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# Value-Based Healthcare

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## Abstract

Value-based healthcare is a new health-care model in which what is important is value to the patient. Value is a broad term, but in essence, it is the best outcome for the patient per dollar spent. To provide value to the patient, the medical practice should be centered around conditions and care cycles and the results must be measured. We now know that the model we have right now, the fee-for-service model, is not linked to quality of the patient. All around the world, many hospitals and clinics are making the transition to this value-based model. To provide the best for the patient, we must have the best medical evidence to follow. In the following chapter, we will cover a few aspects of value-based healthcare, its reimbursement model, the integrated practice units, and the information technology necessary to implement it.

**Keywords:** value-based, healthcare, value, accountable care, cost-efficiency

## 1. Introduction

Value-based healthcare (VBHC) is a term coined by Harvard Professor Michael Porter. Along with Elizabeth Teisberg, he published his book in 2006 entitled *Redefining Health Care Creating Value-Based Competition on Results* [1]. They proposed that healthcare should be restructured and focused on competition and improved outcomes for patients.

Some level of competition is important to drive improvement forward. In other fields of expertise, competition is what drives knowledge forward and thus improve value to its consumers, such as in technology. In health, this competition also occurs today but is dysfunctional and does not equate to value to the patient.

Value is defined, according to Dr. Porter, around the customer and that is achieving the best outcome at the lowest cost, in other words better health per dollar spent. Conrad defines health as maximum health benefit at minimum cost [2]. The shift from today's model and the value-based model is a change that must be physician led and focused around three principles: 1—the goal is value, 2—medical practice should be organized around medical conditions and care cycle, and 3—results must be measured [3].

Moving to a value-based structure is challenging but feasible and the best way to contain costs is to improve outcomes [4], but containing costs alone will not solve the problem. The focus on value is key to a sustainable health-care system [5]. Achieving and maintaining good health is less costly than dealing with poor health, according to Dr. Porter [4].

Not only physicians but the industry itself is moving toward a value-based system. For example, in orthopedics, we have value-based implants [6]. To cut costs of sterilization and sales representatives, they are manufacturing single-use kits.

There are some barriers to the use of these implants such as the surgeon's conflict of interest with the industry [6], but they can be overcome.

Right now, we have a fee-for-service model for reimbursement that over the past several years is shifting toward this value-based model that attempts to link quality and value to payment [7]. The difficulty in implementing it is to quantify quality and value. Professional societies are trying to develop different programs to attempt to define what high value is.

Tools that quantify if we are achieving our goals are needed. In VBHC, we need quality measures that quantify health-care processes, outcomes, patient's experiences, and organizational systems to evaluate the effectiveness of delivered care as it benefits the patient [8]. Value and good outcome may differ from person to person and from condition to condition. It is hard to build a single tool that can be used for every condition.

But how does this model fit in the real world and how can we make the transition to this value-based model keeping in mind we need to improve value to patients? That's what we are trying to answer in this chapter. It is a rather simple question but with a complex answer. A few hospitals in the United States and around the world are adhering to this type of healthcare based on value to the patient [9]. We are going to review a few of them and how they implemented it.

Value-based healthcare may be considered a merge between evidence-based medicine, patient-centered care, and cost-effectiveness [10], even though in essence they are not the same thing.

## **2. The goal is value for patients**

Today's healthcare is not necessarily structured that way. Hospitals want to increase revenue, health plans want to cut costs, and physicians want to increase revenue to their practices. Those practices not necessarily mean better outcome or results for the patient. Patients only want good outcomes with less office visits, less procedures, and less tests [3]. A more individualized practice is needed to meet all these goals.

Many argue that genetic testing is a possibility in the near future [11], but that raises many other questions. The majority of physicians are not trained to interpret the results of a genetic test and that may lead to wrong interpretations and harmful treatments. When that is done correctly, by a specialist, that raises the concern that sometimes an asymptomatic patient or one that did not develop the disease, whether they need treatment or not.

The concept of value remains misunderstood. It is not supposed to be confused with cost reduction, although it encompasses it. Value should be defined around the patient and what they see as a good result, and the creation of value should be rewarded. Value depends on results not volume of services, and the two should not be confused [12].

The cost related to value is the total cost of care cycle, not only the cost of a single procedure or surgery as it is today. Often we need to spend more money in some services to reduce the need for others, which in the end will reduce the total cost of care. The outcome is condition specific, and no single outcome captures the results of care [12].

This value-based model strengthens the role of primary care. There are four features of primary care as stated by Starfield in his 2005 paper: 1—first-contact access, 2—long-term person-focused care, 3—comprehensive care for most health needs, and 4—coordinated care [13]. In primary care, value should be defined for similar groups with similar needs. Primary care and preventive medicine should be

divided by need, for example, healthy children, single chronic disease, and so on [12]. This will be addressed further along the text.

The structure we have today makes it difficult to measure value, and most providers fail to do so. Some argue that measurement is necessary but not sufficient to improve quality. One of the barriers to improve quality and value to the patient is the lack of a uniform, simple, and reliable measurement. This difficulty is being addressed by The International Consortium for Health Outcomes Measurement (ICHOM), as we will see next.

Outcomes must be reported publicly to benefit patients and providers. These public reports will further accelerate innovation by motivating their peers to improve their own results. The costs for achieving value to the patient must be measured around the patient, not specialty or around departments. Measuring cost around an entire cycle of care will reduce costs through reallocation of services, elimination of others, and better use of the local capacity.

The change in the reimbursement model from a volume-based to a value-based model will allow a reform in payment. It will reward value by providing bundled payment covering the full cycle of care, covering periods of months to 1 year, or longer, according to the condition treated. We will cover this topic further along.

The payment must fit five conditions: payment covers the overall care required to treat the condition, payment is contingent on delivering good outcomes, payment is adjusted for risk, payment provides a fair profit for effective and efficient care, and providers are not responsible for unrelated care or catastrophic cases [14].

### **3. Medical practice should be organized around medical conditions and care cycle**

The organization we have today is by specialty, so a patient who has a condition that needs the effort of different specialties will bounce around from office to office to get his treatment. The reform should be made that patients only go to one place and have a team ready to address their different problems related to the initial condition in the same visit. Organizing around medical conditions and care cycle will be a major change for physicians but a great improvement for patients [3].

Effective care should be centered around a medical condition. That will need the effort of multiple physicians and other health professionals. This organization is known as integrated practice unit (IPU). The IPU is formed by physicians and nonphysicians who provide the full cycle of care for the patient. We will review them further along the text.

The scope of services should be accounted for concentrating volume in fewer locations, choosing the right location for each service line, and integrating care across locations.

Defining the scope of service is to reduce or eliminate service lines where value cannot be achieved. Another possibility is to create partnerships or affiliations with services that you have eliminated because of the lack of possibility of creating value for patients [15].

The concentration of volume in fewer locations is to create a consumer-oriented healthcare. Volume matters for value. The more you treat a disease and the more you learn, the better your treatment will be and more value will be created for the patient. This can be very difficult for organizations to achieve [15].

To choose the right location for each service line is of high value for patients. Less complex conditions should be moved away from high-value facilities to low-cost facilities. It's important to match complexity and the skills needed to the right location. That will optimize cost and productivity [15].

The integration of care across locations is the final component for health system integrations. This concentration of services around different locations must be tied together to improve patient's experience across the sites. All have been directed by IPU's and their physician managers [15].

Value for the patient comes from the effect of the entire set of activities and not only from a single specialty, and the value is greater when all of the four changes above are made.

The MD Anderson Cancer Center in Texas is one of the places where this set up was made. They are organizing around cancer type, and all relevant specialties needed are found in every one of those centers [1].

This approach changes the way physicians manage their practices and their patients. In primary care, for example, they will participate in a number of care cycle teams and they will focus, maybe, in disease diagnosis [3]. The complete cycle of care includes many areas and may take months or even years for the cycle to come to an end. Surgery is one part of care and physical therapy another.

It is thought that increasing value for the patient and the patient feeling well taken care of will reduce the number of malpractice suits. When you have more outcomes measured and a good data collection system, if you get sued you have better data that you can use to defend yourself.

#### **4. Results must be measured**

There cannot be an improvement in value for patients without measuring the results. The outcomes for every medical condition and the cost for achieving it need to be measured. Good measures are vital, and they enable professional insight and the development of expertise [16].

This is easier said than done because it may not be so straightforward to measure value or outcome. They can mean different things to different people, and unifying that is a challenge. Many medical associations all over the world are trying to do just that, some with relative success.

One thing we need to recognize is that health consists of physical, mental, and social health. All three must be in order to consider someone healthy and that need to be taken in consideration when measuring results for patients [17] and when a measurement tool is being done. To measure results by improvement on the initial condition alone is not good enough and should not be done.

The results should be measured by condition and care cycle, not specialty or even intervention. It should cover the full cycle of care until after care is completed and taken in consideration the social and mental status. According to Dr. Porter, the outcomes fall into three tiers. Tier 1 involves the health status achieved. Tier 2 outcome relates to the nature of the care cycle and recovery. Tier 3 outcomes relate to the sustainability of health [15]. If all tiers of outcome work well, costs will go down and productivity will go up.

If we want the value-based model to be successful, we need to measure outcomes. If we measure a minimum sufficient set of outcomes for every major medical condition and then standardize them nationally, we are one step closer to this model's success, but that has proven to be difficult.

First, quality is not defined as improvement in outcomes by today's standards. Second, the measurements that have been done are done by specialty societies but the aim is to treat the patient around a care cycle, not by a single specialty or a single procedure. Third, outcome measurements have focused on clinical status rather than functional outcome, which is the patient goal after all, to improve quality of life. And finally, every organization and even physician have their own set of



measurements and outcomes, and that leads to inconsistencies in definitions and results. A regional, national, and global standardization is needed, but that is hard to achieve [18].

The International Consortium for Health Outcomes Measurement (ICHOM) has convened groups of experts on specific diseases to set a minimum standard set outcome and risk factors using a structured process [18]. Once this is done, it should be fairly easy to spread round the country and around the world.

One important thing for this to work is the implementation of information technology. The development of software that can automatically collect and aggregate the data for future analysis, such as electronic medical records.

It is believed that in the near future, this is something that will be implemented all over the world with good results for everyone involved in healthcare, especially with excellent outcomes for the patients.

## 5. Integrated practice units

An integrated practice unit (IPU) is a multispecialty team that collaborates to provide the best outcome to the patient at the lowest cost. These IPU's are encouraged to compete among themselves for the best possible outcome at the lowest cost during the cycle of care. The IPU will treat not only the disease but also all related conditions of the patient.

The team is responsible for the patient's full cycle of care. That encompasses outpatient, inpatient, rehabilitation, and supporting services such as nutrition, social work, and others. The team is also accountable for the outcomes and costs.

Usually with IPU's, we have faster treatment, better outcomes, and lower costs. All that are achieved by the amount of patients they are able to see.

Since the IPU focuses on disease, it is not clear how a patient with multiple diseases at the same time, and not necessarily correlated, will be conducted. Does he have to seek multiple IPU's to treat each of his diseases or only the one? Some say that the need to go to multiple IPU's may cause almost the same problem we have in today's system.

The West German Headache Center can be considered an IPU. It includes neurologists, physical therapists, and psychologists who work together to treat every patient. The patient sees all experts they need in a single visit. If diagnostic imaging is needed, it is obtained from a nearby partner provider [19].

Care delivered in an IPU should be structured. Just the fact that everybody is in the same place does not mean it works well and is integrated. The creation of evidence-based guidelines will incrementally improve value to patients.

One important thing for an IPU is volume. Volume is needed to achieve better results and improve value to patients. The more you study and the more you treat a disease, the better you get at it. Experience is a key point for the deliverance of value. With that you can incorporate more parts of the cycle of care in your facility.

The creation of an IPU can be challenging. A good example of how to make it work is as follows. The Navy launched in Jacksonville at their hospital a value-based program. They selected four of the most common condition to be the starting point [20]. A physician and a nurse were selected to lead each of the four IPU's that were created, and then they recruited other physicians, physical therapists, nurses, and others to be on the IPU. The teams received training on VBHC by external experts and the entire hospital too. Evidence-based treatment and outcomes were defined for later examination; the location, structure, and schedule were also defined by the team. The IPU's met weekly to monthly to discuss patients and treatments. When a treatment was not working, the team would come to an agreement to change it [20]. Three out of the four IPU's created were successful.

Another example of an IPU is at the Dell Medical School at the University of Texas. The musculoskeletal group implemented an IPU team. They followed these steps. First, they choose a condition, symptom, or patient segment to focus. They choose lower extremity joint pain. Next, they set the standards to meet for the patient to be able to go back to primary care. The next step is to define the clinical and nonclinical staff of the IPU, such as the IPU multidisciplinary team and the physical location of the IPU, for example, the building they are located. For their lower extremity joint pain IPU, all patients were initially evaluated by a mid-level orthopedic provider and if surgery was as option they would consult with the orthopedic surgeon and address any questions of the patient. All decisions were discussed with the patients as a shared-decision making. Data collection and feedback is an important step in an IPU since those measurements will be used to address the value of care. The final step is to identify opportunities to improve value to the patient, increasing the overall health and maintaining the patient engaged in care [21].

This is the basic structure to initiate an IPU at your local hospital to get started. At first, we can select a few specific conditions, the most common ones. Later, when you have the first data collected and analyzed, if they are successful, others IPUs can be created. For the data collection and patient information to be readily available, we need the implementation of information technology, such as electronic data records.

We will cover this topic of the collection of data next.

## **6. Primary care**

Primary care is essential for healthcare. Primary care physicians are hard to find, and when patients do, they feel frustrated with the ability of primary care to meet their needs. The problem is that primary care needs to be organized to deliver and demonstrate measured value [22].

Primary care needs to be deconstructed. Instead of one single set of services, it is actually a group of services delivered for multiple subgroups of patients [22]. Like VBHC is organized around conditions so should value-based primary care. It will be needed to transform care into subgroups of patients with new ways of measuring outcome and costs, new payment models, and new approaches to integrate primary care with specialty care [22].

The problem with primary care is that the patients are heterogeneous. The diversity of needs these different patients create is the challenge to implement value-based primary care. It is impractical to measure outcomes achieved relative to costs for such diverse patients [22]. There are five elements to shift primary care to a value-based model [22].

The first element is basing primary care on patients' needs. It is to group patients by their needs. It is designed to create value to patients. The "needs" include types of services and effective methods for patients to access care [22].

The second element is integrating delivery models by subgroup. Once the subgroups are defined, we can move over to the second element. A few questions must be answered. First, the team should be composed of the physician and other personnel according to the subgroup and their needs. Second, the facilities should also be organized around the subgroup and their needs, and they can be arranged to each day of the week to receive a different group of patients. Third, providers must function as teams, a leader must be recognized, and the team must meet regularly to address the patients' needs [22].

The third element is measuring value for each patient's subgroup. Identification of the outcome that matters to patients is key; also, the measurement of the total

cost should be done, including those costs outside primary care. All of the care processes must be mapped by subgroups; then, the resources needed can be identified and the costs ascertained.

The fourth element is aligning payment with value. The payment system should be redesigned to a time-based bundled payment or a payment for a total package of services for a defined primary care subgroup during a specified time period. Additional fee-for-service payment could be available for patient's acute care need [22].

The final element is integrating subgroup teams and specialty care. Some patients will need coordination between primary care and specialty secondary and tertiary care. Healthy children and adult may have all their needs met by primary care. Chronic conditions will need to be integrated with specialty care according to their needs [22].

This concept of organizing care around subgroups may seem different than the purpose of primary care but this approach is something that will make primary care more efficient, integrative, and holistic [22]. Electronic data record systems are needed in primary care also. All the participants of the teams must have access to it, and it must be integrated with secondary and tertiary care units and their IPU's. We will revise this topic on information technology up next in further detail.

## **7. Information technology**

All over the world the interest in VBHC is growing. With this growing interest and rapid acceptance of both patient and providers, it is important to have the right tools to record and analyze patient's data toward a value-based model. That is why the implementation of a value-enhancing information technology system, such as a patient electronic data record, is so important.

It is critical for the implementation of value-based healthcare to be successful such as the use of electronic data record. The completion of data and reduction of the potential loss of data, by not keeping patient paper records, are critical for the correct measurement of outcomes [23].

Some electronic records today are very good for keeping data but make it hard to export those records for later analysis. There are six elements that are key for a value-enhancing IT platform for the IPU's [15].

First, the platform must be centered on the patient. The system needs to follow the patients across the services and through time for the full cycle of care. Data are aggregated around the patients not locations. So, all parts of the team have access to the same and complete records, instead of the physicians having access only to his notes or other physicians' notes, he is capable of accessing the records from the nurse staff, physical therapists, and so on [15].

Second, it needs to use common data definitions. The data fields related to diagnose, medical history, and other aspects of care are standard according to the condition being treated so everyone can understand what it means and it is easy to export when needed across the entire system [15].

Third, it encompasses all types of patient data. Notes, images, laboratory tests, and many other are stored in the same place and in a standard format. Like said before, everybody has access to everybody's notes and to the complete patient record. Access is not limited to the IPU team leader [15].

Fourth, the access is available to all parties involved in care. That means that the data collected have to be available to the patients and any referring physicians. The best information technology system possible is the one in that the patients can schedule appointments, refill their prescription, and communicate with their physicians and to the rest of the IPU team, in a simple and easy way. It also should



be made easy to access some types of information needed for the evaluation of the care given to the patient [15].

Fifth, every medical condition should have its own template. This set of templates makes it easy and efficient for the IPU teams to retrieve the data they need in order to execute procedures and measure the patient's outcomes and risk factors and the costs of the full cycle of treatment [15].

And finally, the system must be easy to extract information. In a value-enhancing system, the data to measure outcomes, track costs, and control the patient risk factors must be easy to extract. They should also allow the patient to report on his/her own outcomes, so that clinicians can make better decisions [15].

The Cleveland Clinic is a good example of an institution that followed all those steps when adopting a value-enhancing data system [24].

## **8. Reimbursement**

The reimbursement changes in a value-based model. Instead of fee-for-service like in a volume-based model, the reimbursement occurs after the full cycle of care. It is essential to have this payment reform. Physicians paid in a fee-for-service tend to provide more care compared with salaried physicians [25]. Also, the fee-for-service payment method is not necessarily aligned with value to the patient.

Payment per activities encourages more procedure done, maintains fragmentation, and discourages prevention, which does not stimulate high-quality care to the patient [26]. According to the authors, high-value care should limit per capita cost, improve patient experience, and improve population health [27].

Emphasis of VBHC is developing and implementing a bundled-payment known as pay-for-performance (P4P). This payment method focuses on aspects of value that can be measured using indicators of quality [27]. Cattel and Eijkenaar in their 2019 article give a comprehensive view on a new payment initiative that combines two elements: 1—global base payments and 2—explicit quality incentives [27].

The rationale of their initiative is that in essence, the global payment is a bundled payment, with the bundle being constructed at a higher level than at the level of conditions or treatments. The second component, the quality incentives, is sort of a P4P payment that rewards measurable aspects of value [27].

Some aspects of value cannot be explicitly measured such as well-coordinated care or many health outcomes are difficult or impossible to measure. While important, they cannot be explicitly accounted for in the payment contract [28]. Designing the base payment as a global payment facilitates cost-consciousness and well-coordinated care across the full cycle of care, with a focus on the patient instead of on separate conditions [27].

Global base payment transfers the risk from payer to provider which may cause a few problems such as diminishing quality or attempting to underprovide expensive services. These concerns have been addressed by Frakt and Meyers [29], and they can be addressed by risk-sharing arrangements in global payment and explicit quality incentives.

The components of the global base payment are, to a multidisciplinary provider group, for a cohesive set of care activities to a predefined population, fixed for a defined period of time, risk-adjusted, and with risk-mitigating measures. The components of the explicit quality incentives need to have a method of linking payment to quality, with quality measures and with quality incentive structure [26].

This payment initiative described above is a little different than that proposed by Dr. Porter. In his initial model, reimbursement would be done after the complete cycle of care and would include all services and medications, and treating inpatients

and outpatient's services together. This model would reward true value and incentivize innovation among physicians [3]. Bundled reimbursement allows for all the system to benefit from value improvement [9].

Today, reimbursement takes place for discrete services not for the entire cycle of care. This works against value, according to Dr. Porter [9]. Value is created by the entire care cycle, not the parts. A change in the payment method is required for the VBHC to work. In essence independently of what reimbursement model you use, for value-based healthcare to work, reform is needed. A fee-for-service model, which is the prevailing way of reimbursement today, does not work in a value-based health-care model.

## **9. Comparison**

The fee-for-service is the prevailing model of healthcare in the US and around the world. The patient pays for a medical service, such as visits, tests, and surgical procedures. In theory, the physician charges to cover their costs and for a profit, the patient knows through itemized bills what they are paying for and they can compare the prices with other providers. This competition will drive prices down.

The value-based health-care model has a pay-for-performance reimbursement system. In primary care, for example, the patient pays a monthly, quarterly, or annual retainer fee. This fixed price is regardless how many visits or test the patient requires. As long as the patient is satisfied to continue this plan, physicians will get paid.

## **10. Limitations and obstacles**

The limitations of the value-based health-care model are that it must be led by physicians and that can pose as a problem. If physicians sense that this new model can limit their gains with reimbursement, they may be inclined not to follow through with the necessary steps to make it work.

Physicians are also worried they have little to no time with the IPU team, lack of transparency with the providers, and find it hard to meet quality expectations. Some physicians are not implementing a value-based healthcare because they fear it is too risky with no real assurances.

Other physicians say that this model is beyond the scope of their practices. Should an internist be concerned about organizing someone's efforts to quit smoking? And so, this only adds on to the physicians' responsibilities and with their work load.

Another problem raised is that some fear that tying the physician salaries directly to outcomes might encourage them to refuse to treat the sickest patients who are more likely not to get better.

## **11. Conclusion**

There is a strategic agenda for creating value-based health-care system. It should encompass what we have seen so far in this chapter: organize into IPUs, measure outcome and costs for every patient, move to value-based reimbursement models and bundled payments, integrate and coordinate care in multi-site care delivery systems, expand across geography, and build an enabling information technology platform [30].

When we have achieved all these goals, we will have reached a VBHC system. The road getting there is rough but rewarding. This shift in health-care design from volume to value is already happening all over the world in all specialties, some with success and some not, but the first step in the right direction must be taken.

It is possible to achieve better results at lower costs as we have seen, and at the same time, creating value to patients. This topic needs to be further studied, but all the components to make it work all already in place and ready to be put to the test.

### **Conflict of interest**

The author declares no conflict of interest.

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