Making Sense of CMS Shadow Bundles:

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Discussion Agenda

- Introduction and Overview
- Review of National ACH Benchmark Price File
- Review of Episode Level File
- Using these files to assess provider performance
- Discussion

Benefits and Limitations of Shadow Bundle Data

- National Hospital ACH file gives comprehensive pricing for all US hospitals based on 100% of Medicare claims
  - Price doesn’t equal spending
  - No spending by site of care
- Episode level file provide detailed episode-level information for each case but ….
  - Aggregates important categories of spending (hospital, Part B)
  - Doesn’t identify downstream providers
  - Additional analysis of raw claims data required for key information
- Episode-level detail only provided for ACO beneficiaries

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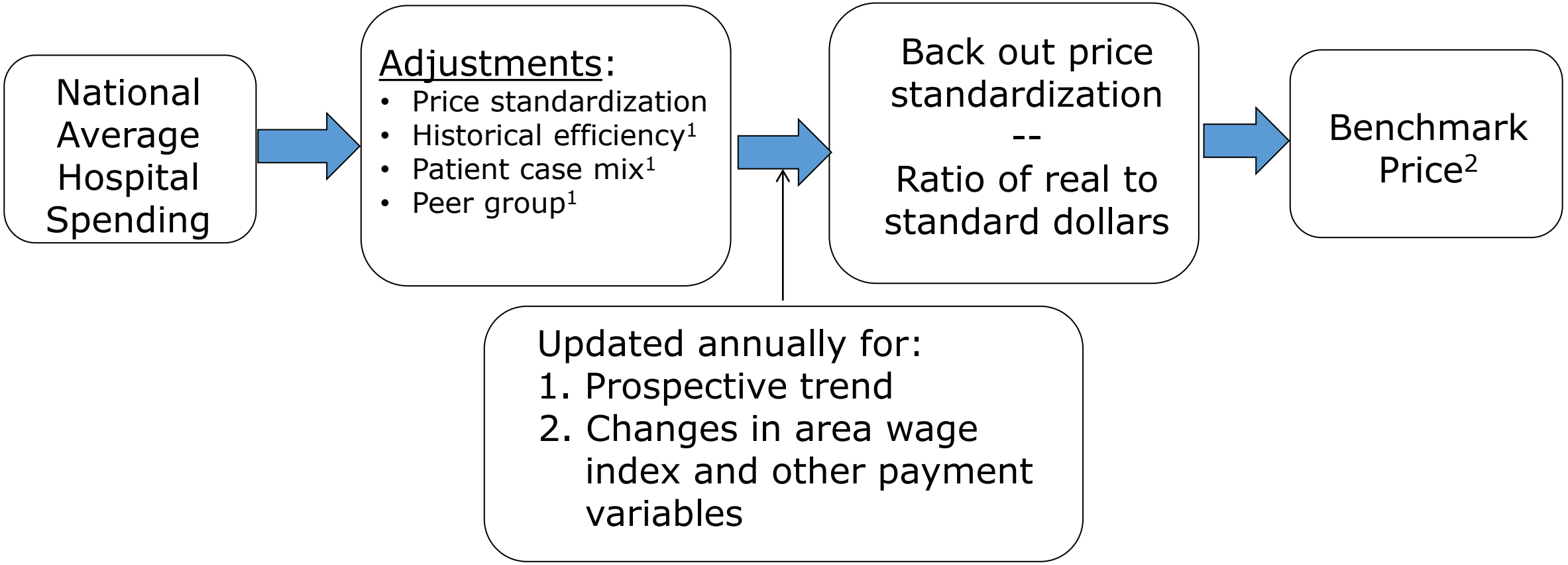
General approach of CMS BPCI Pricing Rules



Notes:
[1] Variables calculated using national regression model specified independently for each bundle.
[2] Target price is benchmark price minus 2 – 3% discount.

National ACH Benchmark Price Calculation

Benchmark Price Calculations for 90-Day CABG Episode

Hospital Name	Episode Count	Average Observed Episode Spending	Historical Adjustment	Standardized Baseline Spending (SBS)	Patient Case Mix Adjustment	Peer Group Adjustment	Peer Group Trend	Benchmark Price in Standardized Dollars	Ratio of Real to Std Dollars	2023 Benchmark Price Real Dollars
University Of Kansas Hospital	177	$56,232	0.99	$55,681	1.11	0.96	0.99	$58,539	1.08	$62,961
Adventhealth Shawnee Mission	64	$56,232	1.03	$57,905	0.93	0.96	0.99	$51,017	0.98	$50,044
Overland Park Reg Med Ctr	53	$56,232	0.98	$54,917	0.96	0.96	0.99	$49,782	1.01	$50,310

National Average Spend[1] per episode

Hospital Efficiency Ratio[2]

Patient Severity[3]

Adjusted for Relative Peer Group Cost[4]

Convert to Real Dollars

Notes:
[1] Spending is price standardized
[2] Observed to expected cost ratio
[3] Hospital severity relative to US
[4] Based on relative peer group cost
Items 2-4 based on national regression model

National ACH Benchmark Price File

Benchmark Price Calculations for 90-Day CABG, Major Bowel, Major Joint Episodes

Hospital Name	Clinical Episode Category	Episode Count	Average Observed Episode Spending	Historical Adjustment	Patient Case Mix Adjustment	Peer Group Adjustment & Trend	Ratio of Real to Std Dollars	2023 Benchmark Price Real Dollars
University Of Kansas Hospital	IP-CABG	177	$56,232	0.99	1.11	0.95	1.08	$62,961
Adventhealth Shawnee Mission	IP-CABG	64	$56,232	1.03	0.93	0.95	0.98	$50,044
Overland Park Reg Med Ctr	IP-CABG	53	$56,232	0.98	0.96	0.95	1.01	$50,310
University Of Kansas Hospital	IP-Major bowel proc.	477	$37,100	1.13	1.02	0.95	1.06	$42,968
Adventhealth Shawnee Mission	IP-Major bowel proc.	259	$37,100	1.01	0.92	0.95	1.00	$32,455
Overland Park Reg Med Ctr	IP-Major bowel proc.	66	$37,100	0.98	0.98	0.95	1.02	$34,565
University Of Kansas Hospital	MS-Major joint Lower	752	$24,772	1.10	1.00	0.95	1.01	$26,171
Adventhealth Shawnee Mission	MS-Major joint Lower	955	$24,772	0.98	1.01	0.95	0.98	$22,977
Overland Park Reg Med Ctr	MS-Major joint Lower	447	$24,772	1.12	1.07	0.95	0.99	$28,107

Note: Crosswalk of hospital name to CCN can be found on the CMS website and downloaded here.
Conversion from standardized to real dollars includes wage adjustments, IME, DSH and other payment adjustments.

Other Information in National ACH File

- Risk adjustment model parameters
- Peer group descriptions
  - Major teaching (Y/N)
  - Safety Net (Y/N)
  - Hospital size (S, M, L)
  - Census division (9)
- Truncation points by MS-DRG

Episode Level File Review

Initial Sort Order	Shadow Bundles Variable Name	Description
1	EPISODE_ID	Unique Clinical Episode identifier
2	ACO_ORG_ID	ACO Organization ID
3	ACO_ORG_ID_NAME	ACO Legal Name
4	EPISODE_GROUP_NAME	Clinical Episode Category name
5	SERVICE_LINE_GROUP	Indicates which Service Line Group is applicable to the Clinical Episode
6	CURHIC_UNEQ	Unequated Health Insurance Claim
7	MBI_ID	Unique Medicare Beneficiary ID
8	BENE_GVN_NAME	Beneficiary's first name
9	BENE_MDL_NAME	Beneficiary's middle name
10	BENE_SRNM_NAME	Beneficiary's last name
11	BENE_AGE	Beneficiary's age as of the date of discharge from the anchoring IP or OP hospital
12	BENE_GENDER	Beneficiary's gender
13	BENE_BIRTH_DT	Beneficiary's date of birth
14	BENE_DEATH_DT	Beneficiary's date of death

- Detailed information on each case includes episode type, service line and ACO
- Beneficiary level detail including MBI, name and DOB

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Episode Level File Review (continued)

Initial Sort Order	Shadow Bundles Variable Name	Description
15	ANCHOR_TYPE	Indicates whether an episode is triggered in the IP, OP, or Multi-Setting (MS) setting type
16	ANCHOR_TRIGGER_CD DRG or HCPCS code	Indicates the MS-DRG or HCPCS triggering an IP or OP anchor-based episode respectively
17	ANCHOR_APC	The APC the anchoring HCPCS maps to in the Performance Year
18	ANCHOR_APC_PMT_RATE	APC payment rate of the anchoring HCPCS in the Performance Year
19	ANCHOR_C_APC_FLAG	Indicates whether the anchoring HCPCS is a Comprehensive APC (C-APC) in the Performance Year
20	ANCHOR_PROVIDER Hospital	The CCN of the hospital anchoring an episode
21	ANCHOR_AT_NPI Attending Physician	The attending physician NPI associated with the anchoring IP or OP hospitalization
22	ANCHOR_OP_NPI Operating Physician	The operating physician NPI associated with the anchoring IP or OP hospitalization
23	ANCHOR_BEG_DT	The start date of an episode's anchor period
24	ANCHOR_END_DT	The end date of an episode's anchor period
25	POST_DSCH_BEG_DT	The start date of an episode's post-discharge period
26	POST_DSCH_END_DT	The end date of an episode's post-discharge period
27	ANCHOR_STANDARD_ALLOWED_AMT	The total standardized allowed amount associated with the anchor IP stay(s) or OP claim
28	ANCHOR_ALLOWED_AMT Hospital stay	The total raw allowed amount associated with the anchor IP stay(s) or OP claim.
29	TRANSFER_STAY	Indicates whether the IP stay anchoring an episode was part of a transfer process

This is information about the anchor stay that triggers the bundle.

- Includes the IP/OP setting of the bundle, triggering providers and the allowed and price standardized amounts.
- No information about post-discharge providers. Need to analyze claims to find them

Episode Level File Review (continued)

Initial Sort Order	Shadow Bundles Variable Name	Description
30	DROP_EPISODE	Indicates whether the episode meets at least one exclusion criteria, overlaps with a CJR Episode, or overlaps with a Clinical Episode that takes precedence over it. Please note that overlap resolution in monthly files is preliminary and subject to change as additional data are received.
31	EPI_PRE_OVERLAP	Indicates whether the episode has any prior episodes overlapping
32	EPI_POST_OVERLAP	Indicates whether the episode has any post episodes overlapping
33	DROPFLAG_NON_ACH	Indicates whether the episode was excluded because it was triggered by a non-ACH
34	DROPFLAG_EXCLUDED_STATE	Indicates whether the episode was excluded because it was triggered in an excluded state (e.g., Maryland). Please note hospitals in Maryland (CCN begins with "21" or "80") are not eligible for BPCI Advanced participation, hence why these episodes will be excluded from shadow bundles.
35	DROPFLAG_NOT_CONT_ENR_AB_NO_C	Indicates whether the episode was excluded because the beneficiary was not continuously enrolled in Medicare Part A and B; or enrolled in Part C for the episode period or the 180-day lookback period
36	DROPFLAG_ESRD	Indicates whether the episode was excluded because the beneficiary received services for End-Stage Renal Disease (ESRD) during the episode period or the 180-day lookback period
37	DROPFLAG_OTHER_PRIMARY_PAYER	Indicates whether the episode was excluded because Medicare was not the primary payer during the episode period or the 180-day lookback period

- Multiple flags indicate why certain cases are ineligible to be bundles.

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Episode Level File Review (continued)

Initial Sort Order	Shadow Bundles Variable Name	Description
56	TOT_STD_ALLOWED	The episode's total standardized allowed amount
57	TOT_RAW_ALLOWED	The episode's total raw allowed amount
58	TOT_STD_ALLOWED_OPL	The episode's total standardized allowed amount for the OP setting
59	TOT_STD_ALLOWED_IP	The episode's total standardized allowed amount for the IP setting
60	TOT_STD_ALLOWED_DM	The episode's total standardized allowed amount for the DME setting
61	TOT_STD_ALLOWED_PB	The episode's total standardized allowed amount for the PB setting
62	TOT_STD_ALLOWED_SN	The episode's total standardized allowed amount for the SNF setting
63	TOT_STD_ALLOWED_HS	The episode's total standardized allowed amount for the HS setting
64	TOT_STD_ALLOWED_HH_NONRAP	The episode's total standardized allowed amount for the HHA non-RAP setting

Detail on spending by site of care is limited – need to analyze raw claims for more detail

- Variables let you calculate the difference between standardized and real spending
- Price standardized spending is broken into subcategories of spending
- All hospital spending is combined in a single line (anchor admissions, readmissions, IRF, LTAC and PSY). Need to use claims files to disaggregate.
- All Part B spending is combined into a single line.

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Episode Level File Review (continued)

Initial Sort Order	Shadow Bundles Variable Name	Description
51	IBD_FISTULA_FLAG	Equals 1 if the Anchor stay of IBD Clinical Episode has a diagnosis code for Fistula, 0 otherwise
53	PRIOR_HOSP_W_NON_PAC_IP	Equals 1 if a Clinical Episode has a prior non-PAC IP hospitalization within the 180-days pre-Clinical Episode period, 0 otherwise
54	PRIOR_PAC_FLAG	Equals 1 if the beneficiary had any IP LTCH, SNF, HH, or IRF stay in the 180-days pre-Clinical Episode period, 0 otherwise
55	DEATH_DUR_POSTDSCHRG	Indicates whether the beneficiary died during the episode's post-discharge period
72	LTI	Equals 1 if the beneficiary was enrolled in long-term institutional care in the 180 days pre-Clinical Episode period, 0 otherwise
73	ANY_DUAL	Equals 1 if the beneficiary has either partial or full Medicare and Medicaid dual enrollment status, 0 otherwise
74	HCC1	Equals 1 if the Medicare claims indicate that the beneficiary has HIV/AIDS in the 180-days pre-Clinical Episode period, 0 otherwise
75	HCC2	Equals 1 if the Medicare claims indicate that the beneficiary has Septicemia, Sepsis, Systemic Inflammatory Response Syndrome/Shock in the 180-days pre-Clinical Episode period, 0 otherwise
157	CHF_RENAL	Equals 1 if the Medicare claims indicate that the beneficiary has both Congestive Heart Failure and Renal Disease in the 180-days pre-Clinical Episode period, 0 otherwise

- Flags for all risk factors used to model expected costs
- Includes information on chronic and acute conditions, complications, prior hospitalization, and death during discharge
- 79 distinct HCC flags

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Using Shadow Bundles to Find Efficiency Opportunities

- Comparing performance of hospitals in your market
  - Targeting hospitals for collaboration/steering patients
  - Negotiating partnerships and gainsharing arrangements
  - Understanding potential impact of model overlap
- Root cause analysis for high-cost cases
  - Patient journey to identify opportunities for quality improvement
- Identifying high performing specialist groups
  - Need to use raw claims data to identify NPIs
  - Pricing may be unreliable if case volumes are low

- Vendors and organizations like IAC can provide episode analysis based on 100% of Medicare claims

Most ACOs have Limited Volume in all but a few Episodes

Mean Number of 2021 BPCI Episodes for ACO beneficiaries by ACO Size

	Q1 3,000-8,430	Q2 8,431-13,500	Q3 13,501-24,300	Q4 24,301-220,365
Top 12 BPCI Episodes by Volume	Mean Episodes	Mean Episodes	Mean Episodes	Mean Episodes
Simple pneumonia and respiratory infections	103	150	238	669
Sepsis	96	125	212	608
Major joint replacement (P)	90	155	267	806
Congestive heart failure	51	75	131	405
Stroke	32	49	81	238
Urinary tract infection	31	40	65	194
PCI – Outpatient (P)	30	43	68	196
Cardiac arrhythmia	30	43	72	217
Renal failure	28	38	63	187
Gastrointestinal hemorrhage	27	39	67	200
Hip & femur procedures expect major joint (P)	24	29	53	156
COPD, Bronchitis, Asthma	24	31	46	129

Source: Institute for Accountable Care analysis of 2021 Medicare claims data using BPCI-Advanced episodes.

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Illustrative Profile of Hospital Spending in ACO Market

90-Day Major Joint Replacement Episode By Service

Hospital	Total	Anchor	Readmit	OPD	SNF	IRF	HHA	Clinician	Procedures
Hospital 1	$20,224	$11,932	$883	$1,102	$611	$28	$1,941	$630	$3,097
Hospital 2	$21,477	$12,510	$663	$903	$1,200	$0	$2,422	$764	$3,015
Hospital 3	$23,031	$12,152	$1,021	$1,142	$2,015	$136	$1,914	$982	$3,669
Hospital 4	$27,621	$12,490	$1,008	$1,001	$3,419	$3,687	$2,097	$1,139	$2,780

Note: Table excludes hospice, imaging, testing, Part B drugs, DME and other.

Table helps identify factors driving total episode spending

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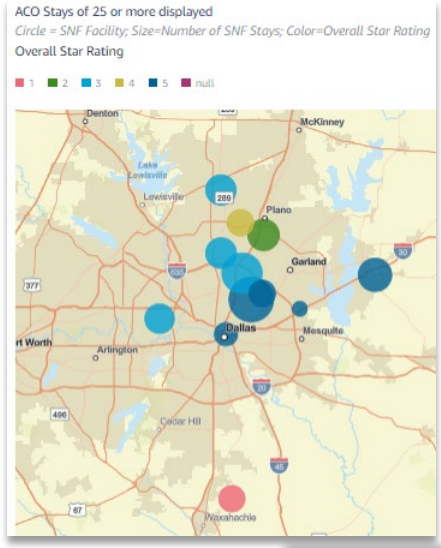
SNF Performance Drill Down

Where do your ACO patients receive SNF care?



How do the SNFs your patients use perform on cost and quality?

SNF Name	ACO Stays	Total Medicare Stays	LOS	30-Day Readmissions	SNF Stay Costs Observed	SNF Stay Costs Expected	O/E Ratio
SNF 1	76	245	20.1	30%	$11,020	$12,693	0.87
SNF 2	65	316	23.2	23%	$12,351	$12,913	0.96
SNF 3	48	355	26.7	15%	$15,916	$13,388	1.19
SNF 4	44	185	20.8	19%	$11,773	$12,850	0.92
SNF 5	36	143	24.5	14%	$13,251	$12,546	1.06

Efficiency is a ratio of observed cost (actual spending) compared to expected cost (predicted spending).

O/E < 1 → efficient O/E > 1 → inefficient

Source: Institute for accountable Care SNF Market Dashboard.

What other high-performing SNFs are in your market?

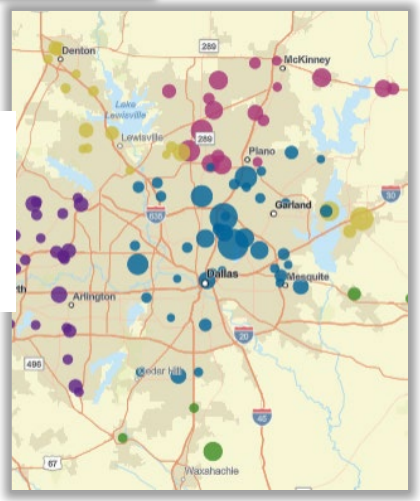


Table helps identify downstream providers affecting total episode spending

Illustrative Orthopedic Group Performance Drilldown

90-Day BPCI Major Joint Replacement Episode

Orthopedic Group	2022 Cases	Observed Cost	O/E Ratio	Readmission Rate	PAC Facility Rate
TIN 1	528	$18,423	0.90	6.4%	4.0%
TIN 2	507	$24,770	1.17	10.8%	26.9%
TIN 3	387	$16,268	0.83	0.6%	0.6%
TIN 4	295	$21,752	1.04	4.7%	13.3%
TIN 5	270	$22,647	0.97	9.2%	17.2%
TIN 6	249	$23,035	1.10	5.1%	17.7%
TIN 7	162	$22,720	1.14	1.9%	30.2%
TIN 8	86	$17,458	0.84	5.8%	5.8%

Table provides more detailed look at surgical group performance

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Questions and Discussion

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Notes on ACH Benchmark Price File

Variable Name	Description
Episode Count	Count is based on four years of historical episode data.
Avg. Observed Spending	Average national spending per episode
Historical Adjustment	*Ratio of observed to expected spending* for each hospital/episode
SBS	Sum of observed spending times historical adjustment
Patient CMI	Patient case mix index.
Peer Group Adj	Historical adjustment based on hospital size, geography teaching etc.
Peer Group Trend	Projected trend rate for each peer group
Benchmark Price Std	Benchmark price in standardized dollars (e.g., wage adjustments)
Benchmark Price Real	Benchmark price in real dollars for each hospital's market

Note: Target Price is Benchmark Price minus 2% or 3% discount.

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