Arkansas Perinatal Episode of Care

In 2012, Arkansas established statewide episode of care payment models under its Arkansas Health Care Payment Improvement Initiative. The perinatal episode was selected for early implementation due to the high volume of maternity care and the ability to monitor key quality metrics associated with the episode. Arkansas ended the payment model in 2021.[1]

The goal of the perinatal episode was to encourage patient-centered care throughout pregnancy, reduce variation in the cost and quality of pregnancy care, and increase provider accountability for improving the quality and efficiency of perinatal care. The model was designed to create payment incentives for providers to manage costs for the entire episode of care. Accountable providers were held financially responsible when their episode costs were higher than annual state-developed thresholds.[2] Conversely, providers were eligible for additional payments when aggregate costs were under state targets, as long as certain quality metrics were met.

Under contract with MACPAC, RTI International conducted interviews and examined five states (Arkansas, Connecticut, Colorado, North Carolina, and Tennessee) implementing value-based payment initiatives to improve maternity care in Medicaid. This case study includes an overview of the Arkansas perinatal model, details how the model is defined, describes the payment methodology, and summarizes the available research on the model's effects on cost and quality.[3] MACPAC has also published case studies for the other study states, as well as an issue brief summarizing the key findings (MACPAC 2021a–2021e).

Overview

The perinatal episode established a value-based payment arrangement, which subjected accountable providers to gainsharing and risk-sharing payments based on costs and quality. Arkansas designated the accountable provider as the individual or group practice performing the delivery. While all Medicaid providers were required to participate, not all perinatal episodes were included in the model. That is, high-risk and other pregnancies were excluded.

The model was applied retrospectively and the accountable provider and all other providers received fee-for-service Medicaid payments for perinatal services delivered throughout the episode. Annually, Arkansas would calculate the accountable provider's average risk-adjusted episode cost and performance on selected quality measures to determine payments. If the accountable provider had low costs (i.e., costs below what the state considered to be commendable) and met quality thresholds, they received gainsharing payments. If the accountable provider had costs that were high (i.e., costs above what the state considered to be acceptable), they had to make a risk-sharing payment. Providers with costs above the commendable level but within the acceptable level were not eligible for gainsharing payments but not subject to risk-sharing payments.

Design Parameters

Duration. The perinatal episode was triggered by a live birth on a facility claim. The episode began 40 weeks (280 days) prior to delivery and ended 60 days after delivery.

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Services included. The episode included the following services provided within the duration of the episode: all medical services with a pregnancy-related diagnosis code; and medical and diagnostic services for pregnancy-related screenings and procedures, including chlamydia screening, gestational diabetes screening, Group B streptococcus screening, Hepatitis B screening, HIV screening, whooping cough vaccination, ultrasound, amniocentesis, and genetic screening (AR Department of Human Services 2020).

Market participation. Arkansas mandated participation in Medicaid, but the program was voluntary for commercial health plans (AR Medicaid n.d., ACHI 2019).[4]

Provider participation. The state required provider participation for those who contracted with Medicaid. If a commercial health plan chose to participate, then the providers contracting with that plan would participate. The accountable provider was the provider or group performing the delivery. A provider could bill as part of a group and also as an individual provider during the same measurement year.[5]

Patient population and attribution. Patients were retrospectively attributed to the provider who performed the delivery using the contracting entity or tax identification number on the delivery facility claim.

Exclusions. Approximately half of all Medicaid-funded births were excluded from the episode model. Episodes were excluded for a variety of reasons:

- Prenatal care was not adequate or rendered less than 60 days prior to delivery.
- The episode could not be assigned to an accountable provider.[6]
- There were clinical complications or comorbidities during pregnancy (AR Medicaid n.d.).[7]

According to Arkansas Medicaid, four of the top five reasons for excluding a case were due to administrative rules (e.g., episode could not be assigned an accountable provider). These administrative exclusions accounted for 63 percent of excluded episodes in performance year 2019. An additional 10 percent of the excluded episodes were triggered due to limited prenatal care.[8] Exclusions due to comorbidities and clinical complications accounted for smaller shares of exclusions (Golden and Gallagher 2020). In 2015, Medicaid reported annual yearly volume of 7,230 perinatal episodes (Martin et al. 2019, ACHI 2017).

Payment Methodology

Arkansas providers received fee-for-service payments for care provided during the perinatal episode. On a retrospective basis, the state would calculate each accountable provider's average risk-adjusted episode cost and performance on select quality measures to determine eligibility for gainsharing or risk-sharing payments. Each year the model was in effect, the majority of accountable providers did not see a gainsharing or risk adjustment to their payment because their episode costs were within the acceptable range.

Cost thresholds

Arkansas Medicaid set two statewide cost thresholds (i.e., commendable and acceptable) annually based on prior year spending (Table 1).

Accountable providers fell into one of three categories based on their average risk-adjusted costs compared to the following state-established thresholds:

- The provider had commendable performance if costs were lower than the commendable threshold, which made them eligible for a gainsharing payment.
- The provider had risk-sharing performance if costs were above the acceptable threshold, which subjected them to a risk-sharing payment.
- The provider had acceptable performance if costs fell between the thresholds, which resulted in no payment change.

TABLE 1. Arkansas Perinatal Episode of Care Payment Model Structure, 2020

Performance level	Average episode cost	Payment
Commendable	<$3,245	Gainsharing payment eligible
Acceptable	3,245 –3,852	No change to payment
Risk sharing	>3,852	Risk-sharing payment owed

Notes: The performance levels were set by Arkansas Medicaid. Average episode cost is risk adjusted. Gainsharing payments are only made if provider also meets quality metrics.
Source: AR Medicaid n.d.

Commendable performance. Accountable providers with costs below the commendable threshold received a gainsharing payment if they also met certain quality metrics (discussed below). That payment was equal to 50 percent of the difference between the commendable threshold and their cost, multiplied by the number of valid episodes in the reporting period. Gainsharing payments were limited to $2,000 per provider (AR Medicaid n.d.).

As an example, an accountable provider averaged $3,100 in risk-adjusted costs per perinatal episode, which was $145 lower than the 2020 commendable threshold of $3,245. During the performance year, she was the accountable provider for 20 episodes resulting in a total savings of $2,900 below the commendable level. If this provider also met all three quality metrics, she would receive 50 percent of the savings resulting in a gainsharing payment of $1,450, (Figure 1).

FIGURE 1. Example of Gainsharing Calculation

Source: RTI 2021

Risk-sharing performance. Accountable providers with average risk-adjusted episode costs above the acceptable threshold owed a risk-sharing payment. That payment was equal to 50 percent of the difference

between the acceptable threshold and their average risk-adjusted episode costs, multiplied by their number of valid episodes in the reporting period (ACHI 2019, Lally 2013). That dollar amount was referred to as the risk-sharing penalty.

As an example, an accountable provider averaged $4,000 in risk-adjusted costs per perinatal episode, which was $148 higher than the 2020 acceptable threshold of $3,852. During the performance year, he was the accountable provider for 20 episodes resulting in $2,960 in costs above the acceptable threshold. The provider was accountable for 50 percent of the excess cost, resulting in a risk-sharing penalty payment of $1,480 (Figure 2).

FIGURE 2. Example of Risk-sharing Calculation

Source: RTI 2021

Acceptable performance. Accountable providers with average risk-adjusted costs between the acceptable and commendable levels were not eligible for gainsharing payment and were not subject to a risk-sharing penalty (ACHI 2019).

Risk adjustment. Average episode costs were risk adjusted to account for enrollee characteristics, and to avoid incentives for adverse selection of patients. Arkansas Medicaid identified risk factors using relevant literature and the input of providers. Risk factors were tested for statistical and clinical significance to identify a reasonable number of factors with meaningful explanatory power for predicting total spending per episode (AR Medicaid n.d.). A total of 21 risk factors determined adjustments to total costs of the perinatal episode, including diabetes, hemorrhage, twin pregnancy, and prolonged labor. Note that these factors are different from conditions that resulted in episodes being excluded from the model (AR Medicaid n.d.).

Quality measures

To be eligible for gainsharing payments, an accountable provider must have met the gainsharing threshold for three quality measures. The scores on these measures, which included screening for HIV, Group B streptococcus, and chlamydia, were calculated annually for all episodes assigned to an accountable provider. An additional 15 quality measures were tracked and reported back to providers, but not tied to gainsharing (Table A-1).

Model Effects

Over the period of performance (2012-2019), overall costs remained relatively constant, while the number of providers meeting the commendable threshold declined. Performance on quality measures was mixed, with improvement reported for one measure.[9]

Cost savings

In the first full year of implementation (2012), total spending across all episodes included in the Arkansas demonstration decreased by 3.8 percent, or $396, relative to control states. Evaluators did not separately examine the effects of the perinatal episode (Carroll et al. 2018).

The number of valid episodes declined by about 28 percent over the performance period (Table 2). The average cost per episode fluctuated slightly over the performance years. In the baseline year, the average cost was $3,567.54; in the seventh performance year the average cost per episode was $3,616.45.

TABLE 2. Arkansas Medicaid Perinatal Episode Aggregate Episode Costs, 2012 - 2019

Performance year	Valid episodes	Unadjusted cost	Adjusted cost	Average adjusted cost per episode
Baseline (2012)	10,912	$50,403,805.93	$38,928,957.44	$3,567.54
PY 1 (2013)	5946	26,234,292.72	20,376,795.95	3,426.98
PY 2 (2014)	12,326	54,446,115.36	41,941,905.30	3,402.72
PY 3 (2015)	7,326	32,211,290.73	25,023,727.94	3,415.74
PY 4 (2016)	6,090	26,461,471.02	21,290,119.01	3,495.91
PY 5 (2017)	7,145	31,541,249.98	25,217,952.30	3,529.45
PY 6 (2018)	8,208	37,068,387.29	29,415,261.50	3,583.73
PY 7 (2019)	7,907	36,479,730.93	28,595,236.21	3,616.45

Note: PY is performance year.
Source: Golden and Gallagher 2020.

In the baseline year, 27 percent of providers met the commendable threshold for costs, making them potentially eligible for a gainsharing payment if they also met the quality metrics (Table 3). The share of providers meeting the commendable threshold peaked in performance years 1 and 2, then declined over the subsequent years.

TABLE 3. Arkansas Medicaid Perinatal Episode Accountable Provider Performance, 2012 - 2019

Performance year	Providers meeting commendable threshold	Providers meeting acceptable threshold	Providers with non-acceptable costs	Total
Baseline (2012)	40 (27%)	79 (54%)	28 (19%)	147
PY 1 (2013)	45 (37%)	62 (51%)	14 (12%)	121
PY 2 (2014)	63 (45%)	66 (47%)	10 (7%)	139
PY 3 (2015)	27 (21%)	95 (74%)	6 (5%)	128
PY 4 (2016)	20 (17%)	84 (69%)	17 (14%)	121
PY 5 (2017)	15 (12%)	91 (73%)	18 (15%)	124
PY 6 (2018)	13 (9%)	102 (73%)	24 (17%)	139
PY 7 (2019)	13 (10%)	83 (64%)	34 (26%)	130

Note: PY is performance year.
Source: Golden and Gallagher 2020.

Changes in quality measures

On the three quality measures tied to payment, one improved (Table A-2). The chlamydia screening rate increased from 76.3 percent in the baseline year to 80.7 percent in performance year 7. The Group B streptococcus screening remained relatively constant across performance years. The HIV screening rate decreased over time, from 83.5 percent in the baseline year to 77.4 percent in performance year 7.

Maternal health outcomes

The absolute rate of cesarean deliveries declined during the implementation period. However, there was no significant difference in the rate of change between those in the episode compared with a comparison group. During the same time, the total number of emergency department visits during the perinatal episode declined significantly more among Arkansas episode participants relative to the external comparison group (Toth et al. 2020, ACHI 2017).

Birth outcomes

Birth outcomes have not been evaluated.

Endnotes

[1] All episodes in Arkansas Medicaid's Episodes of Care program were phased out over state fiscal years 2020 and 2021. State fiscal year 2020 was the final payment reporting period year for each episode's performance period. The final reconciliation report for the perinatal episode was released on January 31, 2021 (AR Medicaid n.d.).

[2] In Arkansas, the accountable provider was referred to as the Principal Accountable Provider (PAP).

[3] MACPAC developed this case study based on the results from RTI International's interviews and unpublished state profiles. Arkansas Medicaid reviewed the unpublished profile for accuracy.

[4] Participating commercial payers in the perinatal episode of care included Arkansas BlueCross BlueShield and QualChoice (ARCHI 2019).

[5] If a provider billed under both formats within a measurement year, they received both individual and group feedback reports.

[6] A provider may not have been assigned to a provider if: (1) they did not provide any prenatal service, (2) there was under-provided prenatal care by the provider (defined as fewer than four prenatal visits), or (3) there was not a confirmed professional claim for delivery and the provider was unidentifiable These exclusions criteria were not indicative of an enrollee having insufficient prenatal care services but rather not meeting the administrative definition of a designated prenatal care rendering the preponderance of care.

[7] Pregnancy complications include: amniotic fluid embolism, obstetric blood clot embolism, placenta previa, severe preeclampsia, multiple gestation greater than or equal to three, late effect complications of pregnancy/childbirth, puerperal sepsis, suspected damage to fetus from viral disease in mother, or cerebrovascular disorders. Comorbidities during pregnancy include: cancer, cystic fibrosis, congenital cardiovascular disorders, DVT/pulmonary embolism, other phlebitis and thrombosis, end-stage renal disease, sickle cell, or Type I diabetes.

[8] These administrative exclusions were related to the accountable provider not providing prenatal care during the episode, the use of third-party insurance, no accountable provider designation on the claims, and exclusion due to out of state claims.

[9] As noted, the perinatal EOC program has sunset, with reporting ending in 2020 with final payment reconciliation in 2021.Final year (2020) data were not yet available when this case study was compiled.

References

Arkansas Center for Health Improvement (ACHI). 2019. *Arkansas health care payment improvement initiative. 4th Annual Statewide Tracking Report.* August 2019. Little Rock, AR: ACHI. https://achi.net/wp-content/uploads/2019/09/ACHI_Statewide_Tracking_Report_2019_4th_Annual.pdf.

Arkansas Center for Health Improvement (ACHI). 2017. *Arkansas health care payment improvement initiative. 3rd Annual Statewide Tracking Report.* August 2017. Little Rock, AR: ACHI. https://achi.net/wp-content/uploads/2018/10/Arkansas-Health-Care-Payment-Improvement-Initiative-State-Tracking-Report-Year-3-Full-Report.pdf.

Arkansas Department of Human Services. 2020. Arkansas Medicaid. *Episode design quick reference: perinatal.* July 2020. Little Rock, AR: Arkansas Department of Human Services.

Arkansas Medicaid. n.d. *Provider Manual Section II – Episodes of care.* AR Medicaid: Little Rock, AR: AR Medicaid. https://medicaid.mmis.arkansas.gov/Download/provider/provdocs/Manuals/EPISODE/EPISODE_II.doc.

Carroll C., M. Chernew, A.M. Fendrick, et al. 2018. Effects of episode-based payment on health care spending and utilization: Evidence from perinatal care in Arkansas. *J Health Econ* 61:47-62. https://doi.org/10.1016/j.jhealeco.2018.06.010.

Centers for Medicare & Medicaid Services (CMS). 2020. Medicaid, children's health insurance program, & basic health program eligibility levels, 2020. Baltimore, MD: CMS. https://www.medicaid.gov/medicaid/national-medicaid-chip-program-information/medicaid-childrens-health-insurance-program-basic-health-program-eligibility-levels/index.html.

Golden, W., and J. Gallagher, Arkansas Department of Human Services. 2020. Interview with RTI International regarding AR Perinatal EOC Stakeholders. October 14, 2020.

Lally, S. 2013. *Transforming maternity care: a bundled payment approach.* Issue brief no. 10. September 2013. Oakland, CA: Integrated Healthcare Association. https://www.iha.org/wp-content/uploads/2020/10/Issue-Brief-Transforming-Maternity-Care-A-Bundled-Payment-Approach.pdf.

Martin J., B. Hamilton, M. Osterman, and A. Driscoll. 2019. Births: Final data for 2018. *National Vital Statistics Report* 68: 13: 1-46. https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021a. Colorado Hospital Quality Incentive Payment Program and Maternity Bundled Payment Program. Washington, DC: MACPAC. https://www.macpac.gov/publication/colorado-hospital-quality-incentive-payment-program-and-maternity-bundled-payment-program/.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021b. Connecticut Pay for Performance in Obstetrical Care. Washington, DC: MACPAC. https://www.macpac.gov/publication/connecticut-pay-for-performance-in-obstetrics-care-program/.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021c. North Carolina Pregnancy Medical Home. Washington, DC: MACPAC. https://www.macpac.gov/publication/north-carolina-pregnancy-medical-home/.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021d. Tennessee Perinatal Episode of Care Model. Washington, DC: MACPAC. https://www.macpac.gov/publication/tennessee-perinatal-episode-of-care-model/.

Medicaid and CHIP Payment and Access Commission (MACPAC). 2021e. Value-Based Payment for Maternity Care in Medicaid: Findings from Five States. Washington, DC: MACPAC. https://www.macpac.gov/publication/value-based-payment-for-maternity-care-in-medicaid-findings-from-five-states/.

RTI International. 2021. Unpublished Case Study on the Arkansas Perinatal Episode of Care.

Toth M., P. Moore, E. Tant, et al. 2020. Early impact of the implementation of Medicaid episode-based payment reforms in Arkansas. *Health Serv Res* 55, no. 4:556-567. https://doi.org/10.1111/1475-6773.13296.

Appendix: Arkansas Perinatal Episode of Care

TABLE A-1. Perinatal Episode of Care Quality Measures

Measure	Measure Type	Gainsharing Threshold
Measures tied to payment		
Percentage of episodes with HIV screening	Process	80%
Percentage of episodes with Group B streptococcus screening	Process	80
Percentage of episodes with chlamydia screening	Process	80
Measures for reporting only		
Percentage of episodes with asymptomatic bacteriuria screening	Process	N/A
Percentage of episodes with gestational diabetes screening	Process	N/A
Percentage of episodes with Hepatitis B screening	Process	N/A
Percentage of episodes excluded for limited prenatal care	Process	N/A
Percentage of episodes excluded for no prenatal care	Process	N/A
Percentage of episodes excluded for PAP not providing prenatal care	Process	N/A
Percentage of episodes excluded for under provided prenatal care by PAP	Process	N/A
Percentage of episodes for which a cesarean delivery was performed	Outcome	N/A
Percentage of episodes with an ultrasound	Process	N/A
Percentage of episodes with amniocentesis screening	Process	N/A
Percentage of episodes with genetic screening	Process	N/A
Percentage of episodes with a whooping cough vaccine	Outcome	N/A
Average length of inpatient admission stay per cesarean delivery	Outcome	N/A
Average length of inpatient admission stay per vaginal delivery	Outcome	N/A
Average number of emergency department visits per episode	Outcome	N/A

Note: N/A is not available. PAP is principal accountable provider.
Source: AR Medicaid n.d.

TABLE A-2. Perinatal Episode Quality Measure Performance, 2012 - 2019

Measure	Baseline	PY1 (2013)	PY2 (2014)	PY3 (2015)	PY4 (2016)	PY5 (2017)	PY6 (2018)	PY7 (2019)	Absolute Change
Measures tied to payment									
Episodes with HIV screening	83.5%	84.6%	84%	77.3%	62.1%	60.6%	74.7%	77.4%	-6.1
Episodes with Group B Streptococcus screening	88.7	85.3	88.6	90.2	88	90.9	84.8	88.6	-0.1
Episodes with Chlamydia screening	76.3	83.1	85.9	85.3	82.7	84.7	82.3	80.7	4.4
Measures for reporting only									
Episodes with asymptomatic bacteriuria screening	67.8%	73.7%	78%	82.6%	77.6%	83.8%	82.8%	82.5%	14.7
Episodes with gestational diabetes screening	60.6	73	76.3	74.4	69.8	74.9	70.7	71.3	10.7
Episodes with Hepatitis B screening	82.2	84.3	82.9	85	79	80.7	77.9	77.2	-4.9
Episodes excluded for limited prenatal care	NR	NR	NR	NR	NR	NR	NR	NR	NR
Episodes excluded for no prenatal care	11.9	8.5	11.4	14.6	16.2	10.1	10.2	10.4	-1.5
Episodes excluded for provider not providing prenatal care	18.6	18.7	22.3	43.1	50	27.3	26.8	27.9	9.3
Episodes excluded for under provided prenatal care by provider	NR	NR	NR	NR	NR	NR	NR	NR	NR
Episodes for which a cesarean delivery was performed	37.6	34.7	33.6	31.9	32.1	32.5	33.1	32.3	-5.3
Episodes with an ultrasound	94.4	94	93.8	94.8	92.9	93.8	93.9	94	-0.4
Episodes with amniocentesis screening	NR	NR	NR	NR	NR	NR	NR	NR	NR
Episodes with genetic screening	NR	NR	NR	NR	NR	NR	NR	NR	NR

Measure	Baseline	PY1 (2013)	PY2 (2014)	PY3 (2015)	PY4 (2016)	PY5 (2017)	PY6 (2018)	PY7 (2019)	Absolute Change
Measures for reporting only									
Episodes with a whooping cough vaccine	NR	NR	NR	NR	NR	NR	NR	NR	NR
Average length of stay for inpatient admissions (days)	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	-0.001
Average length of inpatient admission stay per cesarean delivery (days)	2.6	2.7	2.6	2.6	2.5	2.5	2.5	2.6	-0.001
Average length of inpatient admission stay per vaginal delivery (days)	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	-0.001
Average number of emergency department visits per episode (days)	0.8	0.7	0.9	1.8	1.5	2.1	2.3	2.4	0.016

Notes: PY is performance year. NR is not reported. Provider is the designated accountable provider.
Source: Golden and Gallagher 2020.