients, healthcare providers and society. We can learn on the job, but for that we must first get started!

In chapter 6, we will explain a number of scenarios on how to set up VMHC.

CHAPTER 5

PHARMA: IS VBHC REALLY RELEVANT?

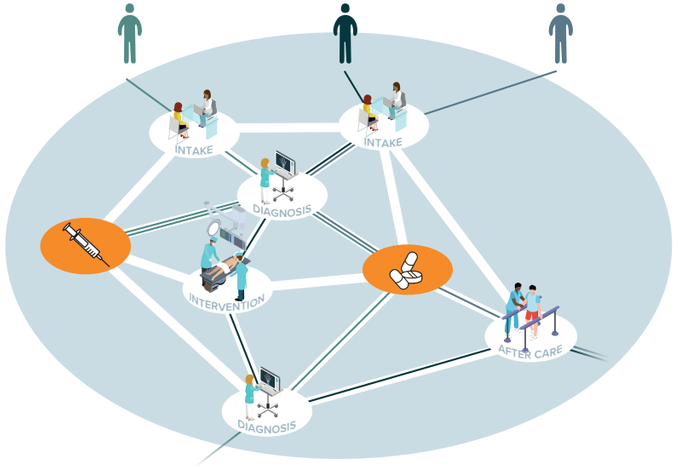
VBHC FOR PHARMA NOT IN EVERY SITUATION

TAKING RESPONSIBILITY FOR PATIENT OUTCOME BY PHARMA IS NOT EASY

unless:

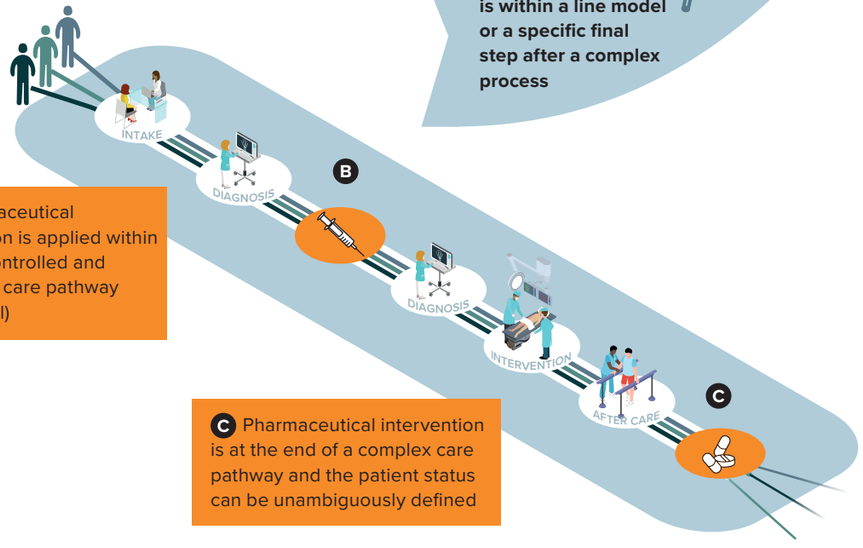
A Pharma is the only therapeutic intervention which makes outcomes definition and measurement (and potentially reimbursement) more straightforward

HOWEVER, PHARMA INTERVENTION IS OFTEN A ROUTINE INTERVENTION WITHIN MULTIDISCIPLINARY SETTING



IN COMPLEX MULTIDISCIPLINARY SETTING PATIENT OUTCOMES CONTROL BY PHARMA IS NEARLY IMPOSSIBLE

unless:



B Pharmaceutical intervention is applied within a single controlled and integrated care pathway (line model)

C Pharmaceutical intervention is at the end of a complex care pathway and the patient status can be unambiguously defined

PATIENT OUTCOME CONTROL BY PHARMA IN MULTI-DISCIPLINARY SETTING IS POSSIBLE

when the following conditions are met:

Insight into the entire care process from intake (patient mix) to after-care

Cross-functional collaboration and ownership regarding patient outcomes

Clear definition of pharmaceutical intervention factors influencing the patient outcome

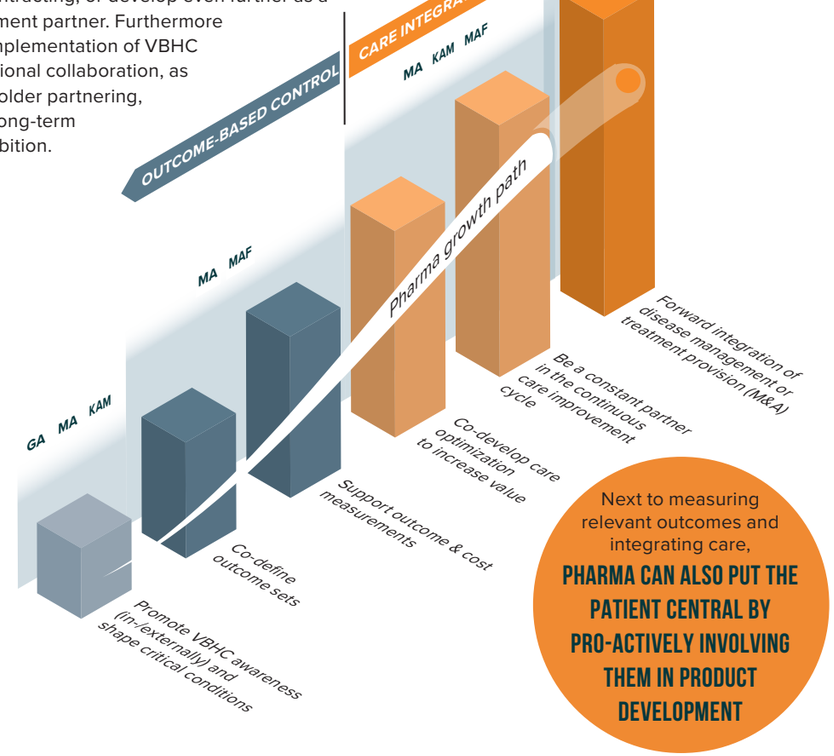
Integrated infrastructure for data registration, processing and access

As an alternative to patient outcome measurement

PHARMA COULD CONSIDER SURROGATE OUTCOMES OR PATIENT RESPONSE/ NON-RESPONSE MEASUREMENTS

IN ADDITION, PHARMA HAS TO DEFINE ITS VBHC ROLE

Based on the applicability of VBHC across the portfolio, or within a certain therapeutic area, the question is which role pharma wants to play respectively as a company or within a specific therapeutic area.
One of the main questions is whether pharma wants to augment their product value with outcomes measurement and outcomes-based contracting, or develop even further as a healthcare improvement partner. Furthermore development and implementation of VBHC requires cross-functional collaboration, as well as multi-stakeholder partnering, based on a shared long-term perspective and ambition.



MAF MEDICAL AFFAIRS
MA MARKET ACCESS
KAM KEY ACCOUNT MANAGEMENT
GA GOVERNMENTAL AFFAIRS
BoD BOARD OF DIRECTORS
NBD NEW BUSINESS DEVELOPMENT

Next to measuring relevant outcomes and integrating care,

PHARMA CAN ALSO PUT THE PATIENT CENTRAL BY PRO-ACTIVELY INVOLVING THEM IN PRODUCT DEVELOPMENT

5.1 PHARMACEUTICAL INTERVENTION: A ROUTINE INTERVENTION WITHIN A MULTIDISCIPLINARY PROCESS

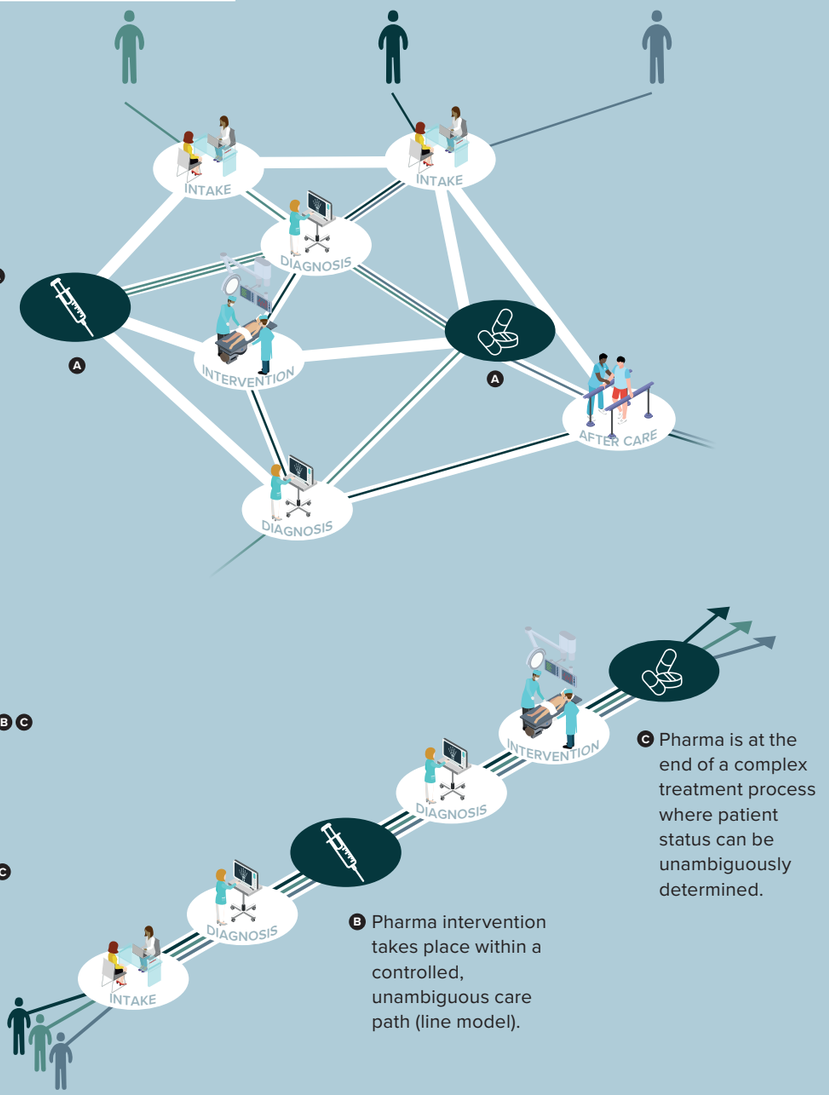
By definition, the traditional pharmaceutical intervention is a monodisciplinary, standardised intervention for a clearly defined patient group (as per the registered product label, leaving off-label use and personalised medicine out of consideration for now). This routine intervention is usually part of a multidisciplinary system organised according to a line model or a job-shop model, as described in chapter 3 (see Figure 15).

As a result of increasing pressure on prices, the pharmaceutical industry has shown more and more interest in outcome-based approaches, in order to explicitly demonstrate their added value for patients and society. However, how can this be achieved when one has direct influence on only one specific intervention, whereas in a multidisciplinary treatment process, there is a multitude of factors influencing the final patient outcome? These outcomes depend on the both the patient themself and the various practitioners involved. For example, the patient might not comply with the therapy, or there could be misalignment between practitioners. All these factors can affect the outcome but are not in direct control of the pharmaceutical company.

In section 3.2.2, we already discussed that a standardised intervention for a clearly defined patient group (a routine intervention) lends itself perfectly to outcome-based control and reimbursement. However, the pharmaceutical intervention is usually part of a complex multidisciplinary set of diagnostics and interventions. If the pharmaceutical intervention takes place in an organic job-shop-like setting, the applicability of patient outcome control is low (see Figure 15, intervention A).

FIGURE 15

PHARMACEUTICAL ROUTINE INTERVENTION



In a line model set-up, the applicability of outcome control increases, because the accumulation and influence of individual interventions on the end result can be made much more transparent. Let us take as an example the administration of erythropoietin in preparation for orthopaedic surgery and its influence on patient recovery and the final outcome. However, when the pharmaceutical intervention takes place somewhere halfway along a linear patient pathway, correlation can still be complicated, as many factors simultaneously influence the end result (see Figure 15, intervention B). As soon as the pharmaceutical intervention is deployed at the end of a care pathway (with a well-defined patient status) to complete the treatment or to manage the medical condition for a longer period of time (e.g. in the case of chronic diseases), it is much easier to establish a correlation between the pharmaceutical intervention(s) and the patient-relevant outcomes (see Figure 15, intervention C).

5.2 OUTCOME MEASUREMENT CAN WORK FOR MONODISCIPLINARY PHARMACEUTICAL INTERVENTION

In theory, the applicability of outcome-based control and reimbursement is greatest when the pharmaceutical intervention stands (almost) alone, as a monodisciplinary therapy. However, even in this situation, there are certain preconditions that must be met for outcome-based reimbursement and pay-for-performance to be achievable. An obvious precondition is that a pharma supplier has sufficient influence on the patient's therapy compliance. Offering digital applications, services, or technical solutions[19] for disease management and patient self-care, may be solutions for better therapy compliance.

19 Technological devices that remind the patient to take his medication (such as smart packaging), or that measure therapy adherence (such as smart pills/e-pills).

However, there is more to it. In practice, the characteristics of the medical condition and related patient group (as discussed in section 3.2), which determine whether outcome-based control and reimbursement can be applied, are in most cases insufficiently considered.

Let us look at a therapy area in which the pharmaceutical intervention is often the single therapeutic intervention – haematology. Due to the direct link with the patient result and the costs of the intervention, pharma companies are investigating and piloting the possibilities of outcome measurements within haematology to be able to demonstrate the patient value delivered. This is in itself a valuable and logical step. However, despite the fact that pharmaceutical interventions in haematology are suitable for outcomes measurement and outcome-based reimbursement, there are still quite a few issues to be considered when looking at the disease characteristics 1 to 8 (as mentioned in section 3.2):

The patient volume is not large enough (characteristic 3)
For some haematological niche indications, it may take too long to obtain sufficient patient outcomes to provide substantiated evidence.

The patient-relevant outcomes are influenced by several factors, which are not only related to the intervention made (characteristic 4)
In haematology, there are various forms of combination therapy. If combination therapy is delivered, it becomes very difficult to make a judgement for an individual pharmaceutical intervention. In the case more pharma companies are involved, this is an additional complicating factor when it comes to outcome-based reimbursement.

The results will only manifest themselves in the long term (characteristic 7)

An important patient-relevant outcome in haematology can be 'survival'. The extent to which therapies differ in this respect usually only becomes clear in the long term – and this is too long for current treatment or reimbursement decisions to be based on. In that case predictive factors, if any, will have to be considered, as well as other factors that determine the patient's current quality of life.

There is a high degree of innovation in diagnosis and/or therapeutic intervention (characteristic 8)

In haematology, innovative pharmaceutical interventions follow each other in rapid succession. The field is constantly changing as a result of increasing thorough knowledge and better patient profiling. As a result, the definition of 'good outcome' is very volatile.

It becomes very difficult to make assertions about the quality of the result, if the standard of care is constantly improving and study results evolve. Furthermore, there is the additional risk that a particular therapy does not build up sufficient experience and data over time to be able to make a statistically substantiated 'real world' judgement about its effect.

This example shows that outcome-based control and reimbursement, even in the case of a monodisciplinary pharmaceutical intervention, is not a straightforward matter. Moreover, in such a situation, it must be carefully assessed whether outcomes measurement, and outcome-based control and reimbursement, are possible and sensible (also by addressing qualifying questions A to H from section 3.2).

In some cases, a concession needs to be made by measuring a partial result or surrogate outcome[20], and basing treatment control and reimbursement on this, with the potential risk of sub-optimalisation.

5.3 PATIENT OUTCOMES IN A MULTIDISCIPLINARY CARE SETTING ARE COMPLEX FOR PHARMA

When the pharmaceutical intervention takes place in a complex environment of multiple diagnoses and interventions, it becomes difficult to correlate the final patient result with it. In many cases, outcome-based reimbursement is impossible, because the pharmaceutical manufacturer only has influence on one of the outcome-determining factors.

If, despite the underlying complexity, parties consider it desirable to link the pharmaceutical intervention to the final patient outcome in a multidisciplinary setting, this must be accompanied by the necessary preconditions:

1. **There must be a line model or a specific final step after a complex process**
   In order to make an overall statement about the patient outcome and to be able to steer the care process accordingly, there must be a homogeneous patient group and therefore a somewhat standardised care pathway (line model). If there is a heterogeneous patient group or a job-shop model, management of and responsibility for patient outcomes is virtually impossible for the pharma supplier.

20 A surrogate outcome (or endpoint) is a measure of effect of a specific treatment that may correlate with a real clinical endpoint, and of which is expected to predict clinical benefit or harm, based on epidemiologic, therapeutic, patho-physiologic, or other scientific evidence [sources: litfl.com/surrogate-outcomes; en.wikipedia.org/wiki/surrogate_endpoint].

An exception to this rule is a specific pharmaceutical intervention at the end of a complex care pathway. If, at the time of such an intervention, the patient status can be unambiguously defined and monitored, patient outcomes could be the basis for steering treatment decisions and reimbursement of pharma.

2. **Cross-functional collaboration and ownership regarding the patient outcome**
   Comprehensive collaboration and ownership of the final patient result is a prerequisite for outcome-based control of care. The pharmaceutical manufacturer is almost never the owner of the integral care process or the patient outcome but must be clearly involved in the collaboration within the care process to be able to take responsibility for the patient outcome. As soon as outcome-based reimbursement is introduced in addition to outcome-based control, all parties – including pharmaceutical companies – must be part of the agreements and contracting for bundled payments (see section 3.3.3) or pay-for-performance, in which everyone's role and contributions are clear. At present, pharma companies do not always have a seat at the table and are often seen purely as suppliers. However, when it comes to comprehensive outcome-based control and reimbursement, pharmaceutical manufacturers must be one of the cooperation partners at the table.

3. **Insight into the entire process from intake (patient mix) to after-care**
   Patient outcome measurements and improvement, and the impact of the pharmaceutical intervention on this, require insight into and measurement of the entire process.
   Normalisation and standardisation of care process steps are necessary to arrive at comparable results and insights, and thus to be able to manage and reimburse outcomes. If the specific pharmaceutical intervention is at the end of a complex care process, it is sufficient to define and measure the patient status at the end of this process and then monitor the effect of the pharmaceutical intervention (see also point 1).

4. **Clear definition of exact parameters influencing the patient outcome**
   A pharmaceutical company does not provide a care process, but a routine intervention that is delivered within an existing care process. Therefore, a pharmaceutical company needs to understand which specific medical indicators are influenced by their product and how these indicators ultimately correlate with patient-relevant outcome(s) (see also section 3.2). The more clearly this is defined, the easier it will be for a pharmaceutical company to pursue outcome-based management and reimbursement. It is important to distil the crucial indicators and limit the measurement to the essentials: less is more. Large data sets and long questionnaires potentially obscure the conclusions and, in addition, are usually not sustainably measured or completed (with the right quality).

5. **Integrated data infrastructure for data registration, data processing and data access**
   To support the above four preconditions, a good integrated data infrastructure is necessary. It is important that the available, or to be created, IT functionality facilitates the workflow and treatment process between the practitioner and the patient. It is also important that data aggregation can take place at departmental level for knowledge exchange between doctors. For pharmaceutical manufacturers, this infrastructure facilitates the registration of the pharmaceutical intervention in relation to the patient result. In addition, it is interesting for pharma companies to look at insights at regional or national level (differences between hospitals and regions) and potentially use aggregated data as input for scientific research.

Because the pharmaceutical industry wants to and must increasingly move towards real-world outcomes measurement and outcome-based control and reimbursement, in practice, manufacturers are trying to partly fulfil these preconditions themselves in cooperation with healthcare providers and payers:

- In order to be a valuable discussion partner and to be more proactive in discussions about the value of care and pharmaceutical interventions, pharmaceutical players focus on analysing and advising on the patient pathway (see the Novartis (case 7). This gives the pharmaceutical industry a clearer and more prominent role in determining the optimal care process and proper use of medicines within a certain therapy area.

In this role, the industry can contribute its knowledge of the disease and, if necessary, take joint responsibility for the end result (precondition 2). This changes the role of pharma's commercial, medical affairs and market access functions towards a more advisory and co-creating role regarding care optimisation within a specific disease area.

- The traditional pharmaceutical data model (the registry) is based on a scientific approach and more focussed on long-term insights and development. The current trend is that the pharmaceutical industry increasingly wants to generate real-life and real-time data to demonstrate the impact and value of its products and to continuously improve patient care together with healthcare providers. This real-world evidence (RWE) can be used at multiple levels in the healthcare system – for improvement of the individual patient treatment plan and outcome-based reimbursement (micro), for adjustment of medical guidelines within a disease area (meso), and for long-term scientific development (macro).

The future will be *real world clinical development*, so that medicines can be brought to market faster and at lower costs. Especially for orphan drugs, niche indications, or increasingly smaller patient groups as a result of the rise of personalized medicine, it is becoming less and less feasible to set up long-term, large-scale clinical studies. For this, real world clinical development can be a solution, especially for new indications for a proven molecule and dosage for which safety has already been demonstrated on a larger scale.

Setting up a VBHC initiative and realising the associated preconditions requires a multidisciplinary approach within the pharmaceutical company. Various departments should be involved, including medical affairs and key account management (for care pathway analysis and optimisation), market access (for outcomes definition, outcomes measurement and outcome-based contracting) and governmental affairs (for establishing necessary (national) preconditions). In this context, it is important to determine what role the pharmaceutical company defines for itself (see Figure 16).

In addition, cooperation with external parties is required. Partnerships between pharma companies and healthcare providers are currently being established to set up integrated data and IT infrastructures for certain diseases. It should be noted that ideally such infrastructures should not be set up specifically for each individual medical condition, hospital, or manufacturer. This therefore requires further cooperation between hospitals and pharmaceutical manufacturers.

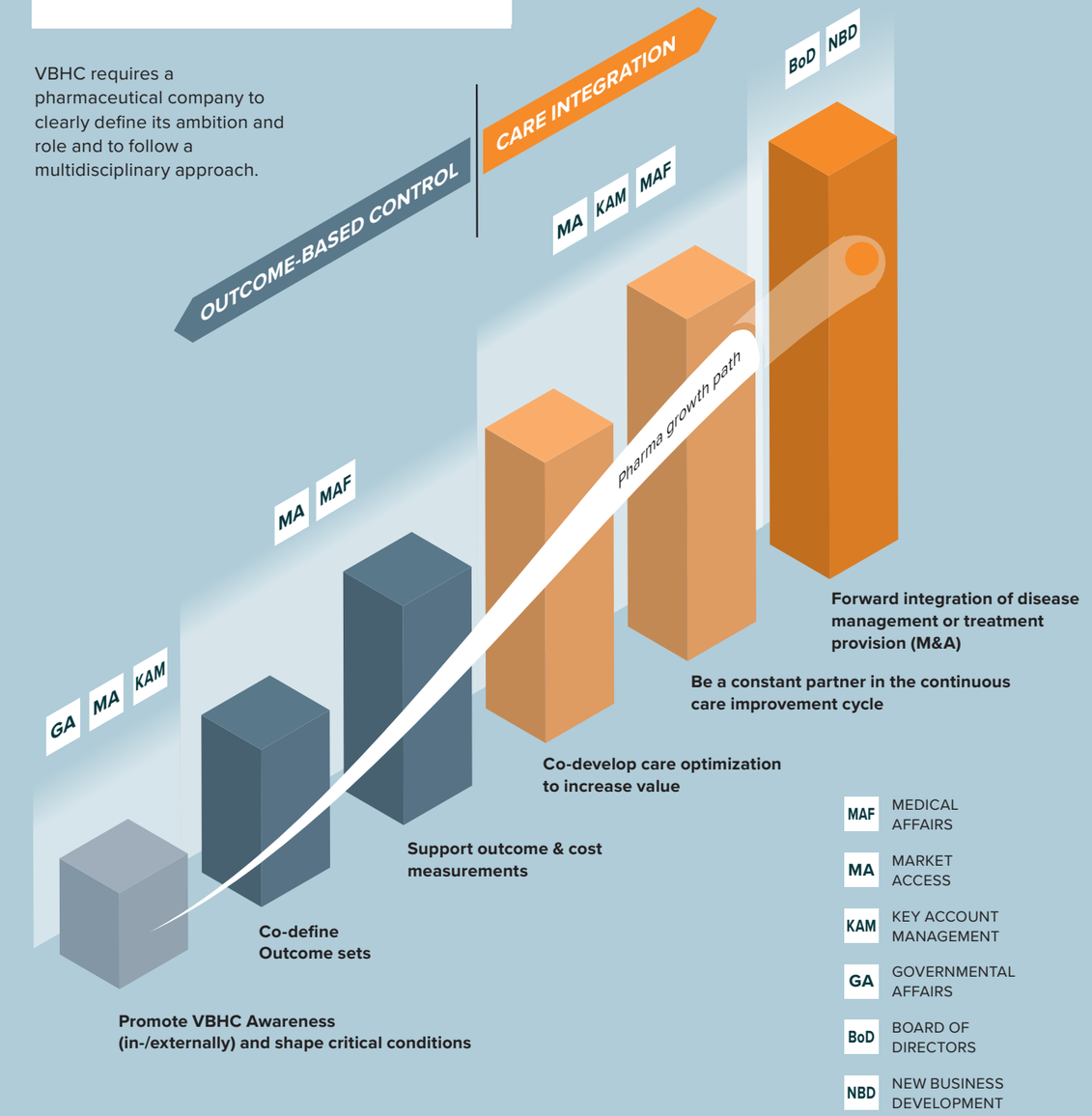
5.4 RESPONSE MEASUREMENT AS BASIS FOR REIMBURSEMENT IN MULTIDISCIPLINARY SETTING

When based on the considerations, as outlined in sections 5.2 and 5.3, patient outcomes measurement, control and/or reimbursement turns out to be impossible for pharma, a purely binary response/non-response measurement could serve as an interim solution for making pay-for-performance agreements. However, it is important to recognise that a good response does not automatically mean a good patient outcome, but it is in any case a good first step towards results-dependent reimbursement.

FIGURE 16

PHARMA VBHC GROWTH PATH

VBHC requires a pharmaceutical company to clearly define its ambition and role and to follow a multidisciplinary approach.



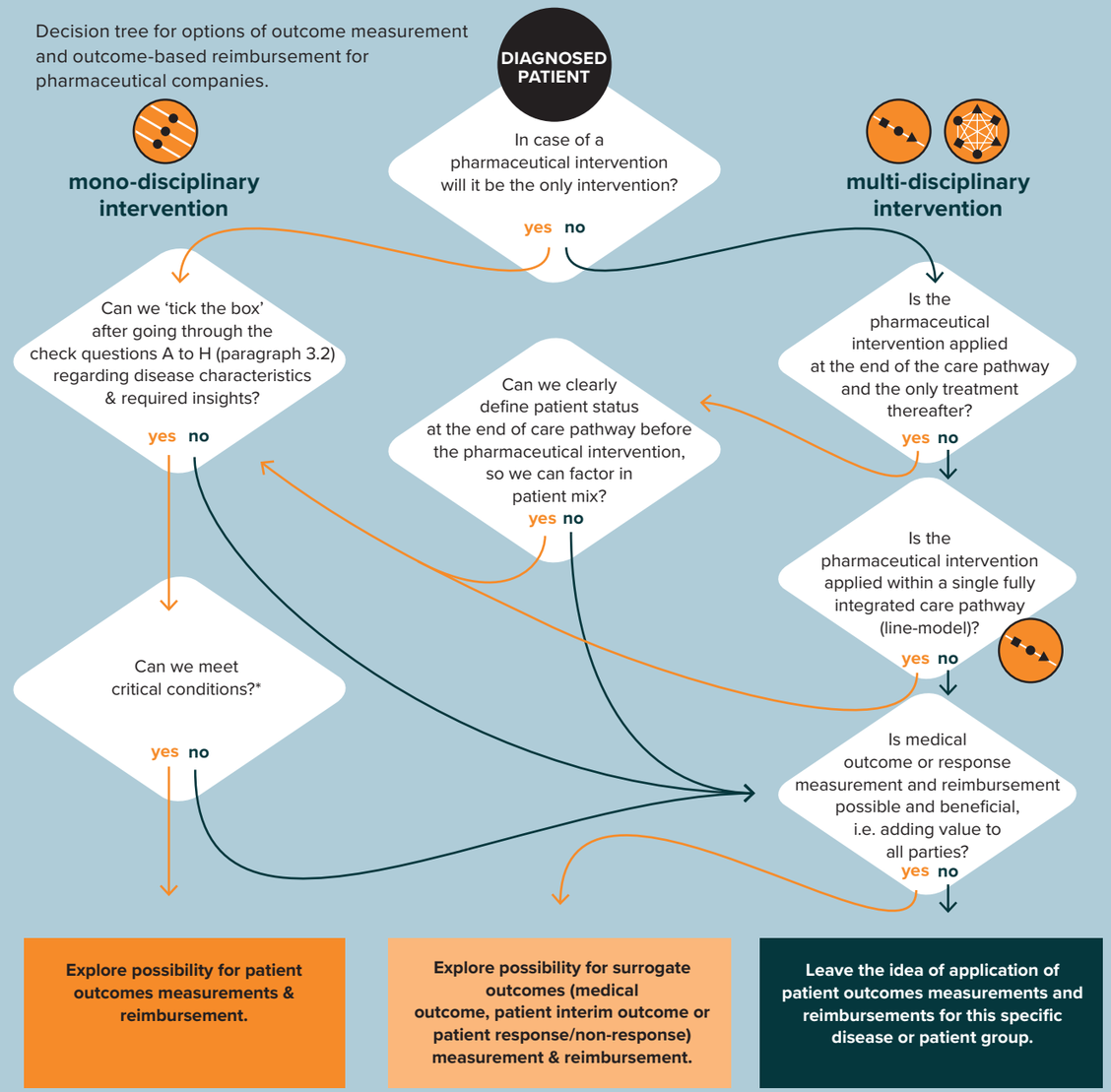
The correct registration of the patient response is a precondition that must be included in the existing treatment process and should not result in too much extra administrative burden. The responsibilities for this registration must be clearly agreed between professional, healthcare organization, payer and pharmaceutical manufacturer. Practice has shown that adverse win-lose discussions arise when this registration is underestimated and is executed poorly. However, with clear agreements and a good registration process, response/non-response measurement can be a good interim solution for outcome-based payment in a complex multidisciplinary setting.

In conclusion, we can say that outcome measurement and outcome-based control and reimbursement is not an easy straightforward task for pharma companies. The characteristics of the disease and the way in which care is organised determine the extent to which this is possible. In the previous paragraphs, we highlighted different situations and set out the possibilities and preconditions. Figure 17 provides a concise decision tree with an overview of the possibilities and impossibilities for each situation. Considering the requirements that outcome measurement imposes on the specifics of the disease, the level of insight and the way in which care is organised, employing comprehensive patient outcome measurement and outcome-based reimbursement will not be a feasible option for the pharmaceutical industry in the majority of cases. In most cases, one will have to resort to measuring an interim result, a surrogate outcome, or patient response.

FIGURE 17

PHARMA DECISION TREE

Decision tree for options of outcome measurement and outcome-based reimbursement for pharmaceutical companies.



*) Critical conditions such as: trusted cooperation and shared outcome ownership with care provider(s), common data-infrastructure, ability to measure outcomes and create transparency along the care pathway, and can adjustments for patient mix be made.

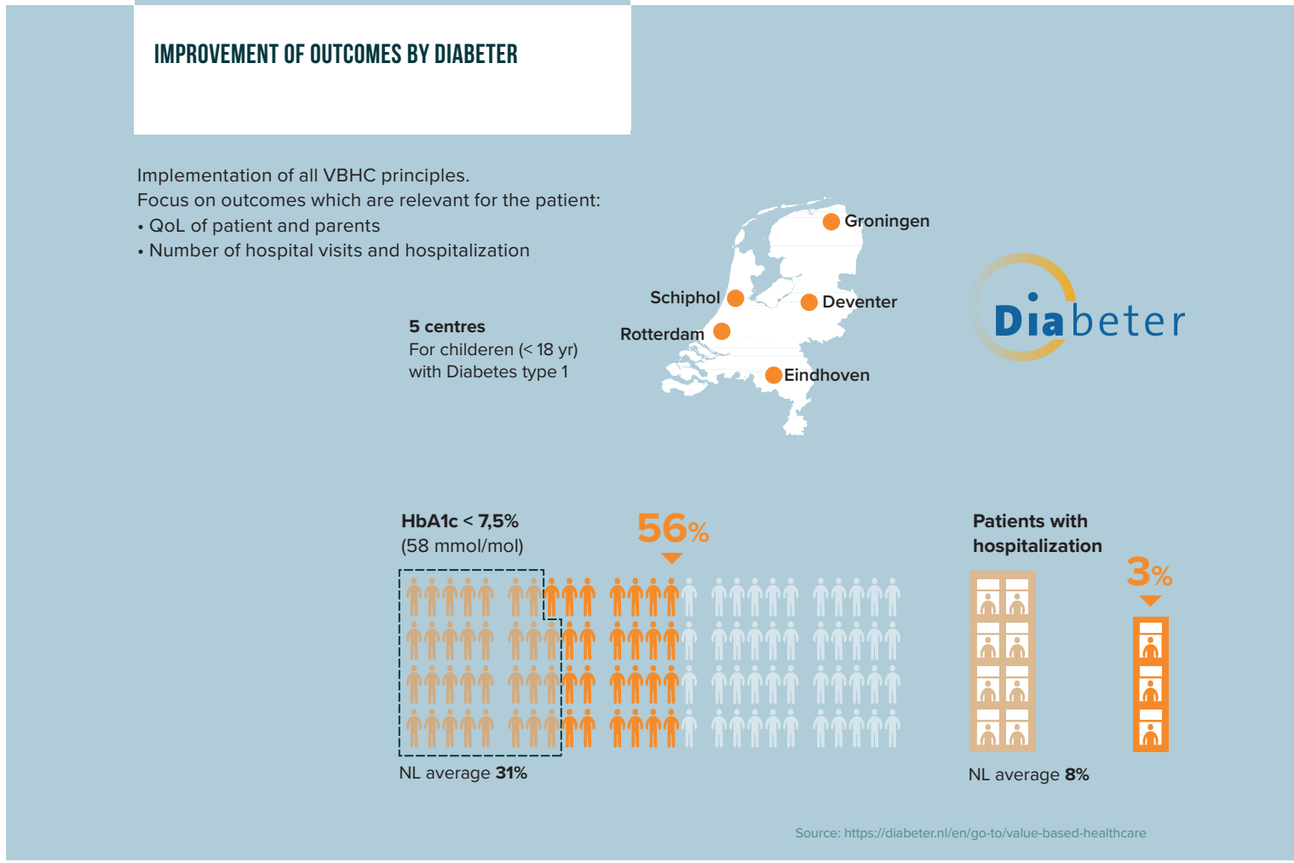
5.5 ULTIMATE SHIFT: FROM PRODUCT LIFECYCLE TO PATIENT LIFECYCLE?

In section 5.3 we mentioned the preconditions for outcome-based control by pharma companies. The first three related to the fact that a pharma company must have a considerable degree of influence and control over the patient's end result, to be able to bear joint responsibility. Meaning, there must be a reasonably homogeneous patient group and one or only a few unambiguous care pathways, mutual cooperation and a seat at the table, as well as comprehensive measurement along the patient pathway. What if a manufacturer implements these preconditions all at once? In that case, the manufacturer takes ownership of (part of) the care process and deploys forward integration. The manufacturer could, for example, take over (part of) the actual treatment, such as in the case of Fresenius, a dialysis filter manufacturer that later acquired dialysis centres in Germany. Alternatively, the manufacturer may focus on disease management or secondary prevention, such as in the case of Medtronic, which has taken over Diabeter centres in the Netherlands for type-1 diabetes care. Many variations are possible, but it is important to realise that the business model is shifting from product supplier to service and care provider. As the role of the manufacturer changes, so do the dynamics between external stakeholders and existing customers. This can create tension. Often other stakeholders watch with scepticism and suspicion when a manufacturer also becomes care provider because of potential conflicting interests. Sometimes it conflicts with the local legal frameworks or existing policies.

Nevertheless, it is unfortunate if these forms of care integration are impeded or not given sufficient opportunity. Integrating care around the patient usually increases quality and reduces costs (see Figure 18).

FIGURE 18

IMPROVEMENT OF OUTCOMES BY DIABETER



We have already mentioned the reasons for this: better insights into the individual patient, more transparency regarding the disease and the treatment, less miscommunication and errors, and so on. The manufacturer can contribute and further develop knowledge and skills concerning a specific disease, which also stimulates innovation. In addition, the major advantage is that the reputation, expertise and role of the manufacturer established within the healthcare system does not change when a product's exclusivity expires. This means that investments made to build up knowledge and a competitive position are retained. In fact, to be

accepted and remain credible, the manufacturer must have an entire portfolio of competitive, and also generic, products from the point of view of delivering the best care for the patient. Therefore, internal governance and responsibilities for product and care delivery must be organised separately within the manufacturer's organisation in order to avoid a conflict of interest.

These business models can provide demonstrable benefits for the patient and the manufacturer. Despite these benefits, they are unfortunately not being applied on a large scale yet, probably due to the complexities and sensitivities mentioned above. In order to take co-responsibility for the patient outcome, in most cases pharmaceutical manufacturers must take shared ownership of the care process in other ways (as described in section 5.3), instead of through forward integration.

5.6 THE PHARMACEUTICAL INDUSTRY CAN PUT THE PATIENT AT THE CENTRE IN OTHER WAYS

So far, this chapter has described the complexities and opportunities for the pharmaceutical industry to adopt a more outcome-based approach and to take co-ownership of the patient result. Putting the patient at the centre and focussing on measurable value creation, which is the pharmaceutical industry's aim in this respect, is obviously a virtuous endeavour and certainly worthwhile. However, we have seen that this is at the same time difficult and complex to implement and manage. There is also an easier way for pharma companies to put the patient at the centre – by involving the patient in the product development process[22].

22 And in service development when a pharma company also offers services related to a disease or product.

This process is entirely in the hands of a pharma company, allowing a manufacturer to put patient centricity at the heart of its process entirely on its own initiative. Involving patient associations and patient focus groups can provide a great deal of insight into the medical condition, the disease burden and what is important for the patient. This places the focus early on which patient-relevant outcomes and attributes should be delivered with a given product. Which side effects are extremely unpleasant? Which end-points that matter to the patient should be the aim of development and focus of clinical research? This applies to the effect of the medication, but certainly also to the formulation. What is pleasant in daily use? Is one oral pill a day much better than a monthly injection, or vice versa? This not only improves quality for the patient, but also gives the pharma company additional arguments, besides medical effectiveness, with which to convince authorities and society of the benefits of the product in question and the value it can deliver to patients.

Ultimately, in addition to patients, society is also the customer of a pharma company. After all, in most healthcare systems, society reimburses medication. Therefore, it is important to involve the payer(s) at an early stage in the product development process. Payers can indicate what is needed in view of the disease burden, budget pressure, (real world) evidence, and so on. In this dialogue, it is important that the payer, too, has a holistic view of the medical condition(s) and patient value. Is a medicine really too expensive if it keeps patients out of the hospital or enables people to return to work sooner? It is only too expensive if the costs do not outweigh the benefits, from a social total-cost-of-ownership perspective. In short, patient-centred thinking and a holistic care perspective are required on both sides of the table. It takes two to tango!

CHAPTER 6

VBHC, WHERE TO GO FROM HERE?

VMHC BROAD IMPLEMENTATION THROUGH TRUSTED THIRD PARTY

VBHC: TARGETTED IMPLEMENTATION

based on disease and patient characteristics

VBHC is especially applicable for homogeneous patient groups based on which uniform care pathways can be defined and integrated as well as relevant patient outcomes can be measured and benchmarked.
It is important to note that one does not always need to define and measure outcomes in order to improve. Practical care integration steps, that lead to improved streamlining of care processes and communication, can already have significant effects. Some things do not require measurement to be evident.

VMHC: BROAD IMPLEMENTATION

especially for co-morbid, chronic and/or elderly patients

Heterogeneous and co-morbid patient groups call for a flexible and person-oriented organisation of care, with care pathways that are virtual and organised in a job-shop model. The moment we coordinate care around the patient (VMHC), the organic job-shop becomes a hub-and-spoke model, where oversight and alignment of individual care steps is created.
In this case we have created an Coordinated Practice Network (CPN) instead of an Integrated Practice Unit (IPU). This allows us to provide as much steer as possible towards patient-relevant outcomes. We expect that the relevance and applicability of VMHC will only increase in the future and that VMHC will be indispensable for a sustainable healthcare system.

THE MOST IMPORTANT ADVANTAGES OF VMHC

❶ VMHC provides an integrated overview and puts the patient at the centre in a complex care setting

❷ A regional or national hub-and-spoke model is much more efficient than every healthcare provider building its own network

❸ More transparency in the care process and patient data between providers and for patients

❹ Fewer (communication) errors and less duplication

❺ Patients no longer fall between the cracks

❻ Lower burden on nursing and medical staff as non-medical staff can handle disruptive issues at the coordination point

❼ Central and broad engagement around patients, resulting in central shared insights for care organisations

❽ VMHC is a prelude to further automation, as soon as thet coordination role has been physically set up and configured

❾ VMHC also organises the demand for care (!), VBHC only organises the provision of care

❿ VMHC is a short-term solution with a long-term perspective

⓫ VMHC can be implemented quickly and yields immediate results

WHAT IS THE BEST WAY TO IMPLEMENT VMHC?

SCENARIO 1

PATIENT

Patient and informal caregivers as empowered care coordinator

- ⊕ patient engagement and empowerment
- ⊕ care provision is not transparent to patient
- ⊖ lack of knowledge and experience
- ⊖ physically or mentally not able

SCENARIO 2

GP

General practitioner as intimate and trusted care coordinator

- ⊕ knows patient's history
- ⊕ has a trust-based relationship with patient
- ⊕ has a rather independent position
- ⊖ is not above the parties
- ⊖ too fragmented and not collectively organised
- ⊖ should focus on providing care

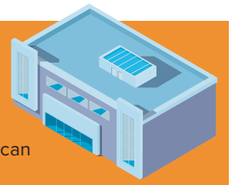
SCENARIO 3

CARE PROVIDER

Main regional or academic hospital as knowledgeable care coordinator

- ⊕ has the medical knowledge
- ⊕ is close to care delivery
- ⊕ already has partial access to information
- ⊖ is not above parties and unclear which provider should be in the lead
- ⊖ is not independent and may easily raise suspicion, e.g. when directing patient flows
- ⊖ should focus on providing care

SCENARIO 4



TRUSTED THIRD PARTY

A trusted third party as independent care coordinator

- ⊕ is impartial to any party and can have overview
- ⊕ is not occupied with delivering care
- ⊕ can represent a broad interest
- ⊖ potentially lacks specific knowledge
- ⊖ potentially adds new organisation in care system
- ⊖ potentially misperceived to focus on costs or profit alone

SCENARIO 5

VIRTUAL AI BUDDY

Algorithms, bots and apps as smart care coordinator

This scenario is not possible yet. In the future, when data exchange is optimally organised and artificial intelligence (AI) is widely used, virtual bots and user-friendly applications can be used to perform coordination tasks and provide patient guidance. AI has a lot of potential, but algorithms must be tested first, and quality of and access to patient data must be guaranteed. Although not available in the short term, AI will play an increasingly important role, also in scenarios 1 to 4.

**VBHC, LET US IMPLEMENT WITH FOCUS!
VMHC, LET US IMPLEMENT BROADLY!
IT IS TIME TO ACT!**

6.1 DEPLOY VBHC IN A TARGETED MANNER

The cases, the detailed theoretical considerations and the two fields of application – care for the elderly and the pharmaceutical industry – teach us that VBHC in its pure and ideal form is not necessarily applicable or sensible in every situation. VBHC is not one-story fits all.

Measurement and control of patient outcomes is not always possible, nor is it always the quickest way to improvement, either due to the characteristics of the disease, or due to insufficient insight into underlying correlations. Hard integration, in the form of a single Integrated Practice Unit (IPU), is not always possible either, because often there is not only one, or a few, definite care pathways that can be defined. In addition, VBHC focuses primarily on improving the provision of care and not on optimising the demand for care. VBHC is therefore not the answer to everything.

We can conclude that VBHC in its complete and pure and ideal form (i.e. care integration plus outcome-based control) can only really be applied to an integrated care pathway (i.e. a care organisation set-up according to the line-model). However, the VBHC principles are broadly applicable and must be filtered and prioritised depending on the medical condition and the care organisation model. Chapters 2 (cases) and 3 (theory) provide important frameworks and starting points for this. In addition, of course, an organisation's ambition, and the desired own contribution in realising this ambition, are important factors to determine the extent to which VBHC principles are going to be applied.

Practical integration of care
We also saw that integration and coordination of care with a pragmatic approach is often the first practical step that delivers great benefits.

It can easily prevent errors, miscommunication and under- or over-treatment. It is an obvious course of action if, with minimal investment, one is able to align and optimise communication and processes, as that will certainly lead to fewer mistakes, higher quality, and/or improved patient experiences. Some things do not require measurement to be evident[23].

Measuring outcomes with common sense
"To measure is to know" is a saying often used in healthcare, even where it is not always necessary. Having measurements and evidence upfront is sometimes used as an excuse to impede or delay change. Conversely, the argument that things are not measurable is sometimes wrongly put forward in favour of not having to measure and improve, or for fear of transparency. Sometimes underlying correlations are not clear. In that case it can be helpful to look at patient satisfaction and patient outcomes at a higher abstraction level and to look how these are impacted by diagnosis and interventions, without trying to understand all underlying correlations. In these cases, it is more important to consider 'when does it work?' than 'why does it work?'. In short, measuring outcomes with a clear goal and with common sense!

To conclude, organisations must use VBHC and its principles in a targeted manner and with a pragmatic view on how they can further improve and optimise care for and around the patient. Concentration of care can play an important and supportive role in this. It would be a shame if VBHC becomes undervalued through misuse, given that its underlying objective is to help realise a powerful universal value – that of putting the patient first!

23 From a change management perspective, it is important to define a clear goal (the why) and keep it in sharp focus throughout the process. This goal can initially be defined in qualitative terms, and (if desired) the effect measured and potentially quantified. The latter, however, requires a baseline measurement. The greater the investment (and hence the risk), the greater the need for a quantitative assessment.

6.2 VMHC AS A BROAD SOLUTION FOR THE FUTURE

In chapter 4, we noted that in an ageing population the demand for care is becoming increasingly heterogeneous. This calls for a flexible and person-oriented organisation of care, with care pathways that are virtual and organised in a job-shop model. Chapter 4 also describes that coordination is the best way to organise a job-shop, and that a hub-and-spoke model then emerges. When this model is applied comprehensively to a specific disease (e.g. Parkinson's disease) or to a specific patient group (e.g. the vulnerable elderly), we have defined it as Value-Managed Healthcare (VMHC) instead of Value-Based Healthcare (VBHC). This is because there is no 'hard' integration and organisation of the patient pathway and no overall patient outcome that can easily be attributed to the individual care providers involved. There is, however, coordination of care around the patient and the resulting overview allows us to provide as much steer as possible towards patient-relevant outcomes. This is virtual integration of care processes through coordination – a Coordinated Practice Network (CPN) rather than an Integrated Practice Unit (IPU). This makes VMHC a derived form of VBHC that approximates some of VBHC principles.

VMHC is not only a solution for Parkinson's disease or for the challenges faced by elderly care. VMHC can be applied much more widely because many patient groups cannot be captured in a single care pathway. An example is chronic disorders associated with a large number of co-morbidities, such as diabetes, in which patient numbers continue to increase and with that the need for coordination of care. Complex mental health care also has much to gain from central coordination and guidance. We expect that the relevance and applicability of VMHC will only increase in the future and that VMHC will be indispensable for a sustainable healthcare system[24].

24 When the coordination function also takes on budget responsibility and is not only concerned with the health of patients but also with the health of healthy people, this is called population health (reimbursement).

In the broader implementation of VMHC we can derive four maturity levels that can operate at local, regional or national level (see Figure 19). The ultimate aim is, of course, that all complex diseases and patient groups are coordinated at national level. Many healthcare systems in Europe are still a long way from this. However, that should not stop healthcare organisations from starting with VMHC. The most obvious step is to start small with the coordination of a complex multidisciplinary disease (e.g. Parkinson's disease) at local or regional level, and then scale up to national level. This experience can subsequently be used to examine several diseases within a co-morbid patient group (e.g. vulnerable elderly people). The advantage of scaling nationally before expanding the scope is that, for the selected disease (or patient group), comparable results and more insights can be obtained more quickly at a national level.

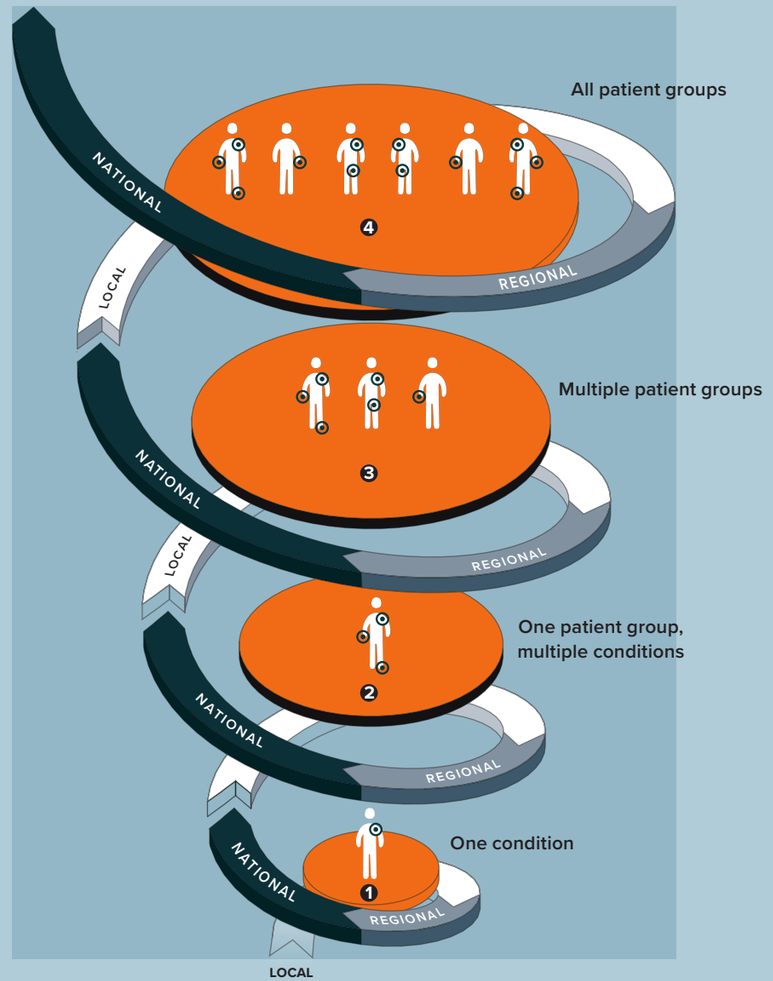
Starting with, and striving for, a broad VMHC implementation is a sensible investment in the future of healthcare for several reasons. The most important advantages of VMHC are, at a glance:

1. VMHC provides an integrated overview and puts the patient at the centre in a complex setting
2. A regional (or national) hub-and-spoke model is many times more efficient than every healthcare provider trying to build its own network with other healthcare providers
3. More transparency in the care process and patient data between providers and for patients
4. Fewer (communication) errors and less duplication
5. Patients no longer fall between the cracks

FIGURE 19

VMHC GROWTH PATH

Start with national roll-out within a maturity level ❶ to ❹, before going to the next level.



6. Lower burden on nursing and medical staff because non-medical staff at the coordination point can handle any disruptive issues. This ensures a more effective deployment of care personnel and reduces staff shortages
7. Central and broad engagement around patients, resulting in central lessons learned and insights by care organisations that enables them to initiate and substantiate necessary changes at healthcare system level
8. VMHC is a prelude to further automation. As soon as the coordination role has been physically set up and configured, and the bottlenecks in communication processes and data exchange have become clear, specific actions and interactions can be streamlined and further automated
9. VMHC also organises the demand for care (!), VBHC only organises the provision of care.
10. VMHC is a short-term solution with a long-term perspective
11. VMHC can be implemented quickly and yields immediate results

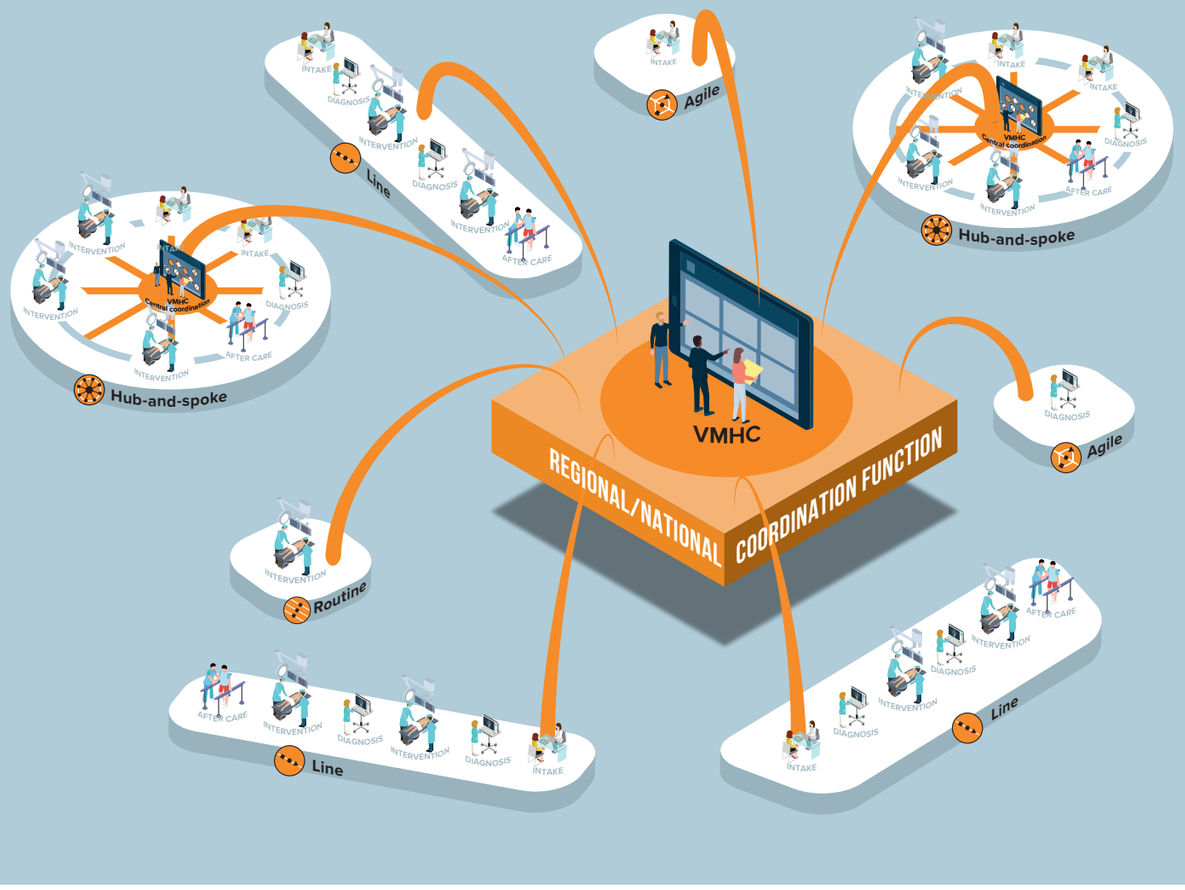
If we do all of the following, the ideal picture shown in Figure 20 emerges:

I. Apply VBHC in its pure form (a line model) where possible, and after concentration of the care provision if necessary
II. Implement VMHC where applicable (a hub-and-spoke coordination of care within a flexible job-shop model)
III. Organise VMHC at multiple levels (per disease, per patient group and at regional/national levels)

FIGURE 20

VBHC AND VMHC COMBINED

Schematic representation of care organised (and concentrated) in an ideal fashion applying VBHC and VMHC according to the nature of the medical conditions and the underlying patient pathways.



6.3 VMHC: HOW TO IMPLEMENT?

Given all the advantages of VMHC, hopefully the question of how to implement it will arise. In section 6.2, we already outlined a possible growth path for VMHC, but the key question remains: who is the most appropriate party to manage this? That depends very much on the healthcare system, but we believe that some overarching and universal conclusions can be drawn, pointing us in the right direction. Let us look at the different scenarios:

6.3.1 SCENARIO 1: IMPLEMENTATION BY PATIENT AND CAREGIVER THEMSELVES (INFORMAL CARE)

An obvious party to coordinate care – the one that VMHC is ultimately all about – is the patient themself. Is the patient capable of coordinating their own care, possibly with the help of an informal caregiver? In chapter 4, we already questioned this in relation to care for the elderly, in view of the likelihood that the number of available informal caregivers will decrease in the future. We believe it is virtually impossible for the patient themself to be the 'VMHC entity' that coordinates the care of complex diseases, with or without the support of a caregiver, because:

- The care provision is insufficiently transparent for the patient
- The status of the disease itself is not transparent to the patient
- Patients usually do not have all the knowledge and experience to make the right choices themselves
- The care pathway, especially for complex diseases and multi-morbid patients, is constantly changing, which means that patients gain little experience in this area
- Patients are usually not physically and/or mentally able to coordinate their care, due to age and/or the disease(s)

As a result, it is not realistic to expect all patients to be able to coordinate their care in a complex setting. There are of course patients who are able to coordinate their own care and would like to do so themselves. That possibility must of course remain, but it is not a broad and sustainable solution.

6.3.2 SCENARIO 2: GENERAL PRACTITIONER AS COORDINATOR (PRIMARY CARE)

The general practitioner (GP), as the patient's trusted adviser, would be in an appropriate position to play a coordinating role in the management of the situation. Letting the GP take on this role may seem obvious in light of the advantages listed below, but in fact, there are many practical and fundamental objections to this scenario, making it a much less realistic option:

Advantages

The GP:

- knows and understands the patient's history
- usually has a good trust-based relationship with the patient
- is close to the patient, therefore easily accessible
- is already part of the care system, and therefore readily accepted
- has easy access to (a part of) the (patient) information
- has a rather independent position within the healthcare system

Disadvantages

The GP:

- is not above the parties
- as a group is too fragmented and usually insufficiently collectively organised to play an overarching and influential role, or to be given the mandate for such a role

- is organised locally, which makes it difficult in practice to fulfil a central role (such as maintaining overview and continuity of care for patients who relocate)
- cannot be expected to have the overview of the entire healthcare provision, especially when the geographic scope expands to a national level
- is already busy providing care (the volume and pressure of which are certainly not abating), suggesting that their primary concern should be to provide care and not to coordinate it

In view of these points, it is neither feasible nor realistic to expect GPs to coordinate patient care. They could, in theory, contribute to VMHC by organising themselves at a regional level, potentially working together with district nursing organisations as well. Such a level of organisation and collaboration would enable them to fulfil a coordination role. However, this is unlikely to be achieved at a sufficient scale in the foreseeable future. In addition, a number of disadvantages remain, notably the opportunity for GPs to develop an overview of the entire care provision at national level, and the fact that they are already occupied and under increasing pressure to deliver care.

6.3.3 SCENARIO 2: HEALTHCARE PROVIDER AS MAIN CONTRACTOR (SECONDARY CARE)

The healthcare provider seems to be a logical party to better organise healthcare. After all, healthcare providers are closest to the care delivery, have healthcare knowledge and know what is needed for the patient. The healthcare provider that organises the entire care process thus becomes the main contractor and takes ownership of the patient outcome.
This can work well in the context of a single disease.

The cases of Cardiologie Centra Nederland (case 1) and Punt voor Parkinson (case 2) are examples of success in this regard. Nevertheless, a key question in these cases arises: which healthcare provider is in the lead? Who will be, or should be, the main contractor?

As soon as there is no longer a single disease, but co-morbidities, the situation becomes complicated, and coordination by multiple main healthcare providers could lead to more complexity rather than an integrated overview. A situation in which each care provider organises its own network is extremely inefficient and confusing. In contrast to a coordination point above the parties (based on a hub-and-spoke model) that leads to simplification, overview, and coordination of care (see Figure 21).

The question is whether a single healthcare provider is the appropriate party to set up and manage a central coordination point at macro level. This may still be possible at local or regional level (e.g. a large academic hospital), but certainly not at national level. The healthcare provider, as a possible scenario for central healthcare coordination, ultimately has more disadvantages than advantages:

Advantages

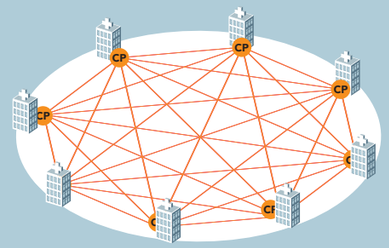
The healthcare provider:

- has knowledge of the disease (or diseases)
- is already part of the healthcare system and is close to the delivery of care
- already has easy access to (part of) the (patient) information

FIGURE 21

COMPLEXITY VERSUS SIMPLICITY

Each healthcare provider organising its own care coordination leading to complexity, lack of transparency, and redundant interactions.



A central coordination point leading to simplification, overview and insight, and single interactions.

Disadvantages

The healthcare provider:

- is not above the parties
- may never receive a clear mandate, because it is unclear which healthcare provider should be in the lead to coordinate and direct care
- cannot be expected to have the overview of the entire healthcare provision, especially when the geographic scope expands to a national level
- is not independent and may easily raise suspicion, for example when certain patient flows are directed
- is already busy providing care (the volume and pressure of which are certainly not abating), suggesting that their primary concern should be to provide care and not to coordinate it

These disadvantages mean that the healthcare provider is in principle not appropriate for the role of central coordinator. It is unlikely that a healthcare provider can quickly acquire the position of an independent party able to streamline healthcare processes or redistribute them amongst other healthcare providers. In some countries, large (academic) centres are trying to fulfil such a role, but their reach is often not sufficiently broad (e.g. covering only a specific disease) or large-scale (e.g. only regional).

6.3.4 SCENARIO 4: INDEPENDENT THIRD PARTY

If scenarios 1, 2 and 3 are not feasible for implementation of VMHC, one option remains, at least in the short term: an independent third party that is above the parties and has a regional, preferably national, view. The coordination role could be taken up in the public or private domain by an independent company, a governmental body or a health insurer.
The choice of which would depend on the healthcare system of the country. In the Netherlands, healthcare insurers would be the most appropriate party to coordinate healthcare regionally and nationally. After all, healthcare insurers have an overview of the care delivery, are (in principle) above the parties, benefit from transparency and optimal quality at acceptable costs, and represent and act on behalf of their customer base (i.e. patients who hold an insurance policy with them). The opportunity to become healthcare coordinators offers health insurers the chance to change and improve healthcare sustainably, and to distinguish themselves positively in front of their customer base. However, this requires that health insurers are given the support to take on this central coordination role and that they implement it adequately. Subsequently, they need to proactively formulate a vision and deploy an open communication strategy in order to gain a permanent mandate and maintain public support to coordinate care.

In fact, this would apply to any party performing this central coordination role, whether private or public. Fulfilling this role requires vision and courage.

Execution of the coordination function by an independent third party offers more fundamental advantages than disadvantages:

Advantages

An independent third party:

- is, by definition, impartial to any party providing care
- can therefore maintain a clear position in charge of coordination
- has an overview of the entire care delivery at regional and national level
- can focus on the patient's overall experience and outcome, and does not also have specific care tasks on top
- can represent a broad customer base and serve a broad interest

Disadvantages

An independent third party:

- potentially lacks specific knowledge of a disease (or diseases)
- might be a new organisation within the healthcare landscape that must quickly establish its role
- could potentially, in the case of a private party, be misconstrued as valuing profit maximisation instead of care optimisation
- does not automatically have access to necessary information (depending on which party fulfils the role)

These disadvantages of scenario 4 can be resolved with good governance (e.g. supervisory and advisory bodies) and the establishment of the requisite capacities and skills. For that matter, not all the capacities and skills need to be developed by the coordinating party itself. In fact, specific knowledge can be collected on demand from healthcare providers or specialised knowledge centres. This enables knowledge and support from the primary and secondary care level to be coordinated via the central party and built up over time. In short, in contrast to the disadvantages of scenarios 2 and 3, the disadvantages of scenario 4 can be pragmatically resolved. This makes an overarching third party the best short-term scenario for VMHC. In the Netherlands, the health insurers are the most logical choice for this.

6.3.5 SCENARIO 5: VIRTUAL AI BUDDY

In the future, when data exchange and transparency are optimally organised and artificial intelligence and algorithms are widely used[25], virtual bots and patient-friendly applications might be used to perform certain coordination tasks and provide patient guidance. Such solutions are already being applied on a small scale, but it will take some time before this technology is ready to guide the co-morbid elderly patient effectively and safely through the complex 'healthcare jungle'. Artificial intelligence has a lot of potential, but to achieve the above, algorithms must be tested for safety first, and the quality of and comprehensive access to patient data must also be guaranteed. However, healthcare cannot wait for these obstacles to be resolved! In order to meet the increasing challenges in the demand for and supply of care, organisations must begin setting up VMHC straight away.

25 Therapies are becoming smarter and more user-friendly. An example is the recently released artificial pancreas for type I diabetes patients, which ensures that these patients only need to go to hospital once a year. Technology, thus can take over part of the coordination role or reduce the need for coordination, as demonstrated in this example.

Starting now will ensure that processes will be rearranged and organised centrally, and that data and insights can be consolidated, laying a foundation for easier digitalisation and automation of aspects of VMHC in the future.

Even though an all-capable AI buddy will not be available for the foreseeable future (see also section 3.2 on outcome-based control and IBM Watson), AI will play an increasingly important supporting role, also in the scenarios discussed above.

6.4 CONCLUSION: DEPLOY VBHC IN A TARGETED MANNER, DEPLOY VMHC BROADLY

In this report, we have examined the applicability of VBHC. We hope this report has provided new insights to help answer the question ‘VBHC: the answer to our future care challenges?’. We also hope that we have succeeded in identifying the 'sense and non-sense of VBHC today' and that we have made 'recommendations for tomorrow'. If the answer is 'yes' we have succeeded in our mission. We will briefly list the most important insights:

- The principles of VBHC are broadly applicable; only its specific implementation differs greatly per care situation or disease.
- Outcome measurement requires a thorough consideration of measurability, insights in correlations and level of influence (see qualifying questions A to H in section 3.2).

- Care control based on outcome measurement requires an unambiguous care pathway (a routine intervention or line model (integrated care pathway).

- Integration and coordination of care is a pragmatic, and usually faster, approach to VBHC, which allows care to be organised more optimally (around the patient). In addition to efficiency, this usually also improves quality, for example through better communication and fewer errors.

- VBHC in its pure form can only be applied in a line model (integrated care pathway) and is the optimal model to deliver care if the care setting allows.

- In many situations, there is a heterogeneous patient population with complex conditions that require multidisciplinary care, which leads to care organisation according to the job-shop model. This is likely to increase in the future, due to the aging population and the accompanying increase in chronic diseases and co-morbidities.

- A job-shop model is not suitable for outcome measurement and hard integration; instead, for this care setting, coordination can bring many benefits (hub-and-spoke model).

- VMHC, a hub-and-spoke model at various levels (national, regional, per patient group and per disease), can be widely used to sustainably organise and improve the demand for and provision of care – now and in the future.

- An independent third party is best placed to give shape to VMHC and implement the coordination role.

We realise that in this report we have not discussed in detail the preconditions for VBHC and the importance of change management, as we did in our VBHC report of 2017. However, these preconditions continue to apply unabated.

Also, with regard to VMHC, the following preconditions remain crucial for properly coordinating the delivery of care and demand for care in the future:

- Integrated regional and national data infrastructures
- Data registration (at source) and data standardisation
- Transparency and exchange of data (which could require specific privacy legislation for healthcare)
- Comprehensive budgets and financing per disease or at population level (removal of budget silos)

The ideal situation is that all parties involved use the same data highway to exchange data in healthcare at different levels, to optimise the process between practitioner and patient, and to achieve efficiency, transparency, and comparability of data (see Figure 22). Many countries in Europe will not be there in the near term, but let us start with a long-term vision: think big, start small, scale fast! In particular, scaling up quickly requires broader cooperation between parties and the willingness to look beyond one's own agenda.

Exactly the same applies to the digitalisation of patient care and interaction. E-health and telemonitoring can yield significant efficiency and quality gains, provided the various players think bigger and put their own agenda in second place. The current proliferation of proprietary applications and fragmented solutions stands in the way of scalability, and therefore efficiency. In addition, healthcare providers should not be afraid of losing patient volumes in hospitals as a result of remote e-care. After all, an unmanageable wave of demand for care is coming[26]!

In addition, change management and communication remain crucial for the implementation of VBHC and VMHC, and are often underestimated. VBHC is about change of care delivery within a care chain, with strong involvement of care professionals. VMHC is more about a system change at regional or national level. This must therefore be tackled more top-down with directors of care and public institutions.

Despite the absence of the aforementioned preconditions, we still need to start with *targeted deployment of VBHC and broad deployment of VMHC*, for the very reason of speeding up the implementation of these preconditions. We can learn on the job, make bottlenecks come to light, and seeing is believing. In short, steering by moving.

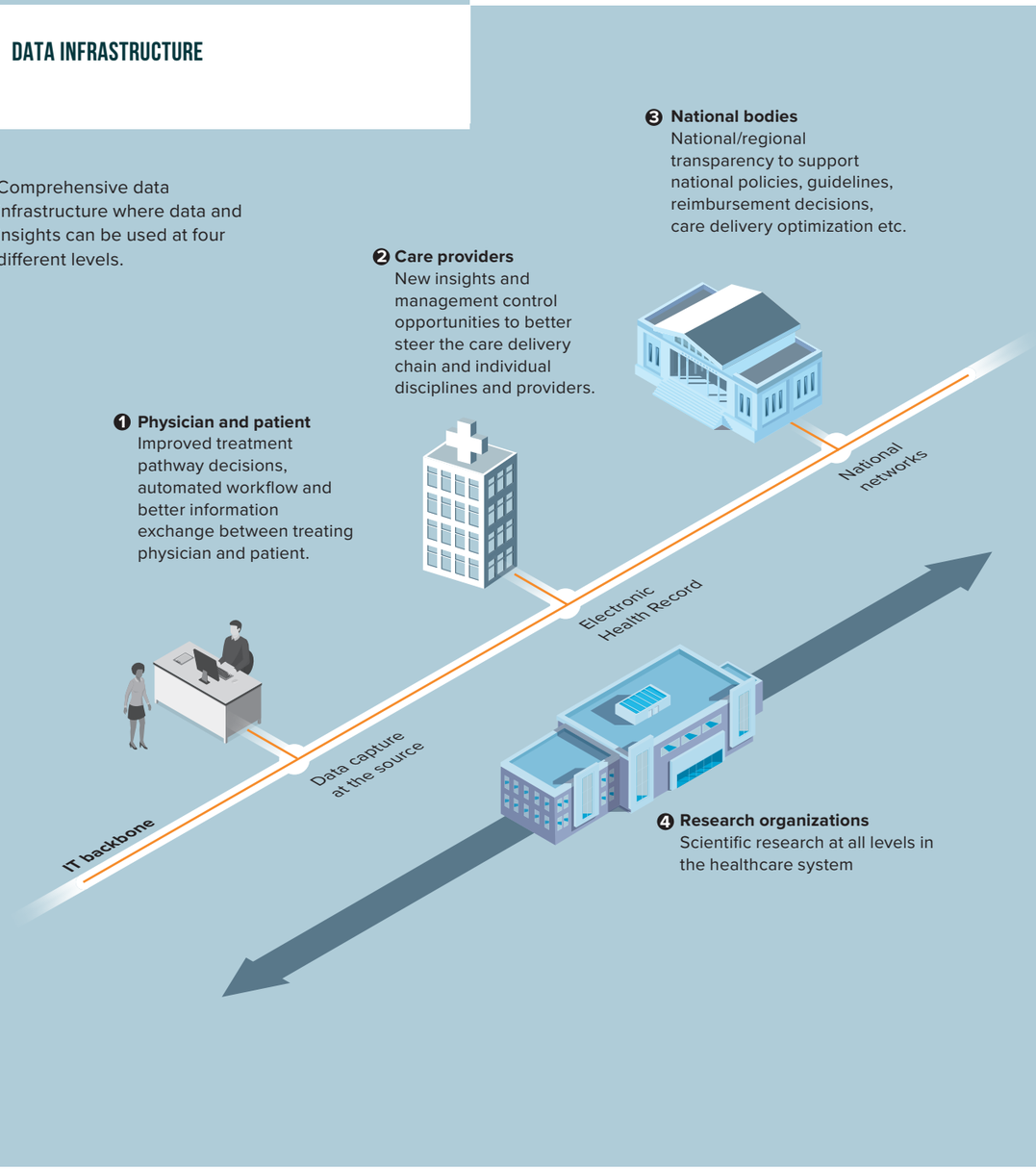
It is time to act, now!

26 The COVID-19 crisis has shown that the use of digital remote care applications has accelerated enormously because of the wave of COVID-19 patients that put pressure on the regular care delivery in the hospital. It is important to realise that a steadily increasing 'wave' of demand for regular care is on its way (see Chapter 1), which also makes these applications necessary.

FIGURE 22

DATA INFRASTRUCTURE

Comprehensive data infrastructure where data and insights can be used at four different levels.



TO CONCLUDE

The previous report made the following appeal:
VBHC, let us implement together!

In this report, we now say: VBHC, let us implement with focus!
VMHC, let us implement broadly!

Albeit this report does not have all the answers. While VMHC does organise the demand for care where VBHC does not, it unfortunately does not prevent the demand for care.

The ultimate solution is not VMHC, but VMH: Value Managed Health, where prevention also plays a role. We will come back to you in three years' time with our Vintura VBHC report edition 3.

Thank you for your attention and commitment!

Gérard Klop and Arno Rutte

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4. Jos Brinkmann, Director, Volante
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VALUE-BASED HEALTHCARE (VBHC), THE ANSWER TO OUR FUTURE HEALTHCARE CHALLENGES?

In 2006, the book 'Redefining Health Care' by Michael E. Porter and Elizabeth Olmsted Teisberg was published. This gave a vision of the healthcare market and introduced a number of key principles to increase transparency and focus on quality, with the ultimate goal of increasing patient value. A beautiful ambition!

In 2017, Vintura published its vision and insights based on the market study 'Value-Based Healthcare: working together for real change', in which we elaborated on what different stakeholders think about VBHC, what experience they have with it and what role it plays within their organisation.

Now more than three years have passed by and VBHC has been celebrated and vilified, there have been successes and setbacks, and there are believers and non-believers. In some cases, VBHC has led to scientific and heated discussions without an end. Therefore, there are reasons enough to take a closer look at the sense and non-sense of VBHC. Where does it work and where does it clearly not? What is the best way to approach and apply VBHC?

Not all principles may apply, but perhaps some of them can make a difference for the patient. It appears that both believers and non-believers are partly right. VBHC is not an one-story fits all.

In particular, the VBHC principles focus on improving our healthcare delivery, i.e. patient outcomes delivered versus costs incurred, but give little indication on how to deal with an increasing demand for care, more specifically the increasing demand for care of elderly.

Within the sub-domain of 'improving the delivery of care', VBHC unfortunately is not the answer to everything. We will discuss the applicability of VBHC and distinguish the sense from non-sense through case studies and a theoretical model and frameworks. We will then zoom in on the application of VBHC within two specific care delivery challenges: the increasing care for the elderly and the increasing pressure on pharma. To conclude, we will give some very practical recommendations for the future. We introduce the concept of Value-managed Healthcare (VMHC), outlined in a number of possible scenarios, resulting in more coordination and transparency within healthcare.