Designing an Episode-based Benefit Plan

Attempting to align payer, provider, and patient incentives through episode-based benefit designs

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As healthcare costs grow in the United States, alternative payment models (APMs) have emerged as a way to improve care and reduce costs by aligning incentives among payers, providers, and patients. Episode payments, one example of an APM, encourage providers to shift from traditional fee-for-service (FFS) models by offering providers a single payment for a set of services within an episode of care (EOC). Providers who are able to reduce utilization and achieve efficiencies within an episode may share in the savings.

Signify Health has engaged Milliman to model an Episode-based Benefit Plan (EBP) design that could be offered to members enrolled in commercial health plans. In this EBP, members would be offered a prospectively defined budget for services within an EOC, while providers would be contracted to manage the cost and care of services within an EOC. This report provides the results of our analysis, including:

- Considerations for a cost-sharing framework for episode-based care intended to incentivize patients to seek low-cost, high-quality providers
- The impact of key plan design parameters under an EBP using data for commercially insured members in large group employer plans
- The limitations, considerations, and challenges for implementing an EBP

The EBP design considered in this report has been proposed by Manatt, in partnership with Signify Health, in the published paper available here. This document reflects an analysis of financial considerations underlying that proposed plan structure. This document does not reflect Milliman's nor the authors' endorsement of the proposal described in the Manatt paper nor its feasibility or legality for implementation. Deviations from the plan design described herein would lead to different results, which we have explored in the limitations section below.

Episode-based Benefit Plan design structure

In the aforementioned report, Manatt[1] described an EOC wrap benefit that would layer on top of an employer or health plan's existing benefit design. This proposed EBP design structure would offer a special cost-sharing schema for services within an EOC and the plan's standard cost-sharing features for all other services. Patient cost sharing may also vary between providers who are contracted in an EOC program to accept a fixed price for an episode (i.e., EOC-contracted providers) and other providers who are paid through traditional FFS models (i.e., non-EOC-contracted providers).

In the proposed plan design structure, three tiers of cost sharing would apply to all services within an episode:

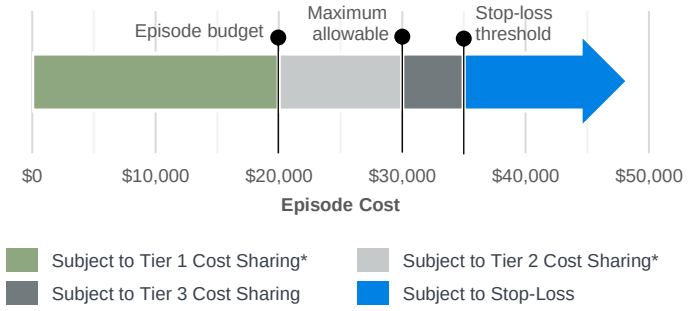
- **Tier 1:** Reflects the lowest level of patient cost sharing (as an illustrative example, 0% to 5% coinsurance). Tier 1 cost sharing would apply to all services up to the episode budget (or provider contracted rate, if lower, for EOC-contracted providers).

[1] Ario, J., Finkelstein, A., & DiBello, J. (September 24, 2021). Promoting Episode-based Provider Payment Through Employee Health Benefit Design. Manatt White Paper. Retrieved September 24, 2021, from https://www.manatt.com/insights/white-papers/2021/promoting-episode-based-provider-payment-through-e.

- **Tier 2:** Reflects a moderate level of patient cost sharing (as an illustrative example, 5% to 10% coinsurance). Tier 2 cost sharing would apply to the marginal cost for services above the episode budget, up to the maximum allowable (or provider contracted rate, if lower, for EOC-contracted providers).
- **Tier 3:** Reflects the highest level of patient cost sharing (as an illustrative example, 20% to 100% coinsurance). Tier 3 cost sharing would apply to the marginal cost for services above the maximum allowable, up to a stop-loss threshold.

A stop-loss threshold would be implemented above the maximum allowable to provide a cap on the claims for which the patient shares in the cost. The health plan (or a separate stop-loss insurer contracted with the health plan) would be responsible for covering episode costs above the stop-loss threshold at 100%.

FIGURE 1: PROPOSED EPISODE COST-SHARING DESIGN FOR EBP



* Applies up to the provider contracted rate for EOC-contracted providers (if lower than the episode budget or maximum allowable).

Figure 1 illustrates the proposed EBP design structure for a hypothetical episode.

This plan design structure is intended to align the incentives of the patient, the EOC-contracted provider, and the health plan or employer:

- **Patient:** Patients are incentivized to choose low-cost, EOC-contracted providers with contracted episode rates near or below the episode budget to minimize patient cost sharing. By selecting a provider with a contracted rate below the episode budget, the patient may be eligible to share in the savings.
- **EOC-contracted provider:** The provider is incentivized to coordinate and provide high-quality care for services within an episode. Bundled payments for EOCs can encourage providers to reduce costs while improving quality of care to achieve episode-specific quality metrics.
- **Health plan/employer:** The health plan or employer is encouraged to promote low-cost, high-quality providers for EOCs. This way, patients are motivated to select EOC-contracted providers for episodes, which can lead to savings for the health plan or employer.

This proposed EBP is only one example of a benefit design that incorporates specific cost sharing for episodes. Other health plans, employers, or benefit consultants may design EBPs differently, though it remains important to align the incentives of the provider, patient, and health plan or employer.

EPISODE-BASED BENEFIT PLAN DESIGN KEY TERMS

Episode budget: A prospectively set budget for each EOC toward which costs are accumulated at preferential cost sharing for the patient.

Maximum allowable: A predefined amount of maximum coverage for an episode of care.

Stop-loss threshold: A predefined cap on the claims for which an enrollee shares in the costs within an episode.

EOC-contracted provider: A provider who has accepted risk for the cost of care associated with services in an EOC.

Episode-based Benefit Plan cost-sharing examples

Under the EBP, it is possible for the patient out-of-pocket expenses to range widely, depending on whether the patient opts for an EOC-contracted provider (and if so, the EOC-contracted provider's rate). Figure 2 outlines four hypothetical situations for a patient initiating a bariatric surgery episode:

1. **Patient selects an EOC-contracted provider with a rate below the episode budget**, so only the Tier 1 patient cost sharing of 1% applies. The total patient cost is $250, while the plan pays for the remaining $24,750 of the provider rate. Because the patient chose a provider with a rate below the episode budget, the patient may be eligible to share in some of the marginal savings between the episode budget and the contracted rate. In addition, if the resulting episode cost is above the EOC-contracted provider

FIGURE 2: HYPOTHETICAL PATIENT COST SHARING FOR BARIATRIC SURGERY EPISODE

	ASSUMPTION
Episode Budget*	$27,000
Maximum Allowable*	$40,000
Stop-Loss Threshold*	$65,000
Tier 1 Cost Sharing	1%
Tier 2 Cost Sharing	5%
Tier 3 Cost Sharing	100%

	SITUATION 1: EOC-Contracted Provider Rate Below Episode Budget	SITUATION 2: EOC-Contracted Provider Rate Above Episode Budget	SITUATION 3: Non-EOC-Contracted Provider With Episode Cost Above Maximum Allowable	SITUATION 4: Non-EOC-Contracted Provider With Stop-Loss
EOC-Contracted Provider Rate	$25,000	$35,000	N/A	N/A
Episode Cost	$30,000	$30,000	$45,000	$75,000
Total Patient Cost	**$250**	**$670**	**$5,920**	**$25,920**
Total Health Plan/Employer Cost**	**$24,750**	**$34,330**	**$39,080**	**$49,080**
Total Provider Cost/(Savings)***	**$5,000**	**($5,000)**	**N/A**	**N/A**

* Numbers are hypothetical for purposes of illustration.
** Includes costs above stop-loss threshold.
*** Assuming the provider is 100% at risk for savings/losses relative to the EOC-contracted provider rate. Risk-sharing arrangements will vary depending on the contract.

rate, the provider is at risk for additional episode cost (e.g., the $5,000 difference between the EOC-contracted provider rate and episode cost shown in Situation 1 in Figure 2).

2. **Patient selects an EOC-contracted provider with a rate above the episode budget**, so the Tier 2 patient cost sharing of 5% applies to the amount that exceeds the budget. The total patient cost is $670, comprised of $270 below the episode budget in Tier 1 and $400 between the episode budget and EOC-contracted provider rate in Tier 2, while the plan pays $34,330. In addition, if the resulting episode cost is below the provider-contracted rate, the provider is eligible for savings (e.g., the $5,000 difference between the episode cost and EOC-contracted provider rate shown in Situation 2).
3. **Patient selects a non-EOC-contracted provider with episode cost above the maximum allowable**, so the Tier 3 patient cost sharing of 100% applies beyond the maximum allowable. The total patient cost is $5,920, comprised of $270 below the episode budget in Tier 1, $650 between the episode budget and maximum allowable in Tier 2, and $5,000 above the maximum allowable in Tier 3. The patient's maximum out-of-pocket (MOOP) for the primary benefit plan does not apply in Tier 3 because the maximum allowable is treated as a reference price. The plan is responsible for the remaining $39,080.
4. **Patient selects a non-EOC-contracted provider and episode cost triggers stop-loss**, so the total patient cost is now $25,920, comprised of $270 below the episode budget in Tier 1, $650 between the episode budget and maximum allowable in Tier 2, and $25,000 between the maximum allowable and stop-loss threshold in Tier 3. Like Situation 3, the patient's MOOP does not apply in Tier 3. The plan is responsible for the remaining $49,080, including $10,000 attributable to stop-loss between the stop-loss threshold and episode cost.

Modeling an Episode-based Benefit Plan design

We modeled the impact of an EBP design on patient, plan, and provider costs using 2018 commercial claims data from Texas for over 2.4 million members. Figure 3 displays the impact of the EBP design relative to the status quo[2] per member per month (PMPM) costs, trended to 2021, in the Texas commercial market under a "Baseline Scenario." The Baseline Scenario includes the following high-level assumptions:

[2] Status quo reflects the average paid and allowed costs observed for the Texas commercial market. The underlying plan design has an actuarial value of 84%.

FIGURE 3: EBP DESIGN UNDER BASELINE SCENARIO RELATIVE TO STATUS QUO

	ALLOWED PMPM*	PLAN PAID PMPM	PATIENT PAID PMPM	PROVIDER PAID/ (SAVINGS) PMPM	ACTUARIAL VALUE
Status Quo**	$610.81	$510.82	$99.99	N/A	84%
EBP Baseline Scenario					
Episode-Based Claims	$214.48	$169.22	$45.26	($6.24)	79%
FFS-Based Claims	$401.03	$341.10	$59.93	$0.00	85%
Total	**$615.51**	**$510.32**	**$105.19**	**($6.24)**	**83%**
Change From Status Quo	*1%*	*0%*	*5%*	*N/A*	*-1%*

* Includes amounts paid by the plan (including costs above the stop-loss threshold) and the patient.
** Reflects the average costs in the Texas commercial market with no EBP design.

- **Episodes:** 43 different episode types were modeled, including both chronic diseases (like diabetes) and procedures (like bariatric surgery), representing approximately one-third of total healthcare spending.
- **Episode budget:** Set at the 40th percentile of historical spending by episode.
- **Maximum allowable:** Set at the 75th percentile of historical spending by episode.
- **Stop-loss threshold:** Set at the 95th percentile of historical spending by episode.
- **Percentage of episodes with EOC-contracted providers:** 25% randomly selected from episodes below the 90th percentile of allowed cost by episode type.
- **EOC-contracted provider savings:** 5% due to utilization or cost management initiatives.
- **EOC-contracted provider rate:** Randomly varies uniformly from 10% below episode budget to maximum allowable.
- **Episode-based plan design patient coinsurance**
  - Tier 1: 0% for chronic episodes, 1% for other episodes
  - Tier 2: 5%
  - Tier 3: 100%
- **FFS-based plan design**
  - Patient coinsurance: 20%
  - Deductible: $1,000
- **MOOP:** $3,500. Applies for all FFS-based claims and episode-based claims in Tiers 1 and 2. As noted above, the MOOP does not apply in Tier 3.

Each of these assumptions could be modified by the health plan or employer as levers to align the incentives of the health plan/employer, patient, and provider while maintaining minimal disruption to the existing benefit design and encouraging high-value, low-cost care.

Figure 3 shows that estimated health plan costs have not materially changed relative to the status quo in this Baseline Scenario. The estimated patient paid amount has increased by approximately $5 PMPM (5%), largely due to the EBP design, which has a lower actuarial value for the episode-based claims (79%) than for FFS-based claims (85%). Providers are estimated to generate savings, on average, in the Baseline Scenario. Note that not all providers will generate savings and some will be at risk for large losses. As illustrated in Situations 1 and 2 in Figure 2, providers that are able to keep episode costs below the provider-contracted rate will have savings, while those with episode costs above the provider-contracted rate will have losses.

The flexibility in the plan design structure and the variability of resulting episode costs exemplifies the need to understand the impact on costs due to changes in plan design parameters or other assumptions. Figure 4 illustrates the impact on stakeholders' costs due to changes in the modeling assumptions. The impact of select scenarios is described below Figure 4.

FIGURE 4: EBP DESIGN UNDER VARIOUS SCENARIOS RELATIVE TO STATUS QUO

	ALLOWED PMPM*	PLAN PAID PMPM	PATIENT PAID PMPM	PROVIDER PAID/ (SAVINGS) PMPM	ACTUARIAL VALUE
Status Quo**	$610.81	$510.82	$99.99	N/A	84%
EBP Baseline Scenario	**$615.51**	**$510.32**	**$105.19**	**($6.24)**	**83%**
Scenario 1: FFS-based cost sharing is representative of a leaner plan design than baseline (30% coinsurance, $3,500 deductible, $7,000 MOOP)	$615.51	$447.44	$168.06	($6.24)	73%
Change From Baseline Scenario	*0%*	*-12%*	*60%*	*0%*	*-10%*
Change From Status Quo	*1%*	*-12%*	*68%*	*N/A*	*-11%*
Scenario 2: Utilization of EOC-related services increases due to anti-selection or induced demand	$633.41	$522.72	$110.69	($3.31)	83%
Change From Baseline Plan	3%	2%	5%	-47%	0%
Change From Status Quo	4%	2%	11%	N/A	-1%
Scenario 3: 50% of episodes are provided by an EOC-contracted provider	$620.36	$518.35	$102.01	($12.63)	84%
Change From Baseline Scenario	*1%*	*2%*	*-3%*	*102%*	*1%*
Change From Status Quo	*2%*	*1%*	*2%*	*N/A*	*0%*
Scenario 4: EOC-contracted provider rates are higher than anticipated, randomly varying uniformly from 10% above the episode budget to 10% above the maximum allowable	$620.20	$514.95	$105.25	($10.93)	83%
Change From Baseline Scenario	*1%*	*1%*	*0%*	*75%*	*0%*
Change From Status Quo	*2%*	*1%*	*5%*	*N/A*	*-1%*
Scenario 5: Episodes with EOC-contracted providers have higher costs than anticipated, chosen randomly from all episodes (rather than lower 90th percentile by cost)	$592.88	$496.69	$96.19	$15.26	84%
Change From Baseline Scenario	-4%	-3%	-9%	-345%	1%
Change From Status Quo	-3%	-3%	-4%	N/A	0%
Scenario 6: Episode budget and maximum allowable are set lower than anticipated, at the 25th and 50th percentiles of episode cost, respectively***	$600.64	$469.31	$131.32	$8.63	78%
Change From Baseline Scenario	*-2%*	*-8%*	*25%*	*-238%*	*-6%*
Change From Status Quo	*-2%*	*-8%*	*31%*	*N/A*	*-5%*
Scenario 7: Episode-based patient cost sharing is set at 50% for Tier 3	$615.51	$531.72	$83.79	($6.24)	86%
Change From Baseline Scenario	*0%*	*4%*	*-20%*	*0%*	*4%*
Change From Status Quo	*1%*	*4%*	*-16%*	*N/A*	*3%*
Scenario 8: EOC-contracted providers achieve 10% savings among contracted episodes due to cost or utilization management initiatives	$615.51	$510.34	$105.17	($7.78)	83%
Change From Baseline Scenario	*0%*	*0%*	*0%*	*25%*	*0%*
Change From Status Quo	*1%*	*0%*	*5%*	*N/A*	*-1%*

* Includes amounts paid by the plan (including costs above the stop-loss threshold) and the patient.
** Reflects the average costs in the Texas commercial market with no EBP design.
*** The EOC-contracted provider rate also decreases as this is set relative to the episode budget and maximum allowable (i.e., varies between 10% below the episode budget up to the maximum allowable).

- **Scenario 1:** Under Scenario 1, the cost sharing for FFS-based services (i.e., non-episode services) is leaner (30% coinsurance, $3,500 deductible, and $7,000 MOOP) than the Baseline Scenario. The additional patient cost sharing of the plan design for FFS-based services, which make up nearly two-thirds of total cost, shifts cost from the plan to the patient. This results in a 12% reduction to plan cost and a 60% increase in patient cost relative to the baseline.
- **Scenario 2:** Under Scenario 2, utilization of episode-related services—both with EOC-contracted providers and non-EOC-contracted providers—increases by 10% due to the impact of anti-selection (where members with known conditions or health issues may knowingly enroll in the EBP design because of the additional coverage) or induced demand (where benefit richness, like lower patient coinsurance under an episode budget, may lead to additional utilization of healthcare services). Compared to the Baseline Scenario, costs for the plan and patient increase by 2% and 5%, respectively, while savings for the provider decrease by 47% because the provider is liable for additional utilization of episode-related services.
- **Scenario 3:** Under Scenario 3, 50% of episodes are provided by an EOC-contracted provider, rather than 25% under the Baseline Scenario. This leads to more savings opportunities for the provider, who is accepting risk for episodes, increasing average provider savings by 102%. On average, the patient cost decreases by 3% relative to baseline due to the favorable plan design structure of episode-based care with EOC-contracted providers.
- **Scenario 6:** Under Scenario 6, the episode budget and maximum allowable are set lower than anticipated, at the 25th and 50th percentiles of episode cost, respectively. This results in a shift from provider savings to provider losses, as the EOC-contracted provider rate is set relative to the episode budget and is thus lower than in the baseline. The patient liability also increases by 25%, relative to baseline, due to the lower episode budget. These provider and patient cost-sharing shifts result in an 8% reduction in plan costs.

Considerations for implementation

There are several considerations, challenges, and limitations for health plans or employers implementing the proposed EBP.

REGULATORY ISSUES

As Manatt's report describes, there are several regulatory issues that must be considered when implementing an EBP design, including (but not limited to):

- **Effective rate review:** Under the Patient Protection and Affordable Care Act (ACA), premium rates in the individual and small group market are reviewed by regulators for reasonability and appropriateness. With the potential for high patient out-of-pocket expenses, it may be difficult for health plans to introduce the EBP design in the ACA individual and small group markets.
- **Mental Health Parity and Addiction Equity Act (MHPAEA):** Under MHPAEA, cost sharing for mental health/substance use disorder (MH/SUD) benefits must not be less favorable than cost sharing for medical/surgical benefits. The health plan or employer must demonstrate compliance with both nonquantitative treatment limitations (NQTLs), like prior authorization and concurrent review, and quantitative treatment limitations (QTLs), like copays and coinsurance. In order to comply with the QTLs of MHPAEA, the health plan or employer may consider capping the coinsurance for MH/SUD benefits at the predominant level of medical/surgical benefits or waiving cost sharing for MH/SUD benefits.
- **ACA actuarial value (AV) limitations:** Under the ACA, health plans offered by large employers must meet a minimum 60% AV threshold, while health plans offered in the individual or small group markets have defined AV ranges by metallic tier (e.g., silver plans must have AVs between 66% and 72%). Plans introducing an episode wrap benefit must consider the EBP design structure and parameters necessary to maintain an appropriate AV to comply with federal and state guidelines.

KEYS TO SUCCESS

There are several keys to a successful EBP design for a health plan or employer:

- **Transparency and education:** Under an EBP design, members must both understand the cost-sharing design and have access to provider-contracted rates in order to select a low-cost option. The health plan or employer will need to ensure that members understand their options and the financial consequences for each option.
- **Aligned incentives:** Each stakeholder involved in the episode program must have aligned incentives to reduce the total cost of care while maintaining quality. As described above, the

The keys to success for an EBP design include patient transparency and education, aligned incentives, and effective contracting.

proposed EBP design introduces cost-sharing tiers in order to align the incentives of the patient, provider, and health plan. The health plan or employer must consider how to design an episode program to encourage high-quality and cost-efficient care for patients and providers.

- **Effective contracting:** The episode program relies on having a robust network of EOC-contracted providers for each episode type. For any episode type or region where there are limited EOC-contracted provider options available, patients will be at greater risk of high out-of-pocket expenses. Additionally, this may limit uptake of the plan, as employers and patients may be hesitant to enroll in the plan given the limited options for contracted providers.

SELECTION IMPACT

If an EBP design is offered to employees or members alongside traditional health benefit plans, patients with underlying health conditions or patients who need healthcare procedures may opt into it, given the rich benefit design and cost sharing available for various episodes of care, leading to anti-selection and induced utilization. It is difficult to estimate the impact of anti-selection, but it is likely that utilization of episode-based care would increase.

PROVIDER QUALITY

Consistent with most APMs, providers should be held accountable not only for cost, but also for quality. One way to accomplish this would be to establish predetermined quality metrics for each episode and then hold providers accountable for their performance against those metrics. This way, providers are incentivized to reduce inappropriate care, rather than cut back on necessary care.

OPERATIONAL CHALLENGES

There are several operational challenges for implementing an EBP design that may limit its real-world adoption. They include:

- **Claims adjudication of episodes:** The EBP relies on implementing a sophisticated grouping methodology to bundle claims into episodes. Challenges include tracking patient spending to monitor the patient's tier and corresponding cost sharing, handling episodes that straddle multiple policy years, and handling reversed or denied claims. Such nuances may require additional administrative expenses for the health plan or third-party administrator (in the case of an employer-sponsored plan).
- **Clinical trajectory:** Effective cost and utilization management in the episode program involves appropriate care coordination through the entire episode by EOC-contracted providers. Patients need to be made aware of participating providers and their contracted rates prior to proceeding with relevant care, and EOC-contracted providers would need to be aware of price and contract information in order to make effective referrals.
- **Cost transparency:** The episode program requires an easily accessible method for patients to choose a provider based on contracted rates, but also provider quality and prospective cost sharing. Plans should target effective communication of the episode budget and cost-sharing schema to plan members.
- **Employer/health plan buy-in:** The episode program also hinges on employers and health plans that are willing to establish an innovative plan design. Often, health plans, particularly larger plans, are slow to adopt new designs without an established proof of concept in place.
- **Risk adjustment:** In order to reduce uncontrollable variability in episode costs, the provider-contracted rate may be risk-adjusted based on the acuity of patients. Risk adjustment may introduce difficulties in effectively setting and communicating prospective episode budgets to patients.
- **Prescription drug claims:** Because prescription drug costs are included in episodes, it is necessary to determine the cost of drugs within an episode, which can be challenging. The simplest approach would be to base the drug cost on the point-of-sale cost (i.e., before rebates), but providers may want to incorporate rebates in the contracted price. This could incorporate additional challenges in the year-end rebate reconciliation process.

Methodology and data sources

We relied on medical and pharmacy claims data from the IBM® Watson MarketScan® Commercial Claims and Encounters Database for 2018 in Texas for this analysis. The MarketScan Databases include the administrative claims experience of employees and dependents covered by the health benefit programs of large employers, health plans, and government organizations. From this data, Signify Health identified medical and pharmacy claims that had been assigned to episodes of care based on proprietary episode grouping logic.[3] For procedure episodes (e.g.,

[3] Additional information on the episode definitions can be found at https://www.careinnovationinstitute.com/episodes-list/.

bariatric surgery), the data reflects services incurred in 2018 for episodes that were triggered in 2018. For chronic episodes (e.g., diabetes), the data reflects services incurred in 2018 for episodes that were triggered in 2017 or earlier.

Using this claims data, we developed a seriatim actuarial pricing model to reprice the claims under the EBP design described in this report. Claims that were not assigned to an episode of care (i.e., FFS-based claims) were repriced to an individual deductible and coinsurance. Claims that were assigned to an episode of care (i.e., EOC-based claims) were repriced based on the cost-sharing structure described in Figure 1 above. Member cost sharing for all claims except for those subject to Tier 3 cost sharing for non-EOC-contracted providers was subject to an annual maximum out-of-pocket; claims subject to Tier 3 cost sharing for non-EOC-contracted providers were not subject to the maximum out-of-pocket. Payment rates for EOC-contracted providers were chosen randomly between a range of reasonable allowed costs by episode type. We are assuming the provider is 100% at risk for savings and losses relative to the EOC-contracted provider rate; risk-sharing arrangements will vary depending on the contract.

Costs and utilization were trended from 2018 to 2021 based on secular trends informed by Milliman's Commercial Health Cost Guidelines™,[4] including consideration for the impact of COVID-19 on healthcare service utilization between 2020 and 2021. All preventive care, including preventive prescription drugs, was assumed to be covered 100% by the health plan.

Caveats, Limitations, and Qualifications

- **Purpose.** This report was commissioned by Signify Health. The findings reflect the research of the authors; Milliman does not intend to endorse any product or organization.
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- **Limitations on reliance.** Our analysis is based on historical claims data and experience may vary from the estimates presented in this report for many reasons. As with any economic or actuarial analysis, it is not possible to capture all factors that may be significant. Further, no algorithm for identifying episodes of care will be perfect. Because we present data for the Texas large group commercial market, the findings should be interpreted carefully before they are applied to any particular situation because there could be considerable variation among subsets of the population.
- **Models.** Milliman has developed certain models to estimate the values included in this report. We have reviewed the models, including their inputs, calculations, and outputs, for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOPs).
- **Academy statement.** Two of the authors, Dane Hansen and Andrew Bochner, are members of the American Academy of Actuaries and meet its qualification standards for this work.

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[4] The Health Cost Guidelines (HCGs) are a cooperative effort of all Milliman health actuaries and represent a combination of their experience, research, and judgment. An extensive amount of data is used in developing the HCGs and that data is updated annually.