MISSISSIPPI DIVISION OF
MEDICAID

Quality Incentive Payment Program (QIPP)

Potentially Preventable Complications

Methodology Supplement

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Prepared by Conduent Government Healthcare Solutions

Glossary and Acronyms

Weighted actual-to-expected ratio	The weighted actual-to-expected ratio compares the combined weight of potentially preventable complications (PPCs) that occur during inpatient admissions at your hospital to the weight of expected PPCs for an average hospital nationwide with the same mix of DRGs and severity of illness. For more information on how the actual-to-expected ratio is calculated, see Section 2.3: Measuring PPC performance.
All Patient Refined Diagnosis Related Groups (APR-DRGs)	3M grouping approach for inpatient admissions. APR-DRGs may also be referred to as DRGs.
At-risk inpatient admission	An initial inpatient stay that may or may not include one or more PPCs. At-risk inpatient admissions exclude inpatient admissions that met the criteria for global exclusions, such as stays for APR-DRGs that have a particularly high rate of expected complications (see globally excluded conditions below). In addition, each PPC has a set of PPC-specific clinical exclusions, which means that the number of at-risk admissions varies by PPC.
Corrective Action Plan (CAP)	CAPs will be required for hospitals that are above the PPC performance threshold on the July report of the second year of each PPC cycle. CAPs will be based on a template distributed by the Division of Medicaid when hospitals requiring CAPs are identified.
Globally excluded conditions	When measuring the PPC rate, several conditions which are expected to have a high rate of unpreventable complications are excluded from consideration. These conditions include major trauma, metastatic malignancies, HIV, many neonatal anomalies and COVID-19. These conditions are excluded from the consideration as at-risk inpatient stays for all PPCs except PPC 45, Post-Procedural Foreign Bodies and Substance Reaction.
Potentially preventable complications (PPCs)	PPCs identify potentially preventable complications that occur during an inpatient stay. There are 55 PPCs that are included in the Quality Incentive Payment Program (QIPP) PPC program ranging from Stroke and Intracranial Hemorrhage to Catheter-Related Urinary Tract Infection. The list of PPCs can be found in Table 4.1 at the end of this document.
QIPP	Quality Incentive Payment Program, a Division of Medicaid program that bases a portion of Mississippi Hospital Access Program (MHAP) payments on quality indicators.
Severity of Illness (SOI)	In the APR-DRG inpatient grouping algorithm, inpatient stays are assigned a severity of illness which differentiates

	the severity and resource requirements of the inpatient stay. The SOI generally reflects the extent of the patient's comorbidities and can be affected by inpatient complications.
State Fiscal Year (SFY)	Each state fiscal year runs from July 1 through the following June 30.

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1 Measuring Complications

Hospitals intend to provide patient care that is safe, evidence-driven and high quality. Nonetheless, complications of care can arise which are costly, lower quality, and lead to poor patient outcomes. Examples of such complications are hospital-acquired infections, surgical complications, and falls. The Potentially Preventable Complications (PPC) component of the Mississippi Quality Incentive Payment Program (QIPP) takes a population-based approach to measuring complications to determine if complications occur more often than would be expected. The QIPP PPC approach is based on the Potentially Preventable Complications algorithm developed by 3M™ (3M PPC). The 3M PPC algorithm identifies 57 separate complications ranging from major (e.g. Myocardial Infarction, Pulmonary Embolism) to "monitor" (Renal Failure without Dialysis and Clostridium Difficile Colitis). Not every complication identified by the 3M PPC algorithm can be prevented, even with optimal care. The population-based approach reflects the expectation that hospitals with higher-than-expected complication rates have room to improve the quality of care they provide. The 3M PPC approach is broader than the CMS Provider Preventable Conditions approach (which focuses on "never" events); is clinically specific; provides categorical results that are easy to interpret; and is designed for an all patient population. The 3M PPC approach has previously been used by Maryland and Texas.[1] This approach was chosen because we believe it provides a comprehensive view into inpatient complications.

QIPP PPC Hospital Reports provide insight into your hospital's overall PPC performance and how it compares to national averages for the same patient mix. Performance is measured using a weighted actual-to-expected ratio. The weighted actual-to-expected ratio compares your hospital's performance to the national average for a hospital with the same patient mix (see Section 2.3 for a description of how the weighted actual-to-expected ratio is calculated). The weights used in calculating the actual-to-expected ratio represent the expected relative cost of each PPC and reflect the fact that some complications are more serious and costly than others. Weighted actual-to-expected ratios greater than 1 indicate your hospital performed worse than the national average, while values less than 1 indicate your hospital performed better than the national average.

The initial QIPP PPC Hospital Report describes PPC performance during calendar years 2019 and 2020. Unlike the QIPP Potentially Preventable Hospital Return program, the QIPP PPC program uses two years of data to measure PPC performance; using two years of data improves the stability of the measurement from reporting period to reporting period. The first year of QIPP PPC reports are designed to increase awareness of your hospital's PPC performance. After the first year of reporting, the Division of Medicaid will identify hospitals that have the most room to improve. These hospitals will be required to submit a corrective action plan (CAP) that demonstrates the steps they will take to reduce their hospital's PPC performance. Hospitals required to submit CAPs will have two years to implement their CAPs and improve their PPC performance before financial penalties are applied.

2 Methodology Overview

2.1 Data

Each QIPP PPC report will cover a two-year period. QIPP PPC reports will be provided on a quarterly basis; each report will advance the reporting period by three months. Reports will be distributed six months after the end of the reporting period. For example, the first QIPP PPC report will cover calendar years 2019 and 2020 and will be released during the first week of July 2021. This delay period allows for the submission and processing of the inpatient claims that provide the data for the 3M PPC algorithm.

2.2 Identifying PPCs

The 3M PPC methodology is an algorithm based on claims data submitted by hospitals for payment. PPCs are identified based on:

- a combination of principal or secondary diagnosis, sometimes in combination with length of stay criteria
- procedures that were performed within a specific time period relative to the admission date, and
- a combination of secondary diagnoses that are not present on admission.

Although complex, the algorithm is available through the 3M PPC Definitions manual for inspection by hospitals, health plans, and others with an interest in the details of its operation. Mississippi hospitals serving Medicaid patients can access the 3M PPC Definitions manual at www.aprdrgassign.com. For information on creating an aprdrgassign account, please email QIPP@medicaid.ms.gov.

Not every inpatient stay is considered at-risk for hospital complications. In studies of hospital complications, an "at-risk admission" refers to an inpatient stay that may or may not include a complication of care, but that doesn't meet the exclusion criteria. Inpatient stays can be excluded due to "global" or PPC-specific clinical characteristics. Some types of inpatient stays are at high risk for unavoidable complications, such as stays for HIV/AIDS, major or metastatic cancer or multiple traumas. Because complications during such stays are likely unavoidable, these stays are globally excluded from consideration for PPC identification. The exception to the global exclusions is PPC 45, post-procedural foreign bodies and substance reaction. PPC 45 is assigned regardless of global exclusions if the stay meets the appropriate diagnostic criteria. Global exclusions are defined by a combination of APR-DRG, age, diagnosis codes, and present on admission indicators. For a complete list of criteria that are used to assign global exclusions, see the section on "Identify globally excluded admissions" in the 3M PPC definitions manual.

In addition to global exclusions, the PPC algorithm considers PPC-specific exclusions based on patient age and clinical characteristics. For example, post-operative complications are specific to surgical inpatient stays; non-surgical inpatient stays would not be considered at-risk for these PPCs. For this reason, the number of at-risk inpatient admissions varies for each PPC. The PPC List tab in your hospital's PPC report indicates how many inpatient stays were considered at risk for each PPC. For more information on how PPC exclusions are identified, see the section on "Apply PPC-specific exclusion criteria" in the 3M PPC definitions manual.

All inpatient stays that did not qualify for a global exclusion and did not meet the PPC-specific exclusion criteria are considered at-risk for a PPC. Each inpatient stay can be at-risk for more than one PPC and can have more than one PPC assigned. However, in cases where an inpatient stay meets the criteria for multiple related PPCs, the more serious PPC is assigned.

There are 57 unique PPCs ranging from PPC 01, Stroke and intracranial hemorrhage to PPC 66, Catheter-related urinary tract infection (evolution of the PPC algorithm has led to discontinuation of some PPCs over time, leading to non-contiguous PPC numbers). Two of the PPCs, 21 (Clostridium Difficile Colitis) and 24 (Renal Failure without Dialysis) are not included in hospital performance measurement; these PPCs tend to be coded inconsistently from hospital-to-hospital making it difficult to compare hospital performance. These PPCs are included in a "Monitor only" section of the PPC report for your review. While comparing performance on these "monitor only" PPCs across hospitals is not meaningful, tracking spikes or sudden changes in these PPCs over time can provide useful insights into your hospital's quality of care. A full list of PPCs can be downloaded from the Division of Medicaid Quality Improvement website: https://medicaid.ms.gov/value-based-incentives/.

2.3 Measuring PPC Performance

The most straightforward way to evaluate complications is to measure the complication rate, calculated as the number of PPC occurrences divided by the number of stays at-risk for a PPC. We report the PPC rate for each type of complication on the PPC List tab of your hospital's report. However, because the number of at-risk stays varies for each PPC, the overall PPC rate in a population is difficult to interpret, making it unsuitable to capture overall hospital performance. In addition, the expected rate of PPCs for a given hospital varies based on the mix of admission APR-DRGs, with more acute inpatient stays expected to experience more complications. Thus, a high PPC rate could reflect a hospital with more complications than expected, or it could simply reflect a hospital that treats a more acute population.

In order to control for the effect of inpatient acuity on the number of complications, we measure overall PPC performance by comparing the PPCs that occurred at a given hospital to the PPCs that were expected to occur based on national PPC rates for the same mix of DRGs and severity of illness (SOI). The national PPC rates are published by 3M and are based on a nationwide dataset of inpatient stays from Medicare, Medicaid and commercial payers. This dataset specifies the expected rate of PPCs for each PPC/DRG/SOI combination. By aggregating over the hospital's mix of DRG/SOIs, we can calculate the expected number of each PPC. Comparing the actual number of PPCs to the expected number of PPCs gives us the actual-to-expected ratio (A/E ratio). The A/E ratio tells us whether there were more of a given PPC than would be expected based on national averages. A/E ratios greater than 1 indicate there were more PPCs than expected based on the national average, while A/E ratios less than 1 indicate there were fewer PPCs than expected.

To measure overall hospital performance, we aggregate both the actual and expected PPCs across all PPC types. However, some PPCs are more serious and costly than others and should have a larger influence on measures of hospital performance. For example, PPC 35, Septicemia and Other Severe Infections, would be expected to be more costly and have worse patient outcomes than PPC 65, Urinary Tract Infection. We use the 3M estimates of relative PPC cost (adjusted for the average APR-DRG casemix in the MS Medicaid population) as weights in the aggregation of actual and expected PPCs. A PDF containing a description of each PPC and its relative cost weight can be found on the Division of Medicaid Quality program website: https://medicaid.ms.gov/value-based-incentives/.

Hospital overall performance is measured as a weighted sum of actual PPCs divided by the weighted sum of expected PPCs and is referred to as the weighted A/E ratio. Table 2.3.1 provides an example of this approach using 3 PPCs. For each PPC, the PPC weight is multiplied by the number of times that PPC occurred, resulting in the "Actual PPC Weight." Next, the PPC weight is multiplied by the number of expected PPC occurrences to calculate the "Expected PPC Weight." The Weighted A/E Ratio is calculated as the Actual PPC Weight divided by the Expected PPC weight. As with the unweighted A/E ratio, weighted A/E ratios greater than 1 indicate room to improve, while A/E ratios less than 1 indicate performance that was better than the national average. Each hospital's PPC report provides the overall weighted A/E ratio as the primary measure of hospital performance on the hospital summary tab. The PPC List tab provides the number of actual and expected PPCs for each PPC type and calculates the number of "excess" PPCs (actual PPCs – expected PPCs). In addition, the PPC List tab provides the relative cost weight for each PPC type.

Table 2.3.1

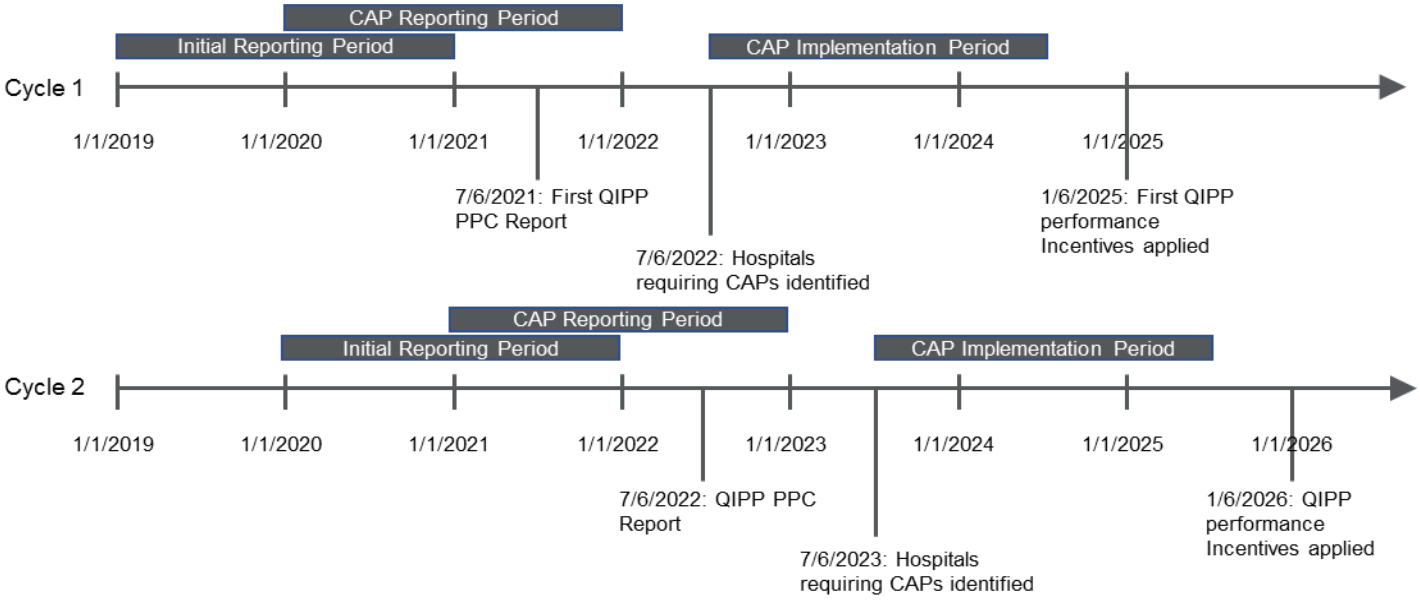
Example of Overall Hospital Performance Calculation

PPC	Description	Adjusted PPC Weight	Actual Number of PPCs	Actual PPC Weight (Weight X Number of PPCs)	Expected Number of PPCs	Expected PPC Weight (Weight X Expected Number of PPCs)	Weighted A/E Ratio (Actual PPC Weight/ Expected PPC Weight)
01	Stroke & Intracranial Hemorrhage	0.63526	8	5.08	7.9	5.03	1.01
02	Extreme CNS Complications	0.32560	2	0.65	2.8	0.91	0.71
03	Acute Pulmonary Edema and Respiratory Failure without Ventilation	0.32113	24	7.71	31.8	10.20	0.76
Overall Performance:			**34**	**13.44**	**42**	**16.14**	**0.83**

2.4 Timeline and Milestones

PPC performance reporting will occur in four-year cycles. A PPC cycle is a period of four years that includes an initial year of "baseline" reports followed by identification of hospitals that need to submit a corrective action plan, two years for corrective action plan implementation plus a six month runout period, and then identification of performance incentive payments. A new cycle starts each state fiscal year (SFY). The cycles overlap such that the second cycle's initial reporting year will cover the same time period as the first cycle's first corrective action plan implementation year. Each QIPP PPC report will list your hospital's performance for each of the currently active cycles.

Chart 1: PPC Timeline



2.5 Performance Incentives

PPC performance accounts for 10% of your hospital's QIPP funds in SFY 2022 (40% is determined by Potentially Preventable Hospital Return performance, and 50% is aligned with the Hospital Information Network initiative).

The at-risk amount of your hospital's QIPP PPC payments depend on your hospital's weighted actual-to-expected ratio. The higher the weighted actual-to-expected ratio, the more of your QIPP PPC funds are at-risk.

	Low Range	High Range	At Risk % of QIPP PPC funds
Weighted Actual-to-Expected Ratio:		<= 1.000	0%
	>1.000	<=1.100	25%
	>1.100	<=1.200	50%
	>1.200	<=1.300	75%
	>1.300		100%

For the first four quarters of each PPC cycle, hospital representatives are required to attest that they have received and reviewed the QIPP PPC report to receive their QIPP PPC funds. Hospitals that are required to submit a corrective action plan (CAP) will be identified based on the July report of the second year in each cycle. CAPs are due by the following September 1 and should follow the template distributed with the QIPP PPC report. Hospitals that are required to submit a CAP but fail to do so by the CAP deadline will not receive their quarterly QIPP PPC funds. Hospitals with CAPs have two years to improve their QIPP PPC performance by 1% to receive 50% of their at-risk funds, or 2% to receive 100% of their at-risk funds. Hospital will need to meet all criteria of all currently active cycles to receive all their QIPP PPC funds.

3 Interpreting Your Hospital's QIPP PPC Hospital Report

Your hospital's report contains six separate tabs: Cover, Performance Measurement, Hospital Summary, Chart Performance, PPC List Cycle 1, and PPC Detail Cycle 1. This section of the Methodology summary contains an overview of each section.

3.1 Cover

The cover tab identifies your hospital's current performance and contains overview information helpful in reviewing the rest of the report. Note the glossary of key terms at the bottom of the tab; this glossary will help you understand the terminology we use throughout the report.

3.2 Performance Measurement

The performance measurement tab describes QIPP cycles and the performance incentive thresholds, as well as listing the key dates and performance requirements for each of the currently active PPC cycles.

3.3 Hospital Summary

The hospital summary tab provides an overview of your hospital's performance in each of the currently active PPC cycles. The notes section at the top provides information about each of the metrics in the hospital performance section. The Hospital Performance section below the notes contains several PPC measurements specific to your hospital. Each quarter in a given cycle is listed so you can see how your PPC performance is changing over time. The following bullet points describe each of the PPC measurements.

- The number of total inpatient admissions indicates the number of inpatient stays that were included in the analysis, prior to determination of whether an inpatient stay was at risk for a PPC. Not all inpatient stays were at risk for each PPC. Inpatient admissions where the patient is expected to be at high risk for unavoidable complications, such as patients with metastatic malignancy, HIV/AIDS, or major trauma, were excluded from the group of at-risk inpatient stays for all PPCs except PPC 45, Post-Procedural Foreign Bodies and Substance Reaction. COVID-19 inpatient stays are also excluded from consideration as at-risk admissions. In addition to these global exclusions, specific clinical logic was applied for each PPC to determine whether a given inpatient stay was at-risk for that particular PPC. The number of at-risk stays therefore differed for each PPC, making a global count of at-risk stays such as that used in the Potentially Preventable Hospital Returns (PPHR) component of the QIPP program meaningless. For more information about the number of at-risk admissions for individual PPCs, see the PPC List tab.
- The number of potentially preventable complications listed on the hospital summary tab indicates how many PPCs were identified during the reporting period at your hospital. Note that more than one PPC can occur during a given inpatient stay; inpatient stays with more than six PPCs are excluded from analysis as they may represent catastrophic illness and the PPCs may be less likely to be preventable. The count of PPCs includes all PPC types except PPC 21, clostridium difficile colitis, and PPC 24, renal failure without dialysis. These two PPCs represent

complications for which there is significant coding variation across hospitals, making PPC performance difficult to interpret.

- The PPC rate varies by PPC. A PPC rate is calculated by dividing the number of PPCs identified during the reporting period by the number of at-risk inpatient admissions. Because the number of at-risk admissions is different for each PPC based on PPC-specific clinical exclusions, reporting the PPC rate for each PPC is more meaningful than reporting an overall PPC rate. For PPC-specific rates, see the PPC List tab.
- The actual PPC weight metric reflects the overall PPC performance at your hospital, weighted using 3M's relative cost weights. PPCs vary in how serious and costly they are to treat. The weights reflect the expected relative cost of each PPC and are based on the fact that some PPCs require more resources to treat, and are associated with worse outcomes, than others. PPC weights are based on 3M national relative cost weights, adjusted for a MS Medicaid population. For more information on PPC cost weights, see section 2.3.
- The expected PPC weight reflects the expected PPC performance for the DRG/SOI mix at your hospital. The expected number of PPCs is based on estimated national PPC norms from a Medicare, Medicaid and commercial population. The expected PPCs are weighted using 3M's relative cost weights.
- The weighted actual-to-expected ratio compares the weighted value of PPCs at your hospital to the weighted expected value based on the national norms published by 3M. Weighted actual-to-expected values less than the statewide target indicate your hospital performed better than the Mississippi average, while values greater than the statewide target indicate that your hospital has room to improve. Note that weighted actual-to-expected ratios are not calculated for low volume hospitals that have fewer than 10 expected PPCs.

3.4 Chart Performance

The chart performance tab has one chart for each of the current reporting cycles. Each chart shows the weighted actual-to-expected ratio over time since the beginning of the cycle. The grey points represent the statewide target. If your hospital is performing better than the statewide target, the orange points will be below the gray points. If your hospital's performance is above the gray points at the beginning of the second year of the cycle, your hospital will be required to submit a corrective action plan. If performance does not then improve by X% over the next two years, your hospital will lose the at-risk portion of the QIPP PPC funds.

3.5 PPC List

55 of the 57 PPCs are included in the MS Medicaid PPC performance metric (PPC 21, Clostridium Difficile Colitis and 24, Renal Failure without Dialysis, are excluded due to statistical unreliability). The PPC list tab provides details for each of these PPC types, including

- the PPC description
- the PPC group
- the MS Medicaid PPC weight, which reflects the relative cost of each PPC
- the number of inpatient stays during the reporting period that were at risk for that specific PPC (each PPC has its own unique set of clinical exclusion criteria)

- the number of times that PPC occurred
- the rate of occurrence for the PPC
- the number of expected occurrences for the PPC type, based on the 3M national rate of occurrence for the same mix of DRGs/SOI
- the number of excess PPCs, calculated as the number of times a PPC type occurred minus the number of expected occurrences for that PPC type. Excess PPCs in this column are highlighted red if there more occurrences than expected, and green if there were fewer occurrences than expected
- the excess PPC weight, calculated as the actual PPC weight (number of PPCs multiplied by PPC weight) minus the expected PPC weight. Excess PPC weight in this column is highlighted red if the PPC weight was higher than expected, and green if the PPC weight was lower than expected.

The PPC list can be sorted by the number of excess PPCs or by the excess PPC weight (actual PPC weight – expected PPC weight) to identify the PPCs where your hospital could improve, or to identify those PPCs where your hospital is performing well.

The PPC List tab also provides details for two PPC types that are not included in the performance metric: PPC 21, Clostridium Difficile Colitis and PPC 24, Renal Failure without Dialysis. Diagnostic coding for these two PPC types is highly variable across hospitals, which means there is significant performance variability. The Division of Medicaid recommends that you monitor performance on these PPCs over time and investigate any unexpected spikes in the occurrence of these PPCs.

3.6 PPC Detail

The PPC detail tab lists information for the inpatient stays that included a PPC. Information includes the medical record number and/or the managed care identification number, the patient Medicaid identifier, dates of service, the admission APR-DRG and DRG description, the number and description of the PPC, the MS Medicaid cost weight for the PPC, and whether the inpatient stay occurred during the most recent quarter. Note that some inpatient stays include more than one PPC; in such cases the inpatient stay is listed multiple times, once for each unique PPC assigned to the stay.

4 Statewide Performance

To provide context for your hospital's results, we analyzed MS Medicaid statewide performance during calendar years (CYs) 2019 and 2020. During this time period, MS Medicaid patients experienced 2,665 PPCs, with a total PPC weight of 1,747 (average PPC weight of 0.66). In comparison, national norms suggest that 2,719 PPCs with a combined weight of 1,593 (average PPC weight of 0.59) would be expected for the same mix of DRGs/SOI over that time period. Overall, the PPC weighted actual-to-expected ratio was 1.10, or 10% higher than expected. This value suggests that, although there were slightly fewer PPCs in MS Medicaid than would be expected based on national norms, the PPCs that occurred tended to have higher weights than the average PPC nationally. The higher weights mean that PPCs had a larger impact on MS Medicaid stays than would be expected based on national averages.

Table 4.1 illustrates statewide performance on the 55 PPCs that are included in the QIPP PPC performance metric. PPC 65, Urinary Tract Infection, was the most common PPC, with 223 instances in the baseline dataset; performance on this PPC was somewhat better than expected, with an actual-to-expected ratio of 0.89. PPC 35, Septicemia and Severe Infections was the most expensive PPC, due to both a high prevalence and a higher-than-average relative cost weight. Performance on PPC 35 (Septicemia and Severe Infections) was worse than expected, with 13% more instances than were expected based on national averages

The initial QIPP PPC statewide target will be a weighted actual-to-expected ratio of 1.0, setting a goal of 10% better performance than MS-statewide performance during the baseline period. Providers with a weighted actual-to-expected ratio higher than 1.0 on the July 2022 report will be asked to submit a corrective action plan designed to help them improve their performance by 2% before the performance incentive measurement report, distributed in January 2025.

Table 4.1
List of PPCs Statewide in State Fiscal Years 2019 and 2020

PPC	Description	Group	MS-Specific PPC Weight	At Risk Stays	Number of PPCs	Statewide PPC Rate	Expected Number of PPCs	A/E Ratio
01	Stroke & Intracranial Hemorrhage	Cardiovascular-Respiratory Complications	0.63526	79,724	70	0.088%	66.98	1.05
02	Extreme CNS Complications	Extreme Complications	0.32560	75,519	41	0.054%	22.77	1.80
03	Acute Pulmonary Edema and Respiratory Failure without Ventilation	Cardiovascular-Respiratory Complications	0.32113	69,746	196	0.281%	229.46	0.85
04	Acute Pulmonary Edema and Respiratory Failure with Ventilation	Extreme Complications	1.20224	69,762	91	0.131%	76.61	1.19
05	Pneumonia & Other Lung Infections	Cardiovascular-Respiratory Complications	0.91150	36,267	127	0.351%	108.42	1.17
06	Aspiration Pneumonia	Cardiovascular-Respiratory Complications	0.65110	70,307	51	0.073%	69.63	0.73
07	Pulmonary Embolism	Cardiovascular-Respiratory Complications	0.67713	78,811	39	0.050%	30.00	1.30
08	Other Pulmonary Complications	Cardiovascular-Respiratory Complications	0.59365	63,792	46	0.072%	46.57	0.99
09	Shock	Extreme Complications	0.74609	79,882	164	0.205%	186.41	0.88
10	Congestive Heart Failure	Cardiovascular-Respiratory Complications	0.29625	72,909	17	0.023%	141.12	0.12
11	Acute Myocardial Infarction	Cardiovascular-Respiratory Complications	0.28674	80,074	32	0.040%	93.87	0.34
13	Other Acute Cardiac Complications	Cardiovascular-Respiratory Complications	0.26061	78,588	5	0.006%	22.98	0.22
14	Ventricular Fibrillation/Cardiac Arrest	Extreme Complications	0.35868	72,730	190	0.261%	135.70	1.40
15	Peripheral Vascular Complications except Venous Thrombosis	Cardiovascular-Respiratory Complications	1.06054	81,470	17	0.021%	16.62	1.02

Table 4.1
List of PPCs Statewide in State Fiscal Years 2019 and 2020

PPC	Description	Group	MS-Specific PPC Weight	At Risk Stays	Number of PPCs	Statewide PPC Rate	Expected Number of PPCs	A/E Ratio
16	Venous Thrombosis	Cardiovascular-Respiratory Complications	0.87600	42,776	29	0.068%	26.48	1.10
17	Major Gastrointestinal Complications without Transfusion	Gastrointestinal Complications	0.87411	79,839	36	0.045%	29.39	1.23
18	Major Gastrointestinal Complications with Transfusion	Gastrointestinal Complications	1.07683	78,055	15	0.019%	14.76	1.02
19	Major Liver Complications	Gastrointestinal Complications	0.51088	80,309	37	0.046%	29.85	1.24
20	Other Gastrointestinal Complications	Gastrointestinal Complications	0.76239	80,545	55	0.068%	70.53	0.78
23	Genitourinary Complications except UTI	Other Medical and Surgical Complications	0.41652	82,168	23	0.028%	20.26	1.14
25	Renal Failure with Dialysis	Extreme Complications	2.04101	73,347	24	0.033%	10.23	2.35
26	Diabetic Ketoacidosis & Coma	Other Medical and Surgical Complications	0.37229	88,132	20	0.023%	5.99	3.34
27	Post-Hemorrhagic & Other Acute Anemia with Transfusion	Other Medical and Surgical Complications	0.68612	38,213	83	0.217%	50.60	1.64
28	In-Hospital Trauma and Fractures	Other Medical and Surgical Complications	0.27030	82,864	7	0.008%	9.87	0.71
29	Poisonings except from Anesthesia	Malfunctions, Reactions, etc.	0.09493	80,792	9	0.01z`1%	8.96	1.00
30	Poisonings due to Anesthesia	Malfunctions, Reactions, etc.	0	83,428	0	0	0.03	0
31	Pressure Ulcer	Other Medical and Surgical Complications	1.92059	28,608	23	0.081%	9.04	2.54
32	Transfusion Incompatibility Reaction	Malfunctions, Reactions, etc.	0.29208	102,982	0	0	0.10	0
33	Cellulitis	Infectious Complications	0.64150	71,369	41	0.057%	44.53	0.92
34	Other Infections	Infectious Complications	0.92758	34,470	38	0.110%	14.64	2.60

Table 4.1
List of PPCs Statewide in State Fiscal Years 2019 and 2020

PPC	Description	Group	MS-Specific PPC Weight	At Risk Stays	Number of PPCs	Statewide PPC Rate	Expected Number of PPCs	A/E Ratio
35	Septicemia & Severe Infections	Infectious Complications	0.87175	23,341	175	0.753%	155.45	1.13
36	Acute Mental Health Changes	Other Medical and Surgical Complications	0.23441	54,395	0	0	0.46	0
37	Post-Procedural Infection & Deep Wound Disruption without Procedure	Perioperative Complications	0.96154	13,569	25	0.185%	20.85	1.20
38	Post-Procedural Infection & Deep Wound Disruption with Procedure	Perioperative Complications	1.73189	14,026	3	0.021%	2.22	1.35
39	Reopening Surgical Site	Perioperative Complications	1.17945	22,874	40	0.175%	27.38	1.46
40	Peri-Operative Hemorrhage & Hematoma without Hemorrhage Control Procedure or I&D Procedure	Perioperative Complications	0.51024	27,008	75	0.278%	80.50	0.93
41	Peri-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Procedure	Perioperative Complications	0.72173	25,783	18	0.070%	13.42	1.34
42	Accidental Puncture/Laceration during Invasive Procedure	Perioperative Complications	0.43767	98,017	71	0.072%	51.93	1.37
44	Other Surgical Complications - Moderate	Other Medical and Surgical Complications	0.76064	23,870	11	0.046%	7.53	1.46
45	Post-Procedural Foreign Bodies and Substance Reaction	Perioperative Complications	0.42098	151,183	2	0.001%	2.43	0.82
47	Encephalopathy	Other Medical and Surgical Complications	0.51646	65,750	73	0.111%	91.40	0.80
48	Other Complications of Medical Care	Other Medical and Surgical Complications	0.75530	82,747	54	0.065%	19.70	2.74
49	Iatrogenic Pneumothorax	Malfunctions, Reactions, etc.	0.34419	94,898	10	0.011%	14.42	0.69

Table 4.1
List of PPCs Statewide in State Fiscal Years 2019 and 2020

PPC	Description	Group	MS-Specific PPC Weight	At Risk Stays	Number of PPCs	Statewide PPC Rate	Expected Number of PPCs	A/E Ratio
50	Mechanical Complication of Device, Implant & Graft	Malfunctions, Reactions, etc.	0.81686	81,878	39	0.048%	32.58	1.20
51	Gastrointestinal Ostomy Complications	Malfunctions, Reactions, etc.	1.07953	82,282	36	0.044%	17.78	2.02
52	Infection, Inflammation & Other Complications of Devices, Implants or Grafts except Vascular Infection	Malfunctions, Reactions, etc.	0.78357	81,873	51	0.062%	63.57	0.80
53	Infection, Inflammation and Clotting Complications of Peripheral Vascular Catheters and Infusions	Malfunctions, Reactions, etc.	0.37147	81,271	12	0.015%	10.78	1.11
54	Central Venous Catheter-Related Infection	Malfunctions, Reactions, etc.	2.08350	92,271	20	0.022%	11.24	1.78
59	Medical & Anesthesia Obstetric Complications	Obstetrical Complications	0.08851	39,646	109	0.275%	152.77	0.71
60	Major Puerperal Infection and Other Major Obstetric Complications	Obstetrical Complications	0.75753	37,029	15	0.041%	18.90	0.79
61	Other Complications of Obstetrical Surgical & Perineal Wounds	Obstetrical Complications	0.14342	39,375	56	0.142%	55.75	1.00
63	Post-Procedural Respiratory Failure with Tracheostomy	Extreme Complications	5.32207	493	5	1.166%	3.91	1.28
64	Other In-Hospital Adverse Events	Other Medical and Surgical Complications	0.00000	82,711	10	0.012%	14.69	0.68
65	Urinary Tract Infection	Infectious Complications	0.47636	77,028	223	0.290%	249.36	0.89
66	Catheter-Related Urinary Tract Infection	Infectious Complications	0.56232	91,389	6	0.007%	7.24	0.83
Total			**0.65542**	**NA**	**2,665**	**NA**	**2,719**	**1.10**

Notes:

1. MS-specific PPC weights are based on national estimates of relative cost published by 3M, adapted for use in a MS Medicaid population.

Table 4.1
List of PPCs Statewide in State Fiscal Years 2019 and 2020

PPC	Description	Group	MS-Specific PPC Weight	At Risk Stays	Number of PPCs	Statewide PPC Rate	Expected Number of PPCs	A/E Ratio

2. At risk stays refer to any inpatient stay that may or may not include a PPC. At risk stays do not meet the global exclusion criteria (except for PPC 45), and do not meet the PPC-specific clinical exclusion criteria. Because the clinical exclusion criteria vary by PPC, there is a different number of at-risk stays for each PPC.

3. The expected number of PPCs is based on national estimates of PPC rates (published by 3M) for the same mix of DRGs and severities of illness as are found in the MS Medicaid population.

4. The Actual-to-Expected Ratio (A/E Ratio) is based on the actual number of each PPC divided by the expected number of each PPC. The A/E Ratio is the same as the cost-weighted A/E Ratio for individual PPCs. The overall cost-weighted A/E ratio reflects the different weights assigned to each PPC.

Notes

[1] See, for example:

- Texas: Texas Health and Human Services. “Hospital Quality-Based Potentially Preventable Readmissions (PPH) and Potentially Preventable Complications (PPC) Program Refresher”, January 30, 2018. Accessed 2/19/2021 at https://hhs.texas.gov/sites/default/files/documents/about-hhs/process-improvement/quality-efficiency-improvement/2018-01-30-refresher-webinar-V02.pdf
- Maryland: Health Services Cost Review Commission. “Final Recommendations for the Maryland Hospital-Acquired Conditions Program for Rate Year 2022” February 12, 2020