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A New Era in Belgian Healthcare:

Key Findings and Collaborative Insights towards Implementation of Value-Based Healthcare

December 2024

Commissioned by the Belgian Association of Hospital Managers to PwC Enterprise Advisory BV ("PwC") in accordance with an agreement signed between the Belgian Association of Hospital Managers and PwC (*).

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Uniting voices from across the healthcare spectrum, this whitepaper charts a path towards a future where value-based care transforms patient outcomes.

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Disclaimer: We would like to draw your attention to the fact that the Sponsors, Expert Committee members and participants to interviews and round table discussions have contributed to numerous discussions on which this whitepaper is based. They however did not co-author this whitepaper, have not necessarily read and approved the whitepaper and therefore do not necessarily agree with every element and/or recommendation contained herein.

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Contents

Foreword

On behalf of the Belgian Association of Hospital Managers
I am proud to present to you this whitepaper on Value Based Healthcare for the Belgian healthcare sector.

We at BAHM aim at helping hospital C-levels to get ready for the future. Through study days, study trips and other activities, we look past borders in time and space to find insights and motivation to tackle our common challenges. The major hurdles on the road ahead are well known. Increasing demand for care and cure, staff shortage, sustainability issues, and financial pressure are jeopardizing the availability and quality of care on a global scale. Belgium is no exception to this reality.

An increase in spending will not be the solution to these challenges. We need to reengineer our healthcare system and build a model that ensures continuous improvement of quality of care as well as affordability for patients and for society. The model should also allow us to achieve the ambitions of the Quintuple Aim. These requirements were included in our request to PwC, whom we commissioned to write this whitepaper.

We believe that VBCH is a healthcare delivery model that can suit our purposes, as it combines quality of care and cost efficiency. Desk research conducted by PwC gave us valuable insights in international evidence of the importance of VBHC, but this paper also contains convincing Belgian use cases.

Collaboration will be one of the answers to our challenges. This whitepaper was set up as a broad exercise, including the views and opinions of all stakeholders. Even though BAHM is an association of hospital managers, we wanted this report to focus on integrated care. An impressive list of actors in healthcare devoted their time, energy, expertise and insights to contribute to the remarkable content you will discover in the next pages. The list of contributors is undoubtedly one of the unique features of this paper. We wish to thank each and every one of them, as well as the organisations they represent, for the effort they put into this work.

We sincerely hope that you will find this whitepaper inspiring and motivating. We at BAHM would like it to be the start of a broad syndication for change, led by our authorities and supported by all stakeholders. The next generations of patients deserve at least the same quality of healthcare as the previous generations. That is the epitome of sustainable healthcare. That is our common responsibility.

Eric Christiaens

Belgian Association of Hospital Managers

Executive Summary

This whitepaper meticulously examines the sustainability and future challenges of the Belgian healthcare system, thereby assessing its capability and maturity to move towards value-based healthcare (VBHC).

Belgium's healthcare system is known for its extensive coverage, high accessibility, and overall good health outcomes, with a life expectancy of 82.5 years in 2023. However, the system faces significant challenges that could threaten its long-term sustainability. One of the primary concerns is the variation in healthcare quality across different providers and diseases, highlighting a need for more systematic outcomes data. Furthermore, the use of antibiotics and medical imaging remains high, hospital-acquired infections are prevalent, and staff shortages seem to reach a critical level, all increasingly putting patients and healthy individuals at risk. Financial sustainability is another critical area of concern. In 2021, healthcare expenditure in Belgium was €55.5 billion, representing 11.0% of the GDP. Despite substantial public expenditure, questions remain about whether the levels of quality achieved justify the costs. The fragmented nature of healthcare financing and decision-making, further complicated by Belgium's multi-level governance system, aggravates these issues. This whitepaper also identifies several key challenges that the current healthcare system fails to address adequately. These include the need for better (data) integration, transparency, and efficiency, as well as the requirement to adapt to future healthcare demands. The document calls for an increased focus on quality and outcome measures, suggesting that the current healthcare framework needs to evolve to a VBHC system to ensure sustainability.

In conclusion, while Belgium's healthcare system boasts many strengths, significant efforts are needed to address its financial and structural challenges to secure its future sustainability and efficiency. We call for action by the government to take the necessary steps to future-proof the Belgian healthcare system.

1 Sustainability of the Belgian healthcare system at risk

Key takeaways

1. Belgium's healthcare system provides extensive coverage and high accessibility, leading to good overall health outcomes for the population.
2. Significant variations in healthcare quality exist across different providers and diseases, with a lack of systematic outcomes data by indication and care provider.
3. The Belgian healthcare system faces high pressure due to a.o. a high use of medical resources, a prevalent issue with hospital-acquired infections, and critical staff shortages.
4. Healthcare expenditure was €55.5 billion in 2021, representing 11.0% of GDP. The system's financial sustainability is a major concern, influenced by fragmented financing and decision-making.
5. A major transformation of the Belgian healthcare system is needed to ensure long-term sustainability. A value-based approach offers a great promise as an alternative solution.

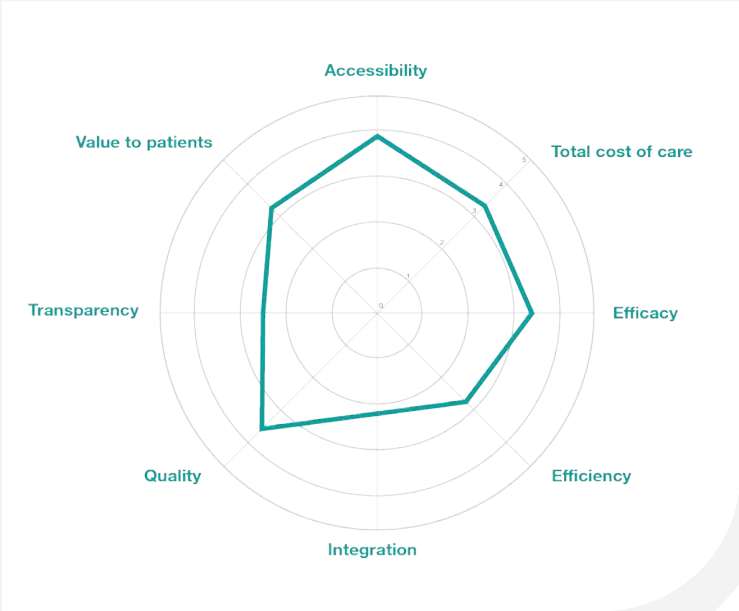
Current State of Belgian Healthcare

Belgium boasts an extensive healthcare system, covering almost the entire population for a large range of services. Care provision is based on the principles of independent medical practice, free choice of physician and care facility, and predominantly fee-for-service payment [1]. Thanks to this open and highly accessible system, the Belgian population is deemed to be in good health overall, with a long-life expectancy of 82.5 years on average in 2023 [2].

A survey launched in preparation for this whitepaper (see Annex 1 - Methodology) confirms this: in an overall assessment of the Belgian healthcare system, survey respondents representing the entire Belgian healthcare ecosystem scored accessibility and quality the highest when considering a set of 8 potential dimensions (Fig 1), while also highlighting some areas for improvement (integration, transparency and efficiency).

Figure 1 - The health of the Belgian healthcare system: highlights from the survey

How would you rate the health of our current Belgian healthcare system overall?



Which elements of our current Belgian healthcare system are (not) working well?

74% availability and quality of health insurance coverage

65% availability and ease of accessing healthcare services

56% challenges related to the aging population and rising demand for healthcare services, particularly for chronic disease management

41% limited focus and resources dedicated to prevention and early intervention initiatives

Quality of healthcare provided to individuals is deemed high in general, although significant variations across providers are demonstrated for different diseases (e.g., in urology [3], stroke [4], lung cancer [5] or cardiology [6]). While some data exist for specific indications, systematic outcome data by indication and by care provider are currently lacking. Moreover, recent indicators on the appropriateness and safety of care also show room for improvement, with e.g., the use of antibiotics and medical imaging remaining at disproportionate level, a high prevalence of hospital-acquired infections, and healthcare professionals indicating staff shortages are potentially putting patients at risk [7]. Concerns are raised across the healthcare ecosystem, with a call to increase attention on quality and outcome measures.

Besides the need for an increased focus on quality and outcome measures, the financial sustainability of the healthcare system is another area of major concern across the healthcare ecosystem. Moreover, questions on whether the level of quality achieved is appropriate should also be related to the cost of healthcare. In 2021, expenditure on health amounted to €55.5 billion in Belgium, accounting for 11.0% of Belgian Gross Domestic Product, ranking Belgium 8th in the WHO European Region in terms of the share of GDP spent on health. Public expenditure on health was 77.6%, while out-of-pocket payments and voluntary health insurance represented shares of 17.9% and 4.5%, respectively [8]. The notable trend of an increasing demand for care and inefficiencies on the use healthcare resources over the past years is worrying. Using current frameworks for performance measurement and/or quality assessment that lack the cost aspect, it is difficult to judge whether these investments in healthcare yield the right outcomes and quality of care provided.

Such assessment will also greatly depend on who assesses this balance, as not all stakeholders have a clear view on actual costs and/or quality delivered: patients will typically deem cost to be lower than e.g., government, while healthcare professionals may evaluate the quality of care higher than those not directly involved in care delivery. Moreover, siloed budgets further cause misinterpretation of actual costs. This debate has been getting louder over the past few years, as resources become scarcer, and pressure on the healthcare system keeps increasing.

In addition to this important debate, the current healthcare system is struggling to appropriately address many of today's and tomorrow's key challenges (see Fig 2), putting its longer term sustainability at risk.

Figure 2 - Key challenges for the Belgian healthcare system and how VBHC can provide a solution

	Key challenge in the Belgian healthcare system	VBHC as a solution
Population health	Ageing population and rising demand for healthcare services, particularly for chronic disease management	Understanding of which interventions are most effective in addressing population health challenges, balancing the needs of the individual and society as a whole
Prevention & early intervention	Limited focus and resources dedicated to prevention and early intervention initiatives	Maximising the health of an individual through more dedicated prevention and early intervention initiatives will support improving the population health and create value at individual, population, and society level.
Finances	Inadequate funding for healthcare and financial sustainability amid rising healthcare costs	Dedicated funds and appropriate incentives will allow to develop, implement and maintain VBHC practices, thereby creating room for innovation and testing outside the regular budget that covers healthcare costs to date.
Workforce	Shortage of healthcare professionals due to workforce burnout and stress and disbalance between demand and availability of these resources	The availability of dedicated staff to support healthcare professionals with e.g., data logging and analysis, and managing and reporting on VBHC pilots, will allow healthcare professionals to focus on the individual seeking care, while practices become more efficient and more consultations can be performed in the same time. Moreover, inclusion of VBHC methodologies and practices in academic tracks will ensure a more efficient way of working from the start of a healthcare professional's career.
Network	Fragmentation of expertise and resources across care institutions and regions, and lack of care coordination at the governmental level	The set-up of a dedicated VBHC transformation office (see Section 3) ensures a top-down coordination of care provision. Moreover, setting up IPUs for specific indications will concentrate expertise and resources for those indications.
Resources	Inefficient use of healthcare resources and the need for fit-for-purpose healthcare infrastructure.	Focusing on outcome parameters and tracking interventions and costs allows to identify areas for improvement, reduce waste, and drive more efficient use of healthcare resources and infrastructure.
Digital technologies	Lack of innovation and slow adoption of digital health technologies, coupled with a general lack of digitalisation across the healthcare system. Lack of valorisation of data and incentives to use digital technologies for the benefit of the healthcare system.	Optimising existing information technology platforms, leveraging digital tools and technologies, and using them to support decision-making in healthcare (e.g. where to invest, focus and improve) will allow for the healthcare system to become more efficient (e.g., by reducing administrative burden) and transparent. Showcasing the benefits of using digital technologies to increase the value for patients and the healthcare system will prompt stakeholders to use these technologies.
Data	Lack of systematic and robust outcome data sets by indication	Developing standardized outcome sets for each indication and measuring those outcomes in a transparent manner will allow to benchmark and continuously learn and improve across care providers.
Decision-making	Lack of inclusion of the patient or individual seeking care in decision-making.	VBHC approaches are people-centric by design and prioritise the value and outcomes for the individual, including active participation in decision-making.

Our healthcare system is complex and fragmented

Belgium's healthcare system is fragmented due to its three levels of power (federal, regional, and local). Health policy and regulation are divided among these levels, resulting in eight ministers or deputy ministers overseeing health matters. This fragmentation extends to legislation, responsibilities, and resources, and leads to misalignment between government strategies. Despite interministerial conferences for alignment, the complexity of legislative and regulatory frameworks hinders an efficient, innovative healthcare system. Additionally, healthcare financing is a complex mix of models involving many stakeholders in decision-making and operations [1].

The landscape to serve the care continuum is equally complex, with different providers taking on specific roles, leading to confusion for both individuals seeking care and healthcare providers. The lack of clear delineation of roles and responsibilities results in overlapping services, administrative duplication, and gaps in care continuity. Poor integration, data sharing, and coordination among primary, secondary, and tertiary care providers exacerbate these issues, causing poor handovers, discontinued care and patients not finding the right information or support. In addition, the recent development of hospital networks has not yet achieved the expected impact in optimising collaboration among care professionals to improve patient outcomes or integration of care [9, 10].

Beyond challenges in care delivery, complex regulatory frameworks hinder (early) access to therapeutic or technological innovations [11]. New technologies like genome editing, synthetic biology, and AI revolutionise disease prevention, diagnosis, and treatment but also pose regulatory challenges. For example, the advent of personalised medicine adds pressure on the system and its sustainability, requiring new reimbursement and payment approaches and clinicians to adapt their practices.

Finally, a lack of transparency at different levels is a recurring frustration across the healthcare ecosystem (see also Fig. 1), as this hampers continuous learning and improvement. This is further exacerbated by the considerable delays in availability of reports and/or data in general to evaluate the healthcare system's performance and quality (e.g., quality indicators only becoming available 2-3 years after the time of data point creation).

Our healthcare system is no longer meeting the demands upon it

Having sufficient qualified care professionals with the right skills and knowledge available to take care of individuals and implement innovations is one of the key drivers to assure quality and safety. Especially post-COVID-19, the healthcare system has faced staff shortages, with 2821 nursing vacancies in Belgian hospitals in 2022, which signified a 20% increase from the previous year [10]. Despite sufficient nursing graduates (5304 in 2021 [12]), filling these vacancies remains challenging. While the number of practising physicians in Belgium is currently stable, 38.2% are aged 55 years and over [13], thus introducing risk of future shortages. Increasing administrative burden and risk of burnout exacerbate staff shortages [14], leading many healthcare professionals to leave the healthcare sector.

In addition, Belgian hospitals face financial challenges, with most general hospitals reporting negative balance sheets in 2022 and 2023 due to high inflation and rising energy costs [10]. A similar trend is expected for 2024. This situation hinders current operations and future investments for e.g., implementation of medical and technical innovations. As a similar outlook for the coming years is expected, the need for revised hospital financing is urgent, as highlighted by many professional bodies and umbrella organisations [15]. Moreover, important socioeconomic inequalities are observed through the whole spectrum of health indicators [1, 8]. A majority of stakeholders in the healthcare ecosystem recognise this observation, as raised in our survey and interviews, and indicate that the decline of access to healthcare and increase in inequality of care is a worrying evolution.

In recent years, patients and - to a lesser extent - healthy individuals have increasingly sought active involvement in their healthcare management. While patients and patient organisations seem to become more recognised in the healthcare system by e.g., the setup of the Patiëntenforum at RIZIV/INAMI, there is still much ground to cover [16]. In this view, greater attention is needed to better include their voices in clinical decision-making, both individually and collectively through e.g., indication-specific patient organisations. However, healthcare providers and institutions struggle to meet these expectations due to limited investment capabilities and support for additional governance structures. Interestingly, patient organisations face similar challenges in terms of assuring their sustainability in their current context, thus putting their assistance to patients at risk [16].

Our healthcare system is not efficient (enough)

The Belgian healthcare system's hallmarks (independent medical practice, free choice of physician and care facility, and predominantly fee-for-service payment) put it at high risk of potential under/over/misuse [17]. Treatment adherence is about 50% according to international studies, with issues such as incorrect use of medication, overuse of antibiotics and psychotropic drugs, excessive medical imaging, unnecessary second or third opinions, and repeating diagnostic work-ups ([1] and inputs gathered through our survey, interviews and validation sessions). The WHO and OECD estimate that 30% of healthcare resources are wasted on avoidable complications, unnecessary treatments, or administrative inefficiencies [18-20], equating to EUR 16.65 billion for Belgium in 2021 that could be better spent [8].

The fee-for-service model, predominant in financing medical and medico-technical services (consultations, laboratories, medical imaging and technical procedures) and paramedical activities (physiotherapy) may encourage potential over/misuse as providers have little incentive to limit procedures. This not only increases healthcare system costs and administrative burden on care providers and payers, but can also overburden patients without providing added value. Availability and correct interpretation of appropriate outcomes data would allow providers to make more informed decisions on performing procedures. Yet, such data are currently not available.

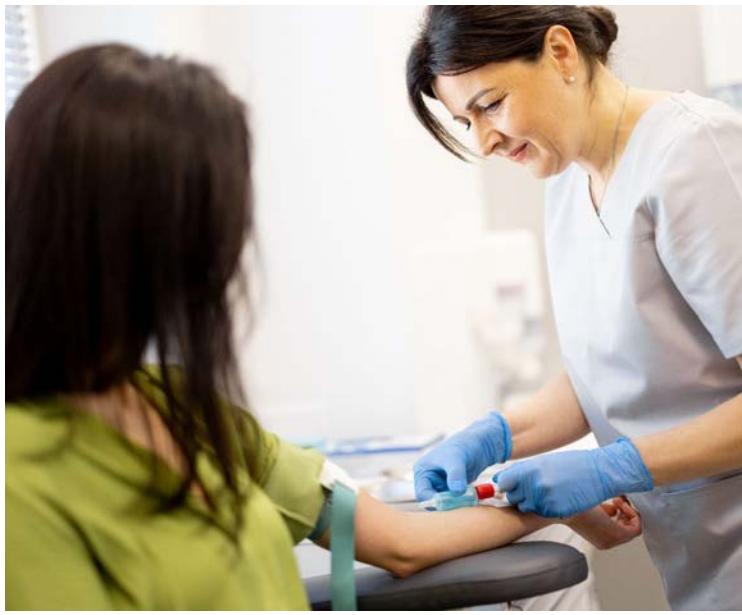
Despite the promise of technology in healthcare (e.g., resource planning, e-health solutions, and electronic medical records), digitalisation and adoption of digital health technologies is slow due to the lack of incentives and time and resources to support adoption.

Our healthcare system focuses on cure

The current healthcare system mostly focuses on curing diseases and maximising the “quantity” of patients’ life, rather than prevention and quality of life (Euro Health Net). Financial decisions seem to prioritise short-term budget impacts over patient or societal value. In addition, budgets for prevention, cure and care are managed separately, resulting in inefficient allocation of resources when considering the full cycle of care. Moreover, the current system mainly evaluates clinical parameters, thereby neglecting lifestyle factors, therapeutic adherence, and the individual’s context and competences.

This is also reflected in the healthcare system’s performance evaluation, which focuses more on processes than outcomes and/or quality achieved. There is no consensus on quality assessment methods, and existing frameworks, or those under development, structurally addressing quality are often questioned by institutions and practitioners. For example, international accreditation, once part of the Flemish Quality-of-Care triad [21], has been discontinued by several hospitals due to concerns about its bureaucratic nature (i.e. time consuming and market-driven), cost, and lack of focus on patient-relevant outcomes [22].

A revised performance evaluation framework was recently launched to better reflect evolutions in the healthcare landscape [23]. However, it evaluates the performance of the healthcare system at a systemic level only, e.g. basing the evaluation of its efficiency on a set of indicators such as one-day surgical admissions, average length of stay for normal deliveries, use of low-cost medication and biosimilars, and low-care dialysis. Moreover, the delay in collecting data causes evaluations to be based on data from more than two years ago. Hence, Belgian hospitals lack knowledge of nationwide patient outcomes and variability between hospitals, leading to a lack of transparency and real-time insight into achieved outcomes across all types of care, including preventive care.



Finally, current prevention policies at population level, mainly focused on vaccination and specific screening campaigns, are not achieving the desired impact [1]. There is a need for more systemic, structured approaches to prevention to create a more sustainable healthcare system in Belgium.

Our healthcare system is not ready to meet tomorrow's needs

In the future, our healthcare system will face increasing complexity due to an ageing population, higher prevalence of chronic diseases, and multimorbidity. These challenges, confirmed in our survey (Fig. 2), will require the healthcare system to adapt to more demanding needs.

The proportion of Belgians aged 67+ years is expected to rise from 16.5% in 2018 to 22.9% in 2070. The ageing intensity ratio, (80+ years within the group of elderly), will increase from 33.9% in 2018 to 45.6% in 2070 [1]. Rapid population ageing requires rethinking systems regarding healthy ageing, quality of care, and end-of-life care, while balancing social adequacy with financial sustainability [24]. Increasing tax revenues to support ageing populations is challenging as the working-age population shrinks. The EU's old-age dependency ratio is projected to double from 31.4% in 2019 to 57.1% by 2100, meaning fewer than two working-age persons per elderly person (65+ years) by 2100, compared to three currently [25, 26].

Non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, chronic respiratory diseases, mental disorders, neurological disorders, and cancer cause 80% of the disease burden in the EU and are the leading causes of avoidable premature death [27]. In Belgium, tumours and cardiovascular diseases were the main causes of death in 2021, accounting for 48% of all deaths [28]. Over one in four Belgians live with at least one chronic disease, with prevalence increasing with age [29]. Worrying is the fact that chronic diseases affect one-quarter of the working-age population, with premature death causing EUR 115 billion in economic loss annually in the EU. In addition, in 2020, 36% of EU adults of 65+ years had at least two chronic diseases. The burden of chronic disease has been growing rapidly over the last decade [25, 30, 31].

Not only the burden of the ageing population and higher prevalence of chronic diseases questions the readiness of the Belgian healthcare system for future needs. Also the lack of embracing new technologies in healthcare that offer both challenges and opportunities, limits the system's sustainability. Innovations such as novel therapeutic approaches and digital health solutions promise support for both care providers and receivers. However, the level of digitalisation across the healthcare ecosystem is still limited, and adopting new technologies remains a key challenge for healthcare providers in Belgium, causing technology providers to look elsewhere to expand their market [32].

The Belgian healthcare system needs to change to survive

While Belgium's healthcare system boasts some strengths such as accessibility and quality of care, it faces issues with integration, transparency and long-term sustainability (from a finance and infrastructure and resources perspective). Urgent changes are needed to ensure its future viability. A sustainable, resilient healthcare system that aims at improving the health and quality of life of the population while meeting increased demands requires a systemic transformation, reconsidering how care is provided, organised and financed. This includes factoring in the health of individuals and the population to create an affordable, performant and efficient healthcare system that ensures quality of life for both care receivers and providers.

In this view, a value-based approach offers great promise as an alternative to the current Belgian healthcare system (Fig. 2), as illustrated in the following sections.

VBHC as a potential solution

VBHC was introduced in 2006 by Michael Porter and Elizabeth Teisberg as a solution to the rising healthcare expenditures and the pressure on the quality and accessibility of healthcare globally [33]. The goal of VBHC is to sustainably improve outcomes (in relation to costs) that matter to people by organising care around individuals with a specific condition. This is accomplished by standardising outcome and cost measurements and using these data to monitor and compare performance within and between organisations.

The value in VBHC is defined as the measured improvement in a person's health outcomes for the cost of achieving that improvement [34]. Within the VBHC approach, care providers are incentivised to help individuals improve their health, prevent chronic diseases and adopt evidence-based practices.

To accomplish the transition to a value-driven system, Porter and Teisberg developed a value agenda, consisting of six components that help to implement VBHC in practice [35]:

1. **Organise into Integrated Practice Units (IPUs)**: involves describing the actual care delivery process to organise healthcare into IPUs.

2. **Measure outcomes and costs for every patient:** outcomes are categorised into three tiers: health status achieved, the process of recovery, and the sustainability of the individual's health condition. Cost accounting methods such as time-driven activity-based costing (TDABC) are used to estimate the full costs of a care cycle.

3. **Move to bundled payments for care cycles:** Bundled Payments (BPs) are proposed as an alternative payment model, rewarding care providers based on outcomes achieved across the episode of care rather than the number of services provided.

4. **Integrate care delivery across separate facilities:** involves integrating care delivery systems to eliminate fragmented care and optimise the types of care provided at each location.

5. **Expand excellent services across geography:** focusing the geographical expansion, i.e. across care providers, on improving value, rather than merely increasing the number of patients.

6. **Build an enabling information technology platform:** an effective IT platform is fundamental to encourage collaboration, facilitate measurement, and support innovative reimbursement strategies.

Recent research calls for an update of Porter and Teisberg's value agenda, thereby introducing four new elements to better align with evolutions in the healthcare system [36]: incorporate a value-based quality improvement program following a systemic approach by care providers; enhance communication on value to patients, thereby prioritising shared decision-making and PROMs; transition to a value delivery system with collective provider accountability towards patients; and adoption of platforms for providers to learn from each other. While the value-agenda was established for use at organisational level, these elements can be used as a first indication on the maturity of VBHC at systemic level.

While the VBHC definition by Porter and Teisberg is well-known in the VBHC community, there is a need to better define and concretise the different elements in the VBHC equation. In addition to the VBHC equation, the evolution of the global healthcare guiding principles defined as the Triple Aim in 2017 and evolved into the Quintuple Aim nowadays, should be considered when defining and concretising outcome measures.

While the Triple Aim focused on improved patient experience, better outcomes and increased efficiency as a key to healthcare transformation, the Quintuple Aim also includes aspects of clinician well-being and health equity [37] (see Fig. 3).

Figure 3 - The VBHC equation and its relation to the Quintuple Aim

Patient value = patient-relevant **outcomes** / **costs** per patient to achieve these outcomes

A New Healthcare Imperative - Quintuple Aim

Improve Provider Experience
Increase the well-being and engagement of the workforce

Improve Patient Experience
Enhance experience of care

Advance Health Equity
Address health and care inequalities

Improve Population Health
Improve the health and well-being of the population

Lower Total Cost of Care
Reduce per capita cost of healthcare and improve productivity

Elements of value

Defining value is equivocal, as it is in the eye of the beholder. Moreover, value can be found at different levels, e.g., individual, population and societal. An opinion by an expert panel, set up by the European Commission to define the value in VBHC and define effective ways of investing in health, considered that the total value is composed of the following four types of value [38]:

Allocative value:

Equitable distribution of resources across all individuals seeking care.

Technical value:

Achievement of best possible outcomes with available resources.

Personal value:

Appropriate care to achieve people's personal goals.

Societal value:

Contribution of healthcare to social participation and connectedness.

Based on the series of validation sessions conducted in preparation for this whitepaper (see Annex 1 - Methodology), we agree with this reasoning and the fact that value should go beyond just monetary value, yet it remains to be determined how these value pillars can become more actionable. In addition to these four aspects of value, the value for healthcare professionals and the healthcare system as a whole, e.g. efficient and effective use of resources leading to achieved outcomes, should also be accounted for by including relevant outcome measures and tracking costs.

Elements of outcomes

Regardless of the type of outcome measure, Porter and Lee emphasised that '*The only true measures of quality are the outcomes that matter to patients. And when those outcomes are collected and reported publicly, providers face tremendous pressure - and strong incentives - to improve and to adopt best practices, with resulting improvements in outcomes'* [35]. In 2017, the OECD launched the Patient-Reported Indicators Surveys (PaRIS) initiative with the goal of benchmarking outcomes that matter most to patients with a focus on primary care [39]. Belgium is an active participant in this initiative through Sciensano. Yet, it should be stated that more and better data are needed for all indications, which are to be made available in real-time and by country to allow proper benchmarking.

There are many ways of capturing relevant outcomes. For instance, PROMs (Patient Reported Outcome Measures) and PREMs (Patient Reported Experience Measures) are used in VBHC for outcome measurement, usually collected via questionnaires. PROMs offer insights into an individual's well-being beyond clinical parameters, covering areas such as fatigue and physical functioning. They can be either generic to evaluate a patient's overall health or specific to a particular disease. PREMs capture patients' views on their care experience, reflecting the quality of care received. While PROMs assess treatment effectiveness, PREMs highlight areas for improvement in healthcare services and facilities [40]. In addition to PROMs and PREMs, PRIMs (Patient Reported Incident Measures) can be valuable tools to capture the patients' perspectives on incidents that occur during their healthcare experience. PRIMs focus on identifying and understanding events that patients perceive as errors or adverse incidents, from medication errors to issues with communication or care coordination. As such, PRIMs aim to improve patient safety by highlighting areas for enhancement of care services [41]. It is critical that PROMs, PREMs and PRIMs questionnaires are co-designed by patients affected by the disease in scope to ensure the right measures are captured.

Clinician Reported Outcomes (ClinROs) are assessments made by healthcare professionals based on their observations and clinical judgement, derived from a patient's observable signs, physical manifestations, and behaviours related to a condition or disease [42]. Unlike PROMs, PREMs and PRIMs, which come directly from patients, ClinROs rely on the expertise of healthcare professionals to interpret and report on a patient's health status. Interestingly, ClinROs are not yet often used in VBHC although they can provide valuable insights.

Noteworthy is the fact that, while PROMs, PREMs and PRIMs are a type of patient-centred outcomes, not all patient-centred outcomes are reported by patients themselves. Patient-centred outcomes focus on what is most important to the patient. They are identified through patient engagement and reflect priorities and values of the patient population [43]. The International Consortium for Health Outcomes Measurement (ICHOM), established in 2012, is a well-known organisation in standardising patient-centred outcome measures in VBHC, and is widely adopted in the VBHC community [44]. Yet, what matters most is to measure outcomes that truly matter to patients, regardless of their type, and including the aspect of day-to-day care management.

In addition to the above outcome measures, our interviews and validation sessions indicated that stakeholders across the healthcare ecosystem also encourage the definition of a generic outcome set to assess the efficacy and adequacy of the healthcare system itself in a given indication or setting.

Elements of costs

The cost side of the VBHC equation includes direct and indirect costs for the full cycle of care, including the initial intervention and any subsequent procedure required as part of the entire treatment. This means also including costs related to readmissions and (avoidable) complications after initial intervention. Moreover, costs related to non-treatment of a given condition should be accounted for as well. Direct costs cover medical and non-medical expenses, such as those related to home modifications for the individual. Indirect costs involve, on one hand, costs incurred by patients due to e.g. loss of production (due to incapacity for work, occupational disability, or death), affecting patients, their carers, and society overall [45]. On the other, indirect costs should also involve costs incurred by society (e.g., social benefits). It needs to be noted that the purpose of measuring costs does not constitute a cost-cutting exercise. It rather serves as a means to maximise value by achieving the highest possible quality of life as perceived by the patient, relative to the costs. When a patient's observed value is high, the expected costs are presumed to be low, as a patient in good health consumes less care, which is less expensive.

It is clear that the VBHC model differs significantly from the current Belgian healthcare system (Fig. 2). As an initial assessment for Belgium's maturity in VBHC, one could consider evaluating the achievement of the six value-agenda components in the healthcare system to date. As shown in Figure 4, Belgium has progress to make, facing hurdles but also having drivers for change to leverage, if we are to shift to a VBHC system (also see next sections for more details).

Figure 4 - VBHC maturity in Belgium and key hurdles hampering VBHC implementation today

Organise into Integrated Practice Units (IPUs)

Available pilots and demonstrators are mostly limited to specific indications and care providers; dedicated centers of expertise only available for very few indications.

Hurdles hampering VBHC implementation:

- Lack of dedicated resources to support capturing, structuring and managing data
- Depending on the indication, population-level assessments (vs. individual level) are not always straightforward
- Difficult to obtain a comprehensive view for an indication, with different actors performing different activities in different pieces of the healthcare system
- Limited alignment among different actors on how to bring VBHC into practice; limited patient engagement and empowerment in their care trajectories *

Measure outcomes & outcomes for every individual

While initiatives to collect appropriate quality indicators are being launched for specific indications and/or at selected care providers, there is no standardised methodology nor practice in place.

Hurdles hampering VBHC implementation:

- Limited sharing of data platforms, dashboards and PROM/PREM tooling, resulting in a lot of duplication of work

Move to bundled payments for care cycles

Financing of healthcare provision is primarily based on fee-for-service. Initial steps were taken towards a pay-for-performance model, yet, very limited evidence to date.

Hurdles hampering VBHC implementation:

- Insufficient financial incentives linked to value and quality outcomes, limiting full adoption of VBHC methodologies and approaches *
- Presence of financial constraints that highly focus on cost reductions and containment, rather than improving value, quality and efficiency *
- Lack of financial reforms to support the implementation of VBHC practices.

Integrate care delivery across separate facilities

Fragmentation is encountered across the entire healthcare system. The Belgian healthcare system is deemed very complex by care providers and receivers.

Hurdles hampering VBHC implementation:

- Too little integration and coordination across different disciplines and levels of care *
- Too little emphasis on prevention, early diagnosis and follow-up, while at the same time a heavy focus on the in-hospital care trajectory
- Lack of integration of social determinants, adding to the burden of an individual.
- Limited awareness about VBHC, as there is no adequate coverage of the VBHC concept in educational programmes

Legend:

Not implemented | Partially implemented | Comprehensively implemented | * top-ranked in the survey

Figure 4 continued - VBHC maturity in Belgium and key hurdles hampering VBHC implementation today

Expand excellent services across geography

While some initiatives are ongoing to increase collaboration among different healthcare professionals, institutions and lines of care, there is still a lot of room for improvement.

Hurdles hampering VBHC implementation:

- Resistance to change and/or cultural barriers among healthcare professionals, patients and/or payers *
- Fragmentation of healthcare and reimbursement systems *
- Lack of a regulatory and financial (reimbursement) framework to test innovations prior to nationwide scale-up

Build an enabling information technology platform

The provision of an interoperable and healthcare system-wide IT infrastructure is under development. However, the impact of these developments is yet to be uncovered.

Hurdles hampering VBHC implementation:

- Lack of data that is captured in the right way, structured and made accessible; lack of real-time individual and population data
- Lack of integrated electronic health records, health data spaces and/or registries that allows for interoperability of systems
- Lack of data transparency, both between healthcare professionals involved in a given care trajectory, and across all actors in the healthcare ecosystem, limiting the use of RWD/RWE
- Lack of regulatory framework concerning data privacy to allow use of health data

Legend:

Not implemented | Partially implemented | Comprehensively implemented | * top-ranked in the survey

2 VBHC in practice today

Key learnings from other countries

Key takeaways

1. Integrated care models and patient-focused programmes are key to improve patient outcomes and increase efficiency.
2. Evidence-based decision-making requires availability and use of appropriate health data infrastructures, as well as capturing and sharing the right data in a transparent manner.
3. A collective effort, spanning the entire care trajectory and engaging all stakeholders in the healthcare ecosystem is needed to successfully implement VBHC practices.

The concept of VBHC is being studied and integrated into healthcare systems in many countries around the world, including countries in Europe, North America, Asia and Australia. Notable initiatives have been observed where countries seek to improve the efficiency and quality of care by focusing on patient outcomes rather than the volume of services provided. While many learnings can be gathered, with valuable examples being observed around the world, we have selected learnings that could be translated to a Belgian context across the different aspects of VBHC, including systematic VBHC implementation, healthcare delivery, health data, integration of care, and healthcare financing.

Systematic implementation of VBHC

Sweden is often cited as a leader in the adoption of VBHC, with its OrthoChoice programme for hip and knee replacements and spine surgery. In addition to establishing a bundled, outcome-based payment model in the above indications, it has put efforts into setting up quality health registries and electronic health records to compile and share RWE about health outcomes. Interestingly, Sweden has 21 regions with different local authorities, which allows them to experiment and pilot reforms within a smaller population before scale-up at national level. The lack of an integrated IT environment, variability in data quality and completeness across registries, and data sharing across regions and borders remain challenging [46].

Also the UK is strong in adopting integrated and patient-focused care, through e.g. the national GIRFT programme where the performance of specialties was compared across care providers and continuous improvement cycles were implemented. The programme resulted in increased productivity, efficiency and capacity within the NHS, leading to better access to care, faster treatment, improved patient outcomes and significant cost savings. Continued monitoring and implementation of recommendations, as well as tailoring best practices to local needs and priorities are focus areas to sustain the success of the programme [47].

In the Netherlands, the Linnean Initiative is an example of a network of predominantly healthcare providers with the common goal to move to a VBHC system. The Initiative uses a bottom-up approach to, e.g., stimulate the use of PROMs in the consultation room [48]. Another Dutch example is the Santeon network that comprises 7 hospitals and focuses on multiple target disease areas for the implementation of VBHC. Per target disease area, an improvement team is engaged that monitors both outcomes and costs, allowing comparison of disease areas within each hospital to learn and optimise care delivery [49].

Moreover, the Dutch healthcare system puts strong emphasis on nation-wide preventive health programmes and early diagnosis, with support from first line care, thereby considering the full care cycle [50]. Despite many successful examples, there is a clear lack of proper collaboration between the different stakeholders in the Dutch healthcare ecosystem. Because of the financial flows in the current healthcare system, healthcare insurance companies are not eager to reimburse care practices that would reduce their revenue. As VBHC provides more efficient healthcare, decreased revenue is expected, thereby hampering collaboration with stakeholders in the (private) insurance sector.

Similarly, the United States has launched several initiatives, such as the Accountable Care Organizations that aim to improve patient outcomes while reducing costs through value-based payments and coordinated care [51]. Well-known is the Kaiser Permanente consortium that integrates customised healthcare, wellness and insurance plans [52]. Private insurers have a big say in how to provide care in the United States. For instance, they decide which medical images are appropriate and thus covered by the insurance, following the ESR iGuide clinical decision support system that is pushed to hospitals [53]. While very top-down, such an approach does seem to reduce the number of irrelevant medical images and may help to counteract the ‘medical shopping’ phenomenon. Although effects are positive with respect to these initiatives, providers participate on a voluntary basis and therefore, the effects may be biassed as only organisations that expect a positive effect will more likely engage in such initiatives [54].

Swansea University in Wales is known for its efforts in educating, researching and establishing VBHC methodologies and practices. For instance, in the IDEATE project (2018-2020), a methodology was developed to define and test an outcomes-based agreement for a metastatic breast cancer therapy [55]. More work has been performed to define the challenges of outcome-based contracting in Europe [56]. Moreover, the university's teams have demonstrated the importance and ability to report an international, patient-centred outcome dataset using routinely collected data from multiple sources without additional system burden, thereby potentially supporting VBHC implementation with population data science [57]. In addition to clinical studies, they evaluated the necessary antecedents to collaboration in VBHC, to establish the foundations for further development of policy, practice and theory in this field [58].

Finally, notable initiatives are found in Switzerland, including defining and monitoring outcome measurements in lung cancer, establishing solutions for integrated care models, developing digital platforms to optimise processes and costs in retirement and nursing homes, and increasing efficiencies in elective knee and hip surgery. A potential strategy and actionable recommendations for Switzerland to move the needle towards VBHC implementation at a systemic level were defined by PwC Switzerland in 2022 [59].

While not necessarily considered a systemic implementation of VBHC, other neighbouring countries such as France and Germany have put in place some aspects of VBHC methodologies and practices, described in the next subsections, where relevant.

Healthcare delivery

From a delivery organisational perspective, we could learn from Singapore, where the public healthcare system has been reorganised into three large integrated health clusters since 2017. Each cluster is led by a university hospital and fosters close collaboration with non-university hospitals and clinical centres in the region. Roles and responsibilities across care providers are very clear, and each provider measures and compares outcomes, resulting in a more efficient and effective healthcare system with the right care delivered by the right provider to the right patient. Moreover, Communities of Care with other health and social care partners were established to meet the needs of individuals in different communities [60]. Integration of primary and secondary care, thereby moving beyond an hospital-centric approach and encouraging primary healthcare professionals to take up additional roles, is essential for successful implementation of VBHC practices.

A patient referral approach for specific conditions has been shown to be successful in Switzerland as well. Implementation of a dedicated VBHC team at the Basel University Hospital resulted in faster treatment of stroke and significant improvements in patient outcomes. It is now recognised as a benchmark for stroke treatment at national and international level and considered the Swiss pioneer in outcome-based care [20]. Similarly, condition-specific specialty centres were created in Germany and the Netherlands for treatment of e.g. prostate cancer [61] and Diabetes Type 1 [62], respectively, resulting in centres with the largest patient base and best outcomes in Europe, both in disease management and treatment-derived side effects [20].

Health data capturing, transparency, access and use

The Nordics (Sweden, Denmark, Norway) are best in class when it comes to health data capturing, transparency, access and use, with the setup of various health data initiatives such as Health Data Sweden [63], the Nordic Health & Welfare Statistics database [64] and Nordic Commons [65]. Also the availability of registries in the UK is a definite advantage in view of data availability and data sharing among healthcare professionals. In addition to clinical audit programmes that collect standardised information on a patient's diagnosis, care processes and outcomes, the UK also established outcome registries and patient-focused registries, thereby collecting standardised data on patient outcomes and experiences, and enabling systematic comparison and analysis across multiple sites [66]. Such databases and registries allow to collect and share not only data at individual level, but also at population level, creating near-real-time insights into the population's health status.

Collaboration and integration across disciplines and lines of care

In VBHC, the entire care trajectory of an individual should be considered, from prevention and early diagnosis to treatment and follow-up, thereby looking beyond the in-hospital trajectory. This requires close collaboration and integration of first- and second-line care, and other stakeholders in the healthcare ecosystem. Such integration has shown to increase value for patients by e.g. the implementation of 'hospital at home' settings, allowing patients to obtain treatment in a safe way and in the comfort of their own home. France and the UK are leading examples in the implementation of such care at home models, with over 300 organisations and agencies providing care in at home settings in France [67]. The NHS@home approach, aiming to provide faster access to more appropriate and targeted care [68], and the Hospital At Home society, providing acute hospital care in an at home setting [69], are good examples of how the UK implements care at home models.

To allow for remote monitoring, and hence, providing care at home, the medical technologies and data & digital industries are key for the provision of smartphone applications and wearable devices. Applications and wearables are available and readily reimbursed through fast-track procedures in e.g. France via the PECAN Initiative [70] and Germany by listing in the DiGA Directory [71]. Yet, although many individuals use applications and wearables daily for private endeavours, adoption of such applications for healthcare purposes remains a challenge. A proper integration between lines of care is also observed in Scandinavian countries (Sweden, Denmark, Norway), where first line healthcare professionals advise on second line care through strict referrals, and integrated care pathways are being established for specific pathologies while enhancing the role of GPs and community health services [72, 73].

Healthcare financing

The Canadian healthcare system is often referred to as a model that could work in Belgium. It uses blended payment schemes for remuneration of its primary healthcare professionals that entails (i) a fixed fee or capitation to provide a basket of services to an individual for a fixed period regardless of the number of services provided, (ii) a fee-for-service for services outside the capitation basket, and (iii) various bonuses and incentives as pay-for-performance fees, mainly focusing on preventive care and chronic disease management [74, 75]. Interestingly, similar to Sweden, healthcare in Canada is organised at regional level, allowing for continuous experimentation of new care models prior to nationwide roll-out [76]. Blended payment systems seem to allow for a good basis, incentivise healthcare professionals to see patients and do not create a glass ceiling for treatment of patients that need extra care, thereby reducing the risk of cherry-picking patients by healthcare professionals.

While many VBHC studies have focused on a specific indication or pathology, it is also worthwhile to mention the increase in value that can be created by looking at cross-pathology interventions and underpinning processes. For instance, the Sherwood Forest Hospitals NHS Foundation Trust showed that standardising catheterisation practices can (i) significantly reduce the incidence of catheter associated urinary tract infections; (ii) lead to cost savings for hospitals; and (iii) release time for clinicians who catheterise patients [77].

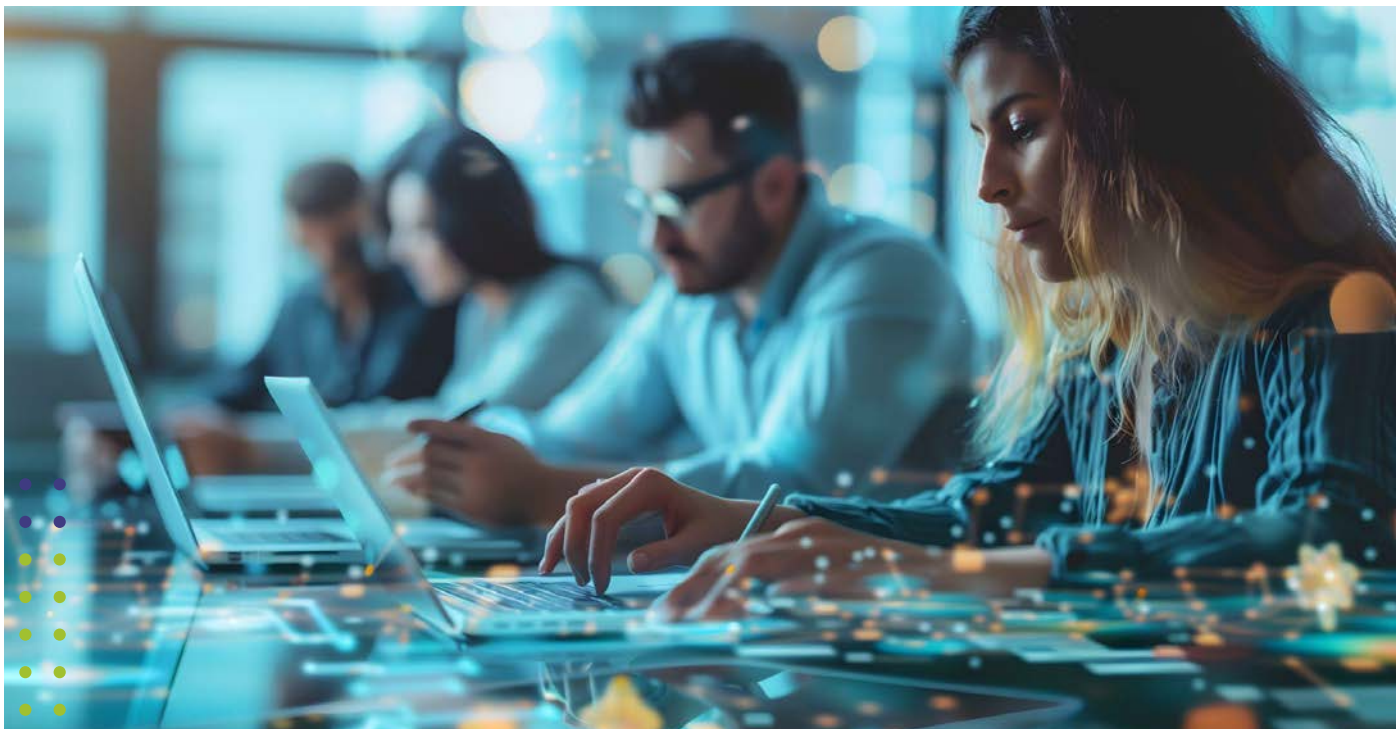
There is no country that excels in all aspects of VBHC, nor a one-size-fits-all solution, as each country has its own unique context to be considered when implementing VBHC. What is evident, however, is that it takes a collective effort, spanning the entire care trajectory and engaging all stakeholders in the healthcare ecosystem to successfully implement VBHC practices. Hence, we echo the European Alliance for Value in Health's message on the need for collaboration to transition to VBHC [78], and have already taken a co-creative approach in the development of this whitepaper (see Annex 1 - Methodology).

The status in Belgium

Key takeaways

1. There are several valuable pilot projects in specific indications to be found in Belgium.
2. While several initiatives to improve the healthcare system were launched by the Belgian government, none of them was fully successful.
3. There is no clear, common vision and strategy on how to improve the healthcare system and shift to VBHC on a structural, systemic level in Belgium.

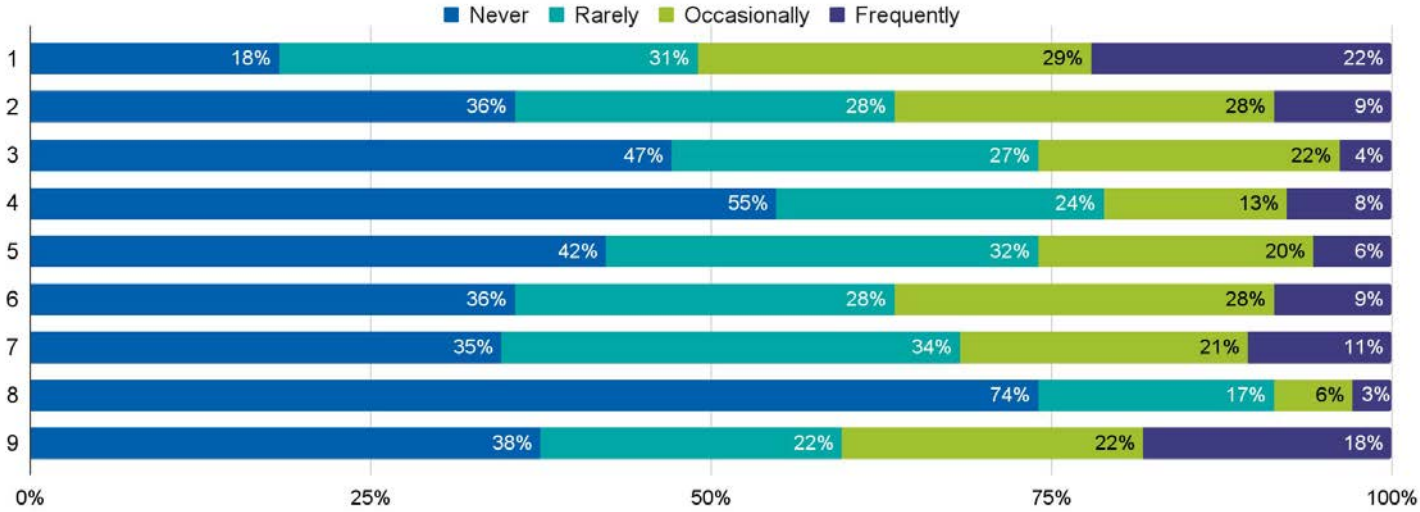
The survey conducted in the lead up to this whitepaper shows that the current level of experience with VBHC related activities is variable, with more than half of the respondents indicating being never or rarely involved in such activities to date, across a range of 9 predefined options (Fig 5a).



Respondents most often have experience with conducting outcome measurement and reporting (81.7%), researching the overall VBHC concept and/or practical implementation thereof (62.5%), participating in VBHC-focused expert panels or committees (65.3%), offering disease management programmes (64.4%) and conducting research or pilot studies on VBHC implementation in clinical practice (64.4%), albeit to a variable degree (rare up to frequent involvement).

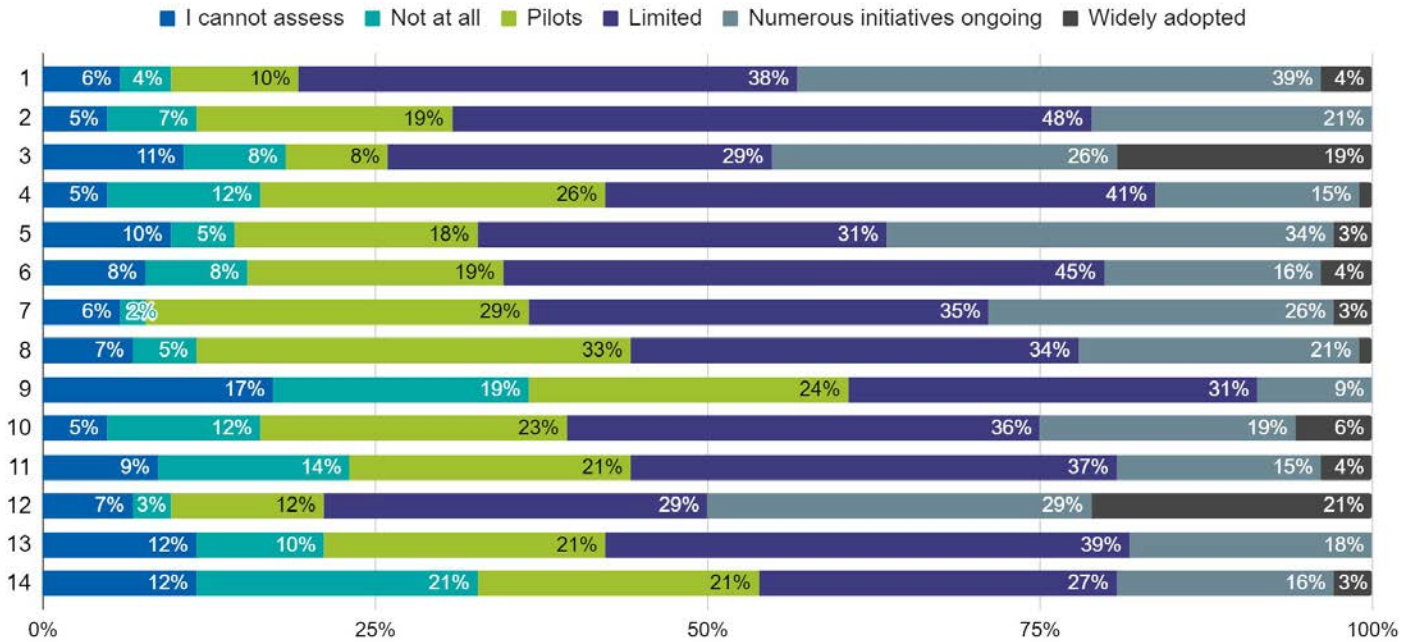
Figure 5 - Status of VBHC experience (a) and practices in place (b) in Belgium today, as based on the survey

a) VBHC in Belgium – Current experience level of survey respondents



1. Conducting outcome measurement and reporting
2. Conducting research / pilot studies on implementation of VBHC in clinical practice
3. Developing and implementing value-based payment models
4. Developing legislation, policy and/or standards related to VBHC
5. Implementing pay-for-performance initiatives
6. Offering disease management programs
7. Participating in expert panels / committees focused on VBHC
8. Participating in value-based insurance design programs
9. Researching the overall concept of VBHC and/or practical implementation thereof (incl. improvement initiatives)

b) VBHC in Belgium – Current practice



1. Collaborative care models and multidisciplinary teams
2. Continuity of care and seamless transitions between providers
3. Education and training programs for healthcare professionals
4. Emphasis on preventive care and health promotion
5. Health information exchange and interoperability
6. Health promotion and disease prevention programs
7. Innovation and adoption of digital health technologies
8. Integration of healthcare services and care coordination
9. Integration of social determinants of health into care delivery
10. Patient-centered care and shared decision-making
11. Proactive and personalized care planning
12. Quality improvement initiatives and patient safety measures
13. Research and evaluation of value-based healthcare practices
14. Transparent performance reporting

When asked to indicate to which extent certain VBHC practices are already in place in Belgium (Fig. 5b), respondents did not seem to have a good view on current practices, with 5-17% of respondents indicating not being able to assess specific VBHC practices in scope. The extent to which different VBHC practices are implemented to date was deemed highly variable by the majority of respondents, with nearly all practices considered at pilot stage or limited implementation. Education and training programmes for healthcare professionals (45.2%), and quality improvement initiatives and patient safety measures (50.0%) were considered the most widely adopted VBHC practices in Belgium. Importantly, despite the adoption of VBHC practices being somewhat limited to date, the vast majority of respondents indicated that VBHC would be an appropriate option for Belgium (78.8% in favour vs. 7.7% not in favour; the remainder of respondents replied not being able to assess or having no opinion).

Beyond the survey, several initiatives to implement VBHC approaches were performed or are ongoing in Belgium, as found in our broad consultation for use cases in the different Belgian regions. While we acknowledge there are many valuable pilot projects in Belgium, we have selected 5 use cases to highlight in this paper (see Annex 2 with one-pagers for each use case).

Implementation of a transmural ambulatory care pathway in elective colectomy

UZ Leuven, together with KU Leuven and a consortium including J&J MedTech, Q1.6 and Tiro Health, launched a Breakthrough Improvement Collaborative in 11 Flemish hospitals to implement an Enhanced Recovery After Surgery (ERAS) program. Their study has shown that increased adoption of ERAS components across centres is inversely related to better postoperative outcomes and a shorter length of stay (LOS). A mean reduction in LOS of 3.1 days was observed [79]. With 6,000 colectomies performed in Flanders on a yearly basis, a reduction in LOS of 1 day would already result in an estimated cost reduction of EUR 3,198,000.

In a subsequent project, a transmural protocol for ambulatory colectomy was developed. A multidisciplinary team was established to improve internal processes and define a set of quality indicators to monitor the safe implementation of day-care colectomies across the patient's care trajectory. Digital solutions were implemented for patient education, monitoring and data registration. LOS were further reduced and colectomy with same-day discharge was safely introduced [80]. This successful approach to day-care colectomy could serve as a template for different standardised and more complex surgical interventions, such as bariatric surgery, prostate surgery and hip replacement.

A digital transmural care pathway for lung cancer patients

In 2017, the department of pulmonary diseases of AZ Delta and Awell developed a digital transmural care pathway for stage IV lung cancer patients. The team implemented weekly digital follow-ups and reporting of side effects during systemic therapy through PROM tooling. In addition, a quality-of-life assessment was performed every 6 weeks through EORTC questionnaires. Automated digital feedback loops to the multidisciplinary care teams were used to allow earlier detection of side effects. The approach resulted in 92% compliance to treatment and reduced the number of emergency department visits (3.5% vs. 4.8%) and length of stay in the day clinic (2.5 hours vs. 4.1 hours), compared to patients in routine care. Furthermore, a higher overall survival in stage IV lung cancer patients was observed, compared to patients receiving routine care (447 days vs. 287 days) [81, 82].

An important aspect of the project's success was the direct feedback to patients when they digitally reported symptoms and/or side effects, and the integration of the digital care pathway in weekly multidisciplinary meetings. Another important point is the establishment of a mirror community with other hospitals, which allowed it to identify areas for closer monitoring and pathway improvement and refinement. Only by comparing and benchmarking it is possible to make a difference, as also shown in other use cases.

Improving outcomes by implementing AI in medical imaging

UZ Brussels, Vrije Universiteit Brussel, Icometrix and GE Healthcare developed and introduced digital solutions in the care pathways of neurological disorders, such as multiple sclerosis and Alzheimer's disease, to screen, diagnose, monitor and manage these disorders in a more standardised manner (i.e. the icobrain platform). In addition, the team developed simulation models to address the effect of introducing AI-assisted radiologic assessment on clinical decision-making, including a cost-effectiveness assessment. The support to healthcare professionals was extended with an application and website to capture patient input and provide education and information about the disease and medical images made.

Similarly, Heartflow Inc., together with the Cardiovascular Centre Aalst (OLV Aalst) and Radiology/Cardiology UZ Brussels, developed and tested a new precision strategy using deferred testing for minimal risk and initial coronary computed tomography angiography (cCTA) with or without selective FFR-CT, supported by AI tooling. The aim of the approach was to assess the initial evaluation pathway to reduce unnecessary testing and catheterisation referral for stable, symptomatic patients with suspected coronary artery disease. Their approach was found to be a clinically efficient and potentially safe initial approach for evaluating patients with new-onset stable symptoms and suspected coronary artery disease. As such, this approach could support reducing excess referrals to invasive catheterisation [85].

Establishing an Integrated Practice Unit (PsoPlus) for treatment of psoriasis patients

Because of the complexity of psoriasis patients needing care by healthcare professionals across disciplines, the UZ Gent dermatology department established an IPU team (PsoPlus) covering the full cycle of care for these patients. The team defined a value-outcome set of 21 patient-relevant outcomes (PsoVOS) and established TDABC to track and compare costs incurred [86, 87]. The team furthermore developed a bundled payment proposal for psoriasis that includes data envelopment analysis. The preparation of an ICHOM-based outcome set is ongoing and benchmarking is underway.

Moreover, the Value in Psoriasis (IRIS) study (NCT05480917) was recently initiated to determine how much value is created for psoriasis patients, based on the patient-relevant outcome set and cost measuring system. After only 6 months of PsoPlus management, results so far show significant improvements in outcomes in view of e.g., psoriasis severity, symptom control, treatment efficacy and convenience, and quality of life. The success of a multidisciplinary team around a patient is evident. Yet, efforts are needed to enhance further development and uptake of VBHC practices in the dermatology field [88].

The Type 2 Diabetes clinical pathway

Abbott's sensing technology has become a standard of care across the world for glucose monitoring for patients with diabetes type 1 and type 2 intensively treated with insulin (≥3 daily injections of insulin or other injectable antidiabetics) (recommendations 2024 of American Diabetes Association and European Association for the Study of Diabetes). In Belgium, for patients with diabetes having signed a contract in the clinical pathway, the pharmacological management is based on a principle of therapeutic escalation: monotherapy, dual therapy, triple therapy, and insulin therapy. Patients using insulin therapy must frequently monitor and adjust their blood glucose levels. This type of treatment increases the risk of hypoglycemic events, which are associated with increased morbidity and mortality. To manage their glucose, those patients have only access to finger prick technique that gives an incomplete picture of a patient's daily behaviour and induces a treatment inertia from health care professional due to a lack of relevant data. The sensing technology provides continuous glucose monitoring, allowing healthcare professionals to follow-up patients in real-time, proactively manage the disease and prevent complications. In addition to better patient outcomes, the approach led to fewer hospital admissions and reduced number of complications, resulting in long-term cost savings. This technology is currently reimbursed for patients in the secondary care conventions and is showing value through the improvements of key metrics measured and showing health improvement for patients using it [89-92].

The key to the success of this VBHC practice was found to lay in the multidisciplinary approach, bringing together all healthcare professionals involved in the care trajectory of a diabetes patient, across disciplines and lines of care. Care continuity via data exchange between the first and the second line health care professionals will increase the value for money, the quality of care and the quality of life of patients in diabetes clinical (or care) pathways. This model has the potential for scale-up to other chronic conditions with similar management needs related to diabetes (e.g. cardiology and ophthalmology).

Government-led initiatives

In addition to projects initiated by healthcare professionals or industry, the Belgian government has also launched initiatives over the past decade:

- In 2015-2019, the federal government (Ministry of Health and Social Affairs) called for a reform of the hospital landscape by creating local-regional clinical hospital networks, with the aim to enhance transmural collaboration and implement feedback mechanisms among hospitals to improve quality of care and efficiency [93]. Several networks were created from 2020 onwards. Yet, the success of the reform is under discussion, as structural and operational limitations were identified along the way that hamper the initial goal of care provision and long-term sustainability [9, 10].

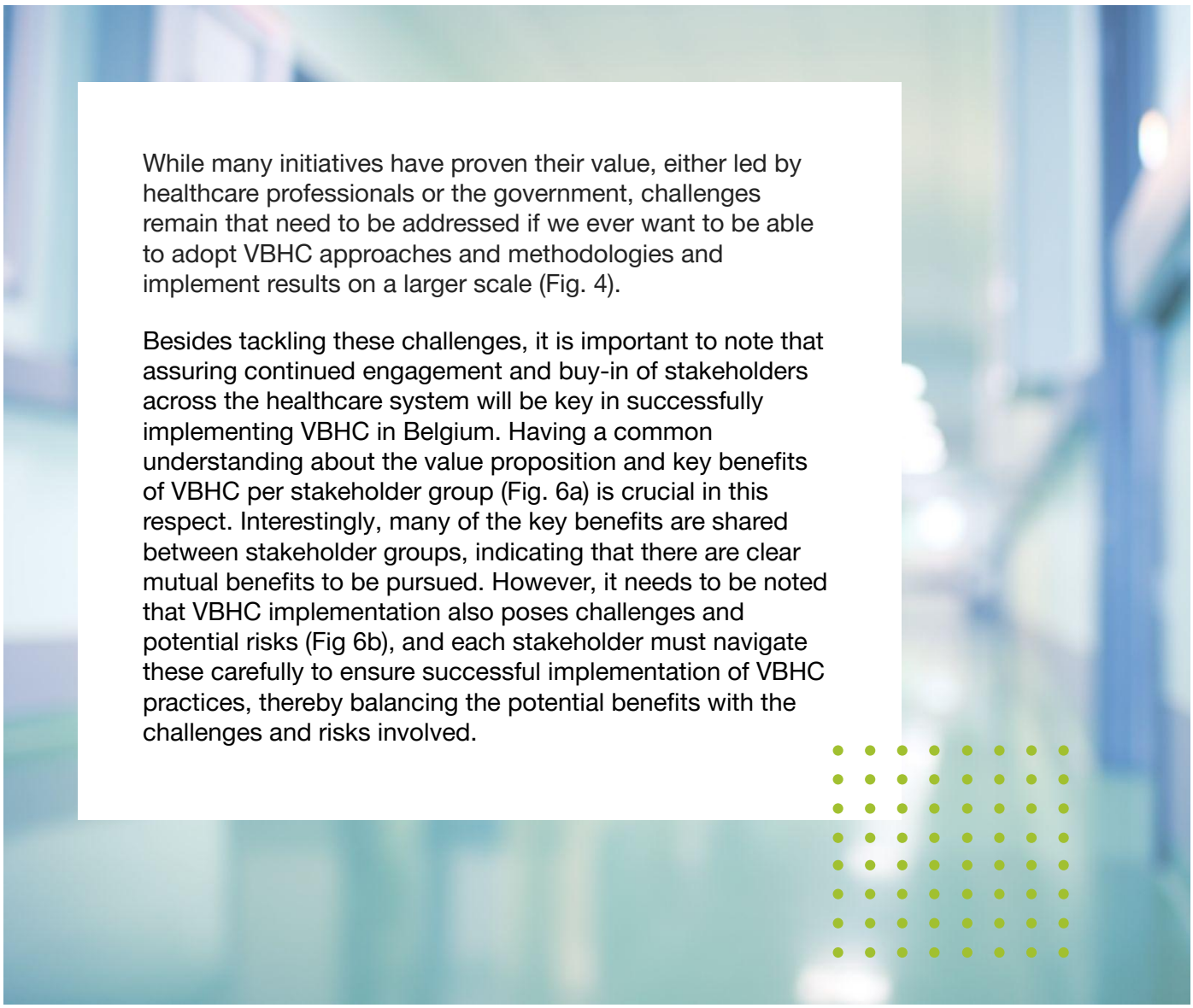
- In the context of reforming the hospital financing model, the Pay-for-Performance (P4P) programme was launched in 2018. The programme aims to financially reward general hospitals that achieve good results on a set of yearly reviewed hospital-wide and pathology-related structure, process and outcome indicators, the latter including incident notifications, patient experience measurements and clinical outcomes. Hospitals can participate voluntarily in the programme, with quality being assessed by authorities. The P4P programme allows to compare performance of hospitals and implement feedback cycles, thereby increasing the quality of care provided [1, 94]. Yet, the highly voluntary nature to participate, not necessarily capturing the right quality indicators to learn and improve, and financial rewards being too small to incentivise continued participation, seem to hamper further uptake of the programme.

- A reform of the nomenclature for medical interventions reimbursed by the mandatory health insurance was initiated in 2019, coordinated by the RIZIV/INAMI. This reform aims to (i) decrease remuneration differences between and across healthcare professionals from primary and secondary care; (ii) refine the nomenclature list to align with changes in the healthcare, such as telemedicine and collaborations across disciplines; (iii) improve the nomenclature's structure, readability and transparency; (iv) incorporate incentives to encourage collaboration and quality; and (v) clarify the remuneration of healthcare professionals to ensure operational costs and remuneration for work performed can be clearly identified. With the reform, the nomenclature will no longer be based on the healthcare professional's specialty that is providing care, but rather on the anatomy of the body receiving care. Preparations for the nomenclature reform are expected to be finalised by the end of 2024 [95].

- In June 2022, the 'New Deal for the General Practitioner (Practice)' was launched, proposing a new financing model for GPs in which the fee-for-service part is reduced and the lump-sum payment per patient (including a capitation payment) is increased, compared to previous models [96, 97]. Work was done to identify countries that could serve as examples for the development of a mixed fee-for-service and lump-sum payment model for remuneration of GPs and their practices [98]. In addition to changes in the financial model, the New Deal also introduces the option for GPs to delegate certain tasks to other healthcare professionals, such as nurses, to help reduce workload and improve efficiency. GPs can choose to opt into the new system voluntarily [97]. While the New Deal was implemented, it showed limited success, potentially due to e.g., difficulties in balancing the fee-for-service and capitation systems, continued high levels of stress and burnout among GPs, and GPs' resistance to the new task delegation model. An evaluation of this model is expected in the years to come.

- Another initiative led by the government was the call to establish the Belgian Integrated Health Record (BIHR), as part of the action plan eHealth 2022-2024 [99]. The BIHR is aimed to become the reference framework for the evolution of eHealth to support integrated and multidisciplinary care. From 2025 onwards, all well-being and health data is aimed to be available in the BIHR for all members of the care team, including the individual him/herself [100]. A pitfall of this initiative is, however, that patient communities are not involved. A second initiative as part of the eHealth 2022-2024 action plan is the setup of a Health Data Agency (HDA) for secondary use of data, to facilitate on one hand the use of data for innovation, research and development purposes, and on the other, allow for population management and informing policies based on aggregated data [101]. It moreover saves time and resources and allows access to large datasets without the need for additional data capturing.

- Finally, Minister of Health and Social Affairs Vandenbroucke called for action towards an all-in-forfait per pathology (albeit excluding honoraria fees) in November 2023 [102], as a response to the Maha 2023 study by Belfius [10], with the aim to stabilise the financing mechanism in the Belgian healthcare system. Furthermore, the reform of the hospital landscape and concentrating specialised care remain important agenda items. A study around the all-in-forfait per pathology is expected to shed light on a strategy forward by the end of 2024. Work already done towards forfait reforms in specific pathologies in past legislations (e.g. Cabinet De Block in 2014-2020) should be leveraged where possible.



While many initiatives have proven their value, either led by healthcare professionals or the government, challenges remain that need to be addressed if we ever want to be able to adopt VBHC approaches and methodologies and implement results on a larger scale (Fig. 4).

Besides tackling these challenges, it is important to note that assuring continued engagement and buy-in of stakeholders across the healthcare system will be key in successfully implementing VBHC in Belgium. Having a common understanding about the value proposition and key benefits of VBHC per stakeholder group (Fig. 6a) is crucial in this respect. Interestingly, many of the key benefits are shared between stakeholder groups, indicating that there are clear mutual benefits to be pursued. However, it needs to be noted that VBHC implementation also poses challenges and potential risks (Fig 6b), and each stakeholder must navigate these carefully to ensure successful implementation of VBHC practices, thereby balancing the potential benefits with the challenges and risks involved.

Figure 6a - VBHC and its benefits for different stakeholder groups

Benefits	Academia & research institutions	Care institutions & providers	Government agencies & regulators	Healthcare professionals	MedTech, diagnostics, data & digital industry	Patients & patient organisations	Pharmaceutical & biotech industry	Professional bodies & networks	Third party payers, mutualities & insurers
Availability of large highly structured datasets for secondary use	●				●		●		
Opportunities to devise new avenues for research and development	●				●		●		
Dedicated educational programmes for healthcare professionals	●			●				●	
Avoidance of unnecessary tests and treatments, reducing waste and focusing resources on effective interventions.		●	●			●			●
More cohesive and efficient care delivery through coordination of healthcare services and providers		●	●			●			
Consistent and continuous care to individuals, through better communication and collaboration among providers		●		●		●			
Rewards for achieving high-quality outcomes, aligning financial incentives with health improvements		●	●	●	●		●		●
Innovation and adoption of best practices to achieve better outcomes		●		●	●	●	●		
Increased transparency in outcomes and costs that supports making more informed choices and fosters accountability among providers		●	●	●		●			●
High-quality care to a growing and ageing population through optimised resource use		●	●	●		●			●
More informed decision-making on reforms and resource allocation through availability of better information		●	●						●
Dedicated efforts on prevention and early intervention, reducing the need for costly acute care and hospitalizations			●		●	●			●
Avoidance of the unsustainable cost growth associated with traditional fee-for-service systems			●						●
Measurement and analysis of health outcomes to drive improvements in clinical practices based on empirical evidence				●		●			
Healthcare professionals are connected to their purpose as healers, supporting their professionalism and countering clinician burnout		●		●					
Door-opener to technological innovations in patient & provider support		●			●	●	●		
Innovations reach their full potential beyond clinical trials and demonstrate their value in real-world settings through better collaboration					●	●	●		
Being seen as an investment, not as a cost					●				
Better patient experiences & satisfaction through more personalised care						●			
Increased health literacy and active involvement of individuals in decision-making leads to better treatment adherence and healthier behaviours, organisation of care and health policy.						●			
Improved patient engagement and participation in their own care.						●			
Safeguards of members' interests and members' representative in relevant initiatives and projects						●		●	
Amplifiers for VBHC communications, education and knowledge						●		●	
Value-for-money with minimum less effective or low-value spending									●
Insurers become organisers and service providers, with greater added value and personalisation for the individual.									●

Figure 6b - VBHC and its challenges for different stakeholder groups

Challenges	Academia & research institutions	Care institutions & providers	Government agencies & regulators	Healthcare professionals	MedTech, diagnostics, data & digital industry	Patients & patient organisations	Pharmaceutical & biotech industry	Professional bodies & networks	Third party payers, mutualities & insurers
Shift in funding priorities to align more closely with VBHC principles, potentially reducing support for basic research or exploratory studies	●								
Straining financial and human resources to accommodate significant investment in data infrastructure and analytics	●				●				
Standardised outcome measures conflict with the nature of academic research, limiting scope and creativity of studies	●								
Adoption of a standardised set of outcome measures may be too limited to shape an intervention		●	●						
Financial instability during the transition period due to changes in reimbursement models and need for upfront investments		●	●	●	●		●		●
Development of VBHC-related regulations that ensure quality and equity is complex.			●						
Difficult public buy-in if generating perceived or real reductions in care quality or access		●	●	●		●			
Pressure to meet specific outcome metrics, leading to stress and burnout	●	●		●					
Seamless integration of new technologies with existing systems and workflows					●				
Increased risk of data breaches and cybersecurity threats due to increased reliance on data		●	●		●				●
Reduced access to care for individuals with complex or chronic conditions (inequity in care)		●	●	●		●			●
Widening of health disparities by favouring populations that are easier to treat			●			●			●
Outcome-based pricing models are risky if expected outcomes are not achieved, potentially leading to financial losses		●			●		●		
Delays in market access for new treatments if clear value is not immediately demonstrated					●	●	●		
Significant investment needed in data infrastructure and analytics to track and measure outcomes effectively	●	●	●						●
Accurate patient risk adjustment needed to ensure fair comparisons and payments			●	●		●			●
Coordination of interdisciplinary collaboration	●	●	●	●	●	●	●	●	●

Despite clearly creating impact and value through pilot projects in a given pathology or indication, there is no clear vision on how to shift to VBHC on a structural, systemic level in Belgium to date. An actionable strategy to move the needle towards VBHC implementation is equally lacking. If we want to make Belgium the first country in Europe that succeeds in implementing VBHC at a systemic level, we not only need to align on a joint vision with all players in the healthcare ecosystem, but we also need to develop a strategy to tackle the identified challenges.

3 Making the shift towards value-based healthcare in Belgium: a vision, supported with an actionable roadmap

Key takeaways

1. A long-term collaborative effort is required to implement VBHC in Belgium, with a call for action to the government for appropriate support and incentives.
2. A joint vision with 5 guiding principles and an actionable strategic roadmap are presented, detailing clear next steps in a top-down meets bottom-up phased approach.
3. A transformation to VBHC is about profound change. Effective change management will be a critical success factor for VBHC implementation.

Transitioning to a VBHC model is complex and entails a long-term (5-10 years) effort from all stakeholders in the healthcare ecosystem. Upfront investments need to be made by all stakeholders to reap the shared benefits in the short-, mid- and longer term. As described before, a proper value proposition for each and every stakeholder is essential if we want to successfully implement VBHC in Belgium. From a practical point of view, an actionable strategy covering clear direction and next steps are to be devised, ensuring that all stakeholders are heard and can collectively move towards standardised VBHC practices. The coordination of a nation-wide roll-out of VBHC methodologies and practices will be challenging and require strong multi-stakeholder engagement and project management. Furthermore, as VBHC is about profound change to our healthcare system, the efforts required to make those changes should not be underestimated, with change management to be considered a critical success factor for VBHC implementation.

Calls for such a change are growing globally and in Belgium, acknowledged at various levels and stakeholder groups [27, 32, 103-106], and consistently confirmed by various stakeholders involved in the development of this whitepaper. As shown by our survey, key areas for improvement include care integration and coordination, patient and outcomes focus, prevention and data-driven decisions, adoption of new technologies (e.g., AI), and revised financing. A vast majority of professionals across the healthcare ecosystem expect changes to their professional roles (84.6%), with most of them expecting significant changes (53.8%) and welcoming such changes (73.1%).

This section presents a joint vision for VBHC in Belgium, supported by a wide range of stakeholder groups. It outlines a foundation and direction for transforming the healthcare system to a value-based model on a systemic level. To move from vision to action, a top-down meets bottom-up approach is proposed, along with a strategic roadmap for phased implementation and operationalisation. The strategic roadmap is kept rather high-level for now, as detailed plans depend on government decisions. However, nearly all stakeholders involved in developing this whitepaper are ready to actively participate in advancing VBHC in Belgium. We believe in designing a future-ready system, not revising the old one. The approach described below focuses on systemic transformation, starting with the whole system before detailing its parts. Therefore, specific guidance for individual organisations on shifting to VBHC is not included.

The foundation: a vision that is broadly supported and adopted across the healthcare ecosystem

It is essential for the healthcare ecosystem to share a common vision of the ideal system and its fundamental workings. Our vision explains the reasons behind decisions, policies, and actions, guiding the system's ongoing direction. Healthcare visions proposed by policymakers and care providers emphasise a shift to a people-oriented, outcome-driven, and systemic approach, including prevention and well-being [27, 103, 104, 107]. This perspective is shared by the Belgian healthcare ecosystem [11, 105, 106, 108]. Many of these visions offer concrete recommendations, which have been considered in this whitepaper.

Creating an actionable vision towards the new Belgian healthcare system is challenging, as concrete healthcare priorities and objectives are under development by the government, expected to be finalised by the end of 2024 [8]. Meanwhile, we have confirmed and validated five key guiding principles with experts and representatives from all stakeholder groups in dedicated validation sessions (see Annex 1 - Methodology). These principles are described below together with concepts to underpin their operationalisation.

Guiding principle 1:

The Belgian healthcare system will be centred on outcomes and value, and delivered through a systemic, people-centric and data-driven approach

We must prioritise value in our healthcare system while ensuring long-term financial sustainability. This includes recognising value in the services delivered and outcomes obtained (incl. quality, efficacy and safety), and access to products and services for all. Moreover, striving for a health-in-all-policies approach will integrate health considerations into policy making across all sectors (incl. transportation, housing, education and environment), improving population health and health equity by addressing social, economic and environmental factors.

We should focus on both individual care and population health by collecting, integrating, and sharing relevant data across the healthcare ecosystem. Establishing uniform definitions and standards to address healthcare quality and outcomes, and making processes transparent, will enhance efficiency. It will moreover maximise outcomes at all levels (individual, departmental, organisational and system), ensuring everyone can achieve their full potential for health and well-being. In view of understanding data concerning direct and indirect healthcare costs, Time-Driven Activity Based Costing (TDABC) can be used. TDABC uses two variables: the time commitment of a resource and its capacity cost rate [109]. Current cost accounting in healthcare primarily relies on Activity Based Costing (ABC), which does not consider the time dimension and causes a lack of data in this view.

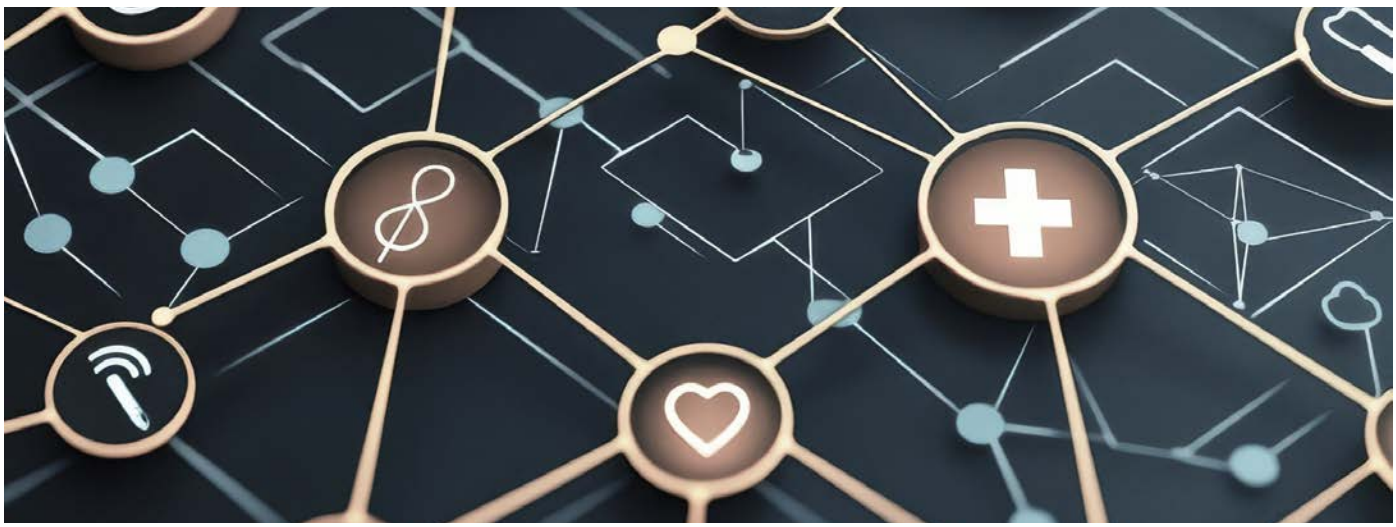
Finally, we should equip individuals with tools to (pro)actively manage their health and boost the general population's health literacy. Telemonitoring solutions have improved outcomes in e.g. Type 2 Diabetes (use case The Type 2 Diabetes clinical pathway; section 2) and lung cancer (use case A digital transmural care pathway for lung cancer patients; section 2). Similarly, applications for (pro)active symptom management and a website for medical imaging education have also shown positive results (use case Improving outcomes by implementing AI in medical imaging use case (in section 2)). Sharing learnings and best practices is essential to establish a system of continuous learning and improvement.

Guiding principle 2:

The Belgian healthcare system will focus on getting the right care to the right individuals at the right time, by the right provider in an efficient and effective way

With limited resources, the focus should be on achieving the best outcomes by improving efficiencies and reducing low-value activities, thereby freeing up resources to invest in higher-value activities that result in better outcomes or patient experience. However, shifting to VBHC should not be seen (or even perceived) as a mere cost-saving measure. It is crucial to maintain flexibility for personalised treatment plans and allocate resources for innovation and population health improvements within the healthcare budget.

To operationalise care delivery, the existing infrastructure needs to be adapted to allow the setup of multidisciplinary, integrated practice units, such as that established at UZ Gent (use case *Establishing an Integrated Practice Unit (PsoPlus) for treatment of psoriasis patients* in section 2). Besides IPUs, more widespread adoption of at-home or out-patient models and telemonitoring solutions also require infrastructural changes in the care landscape. Those changes relate not only to the data infrastructure, but also to the physical infrastructure of consultation rooms and care providers, allowing for data collection and sharing, evidence-based decision-making, and continuous learning within and across the multidisciplinary team. In this view, synergies with a recent project supported by the FPS Health to establish a telemonitoring prescription, including an integration layer to facilitate data sharing between telemonitoring providers and electronic patient dossiers as held by Belgian hospitals, should also be maximally pursued.



In addition, we should reconsider a shift in roles and responsibilities between first-, second- and third-line care providers, which may need to be revisited along the way as new technologies and treatments become available. Such a shift is already underway since the COVID-19 pandemic, where pharmacists are now allowed to provide vaccinations for e.g. flu and COVID. Additionally, an increased use of multidisciplinary teams in primary care to manage chronic conditions such as diabetes and heart disease, thereby collaborating with second line specialists, nurses, and other professionals, can reduce hospital visits and improve outcomes.

Moreover, more specialised outpatient clinics for complex conditions, such as cancer or rare diseases, can be provided in secondary care settings, allowing patients to receive high-level care closer to home and enabling tertiary care hospitals to focus on the most critical cases. By providing the right level of expertise for the right indication, resources can be allocated more effectively. Importantly, individual patients highly benefit from systematic support from patient organisations to educate and assist them throughout their journey.

Care and clinical decision-making should be evidence-based and personalised, considering individual context, complexity and preferences. The shift towards more personalised care or medicine, using specific diagnostics and biomarkers, ensures the right intervention for the right patient at the right time, reducing low-value care. Embracing science, research, and innovation in care and clinical decision-making also fosters new methodologies for e.g., disease prediction and early diagnosis. Additionally, promoting care-at-home settings can improve outcomes, as demonstrated by UZ Leuven's ambulatory care pathway for elective colectomy (use case *Implementation of a transmural ambulatory care pathway in elective colectomy* by UZ Leuven; in section 2).

The role of new technologies in care provision is underrated and underused. We should embrace and leverage technological advancements, including AI tooling, to improve, optimise and expand our healthcare system, and speed up diagnosis. Digital health records and registries, and data analytics and RWD/RWE can (help) alleviate resource shortages. The WHO recognises harnessing new technologies as one of the 13 urgent health challenges for the next decade [110]. Technology can rebalance healthcare demand and supply [111], also shown by the use of AI in medical imaging (use case *Improving outcomes by implementing AI in medical imaging*; section 2). However, AI tooling is currently funded by hospitals or industry that acknowledge the benefits it may create, with limited resources. Government support is needed to fully benefit from implementing AI and other digital health solutions on a larger scale. With the rise of new technologies, it is essential to make deliberate choices about their introduction from a health economic perspective [112]. Given budget constraints, society cannot afford to implement all new technologies. Additionally, the benefits of technology should be carefully weighed against the desirability, the feasibility for the population concerned, and potential impact on the care receiver's experience (e.g., high levels of digitalisation that increase efficiency may lead to a less personal, human way of working, which care receivers typically not prefer). Therefore, decisions should be made considering both outcomes, preferably from a VBHC perspective, and the associated costs.

Guiding principle 3:

The Belgian healthcare system will maximally serve the entire population, warranting appropriate care for all now and in the future

Healthcare should be maximally accessible and equitable for everyone, as per the basic principles of the Belgian healthcare system. Care provision should be based on an individual case or pathology. While everyone should have access to care, individuals have responsibilities in their care trajectory as well, such as maintaining an appropriate lifestyle in view of e.g., smoking, drinking, exercise and diet, but equally regarding making decisions on which care they wish to (not or no longer) receive at any given time point.

Qualitative, widely available prevention should become a cornerstone of our future healthcare system. Currently, most healthcare professionals are paid to treat illness, with few frameworks and incentives for prevention. To balance cure and prevention, a thorough revision of the healthcare financing model is needed.

We need to be conscious that implementing VBHC practices is a moving target and long-term commitment, requiring a plan with short-, middle-, and long-term objectives. The new healthcare system must be prepared for future needs, actively monitor quality, and enforce continuous improvement through a data-driven approach to ensure appropriate care for all at any time. The quality of life of healthcare professionals should be a key area of attention to maintain an appropriate balance between the care receiver's needs, insights and preferences and those of care providers.

Streamlining administrative processes and adopting more digital solutions can already significantly reduce the administrative burden for healthcare professionals, allowing them to focus more on patient care in our current system. Investments to support the shift to digital healthcare are required to adopt technological solutions and embrace current technological evolutions. For instance, implementation of AI and other digital automations can (help) alleviate the (administrative) burden on healthcare professionals and allow for faster decision-making on the appropriate treatment.

Finally, long-term sustainability requires resilience, thereby building a system that can foresee, absorb, recover from, and adapt to shocks such as pandemics, climate change, geopolitical conflicts, and cyberthreats. As countries recover from COVID-19, strengthening health systems' capacity is more critical than ever [24].

Guiding principle 4:

The future Belgian healthcare system is a joint mission for everyone

Advancing our healthcare system requires fostering co-creation and collaboration among a wide range of stakeholders from the start (cfr. Health in All Policies [113]). There must be room for science, research, and innovation to implement new methodologies and practices as they come along. Structured dialogue is essential to ensure the voices of all actors in the healthcare system are heard, ideally expanding this into a wider social debate. This approach was used in developing this whitepaper, co-creating the foundations included herein with various stakeholders in the Belgian healthcare ecosystem (see Annex 1 Methodology).

Shifting to a new system offers a chance to rethink and recalibrate the ownership, accountability, and involvement of the various stakeholders in the healthcare ecosystem within a given care trajectory. Trust, a people-centred approach, and accountability are essential. In the envisaged Belgian VBHC system, strong leadership and coordination across the care continuum are crucial for clear, patient-centred decision-making.

Finally, we must share both advantages and burdens equally, showing solidarity. All healthcare stakeholders should invest in making VBHC a reality in Belgium, understanding that major impact, value and gains, including potential cost savings, come in the longer-term. We should learn, improve, and collaborate closely to move forward as one team.

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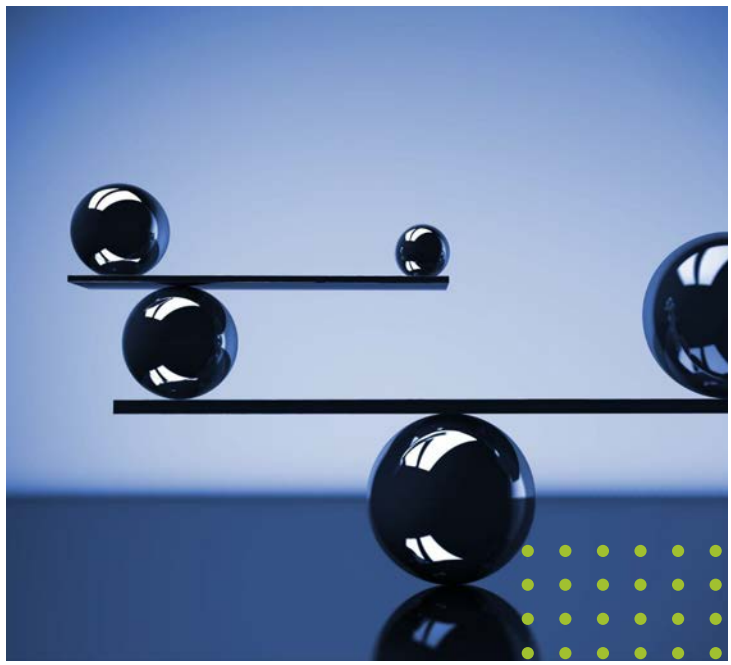
Guiding principle 5:

All value-creating players in the Belgian healthcare ecosystem should be accountable and recognised fairly for their contributions

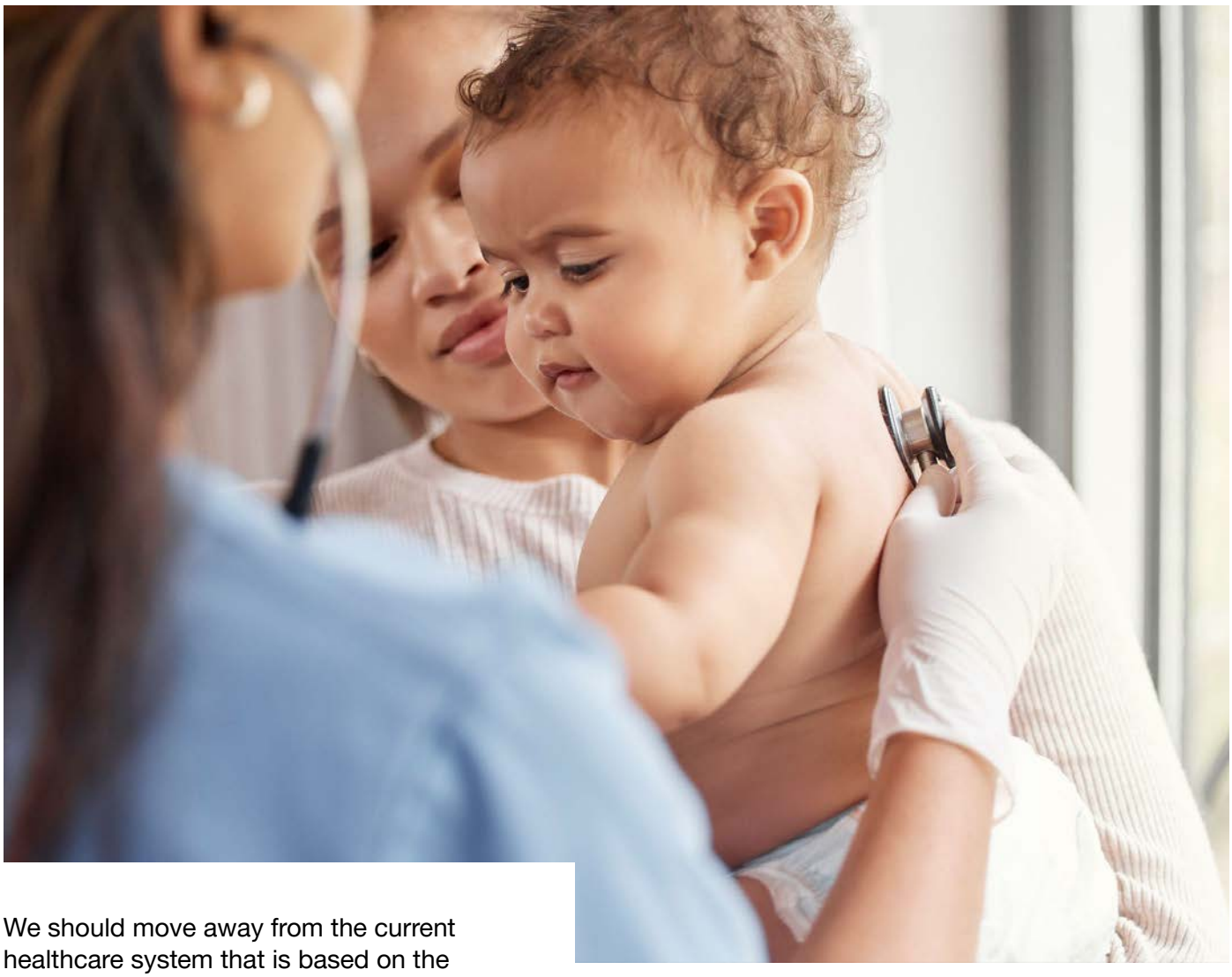
All stakeholders that positively impact an individual's care trajectory are considered 'value-creating'. Financial and non-financial incentives should reward care providers who excel in value-based metrics, while penalties such as redeeming incentives or other types of consequences should ensure quality and value are maintained.

We should carefully define fairness to stay competitive in the Belgian and European care labour market. In addition, measures are needed to prevent underserving specific populations, by e.g., healthcare professionals cherry-picking patients and excluding more difficult cases or complex pathologies, as complex cases require more time, and the perception may exist that good outcomes are more easily obtained in straightforward cases.



To shift from a volume- to a value-based healthcare system, an alternative financing model is needed to reward care providers based on the value they deliver. Such new payment model should mix financing models to allow risk adjustments, factoring in comorbidity indexes, and exceptions. Bundled payments offer a single, predetermined fixed amount for all services related to a medical condition over a set period. This approach shifts the financial risk associated with care delivery to providers, making them collectively accountable for both costs and quality of care, and encourages collaboration and coordination. Therefore, bundled payments can enhance value by improving outcomes and reducing spending. As stated by Porter and Lee [35], sound bundled payment models should include: severity adjustments or eligibility only for qualifying patients; care guarantees that hold the provider responsible for avoidable complications, such as infections after surgery; stop-loss provisions that mitigate the risk of unusually high-cost events; and mandatory outcomes reporting. Not all indications may fit bundled payments (e.g., psychiatry), and so each should be assessed individually.

Moreover, for indications in scope of bundled payments, understanding all costs incurred, preferably through TDABC, is crucial, as shown by the PsoPlus IPU at UZ Gent (use case Establishing an Integrated Practice Unit (PsoPlus) for treatment of psoriasis patients; section 2). Important to note is, however, that TDABC calculations concern average costs, while patient expenditure can vary. It is crucial to account for differences in patient risk profiles to avoid financial incentives that lead to cherry-picking or excluding individuals. This consideration is important when introducing any alternative payment model in Belgium. To overcome challenges when designing alternative payment models, techniques such as efficient frontier and data envelopment analysis can be used, which help optimise the balance between risk and return, and evaluate the efficiency of different healthcare providers by comparing their performance to the best-performing units, respectively [114]. A close collaboration between healthcare professionals and health economists is key to design alternative financing models.



We should move away from the current healthcare system that is based on the dichotomy of organised care and the individual freely choosing care, in the (wrong) assumption that all individuals are fully self-reliant. Instead, we should strive for a triangular system with organised care, self-reliant individuals, and disease-specific patient communities to support and assist the individual in the practical care of living with a disease [16]. Yet, patient organisations are not properly recognised for their work, and - unlike neighbouring countries - not publicly funded in Belgium.

Finally, when revisiting the stakeholders' roles and responsibilities in the healthcare system, decision-making bodies should fairly represent all relevant stakeholder groups. An integrated, multidisciplinary approach of providing care should be reflected at the decision level to maintain a top-down meets bottom-up approach, essential for VBHC success in Belgium.

The VBHC Transformation Office: adopting a top-down meets bottom-up approach, together with a transformation mindset

"System change is a deliberate process designed to transform the system's fundamental behaviours so that a new, sustainable pattern can emerge." [115].

System changing activities are as much about finding out what needs to change as it is about mobilising the will and strategic support for transformative change. To proactively support this work, we have started to develop a 'change coalition of the willing', through the co-creative approach taken for this whitepaper (see Annex 1 - Methodology).

A top-down meets bottom-up approach for systemic implementation of VBHC in Belgium, coordinated by the VBHC Transformation Office

To create meaningful and fit-for-purpose solutions, we propose a mixed top-down meets bottom-up model to guide and oversee the development and implementation of VBHC in Belgium. Our research shows that neither approach alone has been sustainable, resulting in suboptimal solutions and even frustration among stakeholders. Combining and aligning both perspectives - top-down for overall direction, political position and support, ownership, and mandates for operationalizing VBHC in practice, and bottom up for scientific, health economic, clinical and care receiver insights, methodologies and approaches - ensures that VBHC implementation will work. Decision-making and steering should occur in the middle ground, fostering a concomitant mindset shift across stakeholder groups essential for effective implementation and adoption of VBHC, or any other major change (e.g., [115]).

Effective change requires strong leadership and governance structures on both sides. We propose establishing a temporary VBHC Transformation Office to coordinate and drive the transformation to VBHC in Belgium. This office will oversee the implementation of key programs and projects that enable the organisation or system to be transformed (cfr. strategic roadmap described below). The VBHC Transformation Office should be mandated by federal and regional governments to operationalise a strategic roadmap through co-creation, consultation and collaboration with the healthcare ecosystem. It should focus on clear objectives, transparency, and accountability, exemplifying the mindset required for a successful implementation of VBHC in Belgium. To prevent further fragmentation, it should be linked to existing governmental bodies or institutes already playing a key role in healthcare organisations, such as RIZIV/INAMI. The Office's key roles and responsibilities are summarised in Figure 7.

Figure 7 - A Transformation Office for VBHC in Belgium

Vision & Strategy

Own joint vision; ensure timely updates and adaptations

Safeguard focus on healthcare priorities and objectives

Balance decisions on projects And initiatives i.f.o. the business case and budgetary constraints

Methodology & practice development

Reinforce sense of urgency by ensuring high pace of VBHC framework development and implementation

Define change delivery approaches that support VBHC implementation and adoption

Implement and facilitate/coach dedicated workstreams

Progress monitoring & reporting

Proactively monitor overall progress; report to all healthcare ecosystem stakeholders

Generate data insights to course correct where needed

Stakeholder engagement & alignment

Assure steady communication flow about VBHC to the entire healthcare ecosystem

Set up a VBHC Community of Practice

Liaise with relevant agencies and initiatives

VBHC Transformation Lead	VBHC Coordination Team	VBHC Workstreams
An executive-level role responsible for leading the required system-wide transformation, and the face of VBHC in Belgium who unites stakeholders around a joint vision and implementation plan	a dedicated, cross-functional team of subject matter experts (including communication) and policy makers, supported by portfolio and program managers to handle the day-to-day activities	designated workstreams to rally teams of different stakeholders around a certain topic, with a possibility to launch several projects and initiatives per or across workstreams

The role of the government and other stakeholders in transitioning to VBHC in Belgium

For effective decision-making and sustained progress in implementing VBHC in Belgium, government support on the strategy to follow is essential. This includes policy maker buy-in and a willingness to address legal, policy, and financial aspects. Commitment to changing existing frameworks to achieve healthcare system value is crucial. A strong leader with a clear, strong mandate and vision should be appointed to lead the VBHC Transformation Office.

In addition, a systemic transformation to VBHC in Belgium requires dedicated resources, including financial means. Considerable, ear-marked funding will be needed to establish the foundations required to implement VBHC in practice, such as (data) infrastructures, a body of evidence, and fit-for-purpose legal and regulatory frameworks. Such funding should be kept separate from the budgets for the current healthcare system, to avoid competition between both systems, and allow the efforts around VBHC to move at its own pace and following its own governance.

From the bottom-up end, professional bodies and umbrella organisations should play a key role in uniting stakeholder groups around the different themes underpinning the envisaged strategy and subsequent implementation plan, while also safeguarding the interests of their members. Nevertheless, any individual stakeholder is equally expected to take on a proactive and constructive role in achieving the best fit-for-purpose solutions.

A transformation mindset for all stakeholders in the healthcare ecosystem

Transformation is not just about changing structures and processes; it is about recalibrating the collective mindset. Adopting a 'transformation mindset' and increasing the sense of urgency are crucial for systemic transformation to VBHC. In this view, success is less about technological brilliance or management acumen, and hinges on creating the right conditions for cross-functional teams to innovate [116].

Key elements for achieving this mindset shift include leadership alignment and commitment, clear communication and vision, education and training programs, recognition and rewards, feedback loops, leading by example, a supportive environment, and celebrating successes [117]. Additionally, aligning financial incentives with desired outcomes is essential to motivate healthcare providers and drive behaviour change.

The way forward:

Think big, act small - a phased approach to transition to a VBHC system, supported by an actionable strategic roadmap

A phased transition to a value-based system, starting with specific conditions or populations, allows for learning, refinement, and scalability. This phased approach is outlined in Figure 8, and integrated in a high-level strategic roadmap with specific recommendations for each phase, detailed in Figure 9.

Figure 8 - A phased approach for VBHC implementation in Belgium

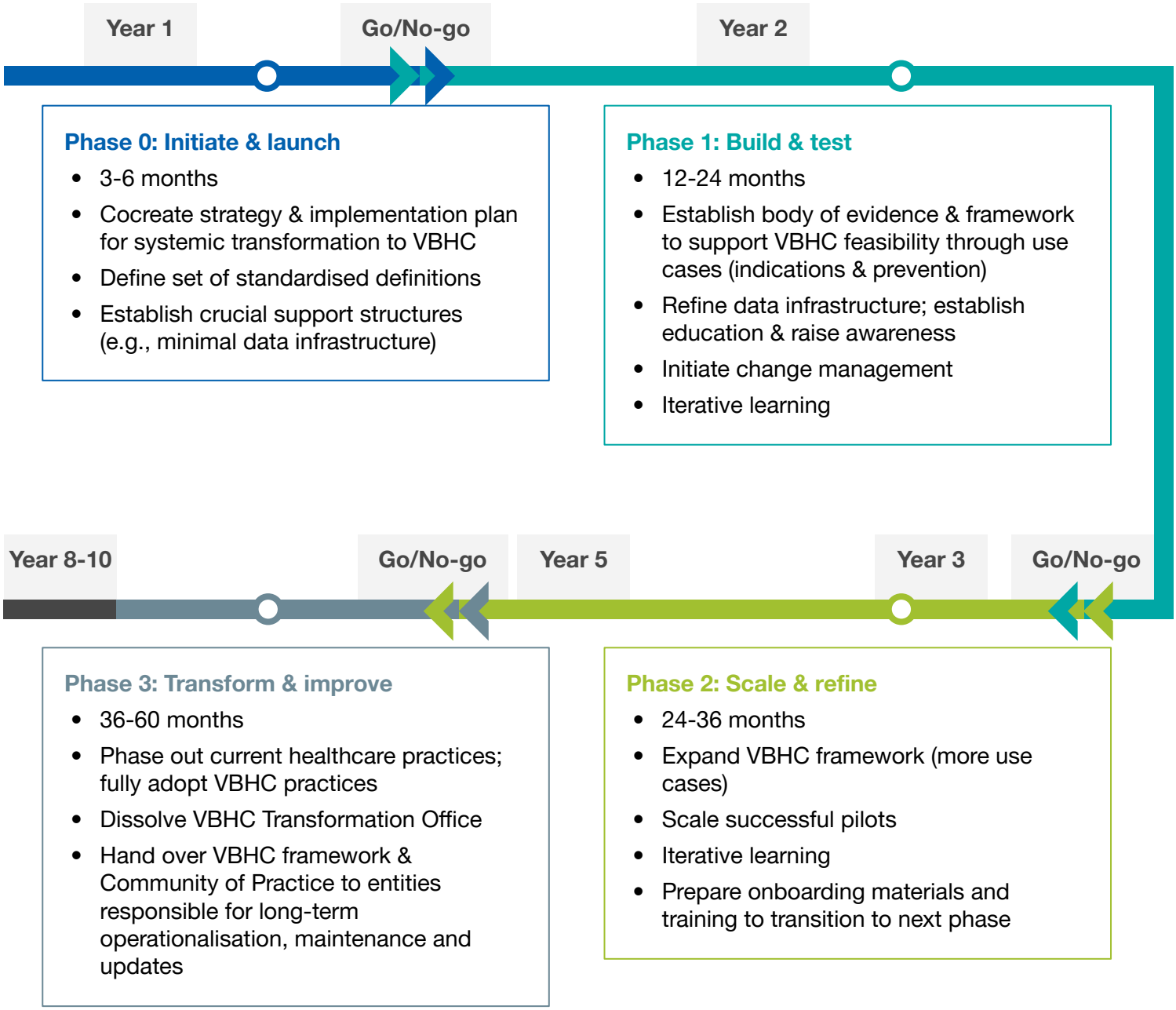
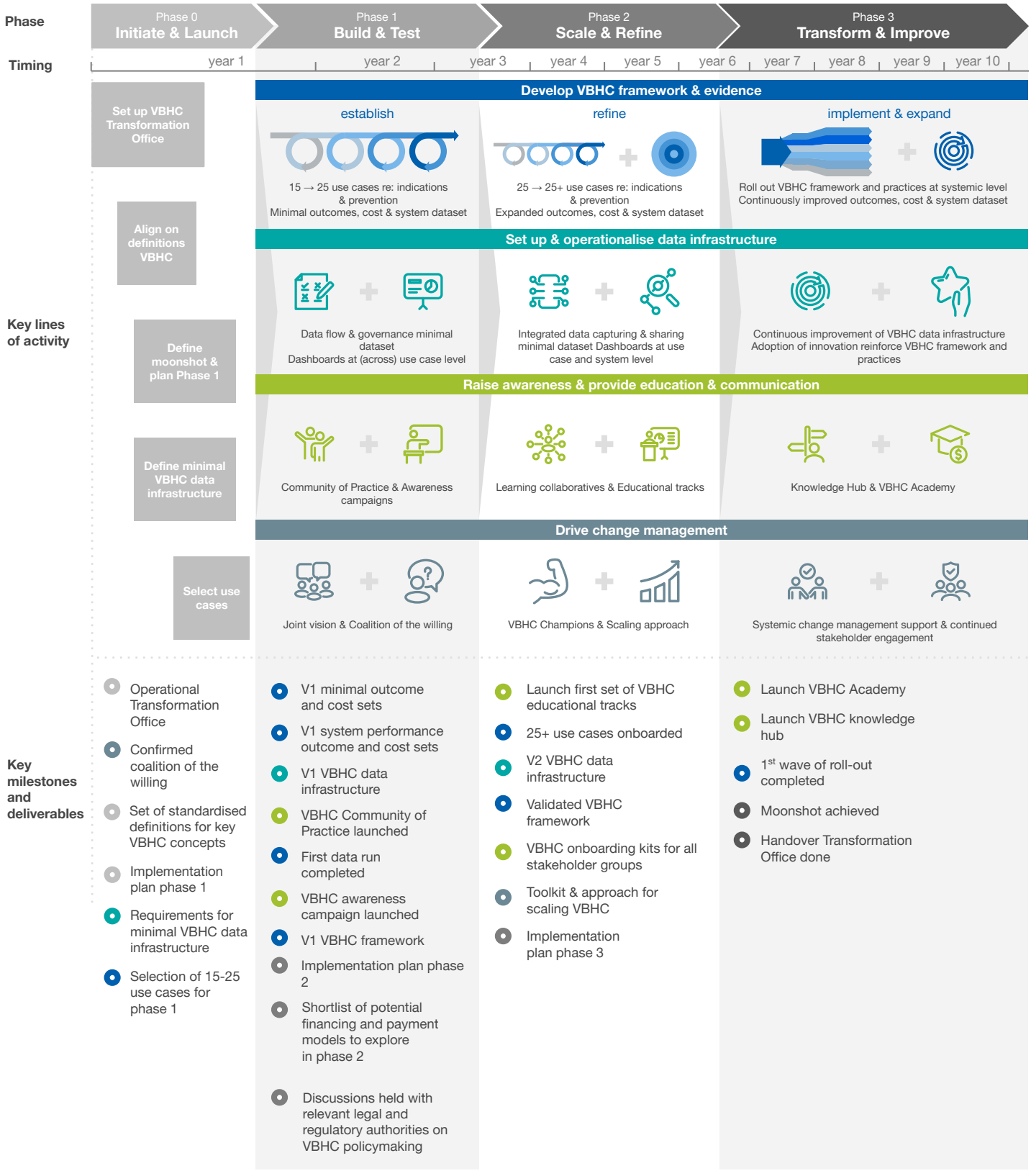


Figure 9 - A strategic roadmap to develop and implement VBHC in Belgium



A phased approach for implementing VBHC in Belgium

The envisaged roadmap includes 4 phases, requiring a go/no go decision based on readiness assessments to shift between phases. Specific readiness criteria are to be defined per phase. Phases 0 and 1 are crucial for shaping and implementing VBHC in Belgium and are to be implemented in the short term. Therefore, these phases are further detailed in this whitepaper. Importantly, even in the early phases, the approach aims for widespread adoption of the VBHC framework to measure, evaluate and enhance Belgian healthcare practices. It is key to keep this overarching aim in mind at all times during the transition.

As each phase has its focus and objectives, building upon what has been created before, the role, composition, and focus of the VBHC Transformation Office will evolve over time. In phase 0 and 1, the Office will bring together existing initiatives and run pilots to address open questions. It will lead the development of a more elaborate strategic roadmap and implementation plan for systemic transformation to VBHC. During scale-up in phase 2 and 3, the Office will drive change management, coordinate efforts, ensure capturing and exchange of learnings, assist in problem solving, and share progress updates with the wider healthcare ecosystem. At the end of the transition period in phase 3 and beyond, the Office will foster a solid and open knowledge centre and provide a single point of contact to all stakeholders to maintain, adapt and improve a future-proof VBHC system.

Phase 0:

Initiate & launch: establishing common ground for a transformation to VBHC in Belgium

Ideally, the VBHC Transformation Office is established first, linked to the appropriate governmental agency and staffed with a Transformation Office Lead and Coordination Team. This team will handle subsequent activities. If delayed, phase 0 activities can also be managed by an existing agency with temporary support staff.

Recommendation 1:

Establish common ground across stakeholders, coordinated by the VBHC Transformation Office

To launch the VBHC transformation, a wide variety of key stakeholders should be invited to jointly work on the following three concrete activities:

(1) Develop a robust case for change by creating a joint understanding of current problems using science- and fact-based information and their impact on key stakeholders, including competitive and economic aspects. An important milestone is achieving recognition of these problems, supported by a joint understanding, across stakeholder groups.

This establishes a **joint vision** - or a moonshot - to guide VBHC efforts in Belgium, connecting stakeholders that act as the '**coalition of the willing**' and recognise the urgency for change. Based on this vision, the strategic roadmap is revised and a **detailed implementation plan for phase 1** is created. Implementation plans for subsequent phases are developed gradually.

(2) Co-create a **set of standardised definitions** for key concepts underpinning VBHC in Belgium (e.g., outcomes, value, efficiency) to raise awareness and establish a solid basis for activities planned in the next phases. These definitions should consider different stakeholders' perspectives and existing definitions and frameworks.

(3) Align on the **minimal data infrastructure** required for the envisaged VBHC framework and what is needed to implement it. Existing projects and initiatives concerning standardisation, interoperability and integration of health data should be maximally leveraged.

In parallel to these activities, a set of 15-25 use cases is selected which will underpin the development of a VBHC framework in phase 1.

Phase 1:

Build & test: establishing a first validated version of the VBHC framework to support implementation of VBHC in Belgium in practice, supported by an appropriate data infrastructure, community of practice and change management

Recommendation 2:

Generate an evidence-based VBHC framework that covers the entire care continuum, from prevention to cure

Developing sustainable solutions to operationalise VBHC in Belgium is crucial for long-term healthcare sustainability. Phase 1 establishes a solid foundation with three major parallel tracks that interact closely, along with a fourth overarching change management track:

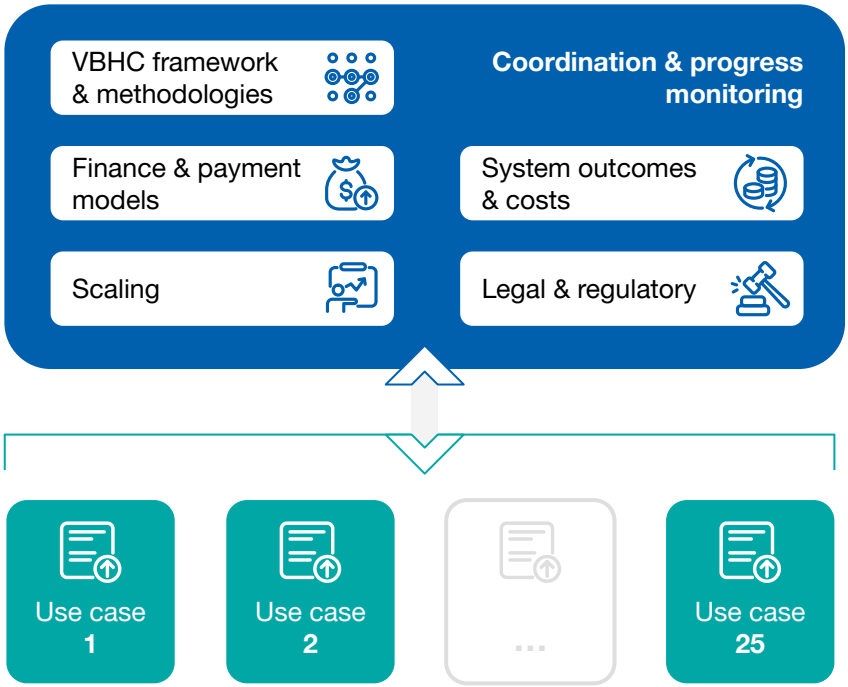
(1) VBHC framework development & evidence generation

A VBHC **framework** needs to be developed that includes key components (value, outcomes, cost), methodologies, and practices to operationalise VBHC, including suitable financial, legal and regulatory aspects. This framework will assess and measure outcomes and quality across the healthcare value chain, providing actionable insights to improvement and adaptation. In addition, it can be used to show the value of new care models (e.g., hybrid care, hospital at home, telemonitoring). The first version of the VBHC framework will be validated with a limited set of use cases, establishing a common methodology for evidence gathering and evaluation in both cure and prevention.

To ensure the framework's broad applicability for outcome measurement, pilots will run in parallel across a **set of use cases** (linked to specific indications or prevention). Each pilot will share learnings and insights to improve the framework. A schematic of the phase 1 approach is summarised in Figure 9.

To avoid bias and ensure sufficient time for individual data collection runs and thorough testing, at least 15 use cases should be included initially, expanding to up to 25 in phase 1. This approach will refine the framework and introduce **stress-testing**. The selection of use cases should reflect a mix of indications and prevention initiatives (e.g., acute vs. chronic disease) and populations (e.g., indication with high prevalence vs. rare disease). Existing knowledge and practices should be maximally leveraged to kickstart the development of the VBHC framework.

Figure 10 - Schematic of the phase 1 approach to establish the VBHC framework



VBHC framework - Generic elements

- VBHC framework
- Shared methodologies & approaches
- Education & information sharing across workstreams
- Finance models & payment schemes
- Legal & regulatory aspects

VBHC framework - Use case specific elements

- Care pathway
- Minimal outcomes set (use case specific measures)
- Minimal cost elements set (use case specific measures)

Each use case should strive to meet the same (minimum) objectives:

- Establishing a **trustworthy and clear baseline** at different levels (indication, organisation, system) to assess the impact of any actions taken towards improvement, or introduction of new solutions in the system.

- Aligning on the **care pathway** and defining a **minimal outcome measures set** to characterise and evaluate the care pathway. The current standard care pathway needs to be described, including identification of unmet needs and opportunities for improvement. The population in scope should be carefully considered to devise appropriate risk adjustments and/or comorbidity indexes to facilitate comparisons across healthcare providers and inform financing and payment models.

  A minimal outcomes set needs to be defined, combining generic and use case-specific measures, and covering clinical, contextual and other care related aspects. Generic measures are devised centrally, while specific ones are based on the latest scientific and clinical insights. This set will expand over time, balancing the burden for collection of measures with added value. Patients and patient organisations should be involved to ensure the set includes measures that matter most to patients.

- Iteratively **testing** and improving the minimal outcomes set. In subsequent data runs, data will be captured to evaluate the minimal outcomes set for overall feasibility (i.e., can we reliably and smoothly measure the outcome of interest) and desirability (i.e., does the outcome measure allow to evaluate e.g., the value achieved and quality of care). Between data runs, information and key learnings will be shared across use case teams to maximise joint learning and cross-fertilisation.

- Defining a **minimal cost measures set** related to the care pathway. This set should cover direct and indirect costs related to the care pathway, with data capturing running in parallel to those for the outcome measures set. Starting with a limited set of measures helps to gain actionable insights into the care provision (e.g., identifying inefficiencies and waste). These cost measures also inform the development of new financing and payment models, further detailed on an overarching level (see below), and support development of health economic insights to steer our healthcare system.

Combining insights and learnings from existing initiatives (e.g., the use cases described in this whitepaper) offers a starting point for refinement through iterative measurements and evaluations. When leveraging learnings and practices from other countries, it is crucial not to duplicate by default, but rather adopt and refine to fit the Belgian context.

In parallel to the use cases, the following aspects of the VBHC framework are established by dedicated workstreams operating at an overarching level, each in a continuous exchange with the individual use cases and other overarching workstreams:

- **VBHC framework and methodologies workstream**: compile and align results from use case teams to create a common VBHC framework, while also devising approaches for recurrent evaluations of the system as a whole. Sharing learnings and best practices will make VBHC methodologies available to the wider community of healthcare professionals. The latter occurs in close collaboration with the education, awareness & communication track (see track 3 below).

- **System outcomes & costs workstream**: define and track measures to evaluate the performance of the healthcare system, in addition to the generic and use case-specific outcomes and cost measures.

- **Financing and payment models workstream**: evaluate and explore future financing and payment models that reward health outcomes. This entails sharing realised benefits (e.g., savings or profits) with value-adding stakeholders involved in a care pathway and addressing insufficient outcomes or quality. Recent initiatives (e.g., diabetes convention, Pay for Performance initiative) can serve as a foundation to explore the feasibility and practical implementation of bundle payments or other alternatives.

  Future payment models should moreover risk-adjust outcome measures to account for factors that may influence health outcomes beyond the intervention or service to be reimbursed, including patient characteristics (e.g., age, comorbidities and lifestyle) and appropriateness of the intervention (i.e., the degree to which the provided care is relevant to the medical needs of the individual, given the current best evidence).

  Another major focus should be on how to incorporate prevention and early diagnosis into a broader healthcare financing model.

- **Legal and regulatory workstream**: embed continuous improvement, adaptation and innovation in legal and regulatory frameworks to safeguard flexibility and agility of the healthcare system. Population health is the result of more than healthcare alone and should be reinforced by increasing adoption and focus on a Health in All Policies approach [113], integrating governance that promotes health and equity across sectors.

  Importantly, policy development should align with the VBHC system's operational aspects, involving key stakeholders with citizens and patients having a central role.

- **Scaling workstream**: prepare for gradual scale-up of VBHC practices to other use cases (phase 2) and the broader healthcare system (phase 3). Best practices and guidance will be developed to help healthcare providers and organisations to adapt to new care provision methods.

While establishing evidence, financial models, and policies will likely use existing or highly promising methods and solutions, the VBHC Transformation Office should ensure opportunities for innovation throughout the phased approach. Innovation includes products, services, and new operational models. This encompasses not only medicines and vaccines, but also diagnostics, imaging, medical devices, surgical techniques, and integrated models for health service design, delivery, management and financing. Encouraging and facilitating innovation across the healthcare value chain is essential.

Creating value through partnerships with industry is crucial for a value-based ecosystem and should be encouraged. Developing incentives and fit-for-purpose policies is essential to drive healthcare innovation. In addition, the framework should also adapt to change and respond to pressures.

Recommendation 3:

Establish a data infrastructure that facilitates data capture, sharing and re-use across stakeholders

(2) Data infrastructure set up & operationalisation

Data is central to any VBHC system, as measurements produce data elements. Timely access to the right type and level of information is essential for system performance. In this track, the minimal **data infrastructure** from phase 0 will be iteratively developed and implemented, in close collaboration with other tracks in phase 1. This involves ensuring the proper collection, quality, sharing, and reuse of healthcare-related data. It includes defining a **minimal dataset for care trajectories** (e.g., clinical parameters, PROMs, PREMs and direct costs - see the evidence generation track).

Additionally, it provides insights into past and ongoing initiatives, sharing key learnings and opportunities, and leveraging results. Developing **dashboards** to display health outcomes and costs can help stakeholders optimise care and prevention and inform systemic course corrections through recurrent evaluations.

In practice, this means making data available in a structured manner, using a (data) infrastructure that enables smooth information exchange among stakeholders across the care continuum (including patients) with appropriate interoperability. This supports data-driven decision-making, reinforces digitisation of care pathways and processes, and facilitates data exchange across silos. Actions and initiatives by the Belgian Health Data Agency, especially those related to the development and implementation of the European Health Data space, are foundational.

Recommendation 4:

Develop education & increase awareness and communication on VBHC

(3) Education, awareness & communication

A virtual hub is established to create a **VBHC Community of Practice**, uniting stakeholders to encourage broad sharing of information and insights and clarify VBHC's value proposition, thereby ensuring continued engagement and embedding **continuous learning** in the healthcare ecosystem. This is supported by appropriate tools and technology, creating a common basis across stakeholders. Importantly, patient organisations are key partners in increasing health literacy and understanding of VBHC among patients.

A community helps stakeholders address results and co-create continuous improvement approaches, such as mirror sessions for healthcare professionals to learn from each other. Education and training are crucial for onboarding individuals and organisations into VBHC and developing the future healthcare workforce, especially with the shift to digital healthcare. Adapting practices to the new VBHC paradigm empowers stakeholders to deliver ideal health systems. Formal education introduces new ways of working, but lifelong learning is essential for a future-proof VBHC system.

Recommendation 5:

Integrate change management in the 4 lines of activity

(4) Change management

Envisaged activities for this track are focused on shifting culture, mindsets and behaviours towards VBHC, and are to be organised as integral part of the preceding lines of activities. However, in view of the importance of creating and maintaining an appropriate sense of urgency across stakeholders, and guiding different stakeholders throughout this journey, change management is included as an explicit line of activity in the strategic roadmap. As such, these activities assure engagement of and with the right stakeholders at the right time in the transformation process.

Conclusion

Bringing together different stakeholders across the healthcare ecosystem, this whitepaper aims to create - and make public - a joint vision towards implementing VBHC in Belgium, thereby defining a set of concrete recommendations that can serve as immediate next steps to start the VBHC transition. We propose 6 main actions to be collectively undertaken by all stakeholders, to make VBHC a reality in Belgium:

1. Establish common ground, thereby setting up a VBHC Transformation Office, aligning on definitions and data (infrastructure) aspects, and establishing a formal coalition of the willing;

2. Build evidence for VBHC practices in a standardised manner and drive examples of outcome and cost improvements for selected use cases;

3. Set up a performant data infrastructure, thereby aligning on which data to capture and share, when and how;

4. Increase VBHC awareness and knowledge in Belgium through e.g., targeted communication and supporting learning networks to spread VBHC practices;

5. Increase efforts concerning prevention, thereby including well-being and moving beyond cure; and

6. Ensure that change management is integrated in all lines of activity to enable the right mindset for change.

Transitioning to a VBHC system that improves value to individuals, the population and society is not a straightforward endeavour. It is complex and will not only require time and dedicated resources, but equally important, leadership and courage. We will encounter obstacles along the way that we will need to mitigate. Due to Belgium's current structure, the sign-off by at least 6 authorities will be required to operationalise VBHC plans in the country. An interministerial or interfederal agreement alone will not suffice to make VBHC a reality in Belgium. The Belgian government will need to make choices to start the next phase of the VBHC journey. While we need to realise that changing a system that has been operating a certain way for decades will be challenging, we need to be ambitious and disruptive if we ever want to succeed in future-proofing the Belgian healthcare system. We strongly believe that by joining forces and involving all stakeholders, we can be successful in our endeavour and become the European example of how a nation can move to a VBHC system in a structured and coordinated manner.

Appendices

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Annex 1: Methodology for the development of this whitepaper

Desk research

Key documents and information sources reviewed for this whitepaperare listed in the reference list above.

Survey

The survey was open to the full ecosystem for 9 weeks (July - August 2024), thereby targeting more than 180 organisations, institutions, federations and experts in Belgium. Data was collected via a validated platform (Qualtrics).

The survey was started by 228 participants and completed by 104.

- Academia & research institutions: 7
- Biotechnology industry: 4
- Care institutions - management & coordination staff: 19
- Government - agencies & regulators: 3
- Health Care Professionals - hospital personnel: 5
- Health Care Professionals - physicians: 21
- Health Care Professionals - others: 4
- Medical Technologies Industry: 19
- Patients & patient organisations: 6
- Pharmaceutical Industry: 7
- Professional bodies & networks: 6
- Third party payers: 3

The overall seniority of respondents is rather high, with 67 out of 104 having 15+ years of experience. All but one respondent currently work for a Belgian organisation.

Interviews

Interviews of 60-120 mins were conducted with the 14 Expert Committee members and 6 patient organisations, following a predefined interview questionnaire.

Validation sessions

Six validation sessions were held for consultation and co-creation of the joint vision and set of recommendations with a broad range of stakeholders across the healthcare ecosystem. In a first instance, five consecutive sessions were held with respectively (i) pharmaceutical and biotechnology industry, (ii) medical technologies, diagnostics and data & digital industries, (iii) governmental agencies, regulators and third-party payers, (iv) healthcare professionals, and (v) healthcare institutes and providers. These sessions served to align on key elements of the joint vision within a specific stakeholder group and co-create the 5 guiding principles described in this whitepaper. A sixth validation session was held with representatives of all actors across the healthcare ecosystem, to further build upon the aligned joint vision and guiding principles, thereby co-creating the strategic roadmap with concrete next steps detailed in this whitepaper.

Annex 2: Use case one-pagers

Five Belgian use cases are presented on the following pages.

Implementation of a transmural ambulatory care pathway in elective colectomy

Population

Patients with colon cancer undergoing surgery.

A consortium for ambulatory colectomy was founded in 2023 with consortium members, incl. J&J MedTech, Q1.6 and Tiro Health.

In 2017, a breakthrough improvement collaborative (BIC) for colon cancer surgery was founded by the LIHP, aiming to gain insight in the care process and the implementation of ERAS principles. In 2024, the BIC consists of 22 Flemish hospitals.

Intervention

Development of a transmural protocol for ambulatory colectomy.

Based on the findings of the collaborative, hospital stay is decreasing steadily. However, if we want to further decrease hospital stay, a disruptive change in how we organise care is needed. Therefore, a transmural, ambulatory care pathway should be developed.

Comparison

1. A set of quality indicators to assess the quality of care for patients undergoing ambulatory colectomy.
2. Comparison between patients undergoing ambulatory colectomy and those who were eligible but unwilling to be discharged so soon after surgery.

Within the BIC, care processes for colon cancer surgery are assessed over time.

Outcome

1. Increased adoption of ERAS components, better postoperative outcomes & mean reduction in LOS.
2. Transmural Enhanced Recovery Program with continuous monitoring of key quality indicators further reduced LOS and safely introduced colectomy with same-day discharge.

Organise into Integrated Practice Units (IPUs)

Measure outcomes & costs for every individual

Move to bundled payments for care cycles

Integrate care delivery across separate facilities

Expand excellent services across geography

Build an enabling information technology platform

Added value

Integrates hospital and primary care to increase value, thereby capturing and providing data to understand dynamics in bundle financing and how cost allocations shift between hospital and primary care.

How to scale towards broader implementation?

- Calculate actual savings (estimated cost reduction of €3.198.000 for a reduction of LOS with 1 day for 6000 colectomies performed in Flanders).
- Provision of incentives and shift in finance model to allow further scaling and roll-out.
- Day-care colectomy as a template for other surgical interventions (bariatric surgery, prostate surgery, hip replacement).

Learnings for VBHC in Belgium

- Financial incentives are needed to allow full adoption of ERAS components and implementation of transmural enhanced recovery programs.
- Successful implementation of a transmural ERAS Programs requires involvement of all stakeholders in the care trajectory and following dedicated monitoring protocols.

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Development & implementation of a digital transmural care pathway for lung cancer patients

Population

Individuals with stage IV lung cancer undergoing treatment.

Collaboration: mirror community with ZOL Genk.

Intervention

Weekly digital follow-up & reporting of side effects during systemic therapy (with automatic feedback loops to the care team); QoL assessment every 6 weeks through EORTC QLQ C-30 questionnaires.

Continuous improvement cycles with regular evaluation & adjustment of care processes, skills enhancement through training programs, and research projects to inform practice.

Comparison

Comparison between use of digital solution vs. no digital solution (standard of care) with case-mix adjustments.

Outcome

92% compliance to treatment with weekly digital follow-up.

Fewer ED visits (3.5% vs. 4.8%), shorter stays at oncology day clinic (2.5h vs. 4.1h), and higher overall survival (447 days vs. 287 days) compared to routine care.

Positive impact on patient-provider communication, smoothing discussions on psychological and palliative care needs.

Organise into Integrated Practice Units (IPUs)

Measure outcomes & costs for every individual

Move to bundled payments for care cycles

Integrate care delivery across separate facilities

Expand excellent services across geography

Build an enabling information technology platform

Added value

Showcases the importance of a digital transmural care pathway and mirror community to identify areas for closer monitoring and pathway improvement and refinement, thereby creating value.

How to scale towards broader implementation?

- Reimbursement for e-consultations and use of telemedicine and/or telemonitoring solutions.

Learnings for VBHC in Belgium

- Assessment at individual level is straightforward; assessment at population level and linking to specific treatments remains a challenge (i.e. difficult to compare different treatment regimens).
- (Sustainable) data platforms, dashboards and PROM/PREM tooling should be shared to avoid duplication of work. Capturing, structuring and making available the right data takes time and effort. More digitisation and automation is needed to decrease manual efforts for maintenance and updates of data and dashboards.

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Improving outcomes by implementing AI in medical imaging

Population

Individuals with neurological disorders (e.g., multiple sclerosis, Alzheimer's dementia) undergoing radiologic assessment as part of a diagnostic or disease monitoring work-up.

Intervention

Introduction of digital tools in the care pathway to screen, diagnose, monitor and manage the disease in a more standardized and efficient way.

Development of simulation models to address the health economics effects (based on microsimulation) of introducing AI-assisted radiologic assessment on clinical decision making.

Comparison

Comparison between use of digital solutions vs. no digital solutions (standard of care), including assessment of effect of experience level of the radiologist and assessment of patient preferences regarding use of digital solutions for management of their disease.

Outcome

Reducing time spent on suboptimal treatment leads to long-term health benefits with an improvement in QALY and a significant lowering of health-associated costs.

Efficiency gains for radiologists by improved image reading time and prepopulated reporting templates that limit reporting time.

Organise into Integrated Practice Units (IPUs)

Measure outcomes & costs for every individual

Move to bundled payments for care cycles

Integrate care delivery across separate facilities

Expand excellent services across geography

Build an enabling information technology platform

Added value

Tackles two fronts: the fully integrated digital solution supports clinicians (radiologists and neurologists) in clinical decision making and empowers patients in their disease management and receive optimal treatment.

How to scale towards broader implementation?

- Deeper integration in health IT systems.
- Recommend the use of AI (for certain applications) in clinical guidelines; provide education on the benefits of digital solutions
- Financial reimbursement of AI tooling in healthcare.

Learnings for VBHC in Belgium

- Digital solutions to standardize care pathways, thereby optimizing efficiency and workflow, and complementing clinical expertise. E.g., AI-based solutions can reliably detect and quantify disease activity on MRI scans, which play a central role in disease management. Microsimulations to complement outcomes with health economics.
- mHealth solutions for more continuous and data-driven monitoring of symptoms and disease progression to mitigate underreporting of clinical events and bridge the information gap between annual neurology visits.
- Set up dedicated knowledge center and/or medical apps to increase patients' literacy on a given indication, thus empowering patients in management of their disease.

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Establishing an Integrated Practice Unit (PsoPlus) for treatment of psoriasis patients

Population

Individuals with psoriasis, typically a comorbid population requiring multidisciplinary care.

Exemplary for applying VBHC to a chronic immune disease tout court.

Intervention

Implementation of the six VBHC steps recommended by Porter.

Setup of an Integrated Practice Unit (IPU), measuring outcomes and costs over the full cycle of care, and establishment of bundled payment proposal for psoriasis (incl. Data Envelopment Analysis).

Comparison

Comparison to standard of care at Dermatology department UZ Gent.

Outcome

Value in Psoriasis study (NCT05480917) to determine how much value is created for patients, based on a patient-relevant outcome set & cost measurement system.

Improved outcomes w.r.t. psoriasis severity, symptom control, treatment efficacy and convenience, QoL, communication with healthcare professionals, and work productivity.

Organise into Integrated Practice Units (IPUs)

Measure outcomes & costs for every individual

Move to bundled payments for care cycles

Integrate care delivery across separate facilities

Expand excellent services across geography

Build an enabling information technology platform

Added value

Establishes an IPU with a multidisciplinary team, fostering continuous improvement cycles and leading to patient-centered and outcome driven care. The learnings and network derived from the IPU setup provide a kickstart to other VBHC care pathways.

How to scale towards broader implementation?

- Ongoing: levelling up the Value Outcome Set for Psoriasis to international level, and incorporation into the ICHOM environment is envisaged.
- Psoriasis as a disease can stand for a broader group of immune-mediated diseases, and a grouping with e.g. arthritis or IBD can be assessed. These diseases have a 'truncus communis' and allow to enlarge the disease group.
- Setting up the IPU model to other centres in Belgium, with support from hospital boards.

Learnings for VBHC in Belgium

- Awareness and educational programmes on VBHC are needed to obtain stakeholders' buy-in.
- VBHC and IPU implementation requires dedicated staff who jointly take responsibility for the entire patient care cycle. Further research is needed to explore how these collaborations can be strengthened.
- Efficient and integrated information systems are needed to follow up patient outcomes. Where possible, AI and other automation tools should be leveraged to support data management, processing and analysis.

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Balak, Deepak. "Value-Based Healthcare: A Primer for the Dermatologist." Dermatology, 2024.

The Type 2 Diabetes clinical pathway

Population

Individuals with Type 2 Diabetes treated under the clinical pathway segment. These patients are usually treated through diet, oral medication and insulin injection (1 or 2 daily).

Intervention

Introduction of a sensing technology for continuous glucose monitoring, allowing real-time follow-up of patients.

Continuous glucose monitoring allows to monitor glycemic variations in patients in real-time, enabling better understanding from the patient, better visibility for the healthcare professional leading to better treatment, and thus increased quality of life.

Comparison

Comparison between use of new sensing technology and standard of care (no sensing technology), looking at key metrics used in secondary care to assess efficacy and impact of treatment of patient. These metrics include HbA1c improvement, time in range and GMI, the latter two only possible with sensing technology.

Outcome

Improved glycemic control, decrease in diabetes-related complications and fewer hospital admissions.

Enhanced patient experience and satisfaction due to better (proactive) disease management and treatment compliance.

Long-term cost savings from reduced complications and hospitalisations.

Organise into Integrated Practice Units (IPUs)

Measure outcomes & costs for every individual

Move to bundled payments for care cycles

Integrate care delivery across separate facilities

Expand excellent services across geography

Build an enabling information technology platform

Added value

Incorporates several aspects of the value-agenda, including design of an outcome-based fee-for-service (honoraria) for HCPs in collaboration with health authorities and integrating first and second line care to ensure care continuity. This also supports future efforts in the development of telemonitoring and telemedicine by facilitating patient data transfer to field experts.

How to scale towards broader implementation?

First level scaling is needed at clinical pathway level where sensing technology is not yet used by giving access to patients. Second level of scaling would be within diabetes prevention and education to help people at risk to reduce the chances of becoming diabetic. The data availability per patient will then be creating value into other domains, mainly looking at diabetes-linked cardiovascular and diet-related domains.

Learnings for VBHC in Belgium

- A multidisciplinary team around the individual seeking care is needed to ensure care provision and continuity.
- Adoption of advanced technology by both HCPs and patients is important for better and proactive disease management, thereby maximising data use and leveraging data for personalised care and early intervention.
- Industry-investment in education needed to support implementation of new technological components and reduce workload on healthcare personnel

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Annex 3

List of figures

Association Belge des Directeurs d'Hôpitaux asbl
Belgische Vereniging van Ziekenhuisdirecteurs vzw
Belgische Vereinigung der Krankenhausdirektoren VoG

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