

COMMENTARY

Value-Based Health Care in Four Different Health Care Systems

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Health care systems across the world have increasingly embraced a value-based health care (VBHC) agenda. They do so for different reasons, using different foundations, and variations on the tools and tactics to effect their strategic goals. The role of governments, providers, and private payers varies, as do funding and payment schemes. In their review of 4 systems — Massachusetts (USA), the Netherlands, Norway, and England (UK) — the authors find that elements of the theoretical framework function better in some health care systems than others. Understanding of these strengths and weaknesses can yield insights for policymakers and providers as they strive for a more patient-focused, value-based care delivery environment. Government involvement can facilitate change by setting the right conditions (e.g., for regional system integration). Continuous IT improvements to ensure the availability of outcome data across the full care cycle and instituting a value-based culture among providers are keys to driving VBHC implementation.

The coronavirus pandemic profoundly disrupted the health care system, prompting leaders and policymakers to rethink how health care is delivered and reimbursed. Value-based health care (VBHC), as outlined by Michael Porter and Elizabeth Teisberg in their 2006 book on redefining health care,¹ could provide a path forward. A recent report by the Dutch Health Care Authority indicated that in its current national health care system “sickness is the revenue model, not health,” suggesting we need a system that rewards appropriate, outcome-based care.² To facilitate the policy discussions, other countries’ experiences with and implementation of VBHC could prove valuable.

Over the last 15 years, various health care systems across the world have embraced the VBHC agenda for different reasons. These systems differ not only in size but also in how governments and private payers are involved in the organization and funding. While VBHC in the U.S. has been mostly tied to moving away from fee-for-service,³ other countries, particularly the more public-run

systems in Europe, have been focusing on coordinating patient care among providers and creating outcome platforms to drive quality improvement and appropriateness of care.⁴

Although no country has fully implemented the VBHC agenda, it seems apparent that different elements of the theoretical framework function better in some health care systems compared to others. Knowledge and understanding of these achievements could be useful for policymakers and providers as they aim for a more value-based care in the post-pandemic era.

Earlier reports have assessed the implementation status of VBHC across the world. In 2012, Boston Consulting Group provided a comprehensive assessment of VBHC implementation in 12 countries,⁵ followed by a similar whitepaper made by The Economist Intelligence Unit in 2018.⁶ Both reports focused on high-level policy factors that could foster an enabling environment for VBHC; e.g., the existence of a government-level policy or plan for VBHC, and the presence of policies for bundled payments. More recently, the European Institute of Innovation & Technology (EIT) Health published a handbook on how to adopt VBHC initiatives.⁴ The handbook also provides concrete examples to inspire providers to take action. Our paper builds on these reports, as it provides an updated implementation status, using the framework by Porter and Teisberg, and delves deeper into policies and programs to distill practical insights.

To understand how system-level factors shape VBHC implementation, we assessed the implementation status of the VBHC elements in four different health care systems representing a broad spectrum, from a public health care model to a more privately run model. First, we made assessments of the models by using expert interviews and policy documents; next, we examined the key factors that are enabling and impeding the functioning of the models; and, finally, we formulated policy recommendations to accelerate and scale up VBHC across the different health care systems.

Characteristics of the Health Care Systems

The four health care systems included in this study were carefully selected (Figure 1).

FIGURE 1

Characteristics of Health Care Systems of Massachusetts (USA), the Netherlands, Norway, and England (United Kingdom)

	Health care funding			
	← More private			More public →
	Massachusetts (within USA)	Netherlands	Norway	England (within UK)
Population size (health spending in % GDP, 2018)*	6.9M (16.9%[†])	17.2M (10%)	5.3M (10.5%)	56.0M (10%[†])
Universal health coverage	Multipayer system with mandated minimum level of coverage	Multipayer with mandated insurance of basic services	Single-payer system, with coverage for all services	Single-payer system, with coverage for all services
Role of government	<ul style="list-style-type: none"> Federal and state govt. provide Medicare and Medicaid Sets the minimum level of covered services Since 2012, Health Policy Commission annually sets the spending growth benchmark 	<ul style="list-style-type: none"> Defines the basic set of services annually Sets priorities and supervises market & access Pays capitation per member to insurers (via taxation); members also pay premium 	<ul style="list-style-type: none"> Taxation-based health system with one national health insurance body Govt. runs Regional Health Authorities for specialty care, municipalities for primary care 	<ul style="list-style-type: none"> Funding for the UK's National Health Service (NHS) comes from tax revenue. NHS owns most of the hospitals and employs medical providers
Role of private players	<ul style="list-style-type: none"> 40% of MA spending is funded by private payers Employers can negotiate with providers directly Two big health systems in MA: Mass General Brigham and Beth Israel Lahey Health 	<ul style="list-style-type: none"> Non-profit insurers provide mandated & supplemental coverage (87% of pop.) Insurers and providers can experiment with value-based payments Providers and insurers compete on health purchase market on price & quality 	<ul style="list-style-type: none"> 85% of spending is public; supplementary coverage available Private providers offer primary and specialty care with out-of-pocket payment 	<ul style="list-style-type: none"> Some private providers for elective services, which are paid out-of-pocket or through private supplemental coverage (10% of population)

*Population and health care spending data derived from OECD.

[†]Health care spending for Massachusetts and England are for the US and UK as a whole. State/country-level data required inputs from several sources, making it unreliable.

Source: The authors

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We included the United States because this was the birthplace of the VBHC theory. However, because its health care system is vast in size and varies by state, we chose to include only the state of Massachusetts, given that the state's universal health care model^{7,8} makes it comparable to the other nations' systems. Massachusetts' health care system is predominantly privately run with multiple payers, albeit with some governmental involvement as both regulator and payer (e.g., setting spending caps, offering public insurance to citizens with low-level income). Massachusetts' market is dominated by two large health care organizations (Mass General Brigham, an integrated delivery system with about 74,000 employees, and Beth Israel Lahey Health, a network of about 35,000 employees that includes hospitals, primary and specialty care providers, and ambulatory

surgery, urgent care, and treatment centers), which provide both primary and specialty care services.

Since 2006, the Netherlands has functioned as a hybrid system that is both publicly and privately run (before 2006 it was mostly a public system), although strongly regulated by the government, which mandates and determines a basic insurance scheme for all citizens.⁹ Private insurers offer basic coverage and supplemental plans, competing on premiums and services offered in the plans. Primary care in the Netherlands is run by independent providers who act as gatekeepers to the specialty care, which is organized in semi-public hospitals and private clinics. Providers compete in the market for contracts with insurers on both price and quality.

Norway has a more public system, designed on the NHS model but, according to health care researchers interviewed for this study, it is more accommodating of private providers. The Norwegian health system is tax-based with one national insurance body covering all citizens. Private supplemental health insurance (largely employer-based) is available, but not necessary to get access to health services. Specialty care is organized in four government-owned regional health trusts (RHTs) that each own public hospitals; the RHTs are free to buy services from independent health foundations or private providers. Primary care is organized by the 356 municipalities that each have staffed physician leaders in charge of public health and community medicine and hire self-contracting primary care physicians who act as gatekeepers to specialty care.¹⁰

The United Kingdom (UK) has the most public system compared to the other countries/states. It is a tax-based system that gives universal coverage for all citizens through the National Health Services (NHS). The UK Health Services are split up in [four different and diverse national systems](#) and organizational bodies; in this study, we focus on [NHS England](#) as it is the largest system in the UK. The Department for Health remains responsible for health care organization and funding in the country, although NHS England has significant power over how government funds are spent. In 2012, Clinical Commissioning Groups (CCGs) were introduced to oversee both primary and specialty care at a local level, tailoring it to the needs of their communities (more information on CCGs is in the section on regional integration).¹¹ There are also private clinics or hospitals that offer elective services running parallel to the NHS system. The private providers are paid out-of-pocket or through private supplemental insurance (approximately 10% of the population has private insurance).¹² Like the Netherlands, primary care acts as a gatekeeper to specialty care.

Assessing the Implementation Status

We assessed the implementation status of the 6 VBHC elements, as outlined by Porter and Lee in their strategic Value Agenda³:

1. Care organized around medical conditions (Integrated Practice Units);
2. Outcome and cost measurement for every patient [we assess outcome and cost separately];
3. Value-based reimbursement (bundled payment for care cycles);

4. Regional systems integration;
5. Geography of care with centers of excellence;
6. Information technology (IT) supporting VBHC.

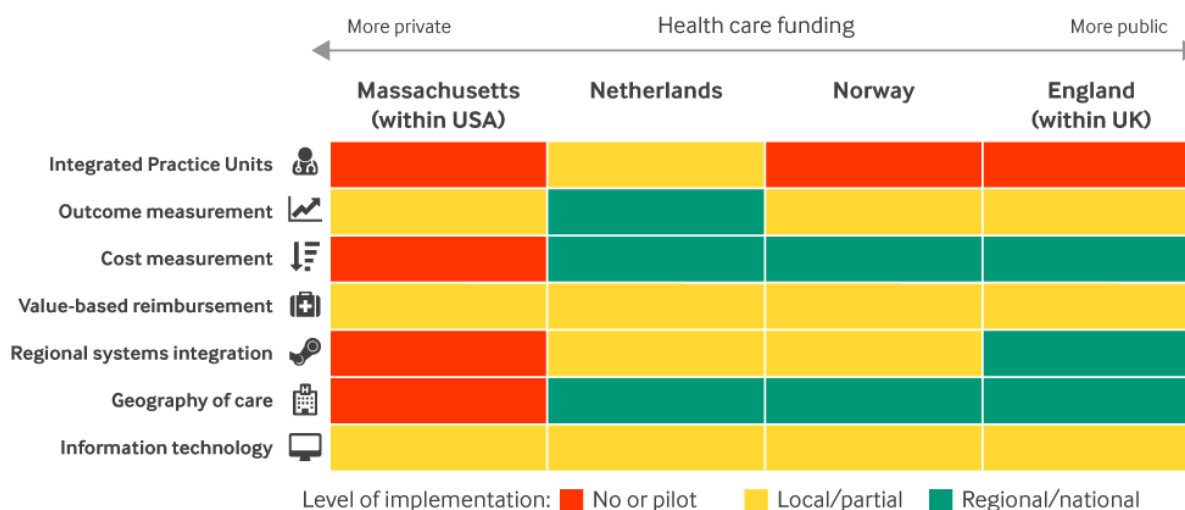
We also used whitepapers and policy documents (2015–2020) from each health system, and semi-structured interviews with high-level administrators, provider executives, and VBHC researchers in all four countries [all interviewees are listed in the Acknowledgement section]. We provided the interviewees the definitions of the elements prior to the interview to avoid any confusion on the data we were looking for. Every interview was recorded, transcribed, and coded. We categorized the implementation of each element as *not implemented* or as *only piloted* (red); *locally* (i.e., at 1 or 2 institutions) or *partially* implemented (yellow); or implemented at a *regional/national* level (green). Based on the data collected and input from health care experts at the Harvard Business School, we identified factors that function as enablers of or barriers to VBHC implementation.

Current Implementation of Value-Based Health Care across Four Health Care Systems

We found the VBHC implementation status to vary considerably across countries and among the six elements (Figure 2).

FIGURE 2

Implementation of the Value-based Health Care Elements in Massachusetts (USA), the Netherlands, Norway, and England (United Kingdom) as of August 2020.



Note: The 7 elements here are based on Reference 3: Porter ME, Lee TH. The Strategy that will Fix Health Care. Harvard Business Review. October 2013.

Source: The authors

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Also, it became clear early that the term *value-based health care* was conceived differently among the interviewees. Some experts defined the concept as *vague* and expressed uncertainty about what the term *value-based* really implies. Others tied it directly to the equation that value is outcome divided by costs as defined by Porter and Teisberg.¹ In the U.S., VBHC was, in particular, associated with health care reform and moving away from fee-for-service.

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It is important to note: Many ongoing initiatives include aspects of the VBHC framework, but are not necessarily framed as or directly inspired by value-oriented thinking. This was particularly present in the single-payer systems, where the concept of VBHC seems to have been introduced to a lesser degree than in the multipayer systems.

In the following sections we describe the implementation of each of the VBHC elements separately, starting with a brief description of the element itself. We provide practical examples from each health system.

Integrated Practice Units

According to the original definition, an Integrated Practice Unit (IPU) is organized around a medical condition or a set of closely related conditions and has a co-located multidisciplinary team that regularly meets to discuss care plans for patients along the full care cycle. This team implements process improvements based on rigorous outcome and cost data, and accepts joint accountability for these data through the use of a unifying IT platform and financial structure.³

Although providers in the systems assessed in this paper are motivated to integrate care across specialities, the implementation of IPUs is currently very limited and is, by far, the least adapted element of the VBHC framework. Government officials and providers in Norway and England did reveal an ambition to work toward more integrated care. In primary care, both systems have introduced teams of general practitioners, specialized nurses, physiotherapists, and psychologists to organize care around patients' needs. In specialized care, the governments seek to integrate care along defined standardized clinical patient pathways, such as cancer or mental health. However, the implementation of physical IPUs with financial and outcome accountability is conceived as not to fit the organizational structure of hospitals where care is organized along the lines of traditional academic disciplines. A major concern is that introducing IPUs would require transferring parts of the different departmental budgets to the IPUs' budgets, disrupting the authority and finances of several departments. As of today, there is no clear economic incentive in place in these systems nor plans to introduce such incentives at a hospital level, making integrated practices — like the one for degenerative back and neck patients at St. Olavs Hospital in Norway, which provides services from neurosurgeons, orthopedic surgeons, and physical therapists — an exception rather than a standard model.

Lack of incentives also seems to be the key obstacle for the U.S. system, where fee-for-service is the main payment model in the major hospitals. In Massachusetts, there are only pockets of attempts to create IPUs, with none of the teams being jointly accountable for outcomes or finances — for example, IPU at Joslin Diabetes Center that focus on different stages of diabetes, from prevention, early-stage, to disease with complications.

In the Dutch system, where some major providers are ambitiously driving the implementation of VBHC, the development seems to have come closest to what constitutes an IPU. At Santeon, a collaboration of seven hospitals focusing on VBHC, a pilot program at one of the hospitals has resulted in a model with some, but not all, IPU elements. At this point, the pilot involves teams responsible for four medical conditions; they are accountable for the quality outcomes but not for the financial side.¹³ Consistent with a formal learning system,¹⁴ at each of the Santeon hospitals multidisciplinary improvement teams regularly meet to share learnings based on data and develop improvement plans.

Outcome Measurement

Care provided in IPU should be based on standardized outcome data to facilitate informed decision-making and improved performance through benchmarking. According to Porter and Lee,³ the outcome data should follow measures for a specific medical condition, cover multiple aspects of patient health, be relevant for both clinicians and patients, and cover the full cycle of care. The International Consortium for Health Outcomes Measurement (ICHOM) has played an important role in the adoption of outcomes measurements across health care organizations by developing standardized outcome sets for more than 30 conditions.¹⁵

Increasingly, health care organizations are expanding outcome measurements. Still, the implementation so far is partial or local except for in the Netherlands where both the hospitals and the government already are focused on collecting outcomes, including Patient-Reported Outcome Measures (PROMs) and Patient-Reported Experience Measures (PREMs). Also, the government has agreed with all key stakeholders that, by 2022, outcome data will be available for 50% of the disease burden in specialty care.¹⁶ To this end, the government started the outcome-driven health care program in January 2020. Nico Zijnsstra, who, as a Senior Policy Officer, was the Project Lead for this program at the Ministry of Health, Wellbeing, and Sport, and who was interviewed for this research, said: “We will build upon the pre-existing registries, e.g., the National Heart Registry, and current infrastructure and also look [at] what is available and what is relevant for both doctors and patients to make sure that we agree upon an outcome set with all stakeholders.”

On the provider side, Samenwerking Algemene Ziekenhuizen [[Cooperating General Hospitals](#)], a collaboration of 28 general hospitals spread across the country, has implemented outcome measurement sets for seven conditions (colon cancer, hip fracture, breast cancer, inguinal hernia, gall bladder, perinatal care, and heart failure) across 22 hospitals.¹⁷ Data are benchmarked across the participating hospitals and nationally, and actively discussed within the clinical teams to determine improvement initiatives. Similarly, Santeon hospitals have developed a scorecard that not only includes outcome metrics but also cost and process metrics, which are benchmarked and discussed across the Santeon hospitals.¹⁸

In Massachusetts, the implementation is mainly driven by providers. Mass General Brigham, an integrated delivery system that reported \$10.1 billion in total operating revenue for the 9 months ending June 30, 2020,¹⁹ is one of the providers actively working with Patient-Reported Outcome Measures (PROMs) in driving clinical decision-making. It has recently launched an electronic PROM dashboard for all departments with data trends extending several years back. However, the clinical application of the data is currently limited and varies among specialties.²⁰ Other hospitals in Massachusetts (e.g., New England Baptist Hospital, part of Beth Israel Lahey Health) are also increasingly implementing outcome sets — some are ICHOM’s and some are developed by the hospitals themselves. To increase further adoption, Blue Cross Blue Shield of Massachusetts, which covers approximately 3 million lives, has mandated data collection on PROMs in some contracts with providers.²¹

In England, NHS hospitals have started collecting PROMs and plan to include patient experience data to support shared decision-making between clinicians and patients. One example is the

introduction of PROMs for total hip and knee arthroplasty throughout all hospitals as part of a national registry.²² However, some clinicians have indicated that use of data in clinical practice is limited due to the poor IT infrastructure, lack of benchmarks across hospitals, and a strict cost-containment regime within the NHS, leaving little room to incorporate outcomes in the clinical workflows.

For years, the Norwegian Health Services has been collecting outcomes for specific conditions on a national level in high-quality, disease-specific registries; e.g., the Norwegian Spine Registry, established as early as 2006, includes a broad set of PROMs, and there is ongoing work to make this data available in the electronic health record. For comparisons among public hospitals (90% of all hospitals), the Norwegian government has made quality metrics available [online](#) like infection rates, mortality rates, etc.²³ Two important strengths of the Norwegian outcome data set are the high compliance and coverage rates. The data collected Norwegian Spine Registry has 70%–80% follow-up rates and accounts for 80% of the operations performed in the country, making it possible to produce population benchmarks for different conditions.^{24,25} A main challenge, however, is the dependence of the regional health trusts and the government to make the outcome data available not only for researchers, but also for physicians and patients in clinical practice. So far, this has not been a priority for either of them, although the government recently has launched a project aiming to make all data sets more accessible through one national platform.²⁶

Cost Measurement

To optimize value for patients, providers should not only focus on improving outcomes but also on reducing *costs of care*, a term that often, but incorrectly, is interchangeably used with the *price charged for a procedure*. In VBHC, costs are ideally measured using the method called *Time-Driven Activity-Based Costing* (TDABC).²⁷⁻²⁹ With this approach, the actual costs of delivering care to a patient with a certain condition are measured from the bottom up, by looking into what happens to a patient in the course of a treatment and what specific costs of all processes are associated with it. The TDABC approach helps to identify opportunities for reducing costs and set the appropriate price for a procedure.

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In 2016, NHS England implemented a national costing program, referred to as Patient-Level Information and Costing System (PLICS), to measure actual resources used at patient-level for acute care, mental health care, and ambulance services.³⁰ The data is determined by tracing the resources tied to an individual patient and by calculating the actual costs incurred by the provider from the resources used. The NHS announced that it will implement this program across the

whole country and will expand it by including other segments of care.³¹ A similar national system has been set up in the Norwegian public health services. The system is being used for benchmark purposes, and the analyses are being made available to the public hospitals to drive efficiency. Neither the British nor the Norwegian government have any plans of adopting bottom-up TDABC approaches where each patient pathway is mapped thoroughly and separately.

Most Dutch hospitals, including SAZ and Santeon hospitals, look at the use of clinical resources (e.g., number of bed days) to treat a patient with a specific condition as a proxy measure for costs, and benchmarking the costs with that of peers. Instead of measuring the actual costs of care delivery, the rationale for measuring the use of clinical resources is that it is the language clinicians understand and can relate to. Private companies, such as Logex and Performance, increasingly support the hospitals with detailed specific costs benchmark analyses at the patient level, to identify cost reduction opportunities. However, there are some local initiatives with TDABC; e.g., perinatal care at Isala Klinieken, and orthopedic care at Máxima Medisch Centrum.

Some providers in Massachusetts have used TDABC for a few conditions. For example, Brigham and Women's Hospital recently did one for breast surgery in order to streamline a cost-efficient care pathway for the patients. However, several stakeholders that we have spoken to indicate that due to the dominant fee-for-service environment and high reimbursement rates, providers in Massachusetts have little incentive to do TDABC.

Value-Based Reimbursement

IPUs can use data-driven insights based on outcomes and cost to improve value for patients. However, a change from a fee-for-service scheme to a value-based reimbursement is needed to align the business model with the delivery practice, so that providers are rewarded for value instead of volume of services. According to the VBHC framework, bundled payment by condition is the preferred payment model to increase value. Bundled payments are risk-adjusted contracts made with providers for all services over a full care cycle or a defined time period and across providers. To secure the quality of care for each bundled condition, providers are made accountable by payers for a set of outcome measures and can receive bonus payments if the targets are met.

In the private system of Massachusetts, private entities play an important role in the adoption of bundled payments. Employers have, in recent years, been developing and implementing bundles with different providers and, now, insurers, such as Blue Cross Blue Shield, are following suit. Also, Medicare is offering voluntary bundles for several conditions that some Massachusetts providers are participating in. Still, the scope of value-based payment models, so far, is limited; the main challenge is that most systems still seem to be running on fee-for-service. “Even in primary care, where there has been an evolution toward global budgets, there are very few providers that are truly getting capitated payments,” Health Commissioner David Seltz said in an interview with the authors. This is supported by Mary Witkowski at the Harvard Business School, who was also interviewed for this research: “Right now, the payment system is rewarding the old system, which makes it very hard for providers to change to value-based payment.”

Like Massachusetts, large Dutch insurers are increasingly pushing for more value-based payment models. For example, Zilveren Kruis, an insurer, implemented five bundles with various providers so far; e.g., a child diabetes bundle with a specialized provider (Diabeter, a Netherlands-based organization that provides care in Europe to more than 2,600 patients with type 1 diabetes).³² Another example is VGZ, a non-profit health insurer with about 2.1 million policy holders, which has multi-year contracts with numerous hospitals, mental health providers, and long-term care institutions, to deliver on its mission to reduce unnecessary care. In November 2019, CZ signed a 10-year contract with a large hospital system in the southern part of the Netherlands on the condition that the hospitals will reduce the volume of procedures by 5% by 2030.³³

In Norway and UK, the governments play an important role in the adoption of value-based payment models. In Norway, mandatory bundled payments contracts for dialysis and four high-cost treatment programs were introduced in 2019 on a national level. By offering a fixed fee based on historical claims the aim is to incentivize the use of the least costly treatment, which, in most cases, will mean the patient-administered alternative treatment rather than in-center treatment.³⁴ In 2020, the very first procedure-based bundle for hip replacement was implemented, including surgery, hospital stay, and hospital follow-up visits.³⁵ Rehabilitation and post-acute care are left out to reduce risk for participants and to secure a controlled implementation within hospital setting. So far, there are no outcome measurements tied to the specific bundles, although all hospitals separately report quality metrics to the regional health authority and the national health authorities. According to Fredrik A.S.R. Hanssen at the Directorate of Health, this is part of a stepwise implementation approach: The government will introduce outcomes measurements further down the road when expanding the number of programs. A recent report suggests these programs will include stroke, HIV, and psychiatric disorders.³⁶

Another striking feature of the Norwegian Health Services is that both providers and government officials are admitting that there is no drive toward implementing bundled payments among providers. “We are dependent on a pull from the national government to get bundled payments introduced,” says deputy CEO of the South-Eastern Health Trust, Jan Frich, MD, PhD, MSc, MHA, highlighting the divided reimbursement schemes between specialized and primary care as a main barrier for implementation. Health care researcher Jon Magnussen, PhD, MSc, a professor and vice dean at Norwegian University of Science and Technology, points out that any of the health trusts or hospitals are free to experiment with bundled payments rather than the traditional activity-based funding independent of government payment plans, but that no one does. “I think it’s a matter of convenience,” he says. “Providers choose to play it safe and use the same model that is used nationally rather than take risks.”

NHS England has not widely introduced bundled payments yet but does work with a payment scheme — known as the best practice tariffs (BPT) — that rewards providers who deliver high-quality care through predefined patient-pathways.³⁷ The goal of BPT is to reduce clinical variation by promoting the adoption of best practices. In this scheme, the NHS defined a set of criteria for various conditions (so far 22) that are likely to result in improvements in care processes from admission to discharge. Providers who participate in the BPT scheme receive a somewhat lower *base rate* for a procedure and, if they meet all the criteria, they receive additional funding that,

by far, offsets the base rate reduction. There are also fines for breaching indicators of quality of care, e.g., unplanned readmissions within 30 days of previous discharge.³⁸

Regional Systems Integration

Regional systems integration allows IPU to deliver the right care at the right location by the right provider within a multisite care delivery system. Systems integration allows systems to concentrate volume at limited sites, which can lead to higher value for patients through higher treatment quality and lower costs; e.g., complex surgery for breast cancer can be done in the academic centers while follow-up assessments can be provided in regional outpatient facilities. Another example is the integration of primary care with speciality care, characterized by continuous, timely communication, a shared electronic health record platform, and a single scheduling system.

Norway, England and, to a lesser extent, the Netherlands have well-integrated health care systems at the regional level. In all systems, the governments have pushed providers for system integration and collaboration; there's a firm belief in having PCPs as gatekeepers to specialty care.

In Norway, to promote the integration of specialty care (managed by the four Regional Health Authorities) and primary care (overseen by municipalities), the national government introduced reforms in 2008 and implemented several national plans. The key element of the reform was to make the municipalities more economically accountable for patients after discharge from specialized care, incentivizing shorter hospital stays and a closer follow-up of patients post discharge.³⁹ The reform has been heavily debated, as municipalities have struggled with capacity and to provide good enough care for high-need, high-cost patients. The Norwegian government has just launched a collaboration program between local hospitals and primary care centers in nearby municipalities.⁴⁰ Also, a several hundred-million-dollar economic stimulus package was recently passed in Parliament in 2020 to boost the productivity and recruitment of PCPs, who for long have been complaining about working conditions and lack of care integration.^{41,42} The question is, however, if this will be enough to decrease the cleft between primary and specialized care.

To manage and coordinate health care services in a local area, the UK government created Clinical Commissioning Groups (CCGs), following the Health and Social Care Act in 2012. CCGs are NHS bodies led by clinicians, and they commission services to support the health needs of the local population. CCGs contract health services on multiple levels, including specialty care and community care; e.g., CCGs in Greater Manchester have successfully integrated health care with social services for their populations. They also closely collaborate with local authorities to determine and implement strategies to improve population health.¹¹ Annual performance assessment of CCGs shows a mixed picture with some units failing to discharge their functions and will need to make 20% reductions to their running costs by 2021.⁴³ However, the continuous restructuring of the CCGs is seen as an evolutionary process run by local organizations rather than an enforced top-down process by NHS England.

System integration is a greater challenge in the two privately run systems in our study. Massachusetts has very little system integration on a regional level. The two large health care organizations, Mass General Brigham and Beth Israel Lahey Health, deliver most of the care in the

state, and there is some degree of collaboration and coordination within these systems, although the interviewees pointed out that this is insufficient. The state government is also not involved in promoting care integration.⁴⁴

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In the Netherlands, a comprehensive governmental plan has been launched to support providers to collaborate and provide the right care in the right setting by the right provider.¹⁶ The government is actively working on addressing any obstacles that impede collaboration between primary and specialty care; e.g., it is supporting the development of population-based payment schemes, funding investments in data infrastructure at primary care level, and easing regulations. Since 2013, the government is supporting nine local experiments for regional integration, in partnerships with providers, insurers, municipalities, and community care organizations.⁴⁵ The experiment [MijnZorg](#) [MyCare], for example, is focused on coordinating care for vulnerable elderly and includes several small-scale initiatives.

Geography of Care

A key element of VBHC agenda is geography of care, which focuses on creating centers of excellence that have the expertise to take care of highly complex patients. The centers of excellence strategically collaborate with smaller hospitals to redesign how and where different activities are performed in the best possible way.

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This study shows that government-run systems, not surprisingly, tend to be more successful in initiating centers of excellence across the country, compared to more privately run systems. Governments in the U.K. and Norway have determined, centrally, where and what type of highly complex care centers are required to better address the specific needs of their populations. The NHS now has several specialized centers spread across the country, including children’s cardiac centers, craniofacial units, and cancer centers. There are plans to designate more services to

specialized centers, like stroke treatment, where specialists have more time and more resources at their disposal to treat the most complex patients.

In Norway, each of the four regional health trusts have their own network of centers of excellence. Additionally, there are some national centers of excellence, typically for cancer treatment or subspecialties like pediatric neurosurgery. As access to care independent of location is important to Norwegians, there is continuous monitoring of the need, access, and quality of these centers of excellence by both the health trusts and government bodies.

The Dutch health care has eight independent academic hospitals spread across the country, acting as tertiary referral centers for the most complex patients, similar to the centers of excellence in Norway and England. There are also a few national cancer centers of excellence, like the well-known Antoni van Leeuwenhoek Hospital providing high-quality cancer care to patients across the Netherlands and abroad, and the Prinses Máxima Centrum, which focuses on pediatric cancer and collaborates with 20 hospitals across the country to cover full cycle of care, from psychological support, developmental assessments, to cancer treatment. These centers of excellence were initiated by the providers themselves.

In Massachusetts, each of the two large systems, Mass General Brigham and Beth Israel Lahey Health, have premier academic hospitals and different centers of excellence. Within the systems, smaller hospitals refer complex surgery patients to the academic hospitals for treatment. However, according to the interviewees, collaboration on complex care within the systems can substantially be improved. There seems to be a lack of conviction among the providers that the academic hospitals can deliver better care than their non-academic counterparts, and smaller hospitals are reluctant to refer patients that they are able to treat themselves as they lose revenue. In contrast to government-run systems, the Massachusetts State has no mandate to improve the organization of complex care.

Value-Based Information Technology

To deliver value-based care across different settings and providers, improved information technology (IT) is needed. According to the VBHC framework, an IT platform should have the following features: data is centered around patients across services, sites, and time for the full cycle of care; encompasses all types of patient data; uses common data definitions; the medical record is accessible among the involved providers and patients; allows easy extraction of outcomes and costing measures by patient and condition and offers interoperability with different provider and payer organizations; and includes templates and expert systems for each medical condition.

Across all systems, the implementation of a value-based IT platform is considered *partial*, rather than *regional or national*, although governments and providers are keen to make progress. In each system, the providers have their own IT systems, which impedes collaboration and interoperability. In Norway, the Netherlands, and England, the fragmented IT landscape is regarded as the most pressing challenge for further improving regional care integration. Clinical teams have little or no access to each other's EHRs and generally communicate through traditional means, which delays information exchange and could affect quality of care.

In Norway, in particular, there is an ongoing debate on whether the country should pursue implementation of centralized IT solutions rather than encourage integration of different local solutions. In one region, the Central Norway Regional Health Authority has decided to implement Epic across primary and specialty care from 2021.⁴⁶ At the national level, the Minister of Health has advocated a 10-year plan implementing one centralized EHR across all Norwegian municipalities apart from the ones in the central part of the country.⁴⁷ Both projects have received criticism from several stakeholders regarding issues of privacy and risk of data breach, especially the latter one, and its fate is currently uncertain.

In the UK, a similar centralized IT project set to integrate EHRs across the country, the National Programme for IT in the NHS, was not successful, and was dismantled by the government in 2011 after a history of delays and implementation issues, as well as public resistance over how patients' data would be used.⁴⁸ A similar effort to implement Epic across the Cambridge health trust has also received criticism for performing inadequately.⁴⁹ Accordingly, NHS England seems today to have changed its IT strategy and has formulated a less centralized but still ambitious health IT agenda, NHS Long-Term Plan for digitally enabled care, aiming to encourage and support providers to implement IT systems that allow interoperability and data access and exchange.⁵⁰

In the Netherlands, individual providers and the government are seeking to improve interoperability and data exchange among local providers and patients.⁴⁰ The government has formulated a national IT strategy for VBHC.⁵¹ It aims to develop new regulations on mandatory data exchange for several domains (e.g., medication, imaging), while easing regulation that impedes data exchange. It also plans to invest resources to actively develop (smart) tools and support providers with implementing those tools. Nico Zijlstra, in a discussion with the authors, argues that the government's role is to create the right conditions and select the most relevant domains, such that "the administrative burden is as low as possible and the perceived added value is higher than the perceived administrative burden."

The IT landscape is heterogeneous among providers in Massachusetts, with different IT platforms being used both between and within hospital systems. However, hospital systems have now formulated ambitious strategies to implement an interoperable IT system within their own systems. For example, Beth Israel Lahey Health plans to implement one vendor across all of its clinics. Mass General Brigham is currently using one vendor to improve communication and data exchange among its primary care providers and specialists and has chosen to leave a contract with a third-party PROM vendor to be able to collect all data on a single platform.

Enablers and Barriers of VBHC Implementation

We are currently early in the history of VBHC, and our study confirms that there is a lot to learn for every system. Importantly, no country/state has the ideal environment for VBHC, and not all the elements described in this article need to be necessarily implemented in order to create a value-based system. Our study indicates that there is a heterogeneity in the implementation not only between countries, but also within countries. We, therefore, believe it is valuable to look not only at each element but also try to analyze the underlying enablers and barriers when formulating recommendations for scaling up the implementation of VBHC.

Strong Government Involvement in Change

A key factor for VBHC implementation seems to be government involvement in care organization. Due to institutional legacies and divergent interests between providers, it is too complex for providers to realize full-fledged value-based systems themselves, as repeatedly indicated by interviewees regardless of the health care system. Forward-looking providers should actively be supported by government, which could ease regulations, provide seed funding, and reward high-value care. We noticed that government's involvement (or willingness to be involved) varies by country/state. For example, Massachusetts state government is less involved in care design decisions and leaves it to *champions* to take the lead and drive delivery innovations. However, in the Dutch system, which is somewhat comparable to Massachusetts', the government is actively involved in the adoption of VBHC elements and pushing providers to take more ambitious steps (e.g., implementing national IT agenda). It should be noted, however, that in contrast to the state government, the federal government is facilitating a move toward to VBHC for Medicare, mainly by developing new payment innovations (e.g., Bundle Payments for Care Improvement Initiative).⁵²

“ *A key factor for VBHC implementation seems to be government involvement in care organization. Due to institutional legacies and divergent interests between providers, it is too complex for providers to realize full-fledged value-based systems themselves, as repeatedly indicated by interviewees regardless of the health care system.* ”

In the government-run systems, on the other hand, interviewees openly admit that providers tend to take a *wait-and-see* attitude and look for the government to drive the VBHC agenda. As such, the government would need to be ambitious and set the goal for providers, like the Norwegian administration is carefully starting to do. To eliminate barriers, a key recommendation across every system would, therefore, be for policy makers to actively communicate the VBHC agenda using a common language. Indeed, the interviewees expressed concerns about the ambiguity associated with what the term *value-based* really implies. This ambiguity could be a barrier for implementation, in and of itself, because it means that leaders will have trouble explaining the VBHC model to their staff and stakeholders and engaging them effectively. By using the framework of Porter and Lee, however, this engagement could be achieved, as the 6 elements provide practical and easily understandable examples of how to create more value in health care.

Focus on IT Improvement

Another key enabling factor across all systems is the strong focus on continuously improving the IT infrastructure; with the emerging technologies, providers and governments have more opportunities than a few years ago. However, many of the interviewees, especially on the provider side, highlighted that there is still a long way to go before adequate infrastructure is in place, especially for seamless systems integration and up-to-date outcome measurement across the full cycle of care. Surprisingly, in the government-run systems, providers at different levels of care are not communicating well electronically, indicating that an integrated health care system, by its

structure alone, is not sufficient to drive IT implementation. IT systems need to be set up to support the information flow consistent with care pathways. Patients most often move across primary and specialty care, and different IT systems should first and foremost follow patients, not vice versa. Whether a centralized IT solution or an integrated model of different systems is the right choice for the single-payer system is beyond the scope of this paper. However, a key recommendation will be to focus on creating integrated IT systems across providers that cover the full cycle of care – specifically, this could mean that primary care physicians and specialists use a single or connected IT system.

Instituting a VBHC Culture among Providers

Another factor highlighted by many across each system was creating the right culture and behavior within the organization so that providers are willing to adopt VBHC. At Santeon hospitals, for example, the pre-existing culture among some leading providers was to collect, discuss, and learn from data to improve care. This mindset paved the way for a quick adoption. Santeon’s Managing Director, Pieter de Bey, MBA, MSc, explains in an interview with the authors that VBHC is, in fact, about cultural change. He adds: “[VBHC elements] are technical solutions than can be fixed, but I think the real added value is to get your providers to a point where they are willing to be open and transparent about their outcomes ... and create a culture where they are continuously focused on improving themselves.”

The current trend to move toward value-based health care seems to be mainly driven by governments and payers in all systems. This does pose a risk of top-down implementation of a framework that most clinicians cannot really make sense of or, at least, have reservations about. Interviewees highlighted the need for physician support as crucial during an implementation process, and for the need to engage physician champions to get a foot in the door in the different medical environments. Physicians themselves need to see and define the value of transitioning to new models to make an implementation successful. To overcome a general resistance to change, policymakers should proactively involve the medical community early on to foster a VBHC culture.

Despite the challenges, we do find that most of our interviewees say that value-based thinking already exists in different forms and shapes in all levels of the health care system today. From nurses to physicians to anyone working in hospitals, the motivation to create better value for patients is an intrinsic part of why people are drawn to the medical field in the first place. However, in terms of designing new payment systems, creating new cost measures or even IT systems, the motivation is greatest in the political and administrative sectors; that means that engaging health care workers in VBHC is a matter of communicating in the right language and focusing on what matters to patients — not to systems, governments, or providers.

“ From nurses to physicians to anyone working in hospitals, the motivation to create better value for patients is an intrinsic part of why people are drawn to the medical field in the first place. However, in terms of designing new payment systems, creating new cost measures or even IT systems, the motivation is greatest in the political and administrative sectors.”

Looking Ahead

There is a general drive across all of the studied systems toward a more value-based health care, although there is a considerable variation in VBHC implementation status among the systems. Our study shows that strengthening government involvement in driving change, focusing on continuous IT improvements to ensure the availability of outcome data across the full care cycle, and instituting a VBHC culture among providers may prove to be pivotal in accelerating the implementation of VBHC across different health care systems.

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