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## On outcomes for hemophilia

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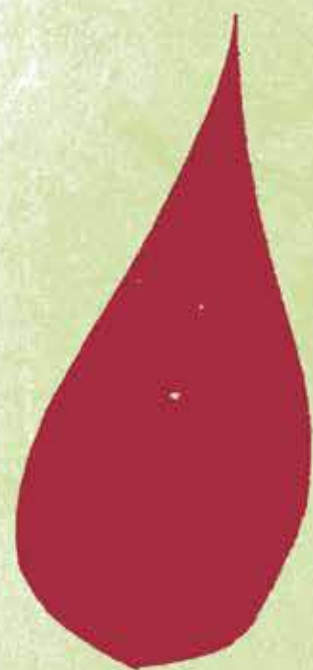
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# PART 2

## DEFINING, MEASURING AND QUANTIFYING OUTCOMES





# CHAPTER 4

## Defining patient value in hemophilia care

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Once upon a time, before the age of modern medicine, death or miraculous survival was the most common outcome for many diseases, including hemophilia. Nowadays, hemophilia outcomes also include bleeding episodes, arthropathy and inhibitors, and more patient-centered outcomes such as quality of life (QoL) and participation in society. There is no doubt that these outcomes have improved dramatically in most countries in the past decades, due to increased availability of safe clotting factor concentrates and prophylactic treatment. But has 'value' for individuals with hemophilia increased? If so, can the hemophilia community worldwide improve 'value' further? And will 'value' increase with novel and promising, but costly treatment options?

That depends on the definition of value. Value comes down to: is it worth it? Value is about achieving patient-relevant outcomes relative to costs. What value is depends on the role played within the health care field: providers traditionally focus on clinical outcomes (e.g., clotting factor levels, annual bleed rates), while costs are usually the domain of policymakers and insurers. For people with hemophilia, outcomes are also about QoL (e.g. pain relief, functional ability) and costs can be both monetary and non-monetary (e.g. travel time to the treatment center, loss in productivity).[1, 2] For someone with mild hemophilia, the most relevant question may be: is it worth taking a morning off from work for a routine visit to the treating physician? Is administering prophylaxis to prevent spontaneous bleeding always worth the time investment for an individual with severe hemophilia? Contrastingly, for someone in a developing country with limited access to treatment, the value may be in surviving severe bleeds.

Delivering value to patients should be the overarching goal of health care provision, argues Michael Porter, professor at Harvard Business School. He is the founding father of value-based health care, a concept introduced in 2006. This strategy consists of six essential elements that should be implemented simultaneously: 1) organize care into integrated practice units (around the consumer or need), 2) measure outcomes and costs for every patient (so progress over time can be tracked), 3) move to bundled payments for care cycles (paying for outcomes rather than services), 4) integrate care delivery across separate facilities (eliminating duplication of care and optimizing care in each location), 5) expand excellent services across geography (increase catchment area for an excellent hospital) and 6) build an enabling information technology platform (that helps the parts of an integrated practice unit work together). Together, these elements can improve value of care in many settings. The need is urgent: many hospitals and even health ministries have started to work towards improving value rather than profit.[3]

How about hemophilia? The first two elements, organizing care into integrated practice units and measuring outcomes and costs for every patient, are the starting points.[3] Integrated practice units provide services to people with the same medical condition and needs in terms of outcomes. They do not only treat the medical condition but also related conditions and complications (e.g., arthropathy, hepatitis C, hiv infections, inhibitors),[1, 3] all highly relevant for hemophilia. Can and should hemophilia

be defined as a single medical condition? Medically, it is clearly defined as factor VIII or factor IX levels below 0.40 IU/mL, but outcomes and subsequent clinical management are much more heterogeneous:[4] functional outcomes and QoL are perhaps similar for individuals with severe arthropathy and people with other orthopedic conditions, but different for mild hemophilia. Many hemophilia treatment centers worldwide provide multi-disciplinary care for hemophilia,[5] but true value-based health care goes further: all team members, regardless of specialty, share the responsibility to improve outcomes, and are accountable for the results.[3]

The second step is to establish so-called minimum outcomes sets or core sets of outcomes (both clinical and patient-reported). These combined sets have already been developed for several conditions, including lower back pain,[6] advanced prostate cancer[7] and hip and knee osteoarthritis.[8] With the help of Delphi-like processes and involvement of both patients and different clinical specialists, organizations such as the International Consortium for Health Outcomes Measurement (ICHOM) and the Core Outcome Measures in Effectiveness Trials (COMET) focus on defining outcomes that matter most to patients and that are to be used as effectiveness endpoints in clinical trials,[9] with the patient's voice becoming increasingly important.[10]

As with value, outcomes are not all similar and equal, but they form a hierarchy.[1] Porter divides patient-relevant outcomes into three tiers: 1) *health status achieved or retained*, for example mortality rates or functional status; 2) *outcomes related to the nature of the care cycle and recovery*, for example preventing hospital readmissions, because they are a burden on patients and clinicians as well as on the system; and 3) *outcomes related to the sustainability of health*, for example recurrence of health problems.[3] A core set of combined clinical and patient-reported outcomes does not yet exist for hemophilia. Brian O'Mahony, Gerard Dolan and colleagues[11] set off to map value in hemophilia onto the three-tiered framework of outcomes. They defined hemophilia outcomes in each tier and subsequently applied the framework to three clinical scenarios (e.g. the impact of receiving care at a hemophilia treatment center versus not receiving care at a specialized center; the superiority of prophylaxis over on-demand therapy; and the utilization of extended half-life products versus standard therapy). They conclude that the framework can be used to evaluate added value of hemophilia health care interventions and to reduce low-value services.

The framework is an important step towards a core set of outcomes. However, additional work is needed in order to make hemophilia care truly value-based. A first and indispensable step in solving any problem is to define the overall goal.[3] We see the overall goal as continuing to improve hemophilia care by improving value for patients. Once all agree on the goal, measuring outcomes that are relevant to and reported by individual patients is next. By tracking these outcomes over time, progress will become visible and care providers can be held accountable to achieve this goal, while allowing them to compare outcomes between centers, countries and health care settings.[3]

Then the central question is: which outcomes should we track? O'Mahony and colleagues suggest outcomes relevant for individuals with hemophilia, including mortality, QoL and pain in tier 1, time to recovery from a bleed and time missed from school or work in tier 2 and joint preservation and lifelong productivity in tier 3. There is no doubt that these are important, but as O'Mahony and colleagues point out, implementation of the framework will require further review and validation of these outcomes by patient groups, including those from low and middle-income countries.[12] Then, these outcomes should be measured appropriately. Already, an abundance of tools exists to measure a variety of outcomes, such as joint health status,[13] QoL,[14] activities and participation,[13, 15] as well as outcomes specifically for people with inhibitors.[16] However, the quality of these tools differs as well as their availability and applicability globally.[14, 15] Therefore, standardization of which tools to use is being advocated.[17]

An important motivation to implement value-based care now, besides the need to make care more patient-centered, is the rising cost of health care. Implementing value-based health care may reduce costs, as care becomes more efficient when it focuses on achieving value, eliminating services that do not contribute to that goal.[3] The issue of high costs is no different for hemophilia: with an average annual cost of almost €200.000 per severe hemophilia patient, it is among the conditions with the highest financial burden on society in Europe.[18] Value-based health care may help make choices about novel treatment options such as extended half-life concentrates, gene therapy and alternative hemostatically active products that may be even more expensive than current treatment. Are they truly more valuable for patients than current approaches? Visibly improved outcomes may be worth the cost. Already, 99 per cent of costs of hemophilia care is spent on coagulation factor replacement therapy. On the other hand, lowering costs while maintaining good outcomes, such as the use of the less costly desmopressin in non-severe hemophilia A[19] or using products of which the patent has expired, will also increase value.

Has value increased for individuals with hemophilia? Certainly. The hemophilia community is well aware of the importance of patient-relevant outcomes, as illustrated by papers by O'Mahony and others. However, although the tale is starting to be told, the story is not yet finished. First, the hemophilia community should define the goals we aim to achieve and which value should be improved. Then, a chapter should be written about a widely agreed upon minimal core set of practical and well-defined outcomes that can be used in a variety of settings, including a set of validated tools to measure outcomes in a standardized manner. And finally, the epilogue should address the need for integrated practice units for hemophilia in which team members share the responsibility for documenting and improving patient outcomes. If we can start to write this book, we believe value-based health care in hemophilia will live in prosperity ever after. And so will people with hemophilia.



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