

# Breakthroughs and Barriers: Advancing Value-Based Payment for Transformative Therapies

May 2019

## EXECUTIVE SUMMARY

Transformative therapies are one-time treatments with expected long-term or even curative effects. Recent breakthroughs in transformative therapeutic innovation have included gene therapy and editing technologies; gene, cellular, and tissue engineering; certain medical devices; and other interventions or approaches intended to correct underlying defects, stop disease progression, or restore functionality. Such therapies represent a paradigm shift away from reactive, episodic treatment of disease towards a proactive approach to sustaining long-term health.

Despite the potential benefits of transformative therapies, the high cost of these innovative technologies creates challenges in volume-based, fee-for-service (FFS) healthcare reimbursement systems. Payer concerns include the impact on budgets (particularly in states and small employers with limited reserves), uncertainty about the long-term effectiveness and durability of new breakthrough therapies, and beneficiary enrollment shifts that disconnect potential long-term financial benefits from the payer that actually bore the cost of the intervention.

Continuing with traditional payment approaches may lead to limited reimbursement for the high, upfront costs of transformative therapies; in turn, this may result in reduced investment and reduced access to innovative therapies. These financial challenges not only cast doubt on the health system's capacity to keep pace with technological change, but presents tangible obstacles for patients today, who may struggle to access life-altering treatments. In order to address the payment challenges surrounding transformative therapy, we must create new business models among payers, manufacturers, and providers, as well as novel regulatory and payment policies that will support these models.

The Duke-Margolis Center for Health Policy's Value-Based Payment (VBP) for Medical Products Consortium works with key stakeholders to address and resolve these barriers so promising therapies can be available and affordable to patients. This paper examines new payment models and other strategies that may help address barriers to the use of transformative therapies under traditional FFS reimbursement and regulation. VBP arrangements aim to: 1) align pricing and payments to expected or observed value in a population (i.e., outcomes relative to costs); 2) generate more evidence related to value, with the goal of reducing the uncertainty and risk in

---

***In order to address the payment challenges surrounding transformative therapy, we must create new business models among payers, manufacturers, and providers, as well as novel regulatory and payment policies that will support these models.***

---

FFS payment for transformative therapies; and 3) address the budgetary challenges posed by upfront payments, by spreading payments over time to reflect the realization of the desired outcomes.

This paper summarizes the transformative therapies environment and considers the potential role for VBP arrangements within this setting. We identify different payment models that represent successively larger shifts away from FFS reimbursement and make policy recommendations to facilitate further use of VBPs arrangements. To build on this work, the Duke-Margolis and the VBP for Medical Products Consortium will identify emerging examples within the field, develop implementation strategies, and propose pilots for transformative therapy VBP arrangements. Lessons learned from these experiences will help clarify regulatory issues specific to transformative therapies (e.g., the effects of price-reporting obligations on stakeholders' willingness to engage in potential VBP arrangements), enhance the feasibility of longer-term, outcomes-based contracts that can better capture the impact of a therapy over time, and identify strategies for collecting appropriate outcome measures.

Reforming the payment system away from the current volume-based, per-service payment structure is challenging, but the coming wave of transformative therapies provide new opportunities and pressure to implement this change. While more action is needed, the concepts described in this paper provide some guidance on how to support the paradigm shift toward value-based payment for transformative therapies

## AUTHORS

**Gregory W. Daniel**, Deputy Director, Duke-Robert J. Margolis, MD, Center for Health Policy and Clinical Professor, Fuqua School of Business, Duke University

**Katie Greene**, Managing Associate, Duke-Robert J. Margolis, MD, Center for Health Policy, Duke University

**Marianne Hamilton Lopez**, Research Director, Duke-Robert J. Margolis, MD, Center for Health Policy, Duke University

**Monika Schneider**, Research Associate, Duke-Robert J. Margolis, MD, Center for Health Policy, Duke University

**Jason Rotter**, DCRI Fellow, Duke University

**Mark B. McClellan**, Director, Duke-Robert J. Margolis, MD, Center for Health Policy and Robert J. Margolis, MD Professor of Business, Medicine and Health Policy, Duke University

**Christina Silcox**, Managing Associate, Duke-Robert J. Margolis, MD, Center for Health Policy, Duke University

**Jingyuan Qian**, former Senior Research Assistant, Duke-Robert J. Margolis, MD, Center for Health Policy, Duke University

**Nicholas Fiore**, Research Assistant, Duke-Robert J. Margolis, MD, Center for Health Policy, Duke University

**Aparna Higgins**, Policy Fellow, Duke-Robert J. Margolis, MD, Center for Health Policy, Duke University

## ADVISORY GROUP

**Alan Balch**, Chief Executive Officer, Patient Advocate Foundation

**Thomas Barker**, Partner and Co-Chair, Healthcare Practice, Foley Hoag

**Amy Bassano**, Deputy Director of the Center for Medicare and Medicaid Innovation, Centers for Medicare and Medicaid Services

**Jonathan Blum**, Independent Consultant

**Marc Boutin**, Chief Executive Officer, National Health Council

**Perry Bridger**, Vice President, Global Value, Payer Access and Public Policy, Edwards Lifesciences

**Chuck Bucklar**, Vice President, North America Commercial Operations, BioMarin

**Tanisha Carino**, Executive Director, FasterCures

**Alexandra Clyde**, Corporate Vice President of Global Health Policy, Reimbursement and Health Economics, Medtronic

**David Macarios**, Vice President Global Evidence and Value Development, Allergan

**Patrick Courneya**, Executive Vice President and Chief Medical Officer, Hospitals, Quality and Care Delivery Excellence, Kaiser Permanente

**Darin Gordon**, President and CEO, Gordon & Associates, LLC

**Tim Hunt**, Senior Vice President, Corporate Affairs, Editas Medicine

**Doug Ingram**, Chief Executive Officer, Sarepta

**Alex Krikorian**, Vice President, Pharmaceutical Strategy and Contracting, Anthem

**Leigh Anne Leas**, Vice President and US Country Head, Health Policy, Novartis

**Nick Leschly**, Chief Executive Officer, bluebird bio

**Paul Levesque**, Global President, Rare Disease Group, Pfizer Innovative Health, Pfizer Inc.

**Jeff Marrazzo**, Co-Founder and Chief Executive Officer, Spark Therapeutics

**Steve Miller**, Senior Vice President & Chief Medical Officer, Express Scripts

**Bruce Nash**, Chief Physician Executive and Senior VP for Health and Medical Management, Blue Cross Blue Shield of Massachusetts

**Joshua Ofman**, Senior Vice President, Global Value, Access & Policy, Amgen

**Jonathan Perlin**, President of Clinical Services and Chief Medical Officer, Hospital Corporation of America

**Rekha Ramesh**, Executive Director, Head of Policy, Gilead Sciences

**Jill Ehrlich Robinson**, Senior Director, Advocacy Relations, Verastem Oncology

**Lewis Sandy**, Executive Vice President, Clinical Advancement, UnitedHealth Group

**Michael Sherman**, Chief Medical Officer and Senior Vice President, Harvard Pilgrim Health Care

**Reka Shinkle**, Vice President, Commercial and Portfolio Planning, Regenxbio

**Surya Singh**, President, Singh Healthcare Advisors

**Maria Stewart**, Global Vice President, Health Economics and Market Access, Boston Scientific

**Susan Winckler**, Chief Risk Management Officer, Leavitt Partners/President, Leavitt Partners Consulting

## FUNDING

The Robert J. Margolis, MD, Center for Health Policy at Duke University is directed by Mark McClellan, MD, PhD, and brings together expertise from the Washington, DC, policy community, Duke University, and Duke Health to address the most pressing issues in health policy. The Center's mission is to improve health and the value of healthcare through practical, innovative, and evidence-based policy solutions. For more information, visit [healthpolicy.duke.edu](http://healthpolicy.duke.edu).

This project is made possible through the generosity of the Margolis Family Foundation, which provides core resources for the Center, as well as a combination of financial and in-kind contributions from consortium members including Allergan, Amgen, bluebird bio, BioMarin, Boston Scientific, Editas Medicine, Edwards Lifesciences, Gilead, Medtronic, Novartis, Pfizer, Regenxbio, Sarepta, Spark Therapeutics, and Verastem. The VBP Consortium is guided by an Advisory Group comprised of patient

advocates, payers, manufacturers, and providers, as well as experts on regulatory affairs, law, and policy. The Duke-Margolis Center for Health Policy's Research Independence and Conflict of Interest statement, with links to relevant Duke University policies, is available at:

<https://healthpolicy.duke.edu/research-independence-and-conflict-interest>.

**Mark B. McClellan, MD, PhD**, is an independent board member for Cigna, Johnson & Johnson, and Alignment Health Care, co-chairs the Accountable Care Learning Collaborative and the Guiding Committee for the Health Care Payment Learning and Action Network, and receives fees for serving as an advisor for Cota and MITRE.

**Gregory Daniel, PhD, MPH**, receives consulting fees from AbbVie, Genentech, and the Reagan Udall Foundation.

## INTRODUCTION

An increasing number of innovative transformative therapies are emerging, including gene therapy and editing technologies; gene, cellular, and tissue engineering; certain medical devices; and other interventions or approaches that correct underlying defects, stop disease progression, or restore functionality. These innovations aim to provide durable responses for serious diseases, and are poised to disrupt the current treatment paradigm for genetic disorders, cancers, and other chronic conditions. Transformative therapies may involve highly complex innovations and diverse mechanisms, targets, and methods of administration, but for purposes of this paper, they are defined as therapies that are: 1) delivered through a single or short-term administration or intervention; 2) intended as an irreversible treatment; 3) aim to address an underlying disease condition or modification; and 4) aspire to produce a long-term, durable response.<sup>1,2</sup> In August of 2017, the Food and Drug Administration (FDA) Commissioner Scott Gottlieb announced the approval of the first cell-based gene therapy in the United States, describing an “inflection point in our ability to treat and even cure many intractable illnesses.”<sup>3</sup> This first cell-based gene therapy was Novartis’s KYMRIAH™, which was created for pediatric and young adult patients with a form of acute lymphoblastic leukemia (ALL). In the months following approval of KYMRIAH™, the FDA also approved Gilead’s YESCARTA® for certain types of large B-cell lymphomas, and Spark’s LUXTURNA™, the first gene therapy approved for an inherited retinal disease.<sup>4</sup> Additional products are expected: Hanna et al. identified 2,335 clinical trials for gene therapies that started between 1989 and 2015, of which, 72% are ongoing and 5% are in Phase 2/3, 3, and 4.<sup>5</sup> Some estimates indicate that nearly 40 gene and cell therapies will attain regulatory approval by the end of 2022.<sup>6,7</sup>

While these therapies represent a paradigm shift away from traditional treatment approaches of chronic disease management, the high potential value and associated large, upfront cost of such technologies creates fundamental challenges within volume-based, FFS healthcare reimbursement systems. Even after excluding administration and patient management costs, the initial list prices of some of these transformative therapies may exceed hundreds of thousands of dollars.<sup>8</sup>

Payer concerns under the current FFS approach include the impact of transformative therapies on budgets (particularly in states and small businesses with limited reserves), uncertainty about long-term effectiveness and durability of the therapy at the time of FDA approval, and the potential for loss of return on investment, in which the long-term financial benefits and/or improved outcomes may not be realized by the payer that bore the upfront cost of the intervention. Such concerns may cause delays and disagreements in payment and access to treatment, and could affect the desire to invest in transformative therapies as a replacement for ongoing, chronic treatments.

Further complicating potential solutions to these market challenges are the differences in Medicare payment policies for these treatments. In the current system, many of the transformative therapies are and will likely continue to be physician-administered. These therapies are traditionally covered under Medicare Part A or B, and fall under the medical benefits in commercial plans where providers typically

receive FFS payments for the transformative therapy and associated procedure costs (with fees negotiated as a percentage of the charges). For drugs and devices covered under these benefit structures in Medicare, provider systems typically purchase the transformative therapy ahead of time and are then reimbursed by Medicare when the procedure involving the therapy is performed. In the Medicare outpatient setting, traditional reimbursement to the provider is in the form of the average sales price (ASP) for the treatment, plus a percentage of the ASP for administration and drug management costs. Beneficiaries are responsible for a 20% copayment, though most have secondary Medigap coverage for these copays.<sup>9</sup> For very high-cost transformative therapies, the percentage markup on ASP will be substantial.

In the Medicare inpatient setting, reimbursement to the facility would generally be from a diagnostic-related grouping (DRG) payment, with the possibility of a supplemental New Technology Add-on Payment (NTAP), if the product demonstrates that it is a substantial clinical improvement over previous care and that it would be inadequately paid under the regular DRG payment. NTAP is a temporary add-on payment that covers 50% of the estimated new technology cost for a period of time (generally for two to three years), until the charges for the therapy are reflected in the base DRG payment amounts. In the absence of a new DRG-based payment that is explicitly for a transformative therapy, manufacturers can apply for a NTAP to help cover the additional costs paid to the hospital treatment center for acquiring the product and supporting the patient through the initial inpatient treatment.

Both Novartis and Gilead (the manufacturers of the CAR-T cell therapies KYMRIAH™ and YESCARTA®, respectively) applied to the Centers for Medicare & Medicaid Services (CMS) for the NTAP program starting in fiscal year 2019.<sup>10</sup> While CMS did not propose a new DRG for CAR-T therapies for 2019, CMS did approve NTAP status for both therapies.<sup>11</sup> Additionally, Medicare providers are generally eligible for outlier payments in the event that the overall cost of an individual inpatient admission substantially exceeds the DRG payment. The extent to which outlier costs are reimbursed varies year to year and is calculated on a hospital-specific basis, accounting for hospital operating costs, DRG payments, and additional add-on payments (including those for new technologies). In calculating NTAP and the outlier payment, Medicare uses a cost-to-charge (CCR) ratio to account for variability in both charges by, and costs to, providers. While costs are generally lower than list charges, in the Medicare Hospital Inpatient Prospective Payment System Proposed Rule, CMS proposed using a CCR of 1.0 for CAR-T therapies, based on the reasoning that hospitals are unlikely to set charges different from costs for these therapies<sup>12</sup>; however, CMS did not finalize this change. Since NTAP and outlier payments currently do not cover the full additional price of a new technology, concerns persist that hospitals administering these therapies will not be able to recoup their expenses when using these therapies on an inpatient basis. CMS payment policies reach beyond Medicare to influence private payers; without Medicare payment changes that are able to keep up with transformative therapies, private-sector reforms are likely to be more difficult.

To address these challenges, this paper will: 1) examine barriers to the use of these therapies under the current FFS reimbursement system, considering potential benefits and challenges of proposed VBP approaches for transformative therapies that have the capacity to align payers, manufacturers, and providers towards greater value; 2) outline the next steps towards implementing VBP arrangements in practice; and 3) focus on the steps necessary to move away from the FFS reimbursement system by making payments that are actually dependent on results in treated populations.

The payment reforms we describe still require payers and manufacturers to determine prices based on available evidence of the therapy's value. There are other efforts underway to guide such price negotiations, including value assessment frameworks for determining a range of appropriate drug prices.<sup>13</sup> Such efforts depend on the availability of long-term evidence, something that the implementation of VBP arrangements with robust data collection requirements can help improve. In addition to gene- and cell-based therapies, these proposed VBP approaches may also apply to other transformative treatments in medical devices and pharmaceuticals. A range of other short-term therapies can correct underlying defects, stop disease progression, and/or restore functionality, including established therapies (e.g., organ transplants) and emerging ones (e.g., artificial organs or robotic prosthetic limbs). These treatments face many of the same payment challenges within the current FFS reimbursement system. Given the challenges of high, upfront FFS payments in these contexts, the development of new payment approaches have broad potential. By supporting the development and application of additional evidence and encouraging higher-value use of transformative therapies, health care could become less reactive and more focused on proactively sustaining long-term health.

---

***CMS payment policies reach beyond Medicare to influence private payers; without Medicare payment changes that are able to keep up with transformative therapies, private-sector reforms are likely to be more difficult.***

---

## BARRIERS TO EFFECTIVE PAYMENT FOR TRANSFORMATIVE THERAPIES IN THE FFS ENVIRONMENT

In the United States healthcare system, traditional reimbursement for therapies is based on FFS payments in which healthcare providers or manufacturers are paid for the volume of services or units rendered, independent of patient-specific factors or outcomes achieved. For single-administration transformative therapies, a FFS system would require a single payment at the time of administration, regardless of whether or not the intervention caused the desired outcome.

Upfront FFS payments (especially for high-priced and potentially durable treatments) create several inherent challenges for supporting high-value care for transformative therapies. For payers, including public insurers, private insurers, and employers, challenges include lack of financial protection against

the high-cost of treatment if that treatment fails to produce the expected downstream outcomes, uncertainty in recouping long-term benefits if a patient or employer switches insurers, and short-term budget pressures related to such an high upfront payment; these specific payer challenges are further described in the sections that follow. For manufacturers, the uncertainty regarding coverage and reimbursement for transformative therapies may deter future investment in developing potentially high-value, but risky products. For patients, coverage restrictions and/or cost-sharing associated with these high, upfront payments may prevent access or create an excessive financial burden.

## **Uncertainty in Long-term Results**

One key concern surrounding transformative therapies is that the initial evidence generated by well-controlled trials used for regulatory approval may indicate the potential for long-term benefit, but evidence is often limited at the time of FDA approval regarding the durability of this benefit in real-world populations. Simultaneously, statutory initiatives encourage both the FDA and manufacturers to prioritize new treatments for areas of high unmet need and accelerate their path to market, along with post-market study requirements.<sup>14</sup> Healthcare payers weigh available clinical and cost-effectiveness evidence versus the current standard of care in making coverage decisions and negotiating payments for new treatments. These decisions can be complicated in the context of any therapy, but with high upfront payments, disagreements surrounding the treatment value based on available evidence can have much larger financial consequences. Such disputes will be compounded if patients respond differently to the treatment for reasons that are not clearly identified in early trials. Therapies that target orphan populations may lack an active comparator or be tested via smaller clinical trials with limited statistical power, potentially adding complexity and uncertainty.<sup>15</sup> While many transformative therapies are likely to benefit from additional post-market evidence to inform value assessment,<sup>16</sup> traditional reimbursement approaches would involve a full upfront payment, regardless of such uncertainties.

## **Uncertainty in Recouping Investment with a Fragmented Payer System**

Another concern is that the potential downstream savings or return-on-investment from a transformative therapy may not necessarily accrue to the payer that assumed the upfront payment. Particularly in commercial plans, expected beneficiary enrollment may be short, relative to the time frame of expected treatment benefit. As a result, concerns about covering the very high cost of transformative therapies that may offer significant value over a long time frame creates uneasiness among many payers with respect to recognizing financial returns-on-investment. This concern is particularly pronounced in the context of a one-time, upfront payment in a FFS setting, as detailed above.

## Concern about Cumulative Budgetary Impact

Upfront payment for transformative therapies pose unique healthcare financing challenges for payers, who must balance the short-term budgetary impact of transformative treatments with their long-term benefit in parallel to competing budget priorities. The pipeline of transformative therapies may create particular budget pressures for certain payers and purchasers, such as states, relatively small employers, and even smaller insurers with limited capacity to finance upfront payments. The magnitude of the short-term budget impact may depend on the size of the potential population, payment per patient, and extent to which the total cost can be anticipated in budgetary planning. A small number of high-cost therapies may result in a relatively minor budget impact against the existing costs of treatment, particularly if the population is predictable. For example, a treatment that costs \$30,000 per year, but is used chronically by one million people, has a far greater budgetary impact (\$30 billion) than a \$500,000 transformative therapy that is used by 500 patients (\$2.5 billion). Both commercial and public payers have expressed concern about the potential cumulative impact of multiple pipeline therapies arriving on the market concurrently.<sup>17</sup> State budgets (including a state's Medicaid budget) are set in advance for one- to two-year periods by legislative vote, and many states cannot effectively run annual deficits,<sup>18</sup> so even a small number of patients requiring high-cost transformative treatments could potentially require states to divert funds from other important public priorities in order to provide coverage for new therapies.

### FINANCING MECHANISMS TO ADDRESS LARGE UPFRONT PAYMENTS

Multiple financing mechanisms have been proposed to help address short-term cost pressures for high upfront payments. These mechanisms may be particularly important for states and other payers or purchasers with limited budgets. Nevertheless, these financing mechanisms alone (briefly described below and in Figure 1) do not address uncertainty regarding outcomes, do not directly encourage long-term tracking and improvement of outcomes, and do not address the other limitations of FFS payment for costly (but potentially high-value) one-time therapies.

One proposed mechanism involves loans that amortize the large upfront costs into annuity payments over time to enable installment-based payment for treatments; these loans smooth their budgetary impact for payers, similar to other investments for high-priced purchases.<sup>19,20</sup> The loan could potentially be managed by a large drug manufacturer with significant capital reserves, although this would not be feasible for biotech companies with few marketed products. Alternatively, a financial institution could provide the loan. Either way, the loan mechanism would have to be as efficient as existing capital markets available to the payer (and in the case of states, within the state's borrowing authority), and would depend on an overall assessment of the payer's capacity to repay the loan. This type of loan program has not been developed, perhaps because most payers already have access to capital markets and for the reasons further described in the sections below. Similarly, if payer coverage is limited, direct-to-patient loans might be available. Nonetheless, many consumers do not have the collateral for such

loans, partly due to existing high healthcare costs, and partly due to the fact that loan reliance defeats one of the main purposes of health insurance, which is to provide financial protection from unlucky or severe disease events.

In order to mitigate the risk to payers of insuring very high-cost patients, some existing mechanisms could be adapted to the context of transformative therapies. For example, reinsurance markets have been developed to reimburse some insurers a portion of incurred spending for very high-cost cases; some manufacturers and payers are exploring the feasibility of such models in the context of transformative therapies. In general, reinsurance works best for rare events that are not dependent upon the insurer's behavior. An insurer that distinguishes itself by providing high upfront payment for transformative therapies and, consequently, attracts a large share of such patients, may have more challenges.

Government policies also may help address the obstacles of high upfront payments. One approach is a government subsidy for patients eligible for the type of transformative therapies described. Some have proposed such mechanisms in conjunction with the loan models described above, through loan guarantees, tax incentives, or explicit subsidies. However, especially if the subsidies are significant, then these mechanisms would likely need to be applied carefully to prevent excessive borrowing opportunities (i.e., if the resulting interest rate obtained from a subsidized loan is lower than the existing, market-derived loan instruments already available, then eligible parties would have an incentive to rely excessively on subsidized loans). Alternatively, the Federal government could provide direct subsidies or reinsurance payments to payers who use transformative therapies. All of these new programs would have significant additional public costs.

A policy-forward approach to reducing payer risk with less direct government cost would be to include patients undergoing transformative therapies in risk-adjustment programs, such as those used in Medicare Advantage, some state Medicaid plans, and the Affordable Care Act exchanges. Subsidies received by competing plans are adjusted based on patient characteristics that significantly influence spending. As a result, risk adjustment redistributes payments from plans who enroll lower expected-cost patients to plans with higher expected-cost patients, spreading the cost of transformative therapies across all payers, not just to those who actually enroll such patients. Though risk adjustment generally involves a budget-neutral redistribution of payments among insurers, additional government subsidies for transformative therapies could be provided through risk-adjusted payments. Pre-specified payment rules may allow risk adjustment to provide stronger incentives to limit spending for high-risk patients than reinsurance payments that rise with actual spending. Such an approach might be particularly helpful to retain strong incentives for payers to negotiate lower prices for the transformative therapy.

On the other hand, such an approach could encourage a selection of patients that are expected to have relatively low risks and costs.

**Figure 1. Proposed Financing Mechanisms to Address High Upfront Budget Pressures**

To address budgetary challenges posed by upfront payment for high-cost therapies, a number of financing mechanisms have been proposed by the Institute for Clinical and Economic Review, IQVIA Health, Tapestry networks, the Alliance for Regenerative Medicine, and others. These mechanisms, described below, can be integrated into different payment models for the medical product. They may also shift financial burden or risk among stakeholders.

**Payer loan financing models**

could allow payers to receive loans that would be paid back in installments over time. Such loans could potentially be managed by a product manufacturer or by a third party (e.g., a financial institution).



**Direct-to-patient healthcare loans**

could be offered by independent financiers for high-cost health expenses not covered by insurers. Healthcare loans could be financed and repaid over time similar to consumer mortgages, with responsibility for payment falling on patients.



**Reinsurance**

could allow payers to limit their risk for high-cost patients, either through purchase on private reinsurance markets or through a government-facilitated approach.



**Government policies**

could take responsibility for some or all upfront costs to be paid back over time, or could be used to reduce payer financial risk related to transformative therapies.



**Patient assistance programs**

offered by manufacturers and currently used to assist patients unable to afford copays for high-cost therapies, could be further leveraged to address patient out-of-pocket expenses.



The financial consequences of transformative therapies may be significant. Furthermore, the ways to spread these costs over time or across larger populations may prove an important part of a comprehensive solution; however, each of these mechanisms has limitations. Opportunities for improving value are substantial, but any finance reforms will have more impact on the sustainability of

transformative therapies if they are implemented alongside payment models that address immediate cost-density for transformative therapies and results uncertainty, as well as encourage better evidence and higher value delivered to patients.<sup>21</sup>

## MOVING TOWARD VALUE-BASED PAYMENT FOR TRANSFORMATIVE THERAPIES

Paying for high-cost, durable treatments is not an unprecedented challenge. For instance, bone marrow transplantation is a relatively well-established, single-administration, potentially curative procedure with follow-up and patient monitoring. Soon after bone marrow transplantation development, payers and providers moved away from FFS transactions to bundled payments, which provide a set, prospective reimbursement for the procedure, as well as services related to administration that take place over the care episode at specialized medical centers. Such alternative payment models (APMs) can encourage greater coordination and efficiency in care. Accompanying registries used to track transplant patient outcomes also facilitate learning about how to improve care and lower costs within the bundled episode. Bone marrow transplantation payments currently do not incorporate bundled payments for care that takes place after the initial treatment episode, nor do they provide direct links to long-term outcomes, although some transplant experts have advocated for such reforms.<sup>22</sup>

However, as with APMs for healthcare providers, VBP arrangements for medical products can be designed to align pricing and payments to an expected or observed value in a specific population, with the goal of reducing uncertainty and payment risks.<sup>23</sup> Implementation of VBP for medical products might be more meaningfully viewed on a spectrum, beginning with FFS payments that are adjusted based on prior evidence of the expected value. Payments could also be adjusted with increasing degrees of risk-sharing based on outcomes and total spending with contracts, so that payments are based on population-level outcomes rather than volume-based reimbursement. Nonetheless, such VBP arrangements are not standard and are difficult to negotiate and implement.

Moving away from the traditional FFS payment model and tying payments to long-term outcomes raises operational challenges, such as developing an adequate capacity to track long-term outcome measures,<sup>24</sup> addressing legal and regulatory concerns such as impacts of outcome prices on Medicaid best-price and anti-kickback rules, and developing strategies to address patient portability between health insurance plans. Finally, because CMS does not have clear authority or an infrastructure to determine appropriate outcome measures and prices on a company-by-company basis, these types of reforms would need to be implemented in a generally applicable pilot or regulatory framework.

Despite these challenges, stakeholders continue to move toward VBP arrangements involving greater risk-sharing in terms of quality and value, thereby encouraging shared efforts to track and improve patient outcomes for the patient population treated. These shared efforts include developing better evidence on how treatments work, how treatments can be improved in real-world settings, and

advancing care models that align manufacturers' and providers' health outcomes—all of which are imperative to the long-term success and sustainability of transformative therapies.

## Potential Value-Based Payment Arrangements for Transformative Therapies

In the following sections, we describe a set of potential outcomes-based payment models for transformative therapies. Where barriers exist, we describe approaches that might meaningfully address such challenges.

### DIRECT PAYER-MANUFACTURER CONTRACTING MODELS

The two models described in more detail below (i.e., upfront payment with outcomes-based rebates and outcomes-based payments over time) describe *longer-term, outcomes-based contracts* that are implemented directly between payers and manufacturers, which provide opportunities to link results to rebates or payments over time. Such models offer an opportunity to provide for an alternative contracting option to eliminate or decrease the provider/facility markup. For example, Spark Therapeutics has worked with Express Scripts' affiliates on a unique contracting model to have their specialty pharmacy unit, Accredo, dispense LUXTURNA™ directly to hospitals and bill payers, which generates savings by eliminating the mark-up to payers.<sup>25</sup> Both models must address operational challenges related to developing and implementing longer-term contracts. Parties will need to establish measurable outcomes as a proxy for value, create an overall contract timeframe, finalize a schedule to collect data and measure outcomes, negotiate a base payment and rebate amount, and collect baseline data for patients. Legal uncertainties remain related to longer-term data tracking; for example, could (or should) a payer have access to continued individual outcomes data to determine rebate amounts if the patient changes insurers before the contract ends. Overall, these longer-term, outcomes-based payment models need a significantly different infrastructure than FFS, but many manufacturers and private payers have expressed support for this approach.<sup>26</sup> We have previously described specific steps that payers, manufacturers, regulators, and Congress can take to address such regulatory/legal concerns.<sup>27</sup> We prioritize areas for further work in the *Looking Ahead* section.

#### Upfront Payment with Outcomes-based Rebates

Commercial payers are currently using an upfront full payment with outcomes-based rebates to tie payments for transformative therapies to measures of value. This model requires the full negotiated price to be paid by the payer to the manufacturer of a particular drug therapy upon treatment administration for the expected clinical value accrued over a specified duration. Individual cases of observed treatment failure within a pre-specified amount of time and based on pre-specified outcomes measure(s) (that may differ from the expected duration of benefit mentioned above) would trigger a rebate payment back to the payer.<sup>28</sup> For example, the VBP arrangement for LUXTURNA™ between Spark Therapeutics and Harvard Pilgrim Health Care includes full payment upfront, with rebates based on pre-

specified outcomes measures. In these types of arrangements, rebates might also be based explicitly on whether certain downstream medical costs or utilization are avoided, if a significant part of the treatment relates to downstream cost and outcomes, and the cost impact is not well-captured by the outcome measures. From the payer perspective, the upfront payment model has a number of challenges. First, similar to FFS, the requirement for full upfront payment would come with short-term budget challenges for some payers. Second, while longer periods of performance (e.g., 3+ years) might be most appropriate to address uncertainty of longer-term benefit of these therapies, such longer periods place the payers at higher risk of missing potential rebates if patients leave their current health plan and cannot be tracked for the full performance period.<sup>29</sup> Nevertheless, since patients receiving these types of gene therapies are treated at a limited number of centers and are often followed in registries over time, these data challenges may be addressable. Likewise, shorter-term performance periods avoid this “patient portability” issue, but may not fully address the uncertainty associated with long-term outcomes of these therapies. Lastly, while upfront payments with outcomes-based rebates are supported under the current regulatory environment, practical barriers such as Medicaid Best Price may limit the ability of manufacturers to offer performance rebates commensurate with the full risk for the product’s value. These legal and regulatory barriers will be addressed more fully below.

### **Outcomes-based Payment Over Time**

Another direct payer-manufacturer, longer-term, outcome-based model is where a manufacturer receives periodic payments over a specified period of time, as long as the patient remains responsive to treatment. Manufacturers have begun to develop these models with payers, such as bluebirdbio®’s proposed approach for a five-year periodic outcomes-based payment for its forthcoming beta-thalassemia gene therapy in collaboration with Harvard Pilgrim Health Care and other payers.<sup>30</sup> A payment-over-time model would have the advantage of better aligning payment with the period of treatment benefit, and addressing payer budget challenges for a very costly, one-time therapy. Payments would continue over time while the product demonstrates benefit; and, as with the rebate model, actual prices paid could be adjusted as more evidence on longer-term benefit and cost impact accumulates, perhaps through a set of negotiated contingency prices based on different outcome scenarios. Although a payment-over-time model addresses key incentives for reimbursing high-value therapies, administrative and regulatory support would need to be developed. Similar to the outcomes-based rebate model, a payment-over-time model faces challenges in terms of tracking outcomes, avoiding regulatory complications designed for volume-based payments like Medicaid Best Price rules, and sustaining the contract if the beneficiary changes plans.

#### *Proposing a New Technology Outcome Payment Pilot Framework*

While the direct contracting approaches described can be implemented in commercial plans, Medicare Advantage plans, and by states (and in some cases, are being implemented already), no established mechanism for implementing an outcomes-based payment currently exists in Medicare. While efforts have been made to develop a pilot program for this type of payment reform, the reform would have to

be applicable to a range of manufacturers, and should not require individual manufacturer-specific negotiation. To illustrate these issues, as well as how they might be addressed, we describe a potential “New Technology Outcome Payment (NTOP) that could be piloted to make Medicare payments more aligned with outcomes-based reforms that are being implemented in the private sector and in states. As an alternative to the current system, NTOP would augment existing Part A and B payment mechanisms, while still being executed through a replicable, standard system that does not require case-by-case Medicare price negotiation. With this approach, total payments to the manufacturer for a transformative therapy would include a fixed component and an outcomes-based component. For example, inpatient therapies currently eligible for NTAP could qualify for the NTOP pilot; Instead of NTAP, however, payment would include an outcomes-based payment that reflects terms for the product implemented in outcomes-based contracts with commercial and Medicare Advantage payers. The manufacturer would receive a larger percentage (e.g., 80% or 90%) of its average sales price, rather than 50%, as with NTAP, but the manufacturer would have to pay a rebate based on the average outcomes-related rebate amounts in its commercial and Medicare Advantage contracts. Alternatively, CMS could add an outcomes-based payment component to a base payment, also reflecting average terms in its commercial and Medicare Advantage contracts. For such an approach to be adopted, a manufacturer would need to have a minimum share of its payment for the transformative therapy in outcome-based models demonstrating significant payment risks, which is analogous to an advanced alternative payment model for providers. The model would be attractive to manufacturers because of the opportunity for more payments than what is offered under the current FFS approach with NTAP. Furthermore, adding an outcomes-based payment component to a base payment amount may increase value in Medicare spending by assuring that Medicare payments for new transformative technologies go towards treatments that demonstrate long-term benefits and cost savings for beneficiaries.

Since outpatient payments for transformative therapies already cover 100% of the sales price, plus a margin in Medicare Part B, manufacturers are more satisfied with existing Part B payments than Part A; however, copayments may be much higher for beneficiaries in the outpatient setting. An alternative outcomes-based pilot might eliminate or reduce beneficiary cost sharing for Part B transformative drugs made by manufacturers who are willing to risk a minimum share of their payment in an outcomes-based rebate. Similar to the inpatient setting, in order for an outcomes-based pilot to be generally applicable, the payment amounts and performance measures would be based on those used in a manufacturer’s commercial and Medicare Advantage contracts. Such an approach could be beneficial for manufacturers by reducing Part B copayment barriers (which can be substantial), and beneficial for the Medicare program, by improving outcomes for beneficiaries and linking a significant part of payments to favorable treatments. NTOP would provide more support for tracking and reporting on key outcomes for the product to inform commercial and Medicare Advantage contracts, and the development of better evidence on the patient and provider factors influencing outcomes. Linking payment to data is likely to reinforce FDA post-market tracking requirements for transformative therapies and reduce the cost to private payers that are moving towards implementing outcomes-based payments.

Identifying how an NTOP could lead to enhanced targeting of transformative treatments and linking them to the patients who will benefit, as well as adjusting an NTOP's key features over time to achieve more value and positive impact for beneficiaries, could evolve alongside VBP for transformative therapies outside of Medicare.

## **PROVIDER-ALIGNED AND PROVIDER-INTEGRATED OUTCOMES-BASED PAYMENT**

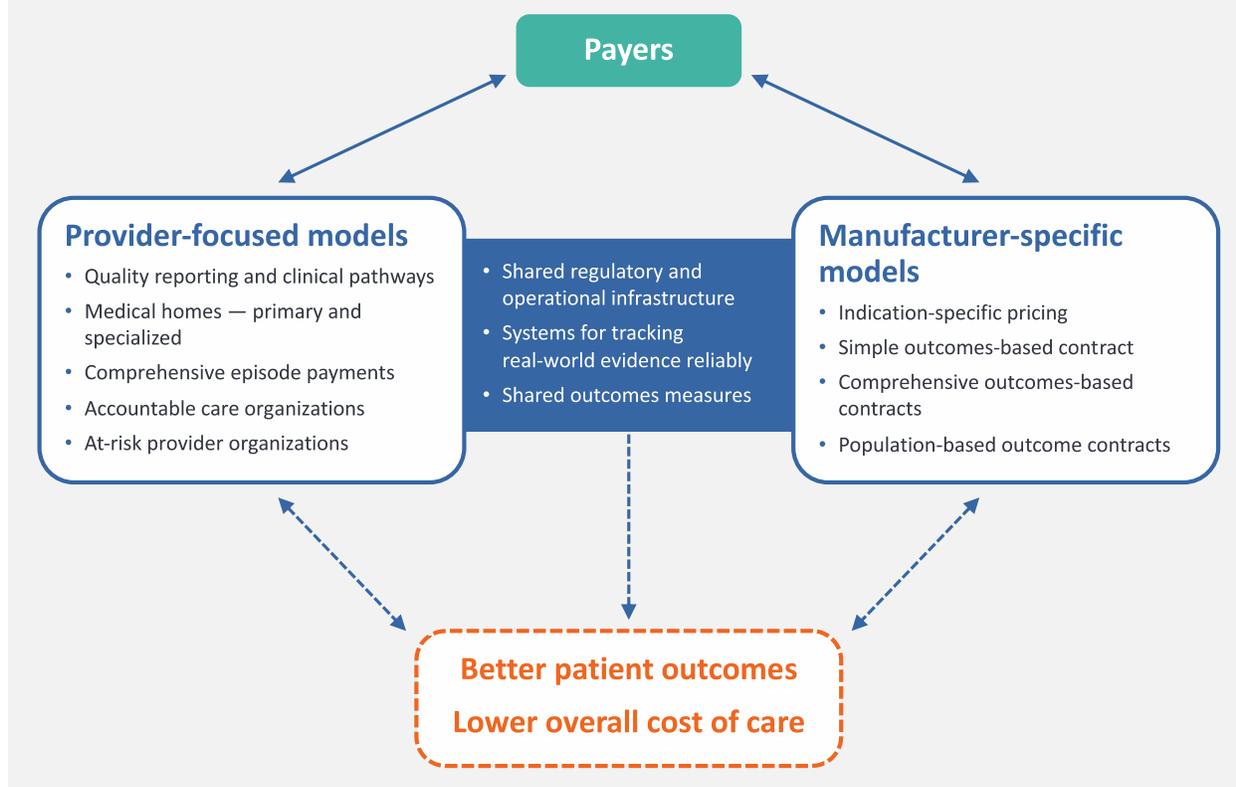
The third VBP model explores provider-aligned and integrated outcomes-based payments. As mentioned previously, APMs for healthcare providers continue to grow and undergo refinement. These APMs hold providers accountable for patient spending, quality, and outcomes; give them more flexibility in how they deliver care; and support innovative and more efficient care models. To ensure that new VBP arrangements for medical products are financially aligned with APMs, it is essential to engage and work with the providers responsible for the care of patients receiving transformative therapies.

Specialized providers in areas where transformative therapies are coming to market may be willing to take on some accountability for outcomes and financial risk related to quality of care, and already do so in a number of APMs at the delivery-system level; however, these providers may be unwilling to take on substantial product-related risks associated with a large contract for the treatment itself. Instead, at least in the initial stages of use, payers might set up separate contracts with provider systems in a way that aligns incentives and outcomes primarily around the elements most under the provider's control.

As described in Figure 2, an example of implementing a "provider-aligned outcomes-based payment" contract might include the development of two distinct contracts with features related to outcomes and costs of care. For example, a payer and manufacturer may have a VBP arrangement like those described in the previous sections. Additionally, the payer and a treatment center might implement a bundled payment "Centers of Excellence" model. The treatment center might receive a payment for the initial episode of care with links to data collection, as well as a few key outcomes and costs related to therapy administration (e.g., if the patient was readmitted post-treatment). Such a partnership would not only support collaborations between manufacturers and payers to improve outcomes and reduce total costs of care; it would also reinforce policy efforts to move provider payments away from FFS and toward VBP approaches. Over time, such Centers of Excellence for transformative therapy administration could compete based on their total episode cost for administration and management, as well as their achieved outcomes.

**Figure 2. Aligned Provider, Payer, and Manufacturer VBP Arrangements**

*Achieving value through payment*



Because transformative therapies are likely to rely on a limited number of specialized treatment centers, provider-aligned contracts could potentially achieve savings related to the cost of product distribution and acquisition. Direct contracting between manufacturers and payers for the cost of the technology could include an arrangement to deliver the treatment to the provider. This approach would allow a better understanding of the total cost of the therapy, the portion of payments going to the manufacturer and to the specialized center, and the associated outcomes that are facilitating the analysis and improving the transformative therapy delivery.

Providers could also be integrated into payment models that utilize either upfront or periodic payment, with upside and downside risk shared with the provider system. This approach would allow providers to engage in managing patients via a shared risk contract with payers and manufacturers, using the new therapy as one component of the care delivery experience. Integrating providers into contracts that use an upfront payment structure would most closely resemble current DRG payment approaches for hospital-based procedures that incorporate medical devices or other physician-administered drugs, but would instead be tied to value-based outcomes. Rather than basing payment exclusively on the transformative therapy results, outcomes would be integrated into determining total cost of care for treating the condition and/or other measures for which the technology manufacturer and providers share accountability. This model would be similar to current bone marrow transplantation payments,

except that payments would extend beyond the initial treatment episode to incorporate accountability for long-term outcomes. This type of model spreads the costs and risks across providers and time, as well as aligns provider payments with appropriate and low-cost care. Integrating providers into a payment model aimed at transformative therapies would require monitoring for appropriate use to ensure there are no perverse incentives rewarding providers for using the new technology in place of other effective treatments. Methods for addressing high, upfront costs and longer-term quality uncertainty that are described in prior sections may be applied to these integrated payment models. Since these models allow providers and manufacturers to share risks and receive more financial support to improve transformative therapies, then the payment reforms may leverage each other.

Provider-aligned agreements may be challenging to implement with traditional Medicare for the reasons outlined above, although providers in Medicare APMs would likely benefit from the illustrative Medicare NTOP pilot previously described. Nevertheless, CMS could try to break down the regulatory barriers associated with provider-integrated contracts in order to make it easier for providers to share risks with manufacturers in advanced “downside” risk contracts that are linked to total cost and outcomes. For example, in models where providers or direct contracting entities take on substantial financial and outcomes risk in a population where transformative therapies are relevant (e.g., cancer patients), CMS could allow additional flexibility for providers to negotiate shared-risk contracts; receive shared-risk payments from manufacturers; and provide clinical, data, and other expertise to support the new care model.

## LOOKING AHEAD

Reforming the current FFS payment system is challenging, but transformative therapies provide unprecedented pressure and new opportunities for doing so. Efforts to design and implement VBP arrangements are already being implemented in various stages. We expect interest in VBP arrangements to increase as new transformative therapies are approved and enter the market, especially with further progress on learning from the early examples and further attention to remaining issues. The following sections outline some steps that will help accelerate future progress.

### **Identify Emerging Examples within the Field and Develop Implementation Strategies/Pilots for the Three Proposed Models of Transformative Therapy VBP Arrangements (Upfront Payment, Payment Over Time, and Provider-aligned Models)**

This report is our Consortium’s first attempt to summarize the transformative therapy environment and consider the role of VBP arrangements within it. As we move forward, future efforts will involve identifying examples of VBP arrangements within the field of transformative therapy, as well as opportunities for near-term implementation. Promising initial therapeutic areas include hemophilia, oncology, sickle cell disease, beta-thalassemia, rare metabolic disorders, and inherited blindness.

## Other Therapeutic Areas with Significant Ongoing Disease Costs and Burdens

Additional criteria that might make transformative therapies ideal for exploring VBP approaches include the potential for tracking long-term outcomes data related to a therapy's impact through post-market registries or suitable claims data systems, improvements in targeting treatments to appropriate patients, and the ability to address unmet needs through more rapid and better-targeted access as a result of these risk-sharing approaches. Initial models could be applied to populations that do not have a lot of historical movement between payers (such as the Medicare population), those with long-term disabilities covered by Medicaid, certain employer-covered populations, and individuals who receive their primary coverage through the Veterans Administration.

## Address further regulatory and legislative issues

There are several concerns related to aligning VBP arrangements with current rules that are designed by Medicaid for FFS payment systems: rebates for treatment failure may not correlate with price-reporting requirements, steps to share data and support better performance may not be congruous with anti-kickback rules, and negotiations about potential off-label uses and outcomes may not concur with off-label communication rules. As a result, manufacturers will need to consider several issues related to their price-reporting obligations. Under current regulations, rebates that are greater than the statutory minimum allowed to all states (23.1% of the Average Manufacturer Price (AMP) for innovator drugs) must be uniformly available to all Medicaid programs (e.g., the "Medicaid Best Price"). To fully align payment for a product with that product's actual value, VBP arrangements likely need to offer substantial rebates; however, implying that a product's failure to perform in one patient may effectually lower pricing across all markets may prove to be an unsustainable pricing practice. Fully addressing these issues will require more comprehensive regulation and legislative solutions, but the Administration has taken steps to clarify how manufacturers can reasonably communicate with payers about off-label use with payers and continues to express interest in anti-kickback rules and Medicaid price-reporting requirements.<sup>31,32,33,34</sup> Such reforms have been informed by our Consortium's previous work on steps that payers, manufacturers, regulators, and Congress can take to address regulatory barriers.<sup>35</sup> Nonetheless, transformative therapies (especially orphan drugs impacting small populations) need additional regulatory clarifications.

## Enhance the Feasibility of Longer-term Outcomes-based Contracts

The issues associated with longer-term payments (particularly patient portability) are relevant to models that incorporate rebates or other risk-sharing payments over time. Longer-term, outcomes-based contracts could be operationalized in several ways:

***Piloting a longer-term, outcomes-based, contract model, NTOP, in Medicare.*** As mentioned previously, implementation of NTOP presents a number of practical obstacles. We have offered an illustrative approach to handling some of these roadblocks, but additional work is needed to understand how to extend outcomes-based payment for transformative therapies into the Medicare context. These payment challenges are an increasingly pressing issue as more transformative therapies become available to Medicare beneficiaries, as well as the problems we have identified with current Part A and B payments for such therapies.

***Examining strategies to address patient portability.*** There are several research assessments that will help address patient portability within longer-term contracts. First, estimating the length of payer or employer relationships with patients and improve evidence on the effects of transformative therapies over time in order to reduce uncertainty about the benefits versus risks of different contract intervals. Second, assessing the practicality of including risk adjustment for prior transformative therapies (and the existence of a long-term VBP contract) in Medicare Advantage or other insurance choice systems. Third, evaluating the political and operational feasibility of encouraging payers and manufacturers to continue rebates/payments over time if a patient leaves the health plan (e.g., through risk adjustment models that provide additional payments to plans that continue such contracts.). Finally, gauging the feasibility of developing a third-party entity to track outcomes, support model contracts, and/or make payments to manufacturers, regardless of insurance. This latter option might work similarly to reinsurance, where payers pay rare disease carve-out premiums to a third party to “carve out” risk; the third party would be financially responsible and would have a potential role in tracking data. When considering all of these research assessment strategies, the question remains whether or not they would create more silos and less payer involvement than our current system already does.

***Examining the potential of tying value to emerging financing mechanisms.*** We described a number of potential financing mechanisms that might support establishing and sustaining longer-term contracts,<sup>36</sup> but these mechanisms are accompanied by significant limitations if they are not linked to steps that improve transformative therapy evidence, targeting, and effective use. One possible next step is to explore how such mechanisms could be linked to outcomes-based contracts. For example, any subsidies or supports for such programs could be targeted to companies that implement VBP arrangements.

***Understanding the potential cumulative financial impact of transformative therapies.*** Additional economic and actuarial modeling could help predict the influx and financial impact of new, approved therapies. Furthermore, such modeling could help assess the uptake and impact of new payment

models for transformative therapies. Additionally, by clarifying the costs associated with developing and administering contracts, these economic and actuarial models may add clarity to why VBP arrangements may be worth their additional administrative complexity.

***Identify strategies for collecting appropriate longer-term outcome measures.*** Relevant outcome measures, as well as supporting data collection and analysis, will be negotiated as part of the contractual process on a product-by-product basis. Outcome measures will likely continue to be refined over time for meaningfulness, with attention paid to reliable measurement feasibility and collection costs. Ultimately, in more advanced VBP contracts, outcome measures might include patient-reported quality of life measures, such as improved function, reduction of side effects, and attenuation or elimination of disease burden. This goal is probably best achieved through practical, incremental improvements in performance measurement, alongside continued refinements in payment contracts. Establishing causality between the transformative therapy and the outcome measure can be challenging, particularly if these therapies are used in conjunction with other treatments. Understanding longer-term patient outcomes, especially for products that may demonstrate effects over an extended period of time, requires further steps, such as:

1. *Conducting registry or post-market studies of intermediate performance measures to validate long-term outcomes:* With time, these studies may demonstrate little variation between patient outcomes at different lengths of time (e.g., 12 versus 48 months) or may show that there are clinical indicators observable in lab tests, imaging, etc., that predict longer-term outcomes.
2. *Linking the long-term outcome payments to measures included in registries in order to strengthen the support and quality of existing and planned transformative therapies registries:* There are opportunities to build upon existing initiatives within the transformative therapy space. Independent, disease-centric registries are well utilized and supported for rare diseases. Common variable immune deficiency and organ transplants have registries that track patient data longitudinally; these registries offer a potential framework for other diseases treated by transformative therapies. Established Centers of Excellence for transformative therapies could assist with data collection. Additionally, post-market regulatory requirements may help enable patient and outcomes tracking for transformative therapy patients. As part of its approval of KYMRIAH™ and YESCARTA®, the FDA is requiring manufacturers to create a registry that will follow patients for 15 years post-treatment to monitor their progress and potential future side effects, yet questions remain regarding the level of information that will be included in this registry. FDA approval of gene therapies often requires registries supported by the manufacturer to track clinical outcomes and potential safety issues; these registries may provide some additional evidence relevant to future payments (e.g., major clinical outcomes and some factors influencing outcomes), but they may not be linked to data and analyses that determine the value of the therapy (e.g., full utilization and payment information or key patient-generated information related to preferences and functional outcomes). Moreover, regulatory approval

and reimbursement of transformative therapies affecting rare disease patients are likely to require registries or similar data collection on longer-term outcomes by treatment centers and manufacturers, suggesting that most, if not all, of these patients will likely have long-term tracking of their outcomes and significant care utilization (e.g., hospitalization).

While there is growing enthusiasm for building patient registries, and efforts are underway to link registries, electronic health records (EHRs), and claims data via initiatives like the National Patient-Centered Clinical Research Network (PCORnet) and the National Evaluation System for Health Technology (NEST), more support is needed to achieve a full return for all stakeholders. Post-market regulatory requirements for data collection in registries can help, but the outcomes that most succinctly measure value from the patients' perspective may not necessarily be collected without additional infrastructure. For example, reliable collection of patient-generated outcomes data that could be tied to payment through registries would require an advanced infrastructure, financial support, and a reasonable workflow for clinicians and staff to collect and share the data. Moreover, fundamental methodological questions remain regarding how to take data from various sources and create usable outcome measures. Identifying and efficiently communicating best practices for collecting these data and involving payers may help clarify how to link utilization and total spending. In the future, we may have opportunities to collect outcomes data through other mechanisms such as smartphones, apps, and patient-reported data sources. While there is significant interest in working towards a more integrated approach to data collection and analysis across stakeholder groups, practical solutions (even if incremental) are needed in the short-term to move forward with outcomes-based payment options and innovative financing strategies.

## CONCLUSION

In order to support the shift in health care away from an ongoing, volume-based, reactive treatment of disease towards transformative therapies capable of sustaining long-term health, action is needed to realign payment and reimbursement systems. New transformative therapies pose distinct challenges, including high upfront costs, long-term uncertainty, and obstacles posed by highly diverse and personalized treatments. Facilitating continued development and access to valuable innovative therapies will depend on the health system's ability to shift reimbursement paradigms in a way that will align stakeholder incentives, address immediate affordability and long-term cost growth, and better reward therapies that benefit patients, society, and health systems over the long-term.

Transformative therapies will ultimately change healthcare, and perhaps advance associated regulations and payments. Support for better post-market evidence systems will improve the evidence base for clinical decisions; impact is easier to measure with transformative therapies than in most observational settings, where a routine treatment may have a more modest influence on outcomes. Additionally, improved post-market evidence can inform payer-manufacturer negotiations, creating a richer

foundation for difficult discussions about pricing and affordability. Linking payments to outcomes enables manufacturers to share in risks associated with how the therapy may perform in practice long-term and will create stronger incentives to improve new technologies and refine their use over time. Finally, an increased focus on patient outcomes in relation to transformative therapy payments could encourage value-based care and payment reforms that aim to achieve optimal patient outcomes at the lowest possible cost.

---

<sup>1</sup> Tapestry Networks “Viewpoints: Building a sustainable health system for curative therapies.” Accessed January 23, 2018. <http://www.tapestrynetworks.com/initiatives/healthcare/upload/Curative-Therapies-ViewPoints-Building-a-sustainable-health-system-for-curative-therapies-May-2016.pdf>

<sup>2</sup> This definition of “Transformative Therapies” overlaps significantly with the definition of “curative” therapies developed through Tapestry Networks “ViewPoints: Building a sustainable health system for curative therapies.” However, “transformative” captures a greater range of long-term effects than therapies limited to “curative.”

<sup>3</sup> Food and Drug Administration “Press Announcements - FDA Approval Brings First Gene Therapy to the United States.” Accessed January 25, 2018.

<https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm574058.htm>

<sup>4</sup> Food and Drug Administration “Press Announcements - FDA approves novel gene therapy to treat patients with a rare form of inherited vision loss” Accessed January 24, 2018.

<https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm589467.htm>

<sup>5</sup> Eve Hanna, Cécile Rémuzat, Pascal Auquier & Mondher Toumi, “Gene therapies development: slow progress and promising prospect” Journal of Market Access & Health Policy Vol. 5 , Issue 1, 2017

<sup>6</sup> MIT NEWDIGS, “FoCUS Project: Financing Cures in the US: Research Brief” Accessed January 24, 2018.

[https://newdigs.mit.edu/sites/default/files/FoCUS\\_Research\\_Brief\\_2017F211v011.pdf](https://newdigs.mit.edu/sites/default/files/FoCUS_Research_Brief_2017F211v011.pdf)

<sup>7</sup> Based on an analysis of the existing, non-replenished gene therapy pipeline, the MIT NEWDIGS consortium FoCUS Project (Financing and Reimbursement of Cures in the US) estimates 39 regulatory approvals (+/- 4, 97.5% confidence interval) by the end of 2022, with forty-five percent of that total estimated to come from oncology.

<sup>8</sup> Institute for Clinical and Economic Review, “Gene Therapy: Understanding the Science, Assessing the Evidence, and Paying for Value: A Report from the 2016 ICER Membership Policy Summit” Accessed January 25, 2018.

<https://icer-review.org/wp-content/uploads/2017/03/ICER-Gen-Therapy-White-Paper-030317.pdf>

<sup>9</sup> Medigap is extra insurance coverage bought by the subscriber to cover healthcare costs that are not paid for by Medicare

<sup>10</sup> Centers for Medicare & Medicaid Services, “New Medical Services and New Technologies” Accessed June 29, 2018. <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/AcuteInpatientPPS/Downloads/FY-2019-New-Technology-Tracking-Forms.pdf>

<sup>11</sup> Department of Health and Human Services, “Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Policy Changes and Fiscal Year 2019 Rates; Quality Reporting Requirements for Specific Providers; Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs (Promoting Interoperability Programs) Requirements for Eligible Hospitals, Critical Access Hospitals, and Eligible Professionals; Medicare Cost Reporting Requirements; and Physician Certification and Recertification of Claims”. Accessed August 22, 2018.

<https://s3.amazonaws.com/public-inspection.federalregister.gov/2018-16766.pdf>

<sup>12</sup> Ibid.

<sup>13</sup> Westrich, Kimberly. Current Landscape: Value-Assessment Frameworks. National Pharmaceutical Council. June 2016.

<sup>14</sup> Food and Drug Administration “Fast Track, Breakthrough Therapy, Accelerated Approval, Priority Review” Accessed January 25, 2018. <https://www.fda.gov/ForPatients/Approvals/Fast/default.htm>

<sup>15</sup> Mardsen et al. Institute for Clinical and Economic Review. “Gene Therapy: Understanding the Science, Assessing the Evidence, Paying for Value’ A Report from the 2016 ICER Membership Policy Summit.” March 2017.

<sup>16</sup> Food and Drug Administration “Fast Track, Breakthrough Therapy, Accelerated Approval, Priority Review” Accessed January 25, 2018. <https://www.fda.gov/ForPatients/Approvals/Fast/default.htm>

<sup>17</sup> Tapestry Networks. “ViewPoints: Building a sustainable health system for curative therapies.” Accessed: [https://www.tapestrynetworks.com/sites/default/files/publication\\_pdf/Curative%20Therapies%20ViewPoints%20-%20Building%20a%20sustainable%20health%20system%20for%20curative%20therapies%20-%20May%202016.pdf](https://www.tapestrynetworks.com/sites/default/files/publication_pdf/Curative%20Therapies%20ViewPoints%20-%20Building%20a%20sustainable%20health%20system%20for%20curative%20therapies%20-%20May%202016.pdf)

<sup>18</sup> Almost every state is required by state law to have a balanced budget at the end of each fiscal year. Even for states that do not have this direct requirement, states are unable to issue debt, so they have limited economic ability to run fiscal deficits.

- 
- <sup>19</sup> Kleinke, J. D., and N. McGee. “Breaking the Bank: Three Financing Models for Addressing the Drug Innovation Cost Crisis.” *American Health & Drug Benefits* 8, no. 3 (May 2015): 118–26.
- <sup>20</sup> Montazerhodjat, Vahid, David M. Weinstock, and Andrew W. Lo. “Buying Cures versus Renting Health: Financing Health Care with Consumer Loans.” *Science Translational Medicine* 8, no. 327 (February 24, 2016): 327ps6-327ps6. <https://doi.org/10.1126/scitranslmed.aad6913>
- <sup>21</sup> Mardsen et al.
- <sup>22</sup> Gajewski et al. Payment and care for hematopoietic cellular transplant patients: Toward a specialized medical home for complex care patients *Biology of Blood and Bone Marrow Transplantation*, 2017
- <sup>23</sup> Daniel et al. “Advancing Gene Therapies And Curative Health Care Through Value-Based Payment Reform.” Accessed June 29, 2018. <https://www.healthaffairs.org/doi/10.1377/hblog20171027.83602/full/>; Duke-Margolis Center for Health Policy “Developing a Path to Value-Based Payment for Medical Products” Accessed June 29, 2018. [https://healthpolicy.duke.edu/sites/default/files/atoms/files/value\\_based\\_payment\\_background\\_paper\\_-\\_october\\_2017\\_final.pdf](https://healthpolicy.duke.edu/sites/default/files/atoms/files/value_based_payment_background_paper_-_october_2017_final.pdf)
- <sup>24</sup> The operational barriers to VBP arrangements for medical products are the focus of an upcoming Duke-Margolis paper.
- <sup>25</sup> Forbes, “Express Scripts staking out million-dollar gene therapies” Accessed September 21, 2018.
- <sup>26</sup> Centers for Medicare & Medicaid Services, “Innovative treatments call for innovative payment models and arrangements” Accessed July 17, 2018. <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2017-Press-releases-items/2017-08-30-2.html>
- <sup>27</sup> See Duke-Margolis Center for Health Policy, “Overcoming the Legal and Regulatory Hurdles to Value-Based Payment Arrangements for Medical Products” Accessed June 29, 2018. [https://healthpolicy.duke.edu/sites/default/files/atoms/files/overcoming\\_legal\\_and\\_regulatory\\_hurdles\\_to\\_value\\_based\\_payment\\_arrangements\\_for\\_medical\\_products.pdf](https://healthpolicy.duke.edu/sites/default/files/atoms/files/overcoming_legal_and_regulatory_hurdles_to_value_based_payment_arrangements_for_medical_products.pdf)
- <sup>28</sup> This model would operate somewhat differently for implantable medical devices, in which payers would have to provide an upfront value payment to the hospital or facility that incurs the cost of the device (an incremental payment in addition to the standard DRG or APC). The manufacturer would, in turn, be accountable for pre-specified outcomes related to cost and quality. If the device fails to meet those outcomes, the manufacturer would be accountable to the payer for the costs associated with the incremental payment during the reconciliation period.
- <sup>29</sup> Spark Therapeutics, “Spark Therapeutics Announces First-of-their-kind Programs to Improve Patient Access to LUXTRNA™ (voretigene neparvovec-rzyl), a One-time Gene Therapy Treatment” Accessed January 25, 2018. <http://ir.sparktx.com/news-releases/news-release-details/spark-therapeutics-announces-first-their-kind-programs-improve>
- <sup>30</sup> Wall Street Journal, “Biotech Proposes Paying for Pricy Drugs by Installment” Accessed February 5, 2019. <https://www.wsj.com/articles/biotech-proposes-paying-for-pricy-drugs-by-installment-11546952520>
- <sup>31</sup> Food and Drug Administration, “Drug and Device Manufacturer Communications With Payors, Formulary Committees, and Similar Entities — Questions and Answers Guidance for Industry and Review Staff” Accessed June 29, 2018. <https://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/guidances/ucm537347.pdf>
- <sup>32</sup> Food and Drug Administration, “Medical Product Communications That Are Consistent With the FDA-Required Labeling — Questions and Answers Guidance for Industry” Accessed June 29, 2018. <https://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/guidances/ucm537130.pdf>
- <sup>33</sup> Centers for Medicare & Medicaid Services, “Medicare Program; Request for Information Regarding the Physician Self-Referral Law” Accessed June 29, 2018. [https://s3.amazonaws.com/public-inspection.federalregister.gov/2018-13529.pdf?utm\\_campaign=pi%20subscription%20mailing%20list&utm\\_source=federalregister.gov&utm\\_medium=email](https://s3.amazonaws.com/public-inspection.federalregister.gov/2018-13529.pdf?utm_campaign=pi%20subscription%20mailing%20list&utm_source=federalregister.gov&utm_medium=email)
- <sup>34</sup> Centers for Medicare & Medicaid Services, “CMS Approves State Proposal to Advance Specific Medicaid Value-Based Arrangements with Drug Makers” Accessed June 29, 2018. <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2018-Press-releases-items/2018-06-27.html>

---

<sup>35</sup> See Duke-Margolis Center for Health Policy, “Overcoming the Legal and Regulatory Hurdles to Value-Based Payment Arrangements for Medical Products” Accessed June 29, 2018.  
[https://healthpolicy.duke.edu/sites/default/files/atoms/files/overcoming\\_legal\\_and\\_regulatory\\_hurdles\\_to\\_value\\_based\\_payment\\_arrangements\\_for\\_medical\\_products.pdf](https://healthpolicy.duke.edu/sites/default/files/atoms/files/overcoming_legal_and_regulatory_hurdles_to_value_based_payment_arrangements_for_medical_products.pdf)

<sup>36</sup> We note however that, at least initially, the benefits of these approaches would be most applicable for contracts within the three-to-five year time frame (as opposed to 10 or 20-year contracts).