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BPCI Advanced: Key considerations for prospective model participants

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Introduction

On January 9, 2018, the Centers for Medicare and Medicaid Services (CMS) announced a new voluntary bundled payment model, Bundled Payments for Care Improvement Advanced (BPCI Advanced). The model started on October 1, 2018, and CMS has indicated that there will be an additional opportunity for new entrants to start on January 1, 2020, with the application period opening in April 2019. BPCI Advanced replaces the current BPCI models (which have been in operation for five years). In keeping with the trend set by its predecessor, it has been extremely popular thus far—according to files updated by CMS on March 15, 2019, the participants include 715 acute care hospitals and 580 physician group practices located in nearly every state in the country.[1] This is much higher than the peak participation in the original BPCI, which reached 423 acute care hospitals and 441 physician group practices as of July 1, 2015.[2]

The bottom line for organizations interested in pursuing BPCI Advanced is whether the potential rewards for participating offset the risks and costs associated with that participation. Specifically, organizations are considering the following key questions:

- Is the target price set in a way that allows the organization potentially to achieve financial gains under the program?
- Can the organization make the necessary reductions in service utilization within an episode to achieve gains under that target price?
- Does the financial arrangement structure set up under the program allow the organization to encourage the Care Redesign[3] and clinical changes necessary to succeed against that target price?
- Do anticipated financial gains exceed costs of Care Redesign, lost revenue, and other changes?

In this paper, we consider these factors, which can influence an organization's decision to enter BPCI Advanced, and, if appropriate, its decision to share risk with a convening organization.

Accruing gains in BPCI Advanced

In any Medicare bundled payment program, there are two major drivers of whether a participating organization can accrue gains compared to the target prices. For purposes of this paper, we will refer to these drivers as follows:

- **Utilization opportunity:** Given that Medicare sets fee-for-service (FFS) payment rates for services through annual rulemaking and that process cannot be directly influenced by program participants, the primary driver of savings within BPCI Advanced episodes of care is reducing utilization of services (or redistributing utilization to lower-cost services) within the episode overall. Given this, utilization opportunity represents the magnitude of potential reductions in utilization of services within BPCI Advanced episodes (for example, by sending a lower percentage of patients to high-cost post-acute care settings).
- **Pricing opportunity:** Regardless of the episode cost and whether the program participant is able to drive utilization down, there may be opportunity inherent in the pricing algorithm for some participants. For example, the target price set for a given potential program participant may be substantially higher or lower than its historical spending for a given clinical episode because it was assigned to a peer group that had a substantially different trend from the participant itself for that episode. Pricing opportunity represents the magnitude of the difference between episode spending and the set target price, assuming no changes in episode spending over time.

From an historical perspective, BPCI Advanced changes very little about the potential for utilization opportunity as compared to other bundled payment programs. BPCI Advanced uses an episode definition that is similar in breadth to the original BPCI Model 2, and as such it affords similar utilization reduction opportunities. BPCI Advanced participants can find utilization opportunity by comparing their current utilization of post-acute services to benchmarks to identify areas where they are currently using more services than the national average or best practice in terms of readmissions or the use of skilled nursing facilities, inpatient rehabilitation facilities, or home healthcare.

Note: This paper is up to date as of information available on March 29, 2019. In late February 2019, CMS announced potential changes to the participation agreement that would adjust certain key provisions, but because those changes have not been finalized we have not incorporated them into this paper. We plan to update the paper to reflect those changes when they occur.

Because this program does not substantially alter the potential utilization opportunity from the existing BPCI models, we will focus here on the pricing opportunity inherent in BPCI Advanced. Within BPCI Advanced, hospital benchmark prices are calculated based on an equation that has the following components:

- **Standardized Baseline Spending (SBS):** Standardizes a hospital's spending in the baseline period to account for historical efficiency.
- **Patient Case Mix Adjustment (PCMA):** Adjusts the benchmark price for the relative severity of patients at a given hospital.
- **Peer Adjusted Trend (PAT) Factor:** Adjusts for persistent differences in episode spending levels across hospital peer groups and trends spending to the Model Year based on trends in spending during the baseline period within a hospital peer group.

Because of the strong influence it has had on the target prices of many BPCI Advanced participants, we have seen a large amount of interest in the PAT factor as a driver of potential savings or losses. Given its effect on target prices and hence implications for financial risk in BPCI Advanced, understanding the PAT factor methodology is critical to succeeding in BPCI Advanced.

The PAT factor as a driver of opportunity

DESCRIPTION OF THE PAT FACTOR

The key aspects of the PAT factor are:

- **Peer group characteristics:** Persistent differences in Clinical Episode spending levels across acute care hospital (ACH) peer groups.
  - Safety-net hospital status
  - Rural/urban status
  - Census division
  - Bed size
  - Academic medical center status
- **Episode-specific baseline and future trend**: Trends each peer group's Clinical Episode spending to each BPCI Advanced Model Year based on trends in Clinical Episode spending during the Baseline Period within each ACH peer group.

CMS projects the PAT factor on a quarterly basis by modeling the portion of spending that is not accounted for by patient case mix as a function of ACH peer group characteristics and a time trend. CMS calibrates these calculations using data from the BPCI Advanced Baseline Period and then projects the PAT to the middle quarter of the Model Year (CMS is combining Model Years 1 and 2). A PAT factor above 1.0 implies an increase in projected spending between the Baseline Period and the Model Year, while a PAT factor below 1.0 implies a decrease. This approach has both pros and cons:

- **Pros**
  - The same methodology applies to all Clinical Episodes
  - CMS constructed the time trend so that PAT factors level off over time, which recognizes that utilization trends will likely not continue at the same magnitude indefinitely
- **Cons**
  - The methodology does not account for the possibility that future trends will deviate significantly from historical trends
  - This creates financial risk for both CMS and participants:
    - BPCI Advanced participants bear financial risk if the future trend is above projections
    - CMS bears financial risk if the future trend is below projections
  - Projecting the PAT factor to the middle quarter of the Model Year creates financial risk due to seasonality in episode spending

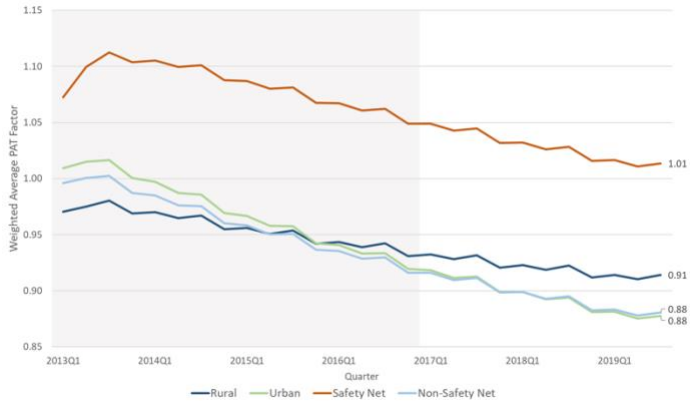
ANALYSIS OF PAT FACTOR

We analyzed the PAT factor for different strata of ACH peer group characteristics (urban vs. rural and safety net vs. non-safety net) between the start of the Baseline Period (first quarter of 2013) and the middle quarter of Model Years 1 and 2 (third quarter of 2019) for two potentially high-volume Clinical Episode Categories—Major Joint Replacement of the Lower Extremity (MJRLE) and Congestive Heart Failure (CHF).[4] For MJRLE and CHF, we calculated the average PAT factor for each quarter, weighted by the number of ACHs with each specific combination of peer group characteristics. We developed ACH peer group characteristics because CMS did not release a comprehensive list of ACH peer groups for BPCI Advanced.[5]

As shown in the figures below, we find that the PAT factor varies along several dimensions, including Clinical Episode Categories, ACH peer group characteristics, and seasonally from quarter to quarter. Each one affects the target price calculation.

Figure 1 shows that starting points of the average MJRLE PAT factors vary by ACH characteristics but uniformly exhibit steep decreases through the third quarter of 2019. The factors are built off a recent downward trend in overall spending on these episodes in recent years due in part to the original BPCI models and the MJRLE-specific mandatory Comprehensive Care for Joint Replacement (CJR) model. This suggests that most Episode Initiators will need to reduce spending significantly to achieve financial gains in MJRLE episodes. In particular, the average PAT factors for urban ACHs and non-safety net ACHs decrease by roughly 12% to 13% between the beginning of 2013 and the third quarter of 2019. The PAT factors for rural ACHs and safety net ACHs show less dramatic decreases over the same time period.

FIGURE 1: WEIGHTED AVERAGE PAT FACTORS FOR MAJOR JOINT REPLACEMENT OF THE LOWER EXTREMITY IN SELECTED ACH PEER GROUPS, 2013Q1-2019Q3



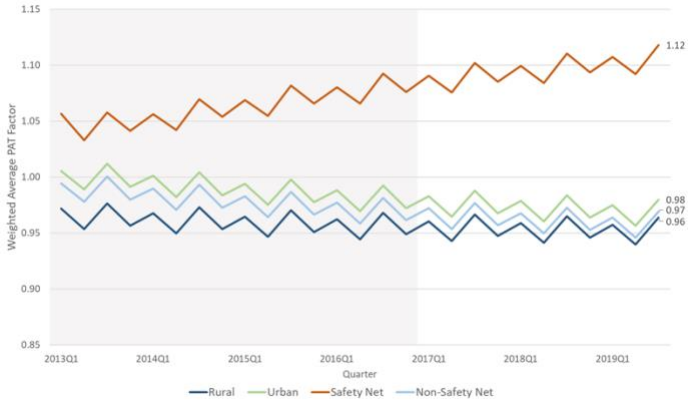
Note: Values shown are weighted averages of PAT factors, with the weights derived from the number of ACHs with each specific combination of peer group characteristics. The PAT factor trajectory for a specific ACH will account for that ACH's specific peer group characteristics and will not align with the weighted averages shown.

Source: Milliman analysis of CMS BPCI Advanced Risk Adjustment Parameters, 2015-2016 Medicare 100% LDS claims files, 2018 CMS Provider of Services File, 2018 CMS Provider Specific File, 2018 CMS Impact File, and https://www.aamc.org/.

Figure 2 tells a somewhat different story for CHF. Whether an Episode Initiator faces a positive or negative CHF PAT factor depends on the peer group characteristics at the ACHs at which the Episode Initiator accrues episodes. The average PAT factor for safety net ACHs increased by 6% between 2013 and the third quarter of 2019. However, the average PAT factor for urban ACHs and non-safety net ACHs decreased by 3% in the same time period, and the average PAT factor for rural ACHs shows almost no change, decreasing by only about 1%.

Additionally, the upward and downward trajectory (the pronounced "sawtooth" pattern) of the average PAT factors from quarter to quarter demonstrates seasonal patterns in Figures 1 and 2, although the pattern is more pronounced in Figure 2. Under the current BPCI Advanced methodologies, CMS will perform reconciliation calculations using the PAT factor in the middle quarter of the respective Model Year. This approach creates financial risk for seasonal fluctuations in episode spending in the first, second, and fourth quarters of each calendar year that will not be captured in the current PAT factor projection methodology.

FIGURE 2: WEIGHTED AVERAGE PAT FACTORS FOR CONGESTIVE HEART FAILURE IN SELECTED ACH PEER GROUPS, 2013Q1-2019Q3



Note: Values shown are weighted averages of PAT factors, with the weights derived from the number of ACHs with each specific combination of peer group characteristics. The PAT factor trajectory for a specific ACH will account for that ACH's specific peer group characteristics and will not align with the weighted averages shown.

Sources: Milliman analysis of CMS BPCI Advanced Risk Adjustment Parameters, 2015-2016 Medicare 100% LDS claims files, 2018 CMS Provider of Services File, 2018 CMS Provider Specific File, 2018 CMS Impact File, and https://www.aamc.org/.

THE PAT FACTOR: INFLUENCING THE BOTTOM LINE

Based on this analysis, the PAT factor can exert a strong influence on the potential for BPCI Advanced participants to accrue gains in the program. Some participants will be required to save a large percentage of episode cost before accruing any gains at all, and others may not be in this situation. The influence of the PAT factor will depend on a hospital's peer group as well as the episodes selected, and it should be carefully considered in the context of a comprehensive risk assessment prior to making a BPCI Advanced participation decision.

What does this mean for BPCI Advanced participants?

The BPCI Advanced target price, and the PAT factor as a component of that target, is a primary driver for organizations considering whether the rewards of BPCI Advanced offset the risks and costs associated with participation. Whether an organization will be able to succeed in accruing gains against its BPCI Advanced target price relies heavily on that organization's ability to do the following:

- **Outperform** other organizations in its peer group (which may be competitors) in managing utilization of services within the episode
- **Identify** regulatory burdens and potentially driving participation costs from the outset
- **Extrapolate** and build upon prior performance and expertise in bundled payment models

- **Attract** partners with experience in cost management and care coordination, or develop such expertise internally
- **Leverage** integrated electronic health records (EHRs) across its partnerships, particularly in non-safety net and urban centers

The remainder of this article, therefore, focuses on the regulatory burdens and pathways for success to improve partnerships and BPCI performance in light of the set BPCI Advanced target prices.

Notably, the regulatory hurdles imposed by this new bundled payment model create divergent opportunities and pitfalls for various organizations seeking to participate in BPCI Advanced, depending on their proposed roles. Below, we provide a high-level overview of key regulatory considerations that should be taken into account by each type of potential BPCI Advanced participant (Non-Convener Participants and Participant Conveners,[6] or "Conveners") to evaluate the contracting, risk-sharing, and participation opportunities for the forthcoming second phase of the BPCI Advanced rollout, for a performance period starting January 1, 2020. To that end, the remainder of this article differentiates between the opportunities and risks for new Conveners and those that participated in BPCI; describes pitfalls and benefits for all Conveners under BPCI Advanced; and then discusses key considerations for ACHs and Physician Group Practices (PGPs) in particular when determining whether to become a Non-Convener Participant instead of a Convener.

CONVENER TYPES AND RELATIVE ADVANTAGES

We differentiate between two types of BPCI Advanced Participant Conveners in this article: Conveners who participated as Conveners in a prior model (Legacy Conveners) and participants who are acting as a Convener for the first time (New Conveners). Although both Convener types may accrue gains under BPCI Advanced, relative to target prices, Legacy Conveners may have a head start relative to New Conveners in several regards.

Specifically, Legacy Conveners have experience with required bundled payment metrics and access to historical achievement records and related data for their prior BPCI partners (e.g., BPCI episode initiators of the Legacy Convener), which New Conveners may lack. Legacy Conveners are therefore positioned from the outset to identify and screen out potential partners with limited financial opportunity in BPCI Advanced (due to inability to reduce spending, such as inadequate coordination of care, unfavorable BPCI Advanced Target Prices, or other reasons) when building a Legacy Convener's network. Alternatively, access to historical achievement records and related loss-run data for prior BPCI partners provides an opportunity to allocate risk appropriately with previously poor-performing partners from the outset.

For instance, consider a scenario where a Legacy Convener collaborated with a PGP for MJRLE under a prior model. During this collaboration, the PGP was unable to adequately coordinate care with post-acute providers, resulting in the Legacy Convener's Net Payment Reconciliation Amount (NPRA)[7] opportunity being limited. If the Legacy Convener can determine that the direct source of the issues is post-acute coordination, then the Legacy Convener would have a number of options to consider from this internal run data. They may include choosing not to partner with the PGP in BPCI Advanced; dedicating resources to facilitate care coordination through its Care Redesign Plan; requiring the PGP to itself adequately track, measure, and remediate care hand-off plans; or eliminating MJRLE as an unprofitable venture with that PGP.

Comparatively, New Conveners do not have BPCI-specific internal run history to assist with selecting partners with sufficient financial opportunity in BPCI Advanced. Instead, New Conveners would have to rely on the historical claims data provided as part of the BPCI Advanced application in order to extrapolate potentially relevant findings on cost control capabilities, or otherwise engage management services organizations (MSOs) or administrative services organizations (ASOs) with experience in BPCI to facilitate partner vetting. Given that New Conveners face a potentially high-cost endeavor in establishing their BPCI Advanced networks from scratch, such added costs could further compound associated startup risks.

CONVENER PITFALLS

Putting internal data capabilities aside, two of the largest pitfalls associated with acting as a Convener under BPCI Advanced involve the requirements (and related ambiguity) for structuring risk-sharing payments.

First, CMS has mandated that Conveners may not structure payments to NPRA Sharing Partners as a loan, without clarifying the underlying basis of: (1) why loans are impermissible if NPRA Shared Payments are allowed; and (2) whether any categories of loans, or alternative payment structures, would not implicate CMS's policy concerns and pose low risk of enforcement. The clear risks associated with a Convener providing a prohibited "loan" could be substantial: not only could the Convener breach the terms of its CMS Model Contract, but its downstream payments to NPRA Sharing Partners would become ineligible for protection under the BPCI Advanced Fraud and Abuse Waivers.

With respect to the waiver protection, the BPCI Advanced program waives the applicability of certain laws, such as the Federal Anti-Kickback Statute (AKS), to facilitate funds flows and payments between BPCI Advanced network partners that may otherwise be viewed as payments to induce referrals. As long as the payments are structured in strict conformity with CMS and Office of Inspector General (OIG) of the U.S. Department of Health and Human Services (HHS) requirements, such payments are permitted, reflecting that HHS acknowledges that the current fraud and abuse

regulatory model does not provide flexibility required for voluntary bundled payment models. Absent waiver protection, however, downstream gainsharing payments from Conveners to PGPs or ACHs may expressly implicate the AKS, a criminal statute, and related laws such as the Stark Law. Given that CMS has provided limited guidance on why, categorically, loans are not desirable, and that it may be possible to achieve the same (or similar) goals with alternative methodologies, it can be valuable to consult with counsel capable of developing payment structures consistent with CMS's mandate.

Second, Conveners bear full financial responsibility for network performance, but may share the associated financial risk with NPRA Sharing Partners.[8] The traditional scope of risk sharing varies based on the Convener's experience with bundled payment methodologies and liquidity, as well as its business model. Organizations that participated successfully in the BPCI program are likely not as heavily impacted by the significance of risk sharing with NPRA Sharing Partners, as these entities maintain the institutional background and financing (sometimes arising from successful participation in the legacy program) necessary either to bear the responsibility to CMS alone or to manage the internal processes for adequately assessing risk of loss. Comparatively, New Conveners may not have large financial reserves, as they have not yet had to build them up, which creates additional challenges in bearing the risk to CMS alone (such as funding access) and thereby increases the need for risk sharing with NPRA Sharing Partners—and accordingly, the allure for NPRA Sharing Partners to contract with these new entities. Thus, the ability to implement robust downstream contracts with NPRA Sharing Partners/Downstream Episode Initiators may be necessary to limit New Conveners' risk to CMS in a manner that is not as pressing for Legacy Conveners. Accordingly, New Conveners are more likely to seek liquidity support from NPRA Sharing Partners/Downstream Episode Initiators, to engage an operational administrator to manage such financial arrangements, or to engage an MSO for data management and analytics services to defray costs. Although the BPCI Advanced target price is important for all Conveners determining whether a contracting network will be profitable enough to move forward as a Convener, it may be less so for Conveners with large financial reserves or ready access to letters of credit on borrower-favorable terms, who may be better positioned to bear financial losses, should they occur. Ultimately, the ability to select key contracting partners, assume risk, and ensure adequate reserves presents a fork in the road for organizations determining whether to transition to the role of Convener.

CONVENER BENEFITS

Despite the potential risks associated with acting as a Convener under BPCI Advanced, one clear benefit may act as a counterbalance: Conveners are eligible for network profit shares in acting as network administrators. Further, the Model Contract created a 50% cap on payments to Episode Initiators to which Conveners (and Non-Convener Participants, as discussed below) are immune.[9] BPCI Advanced imposes the cap by limiting the total amount of payments from a Convener to a NPRA Sharing Partner through a NPRA Sharing Arrangement or from a NPRA Sharing Partner to a NPRA Sharing Group Practitioner during a performance year. The payments are limited to 50% of the total Medicare FFS payment for all items and services that were both (1) billed by that NPRA Sharing Partner or NPRA Sharing Group Practice Practitioner when that person was identified on the Convener's financial arrangement list, and (2) included in clinical episodes attributed to the Convener for that performance year. If savings exceed the total threshold point, the Convener retains any additional savings. The prospect of eliminating caps on profit sharing while developing particularly expansive networks may be particularly alluring for certain entities, such as PGPs that are central to Care Redesign implementation but struggle with contractual restrictions on their abilities to fully accrue gains, when considering whether to participate in BPCI Advanced as a Convener.

As discussed above, there are a number of advantages and hurdles to acting as a Convener. Navigating those hurdles to determine whether acting as Convener will be profitable requires a nuanced understanding of BPCI Advanced for any potential participant. For a number of entities seeking to participate in BPCI Advanced, the analysis of whether to participate as Convener largely stops here. This is not so for ACHs or PGPs, which are eligible to enroll separately in BPCI Advanced as Non-Convener Participants. In addition to avoiding the 50% cap discussed above, PGPs and ACHs that contract with CMS as Non-Convener Participants are subject to less downside risk than Conveners that assume responsibility for Episodes attributable to other organizations acting as their Downstream Episode Initiators. Given this fact, Non-Convener Participants may be able to accrue the same kinds of profits as Conveners, though such profits may be different in scale as Conveners may operate larger networks. Beyond these points, ACHs and PGPs who decide to become Non-Convener Participants are subject to many of the risks associated with becoming a New Convener. Thus, the remainder of this article explores what PGPs and ACHs need to consider in the decision to enter BPCI Advanced as either a Convener or Non-Convener Participant.

TO BE A CONVENER OR NON-CONVENER PARTICIPANT: PGPS AND ACHS

The Model Contract allows PGPs and ACHs the opportunity to contract directly with CMS as New Conveners or Non-Convener Participants as soon as January 1, 2020, without the restrictions of the 50% gainsharing cap. As high-functioning PGPs may currently perform many functions of a Non-Convener Participant or a traditional Convener (e.g., administrative operational and clinical oversight, managing EHR systems connected with a network of providers, developing innovative care plans, and administering payments), they may be well-positioned to transition to the role of

Non-Convener Participant or Convener and to avoid the 50% cap on payments to NPRA Sharing Partners. As it stands, the Model Contract incentivizes PGPs that previously participated in Convener networks to draw on their on-the-ground care management experience in Convener networks and take more active roles in controlling patient care across network participants. Transitioning from a downstream, gainsharing PGP to a Non-Convener Participant or New Convener, however, carries both financial and operational risk, particularly related to bearing full responsibility for episodes under contract with CMS and to building partnerships with necessary stakeholders.

PGPs and ACHs that leave existing Convener networks to act as Non-Convener Participants or New Conveners will face challenges in connection to their former partners. PGPs and ACHs in this position may be subject to contracts with confidentiality provisions, non-compete provisions, and post-termination patient care financial requirements. Confidentiality provisions can include restrictions on using the "know how" that a PGP or ACH acquires as part of its association with the Convener. Non-compete provisions may include geographic restrictions that prevent a PGP or ACH from operating as a New Convener in a designated area once an agreement terminates. To be clear, any such non-compete would be subject to state law and only enforceable to the extent finely tailored to permit PGP/ACH operations expressly protected by the Model Contract. Further, existing contracts may also include non-solicitation requirements that prevent PGPs and ACHs from poaching parts of a Convener's network. Post-termination patient care financial requirements may tie up a PGP or ACH with handling costly patients well after the agreement terminates, thereby diverting resources from transitioning to the Non-Convener Participant or New Convener status. Such provisions or agreements are often broad and nuanced and violating one can be the basis of a contractual dispute. Contractual disputes could result in costly litigation that diverts resources from operating in BPCI Advanced. Leaving an existing network also requires Episode Initiators to explore whether they will continue to have access to BPCI Advanced waivers during the transition out of an existing network to receive accrued gains, and whether the former partners of the PGP or ACH will close their networks (e.g., access to existing contracted partners) to their new competitor. A closed network may necessitate the need to find new partners for post-acute care, for example, because skilled nursing facilities may have exclusivity agreements with the Non-Convener Participant or the New Convener's former partners. Accordingly, any transition that attempts to take part of a former partner's network or the "know how" accrued during the PGP/ACH's participation in a network may result in the former partners alleging violation of non-compete provisions of participation agreements, confidentiality provisions, or tortious interference with contracts if an exiting partner is viewed as "poaching" entities to join its new network.

Conclusion

The BPCI Advanced program offers proactive industry stakeholders flexibility to develop innovative care and gainsharing models, even if they had not previously participated in BPCI. However, both new entrants and experienced entities in the bundled payment space will need to balance these opportunities with target price and contractual structuring considerations in order to determine whether they are best positioned to participate in BPCI Advanced as Participant Conveners, Non-Convener Participants, Downstream Episode Initiators, or other NPRA Sharing Entities. Given the creative structuring opportunities offered by CMS, entities interested in participating in BPCI Advanced can calibrate gainsharing and execution risks by selectively developing their networks (or choosing the networks in which they participate) to satisfy their specific financial and quality goals.

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Endnotes

[1] BPCI Advanced. Episode Initiators (EIs) and Their Clinical Episodes (CEs) Selections for Model Year 2 (March 2019 update). Retrieved April 3, 2019, from https://innovation.cms.gov/Files/worksheets/bpci-advanced-ei-episodes.xlsx (Excel spreadsheet download).

[2] CMS (August 13, 2015). Fact Sheet: Bundled Payments for Care Improvement Initiative (BPCI). Retrieved March 26, 2019 from https://www.cms.gov/newsroom/fact-sheets/bundled-payments-care-improvement-initiative-bpci-fact-sheet.

[2] CMS defines Care Redesign as the specific planned interventions and changes to the BPCI Advanced participant and BPCI participant's contracting partners' current healthcare delivery system. See CMS, BPCI Advanced Participation Agreement, § 2.

4 These Clinical Episode Categories represent the highest volume Clinical Episode Categories from Model 2 of the original BPCI model that are also in BPCI Advanced. Similar to BPCI Advanced, BPCI Model 2 Clinical Episodes include both acute and post-acute care. Clinical Episode Categories were selected based on Exhibit 10 of the CMS Bundled Payments for Care Improvement Initiative Models 2-4: Year 4 Evaluation & Monitoring Annual Report, which is available at: https://innovation.cms.gov/Files/reports/bpci-models2-4-yr4evalrpt.pdf.

5 Safety-net hospital status: 2016 100% Medicare Limited Data Set (LDS) Inpatient Claims Files; Rural/urban status: 2018 CMS Provider of Services File; Census division: 2018 CMS Provider Specific File; Bed size: 2018 CMS Provider Specific File; Academic medical center status: Because CMS did not make a clear source for academic medical center status available publicly, we identified the variable through the following steps:

1. Compiled a list of all hospitals and health systems on the website of the Association of American Medical Colleges (AAMC) website (available at https://www.aamc.org/).
2. Identified all hospitals associated with health systems listed on the AAMC website.
3. Cross-checked hospitals identified in steps 1 and 2 against the 2018 CMS Impact File to identify the level of teaching at each hospital.
4. Removed hospitals without any teaching (e.g., some community hospitals associated with a health system that included other teaching hospitals) and added hospitals based on physician review.

Based on CMS remarks during the BPCI Advanced Pricing Methodology Open Door Forum on June 28, 2018 (see https://innovation.cms.gov/Files/transcripts/bpci-advanced-odf-pricingmethodtrans.pdf), we believe that the CMS methodology will identify fewer academic medical centers than our approach. We performed sensitivity analyses (not shown) on PAT factors for academic medical centers and nonacademic medical centers separately, and found results that were similar to the full analysis.

6 The BPCI Advanced Participation Agreement (the "Model Contract") provides that there are two types of Participants: Convener Participants and Non-Convener Participants. A Convener Participant is an entity who enters into a Model Contract with CMS, brings together at least one or more Downstream Episode Initiators, facilitates care among them, and bears the full financial risk to CMS under the Model. Comparatively, a Non-Convener Participant does not bear the financial risk of a Downstream Episode Initiator. Only ACHs and Physician Group Practices may be Non-Convener Participants whereas a Convener Participant may be any entity. See CMS, BPCI Advanced Participation Agreement., § 2 (2018).

7 CMS defines the NPRA as the amount CMS pays to the party who contracts directly with CMS for the party's selected episodes of care. See CMS, BPCI Advanced Participation Agreement, § 2 (2018).

8 Conveners bear 100% financial risk to CMS for up to the 99th percentile of national Medicare FFS spending on each clinical episode to which the Convener has selected. (See CMS, BPCI Advanced Participation Agreement, § 7.) Conveners may share said risk with NPRA Sharing Partners/Downstream Episode Initiators. (See CMS, BPCI Advanced Participation Agreement, § 2.) An Episode Initiator is the entity that triggers the clinical episode to which the Convener is responsible. (See CMS, BPCI Advanced Participation Agreement., § 2.) A Downstream Episode Initiator means an ACH or PGP that participates in BPCI Advanced pursuant to an agreement with the Convener Participant. (See CMS, BPCI Advanced Participation Agreement, § 2.) Such agreements between a Convener Participant and Downstream Episode Initiator require the Downstream Episode Initiator to comply with all of the applicable terms and conditions of the Model Contract. (See CMS, BPCI Advanced Participation Agreement., § 2.)

9 Conveners, like Non-Convener Participants, are subject to 20% stop-loss and stop-gain limits, calculated at the Episode Initiator level. (See CMS, BPCI Advanced Participation Agreement, Appendix A.)