Maternity Multi-Stakeholder Action Collaborative Session 4: Setting the Patient Population

Table of Contents

Sample of Patient Populations within Existing Maternity Care Initiatives

Existing Maternity Care Initiative	Patient Population Includes:		
	Mother	Newborn	Sample of Subpopulation Specifications
Arkansas Health Care Payment Improvement Initiative	✓		• Various comorbidities and pregnancy related conditions are excluded • High-risk pregnancy excluded • Only pregnancies resulting in live births are included
Community Health Choice of Texas	✓	✓	• First phase: Level 4 NICU stays are excluded • Second phase: Plan to use individual stop/loss limits • Low-risk and high-risk pregnancies are included with severity markers • Various co-morbidities and pregnancy related conditions are adjusted for but not excluded from the bundle
Geisinger Health System's Perinatal ProvenCare Program	✓		• High-risk patients are excluded • Neonatal care is excluded • Members without continuous enrollment or with late referrals are excluded • Includes care provided by Geisinger Health System (GHS) providers only • Only pregnancies resulting in live births by GHS providers are included
Integrated Healthcare Association's Bundled Episode Payment – Pregnancy and Delivery (Mother Only)	✓		• Various exclusions based on discharge status and clinical history • Age at time of delivery (<13 or 50+ excluded)
New York State Department of Health's Delivery System Reform Incentive Payment Program (DSRIP) Maternity Care Bundle	✓	✓*	• Claims exclusions include incomplete sets of claims or gaps in coverage • Pregnancies resulting in maternal or fetal/newborn death are excluded • Pregnancies resulting in stillborn or multiple births are excluded • Age at time of delivery (<12 or 65+ excluded)
Tennessee Division of Health Care Finance & Administration's Perinatal Episode of Care	✓		• Risk adjustments for higher-risk pregnancies • Various patient comorbidities are excluded • Various coverage exclusions (e.g., dual coverage, gaps in coverage, patient death, discharge status, and incomplete data/claims)

**The New York State Department of Health's Maternity Care Playbook states "The maternity bundle is built up combining three separate episodes: pregnancy, vaginal delivery or C-section, and newborn care" therefore if one episode is not included, the maternity bundle is not triggered.*

Additional Information on Existing Maternity Care Initiatives

Episode of Care:

Perinatal Care

Episode Design Summary

January 17, 2017

Building a healthier future for all Arkansans
www.paymentinitiative.org

Health Care Innovation/Episode Design and Delivery
Division of Medical Services
Arkansas Department of Human Services
Post Office Box 1437, Slot S425
Little Rock, AR 72203

PERINATAL CARE EPISODE DESIGN

EPISODE DEFINITION

EPISODE TRIGGER

- The trigger for this episode is a live birth on a facility claim and confirming professional claim.

NOTE: For national and other state birth rate comparisons, the Arkansas Medicaid perinatal episode of care triggers all live births including both the "global" or "all inclusive" billing codes (those patients receiving prenatal care) and the "itemized" billing codes (those patients receiving limited prenatal care).

EPISODE DURATION

- Episode begins 40 weeks prior to delivery and ends 60 days after delivery.

EPISODE SERVICES

- All medical services with a pregnancy related diagnosis code are included.

NOTE: Medical services related to neonatal or newborn care are not included in the episode.

PRINCIPAL ACCOUNTABLE PROVIDER

- The Principal Accountable Provider (PAP) for this episode is the provider or provider group that performs the delivery.

EPISODE EXCLUSIONS

A Perinatal episode that meets one or more of the following criteria will be excluded:

- All episodes without a confirming professional claim for delivery.
- All professional delivery claims billed without a "global" or "all-inclusive" delivery code.
- The following pregnancy related conditions: 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, cerebrovascular disorders.
- The following comorbidities: cancer, cystic fibrosis, congenital cardiovascular disorders, DVT/pulmonary embolism, other phlebitis and thrombosis, end-stage renal disease, sickle cell, type I diabetes.

EPISODE ADJUSTMENTS

For determining a PAP's performance, the total reimbursement attributable to the PAP for a perinatal episode is adjusted for patient comorbidities and statistically significant risk factors that influence an episode's cost.

QUALITY MEASURES

QUALITY MEASURES "TO PASS" [LINKED TO PAP GAIN SHARE ELIGIBILITY]

The following quality measures must be met in order "to pass":

- HIV screening must meet a minimum threshold of 80% of episodes.
- Group B streptococcus screening (GBS) must meet a minimum threshold of 80% of episodes.
- Chlamydia screening must meet a minimum threshold of 80% of episodes.

QUALITY MEASURES "TO TRACK" [FOR INFORMATION AND REPORTING]

The following are the quality measures that will be tracked:

- Ultrasound screening.
- Screening for Gestational Diabetes.
- Screening for Asymptomatic Bacteriuria.
- Hepatitis B specific antigen screening.
- C-section rate.

MINIMUM CASE VOLUME

- The minimum case load is five episodes during the 12-month performance period.

APPENDIX

EPISODE TRIGGERING PROCEDURE AND DIAGNOSIS CODES

CPT Code	Description
59400	Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care
59409	Vaginal delivery only (with or without episiotomy and/or forceps);
59410	Vaginal delivery only (with or without episiotomy and/or forceps); including postpartum care
59510	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care
59514	Cesarean delivery only;
59515	Cesarean delivery only; including postpartum care
59610	Routine obstetric care including antepartum care, vaginal delivery (with or without episiotomy, and/or forceps) and postpartum care, after previous cesarean delivery
59612	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps);
59614	Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps); including postpartum care
59618	Routine obstetric care including antepartum care, cesarean delivery, and postpartum care, following attempted vaginal delivery after previous cesarean delivery
59620	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery;
59622	Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery; including postpartum care

Code ICD-10-PX	Description
0W8NXZZ	Division of Female Perineum, External Approach
10D00Z0	Extraction of Products of Conception, Classical, Open Approach
10D00Z1	Extraction of Products of Conception, Low Cervical, Open Approach
10D00Z2	Extraction of Products of Conception, Extraperitoneal, Open Approach
10D07Z3	Extraction of Products of Conception, Low Forceps, Via Natural or Artificial Opening
10D07Z4	Extraction of Products of Conception, Mid Forceps, Via Natural or Artificial Opening
10D07Z5	Extraction of Products of Conception, High Forceps, Via Natural or Artificial Opening
10D07Z6	Extraction of Products of Conception, Vacuum, Via Natural or Artificial Opening
10D07Z7	Extraction of Products of Conception, Internal Version, Via Natural or Artificial Opening
10D07Z8	Extraction of Products of Conception, Other, Via Natural or Artificial Opening
10E0XZZ	Delivery of Products of Conception, External Approach
10S07ZZ	Reposition Products of Conception, Via Natural or Artificial Opening

ICD-10-DX Code	Description
Z370	Single live birth
Z372	Twins, both liveborn
Z373	Twins, one liveborn and one stillborn
O76	Abnormality in fetal heart rate and rhythm complicating labor and delivery
O770	Labor and delivery complicated by meconium in amniotic fluid
O771	Fetal stress in labor or delivery due to drug administration

ICD-10-DX Code	Description
O778	Labor and delivery complicated by other evidence of fetal stress
O779	Labor and delivery complicated by fetal stress, unspecified
O6010X0	Preterm labor with preterm delivery, unspecified trimester, not applicable or unspecified
O6010X1	Preterm labor with preterm delivery, unspecified trimester, fetus 1
O6010X2	Preterm labor with preterm delivery, unspecified trimester, fetus 2
O6012X0	Preterm labor second trimester with preterm delivery second trimester, not applicable or unspecified
O6012X1	Preterm labor second trimester with preterm delivery second trimester, fetus 1
O6012X2	Preterm labor second trimester with preterm delivery second trimester, fetus 2
O6013X0	Preterm labor second trimester with preterm delivery third trimester, not applicable or unspecified
O6013X1	Preterm labor second trimester with preterm delivery third trimester, fetus 1
O6013X2	Preterm labor second trimester with preterm delivery third trimester, fetus 2
O6014X0	Preterm labor third trimester with preterm delivery third trimester, not applicable or unspecified
O6014X1	Preterm labor third trimester with preterm delivery third trimester, fetus 1
O6014X2	Preterm labor third trimester with preterm delivery third trimester, fetus 2
O6020X0	Term delivery with preterm labor, unspecified trimester, not applicable or unspecified
O6020X1	Term delivery with preterm labor, unspecified trimester, fetus 1
O6020X2	Term delivery with preterm labor, unspecified trimester, fetus 2
O6022X0	Term delivery with preterm labor, second trimester, not applicable or unspecified
O6022X1	Term delivery with preterm labor, second trimester, fetus 1
O6022X2	Term delivery with preterm labor, second trimester, fetus 2

ICD-10-DX Code	Description
O6023X0	Term delivery with preterm labor, third trimester, not applicable or unspecified
O6023X1	Term delivery with preterm labor, third trimester, fetus 1
O6023X2	Term delivery with preterm labor, third trimester, fetus 2
O632	Delayed delivery of second twin, triplet, etc.
O68	Labor and delivery complicated by abnormality of fetal acid-base balance
O690XX0	Labor and delivery complicated by prolapse of cord, not applicable or unspecified
O690XX1	Labor and delivery complicated by prolapse of cord, fetus 1
O690XX2	Labor and delivery complicated by prolapse of cord, fetus 2
O691XX0	Labor and delivery complicated by cord around neck, with compression, not applicable or unspecified
O691XX1	Labor and delivery complicated by cord around neck, with compression, fetus 1
O691XX2	Labor and delivery complicated by cord around neck, with compression, fetus 2
O692XX0	Labor and delivery complicated by other cord entanglement, with compression, not applicable or unspecified
O692XX1	Labor and delivery complicated by other cord entanglement, with compression, fetus 1
O692XX2	Labor and delivery complicated by other cord entanglement, with compression, fetus 2
O693XX0	Labor and delivery complicated by short cord, not applicable or unspecified
O693XX1	Labor and delivery complicated by short cord, fetus 1
O693XX2	Labor and delivery complicated by short cord, fetus 2
O694XX0	Labor and delivery complicated by vasa previa, not applicable or unspecified
O694XX1	Labor and delivery complicated by vasa previa, fetus 1
O694XX2	Labor and delivery complicated by vasa previa, fetus 2

ICD-10-DX Code	Description
O695XX0	Labor and delivery complicated by vascular lesion of cord, not applicable or unspecified
O695XX1	Labor and delivery complicated by vascular lesion of cord, fetus 1
O695XX2	Labor and delivery complicated by vascular lesion of cord, fetus 2
O6981X0	Labor and delivery complicated by cord around neck, without compression, not applicable or unspecified
O6981X1	Labor and delivery complicated by cord around neck, without compression, fetus 1
O6981X2	Labor and delivery complicated by cord around neck, without compression, fetus 2
O6982X0	Labor and delivery complicated by other cord entanglement, without compression, not applicable or unspecified
O6982X1	Labor and delivery complicated by other cord entanglement, without compression, fetus 1
O6982X2	Labor and delivery complicated by other cord entanglement, without compression, fetus 2
O6989X0	Labor and delivery complicated by other cord complications, not applicable or unspecified
O6989X1	Labor and delivery complicated by other cord complications, fetus 1
O6989X2	Labor and delivery complicated by other cord complications, fetus 2
O699XX0	Labor and delivery complicated by cord complication, unspecified, not applicable or unspecified
O699XX1	Labor and delivery complicated by cord complication, unspecified, fetus 1
O699XX2	Labor and delivery complicated by cord complication, unspecified, fetus 2
O755	Delayed delivery after artificial rupture of membranes
O7581	Maternal exhaustion complicating labor and delivery
O7582	Onset (spontaneous) of labor after 37 completed weeks of gestation but before 39 completed weeks gestation, with delivery by (planned) cesarean section

ICD-10-DX Code	Description
O7589	Other specified complications of labor and delivery
O759	Complication of labor and delivery, unspecified
O80	Encounter for full-term uncomplicated delivery
O82	Encounter for cesarean delivery without indication

Maternity and Newborn Care Bundled Payment Pilot

Karen Love
Senior Vice President
Community Health Choice, Inc.

COMMUNITY HEALTH CHOICE
COMMUNITY CARES.

About Community Health Choice

- Community Health Choice, Inc. (Community) is a non-profit Health Maintenance Organization (HMO)
- Affiliate of the Harris Health System
- Serves over 280,000 Members with the following programs:
  - **Medicaid:** State of Texas Access Reform (STAR) program for low-income children and pregnant women
  - **CHIP**: Children's Health Insurance Program for the children of low-income parents—includes **CHIP Perinatal** benefits for unborn children of pregnant women who do not qualify for Medicaid STAR
  - **Health Insurance Marketplace (HIM):** Community is a qualified health plan issuer in the new subsidized individual Health Insurance Marketplace

Community's Service Area Map

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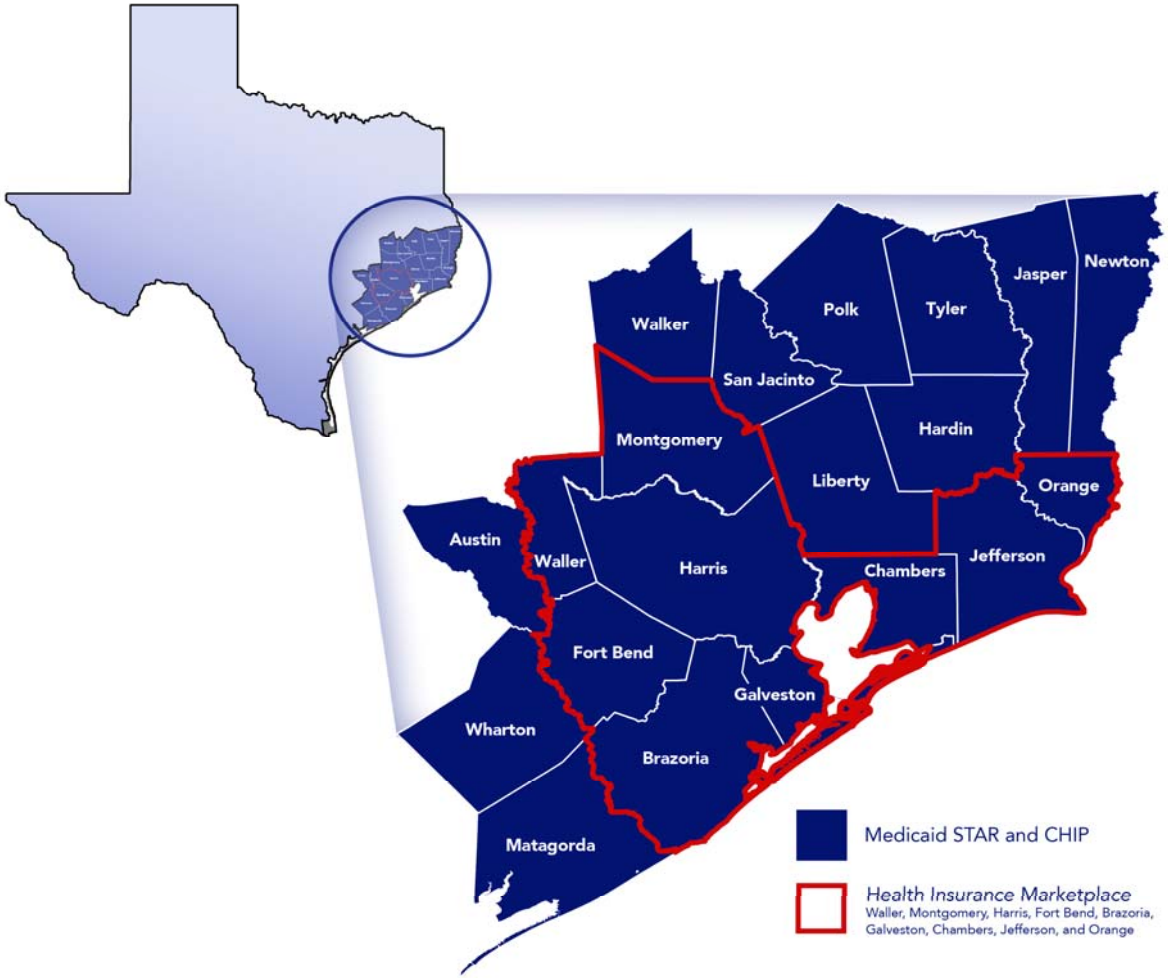

Pregnancy and Bundled Payment Pilot

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- A multi-year pilot beginning March 1, 2015
- Two separate academic institutions (UT Physicians - Houston and UTMB - Galveston)
  - Physicians (OB, MFM, Pediatrics, Neonatology)
  - Hospitals
  - All ancillary services
- Community Health Choice (HMO)
  - Medicaid (STAR) Members
- Health Care Incentives Improvement Institute (HCI3)
- Plan to publish results

Bundled Payment Episode Definition

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- Includes both low risk and high risk pregnancies with severity markers
- Includes related care for Moms and babies:
  - For the mother: includes all related services for delivery including post discharge period (60 days post discharge) and entire pre-natal care period (270 days prior to delivery)
  - For the infant: includes initial delivery stay and all services/costs up to 30 days post discharge
  - Blended C-section and vaginal delivery rate; blended nursery levels 1, 2 and 3; separate budget for nursery level 4 babies.
  - Excludes Level 4 NICU stays

Pregnancy/Delivery and Neo-Natal Episode

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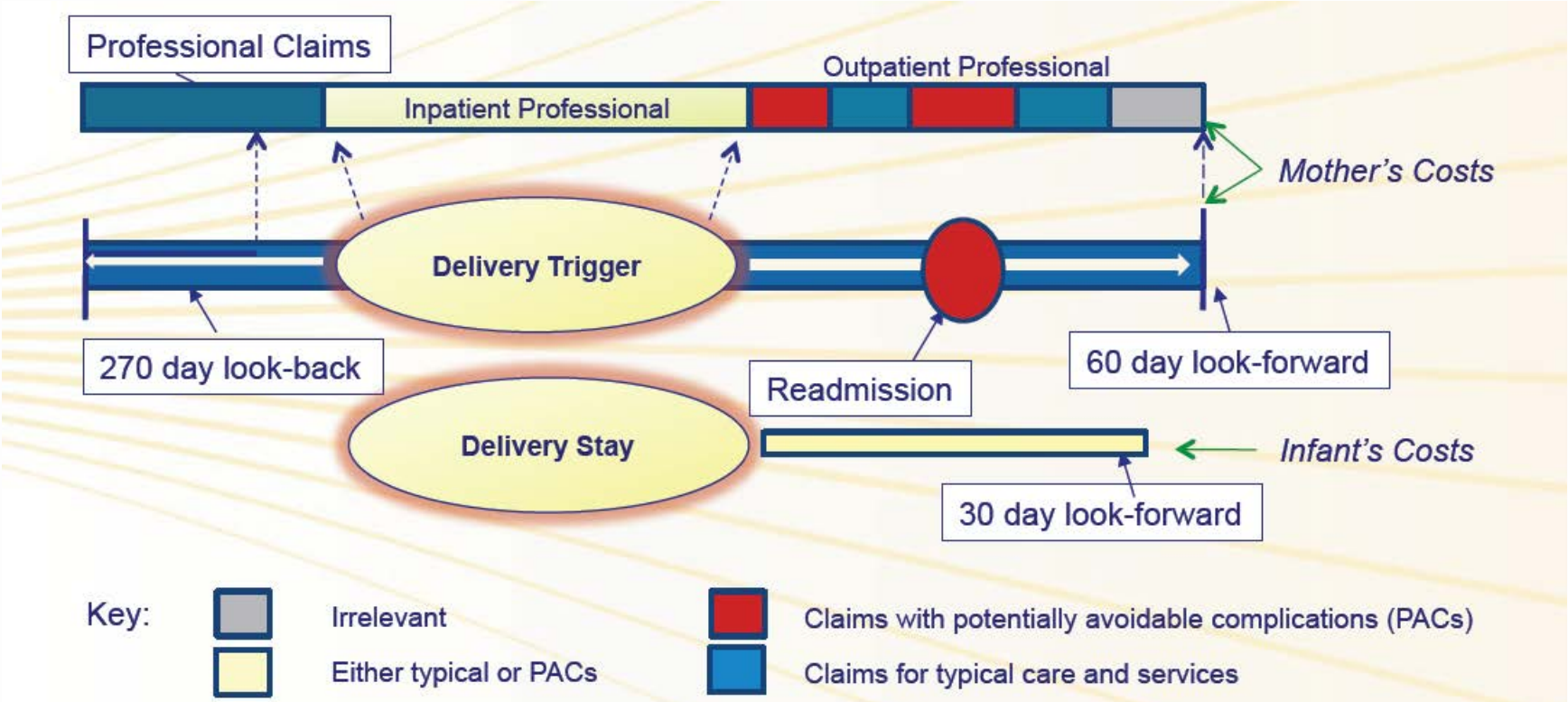

- *Episode is triggered by delivery*
- *Services for the Mother are evaluated as typical (e.g. ultrasound, anesthesia, office visits, etc.) or complications (obstetrical trauma, fetal distress, c-section in low risk pregnancy, etc.)*

Why Separate Nursery Level 4 Episodes?

Small # Contribute Significantly to Costs

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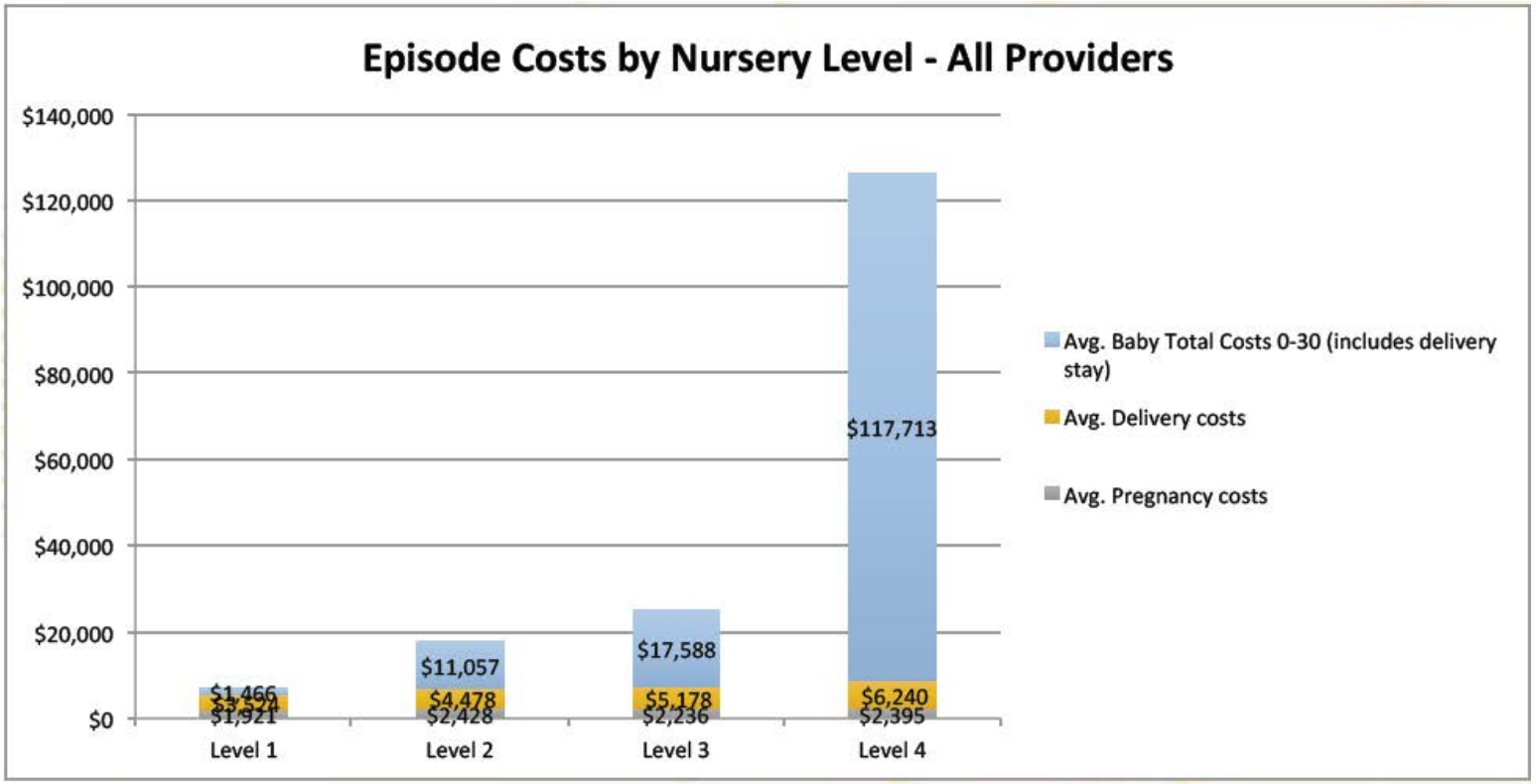

Level 1	Level 2	Level 3	Level 4	All	
$6,911	$17,963	$25,001	$126,348	$13,269	Average Episode Cost
2	9	12	38	5	Baby LOS
21,996	1,315	1,845	985	26,141	Number of deliveries
84%	5%	8%	4%	100%	% of Deliveries

Historical Episode Budget (Blended Deliveries) ~ $8,952*

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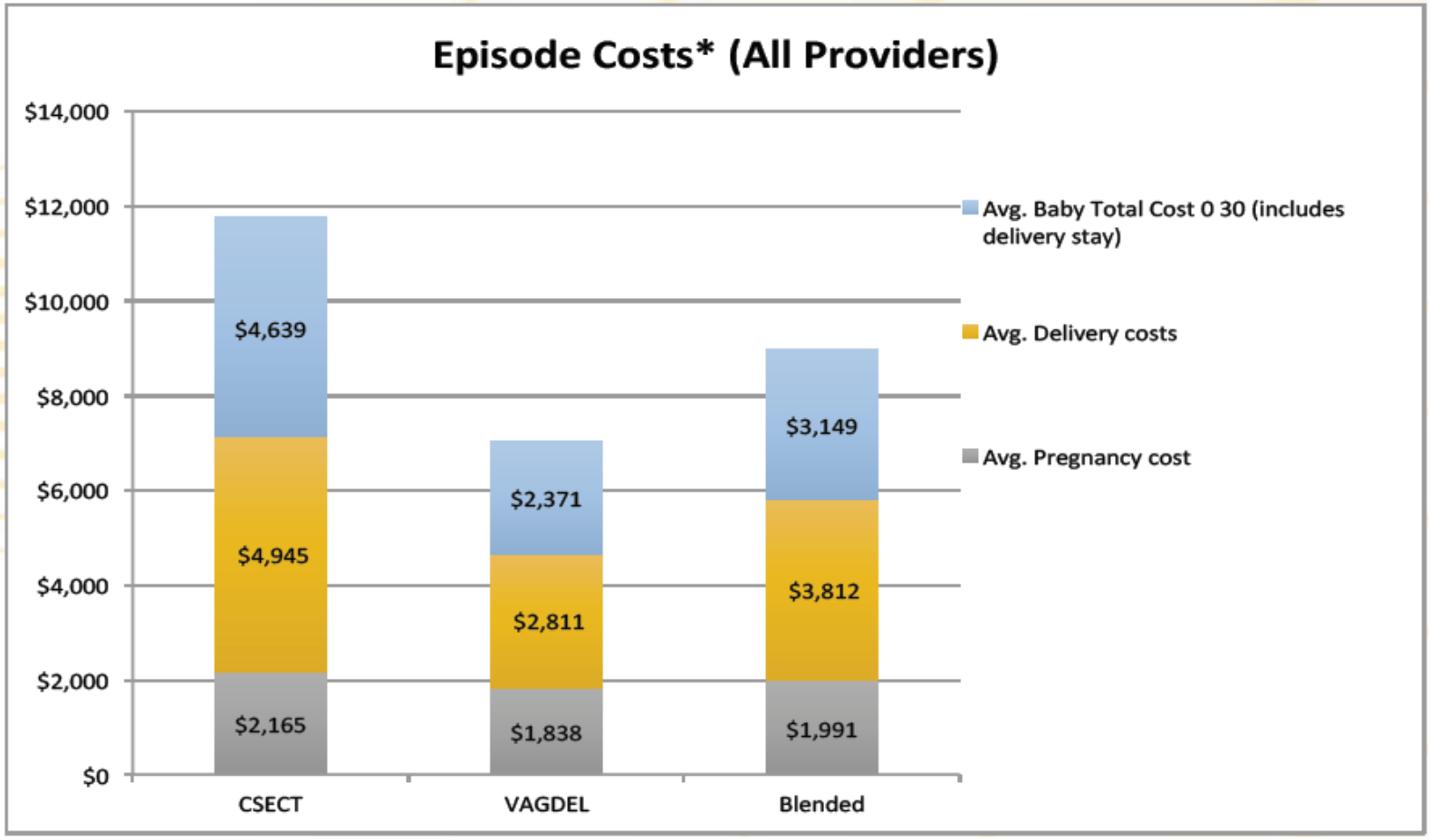

- *Blended rate of $5,803 for Pregnancy & Delivery (all deliveries) + $3,149 for Neonate (excludes level 4 nursery)
- Separate budget for level 4 nursery stays will be based off historical average of level 4 costs

Creating Patient Specific Budgets

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- Patient specific budgets are based on the historical average costs and are adjusted based on “risk factors”
- Patient Risk Factors include:
  - Patient demographics – age, gender
  - Patient comorbidities - mostly diagnosis code-based (very few procedures)
  - Clinical severity markers (derived from episode specific risk categories, e.g. gestational diabetes, multiple gestation, etc.)
  - Collected from claims data and clinical records
  - Neonatal costs are not risk adjusted
- Timing of Risk Factors
  - Risk factors are mostly ex-ante (historic); not concurrent
  - Clinical severity markers (subtypes) are pulled from the trigger claims, the look-back time window, and medical record data

Overview of Steps in Implementation

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- Historical data analysis:
  - o Establish episode costs used as inputs to set specific patient budgets (non-risk adjusted average costs)
- Ongoing Implementation:
  - o Providers identify eligible patients (mothers and babies) (deliveries and pre-natal)
  - o Preliminary patient budgets are created for post delivery patients
  - o Providers submit quality data for identified patients
  - o Community submits updated claims data on regular basis
  - o Final budgets are created at completion of episode; Reconciliation occurs at end of pilot year

Quality Measurement Scorecard

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- Normal Birth Weight
  - Pre-Natal Care and screenings
  - Delivery Care (C-section rate, elective deliveries)
  - Postpartum Care with depression screening
  - Baby Care (breastfeeding, Hep B vaccine)
- Low Birth Weight
  - Similar Measure as Normal Birth Weight, plus NICU infection rates
- Patient-Report Outcome Measures (TBD)
- Additional Measures for Monitoring Purposes

Other Implementation Features

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- Upside only year 1 with move to upside/downside in year 2
- Year 1 quality scorecard used for monitoring and setting benchmarks; Year 2 set quality thresholds for shared savings
- Year 3 and beyond: Move away from current contractual payments to flat dollar or other budget payments with reconciliation

Opportunities for Margin Under Bundled Approach

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- Opportunity for shared savings can come from:
  - Reducing C-Section rate
  - Reducing neonate length of stay
  - Reducing Potentially Avoidable Complications (PACs) for moms' during pregnancy and delivery
  - Reducing post-discharge hospitalizations for the infants (measured w/i 30 days post discharge)
- In total, opportunity for margin under bundled approach is estimated at more than $1 million for each institution

Opportunity for Margin – *Putting it all Together*

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Reduction	XX (Provider)
Reduce C-Section Rate by 10 percentage points	$335,000
Reduce Neonatal LOS by 10%	$175,000
Reduce PACs for C-Sections by 50%	$90,000
Reduce PACs during Pregnancy by 50%	$85,000
Reduce PACs for Vaginal Delivery by 50%	$30,000
Reduce Infant Post-Discharge Admits by 50%	$225,000
Reduce Infant Post-Discharge ED Visits by 50%	$60,000
Total Potential Savings/Margin	$1 Million

Questions & Answers

Contact Information:
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713.295.2515
Karen.Love@communitycares.com

The Newborn Frontier

Geisinger's Perinatal ProvenCare Program

GEISINGER
HEALTH SYSTEM

ProvenCare®

- Concept: Link evidence-based practices to a continuum of care in a subclass of patients and reliably give that care **to each and every patient**

- Purpose: Fully optimize patient outcomes
  Reduce unnecessary variability in care
  Create an idealized flow for providers and patients

ProvenCare®
brings national attention

StarNewsOnline.com
The Voice of Southeastern North Carolina

The Detroit News
detnews.com

Chicago Tribune

denverpost.com
The Denver Post

upi

REPRINTED WITH PERMISSION

The New York Times

National

In Bid for Better Hospital Care, Heart Surgery With a Warranty

By REED ABELSON

What if medical care came with a 90-day warranty?

That is what a hospital group in central Pennsylvania is trying to learn in an experiment that some experts say is a radically new way to encourage hospitals and doctors to provide high-quality care that can avoid costly mistakes.

The group, Geisinger Health System, has overhauled its approach to surgery. And taking a cue from the makers of TVs, washing machines and other products, Geisinger essentially guarantees its workmanship, charging a flat fee that includes 90 days of follow-up treatment.

Even if a patient suffers complications or has to come back to the hospital, Geisinger promises not to send the insurer another bill.

Geisinger is by no means the only hospital system currently rethinking ways to better deliver care that might also reduce costs. But its effort is noteworthy as a distinct departure from the typical medical reimbursement system in this country, under which doctors and hospitals are paid mainly for delivering more care — not necessarily better care.

Since Geisinger began its experiment in February 2006, focusing on elective heart bypass surgery, it says patients have been less likely to require intensive care, have spent fewer days in the hospital and are more likely to return directly to their own homes instead of going to a nursing home.

Geisinger presented the first-year results of its experimental program at a meeting last month of the American Surgical Association.

Geisinger stands out as a group that has transformed the way it delivers care, said Dr. Donald M. Berwick, the chief executive of Institute for Healthcare Improvement, a national nonprofit organization whose

In almost no other field would consumers tolerate the frequency of error that is common in medicine, Dr. Berwick said, and Geisinger has managed to reduce the rate significantly. "Getting everything right is really, really hard," he said.

It is still too early to know whether the approach, which Geisinger calls ProvenCare, will catch on with employers and health insurers.

So far, the only insurer that Geisinger has contracted with under the new arrangement is its own insurance unit, which covers about 210,000 people in Pennsylvania. Eventually, though, Geisinger hopes to attract other insurers and employers that provide health benefits by expanding the approach into other lines of care provided by the nearly 600 doctors it employs at its three hospitals and 35 offices in the region.

Geisinger is trying to address what it views as a flaw in the typical medical reimbursement system.

Under the typical system, missing an antibiotic or giving poor instructions when a patient is released from the hospital results in a perverse reward: the chance to bill the patient again if more treatment is necessary. As a result, doctors and hospitals have little incentive to ensure they consistently provide the treatments that medical research has shown to produce the best results.

Researchers estimate that roughly half of American patients never get the most basic recommended treatments — like an aspirin after a heart attack, for example, or antibiotics before hip surgery.

The wide variation in treatments can translate to big differences in death rates and surgical complications. In Pennsylvania alone, the mortality rate during a hospital stay for heart surgery varies from zero in the best-performing hospitals to nearly 10 percent at the worst performer, according to the Pennsylvania Health Care Cost

Around the world, other modern industries — whether car manufacturing or computer chip making — have long understood the importance of improving each piece of the production process to ramp down costs and improve overall quality.

But hospitals have been slow to focus their attention on standardizing the way they deliver care, said Dr. Arnold Milstein, the medical director for the Pacific Business Group on Health, a California organization of large companies that provide medical benefits to their workers. Geisinger "is one of the few systems in the country that is just beginning to understand the lessons of global manufacturing," Dr. Milstein said.

In reassessing how they perform bypass surgery, Geisinger doctors identified 48 essential steps, then devised procedures to ensure the steps would always be followed, regardless of which surgeon or which one of its three hospitals was involved.

From screening a patient for the risk of a stroke before surgery, to making sure the patient has started on a daily aspirin regimen upon discharge, Geisinger's 40-step system makes sure every patient gets the recommended treatment.

At least one heart surgery patient, David Dunsmuir, 60, was impressed by the care he received — and the doctors' and staff's efforts to explain things during the four days he spent last December at Geisinger's hospital in Wilkes-Barre, Pa.

The cure, which included a few weeks of rehabilitation, was delivered "like clockwork," Mr. Dunsmuir said recently. "I'm feeling fine."

For Geisinger, as with any hospital, the challenge is often in persuading the doctors to get on board. Before ProvenCare began, Geisinger's seven cardiac surgeons each delivered the care they believed was best for patients. And that care varied.

"We realized there were seven ways in

boston.com
The Boston Globe

The Ledger Online
theledger.com

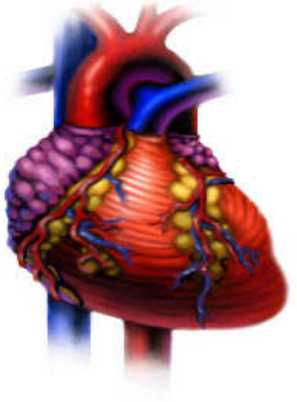
International Herald Tribune HEALTH/SCIENCE

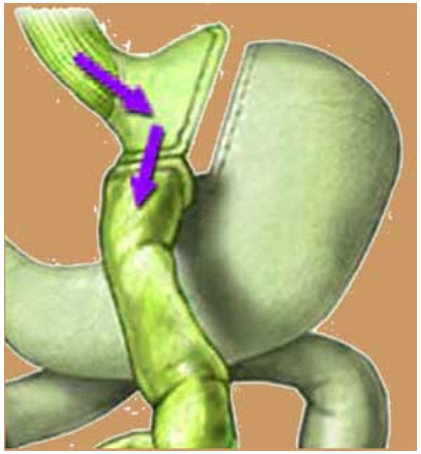
BMJ

May 24th, 2007 at the George Washington University Medical Center

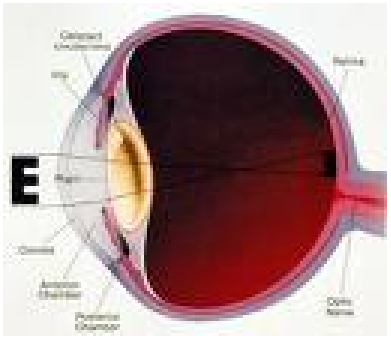
HEALTH CARE: Hillary Remarks on Reducing the Cost of Health Care

ProvenCare®





- ✓Elective CABG
- ✓Elective Cataract Surgery
- ✓Elective Total Hip Replacement
- ✓Elective PCI (Percutaneous Coronary Intervention)
- ✓Bariatric Surgery
- ✓Low Back
- ✓**Perinatal**



ProvenCare Perinatal

Background Knowledge

- 23% of all individuals discharged from American hospitals are mothers or newborns
- Childbirth is the leading reason for hospitalization in the U.S.
- 6 of the 15 most commonly performed hospital procedures in the entire population are associated with childbirth
- Birth rates are reversing after a long decline
- After 2011, the number of births each year are expected to be the highest annual rate ever achieved in the U.S.

Sakala, C. & Corry, M. (2008). Evidence-based maternity care: What it is and what it can achieve. Milbank Report.

Kjerulff, K.H., Frick, K.D., Rhoades, J.A. & Hollenbeak, C.S., (2007). The cost of being a woman: A national study of health-care utilization and expenditures for female-specific conditions. Women's Health Issues, 17(2), 13-21.

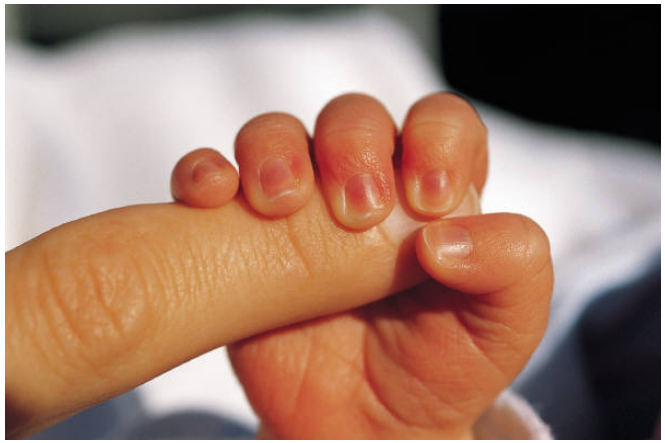
Defining Perinatal *ProvenCare®*

Why was this work important?

- High Volume DRG
- Process unreliable and inefficient
- Opportunity to decrease LOS
- Potential to decrease cost of care
- Account for patients entering/exiting the system and ensure that the ProvenCare pathway is followed (1st prenatal visit through post partum)

Geisinger Context

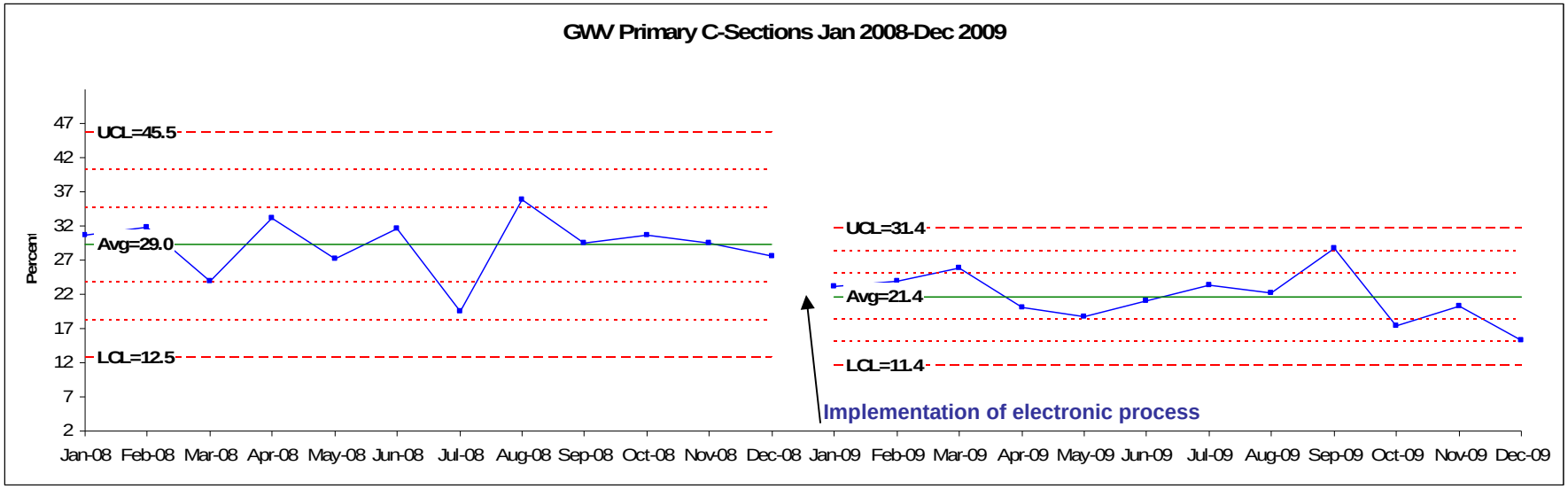
- ~5,000 Pregnancies per year
- ~4,500 + deliveries per year
- 66 Clinicians (26 MD's; 12 Residents; 7 Midwives; 14 NP's; 7 PA's)
- 22 Clinic Sites
- 4 Hospitals (2 non-Geisinger)



Perinatal *ProvenCare®* Goals

- 103 Discrete evidence-based elements of care are incorporated, measured and tracked for compliance
- Redesign, from the ground up, all aspects of provider workflow
  - Drive fundamental efficiency improvements
  - Increase patient safety and process reliability
  - Reduce/eliminate documentation redundancy
  - Streamline patient education and cut costs
- Seek observable reductions in C-section rates and premature births
- Enhance management of comorbid conditions
- Improve fetal/child health and wellness

ProvenCare Perinatal
Quality Measures



Balancing the Message- AHRQ Patient Safety Indicator 17

- The numerator includes any of the following diagnosis codes: 767.0, 767.11, 767.3, 767.4, 767.5, 767.7, 767.8
- Subdural and cerebral hemorrhage (due to trauma or to intrapartum anoxia or hypoxia)
- Epicranial subaponeurotic hemorrhage (massive)
- Injuries to skeleton (excludes clavicle)
- Injury to spine and spinal cord
- Facial nerve injury
- Other cranial and peripheral nerve injuries
- Other specified birth trauma

Quality Performance- AHRQ Patient Safety Indicator 17

	Population of Mothers	Population of Babies	# of All Diaganoses birth trauma cases	Number of Excluded cases	Numerator based on PSI 17 definition	Birth Trauma Rate based on PSI 17 definition (per 1000 babies)
FY2008	2635	2888	20	5	15	5.19
FY2009	2786	3054	10	5	5	1.64

-At GWV, there is no change in PSI 17 Birth Trauma Rates although vaginal deliveries have increased (GWV remains below the national average)
-As a system, there is a statistically significant decline in PSI 17 for FY09 (p=0.047). The national average is 2.31

http://www.ahrq.gov/qual/nhqr07/measurespec/patient_safety.htm#rtraumt1

Select Quality Measures

- In the first 6 weeks of the 2009 flu season we administered more than twice the number of vaccines as the 2007 flu season
- 100% compliance with Postpartum Depression Screening achieved in November 2009
- Nutrition consults offered for appropriate patients

Select Quality Measures

- Collaborative management with the patients diagnosed with Gestation DM through MyGeisinger patient entered flowsheet
  - Current activation ~95%
  - Early trend suggests:
    - Lower incidence of insulin dependent gestational diabetes for moms who received care after ProvenCare implementation

Select Quality Measures

- **Quality Measures in process**:
  - NICU Length of Stay
  - NICU outcomes and reason for admission
  - Early trends suggest:
    - Lower incidence of spontaneous premature rupture of membranes (PROM) for moms who received care after ProvenCare implementation

Payer key business objectives

- Support the reengineering of care to deliver more **value**
- Align reimbursement incentives to reflect ProvenCare transparency
- Build a business case to ensure sustainability

Reimbursement Aligned via “Bundle Approach”

- Geisinger Health System accepts risk via a global payment for all related services and follow up care
  - Technical and professional
  - Physician, consultations, supporting clinicians
- Rewards team for optimal outcome
- Eliminates perverse incentives

A reasonable approach for GHS

- Began with diagnosis of pregnancy in the first or second trimester of care and continued through the delivery of a viable newborn by GHS providers
- Does not include care provided by non-GHS providers

A win/win business case

- GHP and GHS share savings from care improvement
- GHP gets consistent cost structure and outcomes
- GHS get better outcomes and improved cost of care
- GHS gets more volume over time by offering high quality care with transparency

High Value care yields a real win/win/win/win business case

- Patients get improved outcomes
- Employer gets healthier employees and lower premiums
- GHP gets more members
- GHS gets more volume

Step 1

- Define the episode length
  - Prenatal Period
    - Identification of pregnancy in the first or second trimester
  - Postpartum Period
    - Concludes at completion of postpartum visit 21-56 days post delivery

Step 2

- Define the episode scope

  Perinatal example:

  – Inclusions
    - Identify episode trigger codes
    - Only deliveries performed by GHS Providers after 12 weeks of continuous prenatal care

  – Exclusions
    - Typical
      – Members without continuous enrollment during the entire episode
      – Members with another carrier as primary
      – Late referrals of high risk patients

Step 3

- Create preliminary claims data set
  - Includes
    - All related services to the pregnancy admission
    - All related services during prenatal period
    - All related services during postpartum period
  - Apply Exclusions

Step 4

- GHP - Create Preliminary Episode Experience Summary and Code Review Pivot Tables
  - Prenatal
    - Procedure code review
    - Professional and Outpatient services only
  - Postpartum
    - Inpatient Readmissions
      - Diagnosis code review on historical services to identify routine follow-up and complications
      - Medical review on remaining inpatient claims to capture those not identifiable by diagnosis codes
    - Outpatient and Professional
      - Diagnosis codes identified through review

Step 5

- GHP - Creation of Final Episode Experience Summary
  - Filter the potential claims set to create a refined claims set with services related to the pregnancy and re-run the Episode Experience Summary
    - Establish **prenatal code list** (Outpatient and Professional only)
    - Establish **postpartum related diagnosis code list**
  - GHP estimates the **global package rate** based on Final Episode Experience Summary

Step 6

- GHS
  - Reviews Final Episode Experience Summary and predicted trends to develop a **global package rate**
  - Creates **Inclusion Matrix** that defines which related services are to be included based on the provider of service

Step 7

- GHS and GHP
  - Reconcile and negotiate final **global package rate**
  - Finalize **Inclusion Matrix**
  - Execute Contract

Bundled Episode Payment and Gainsharing Demonstration*
Pregnancy and Delivery (Mother only) Definition

Component	Description
Summary Description	This episode definition covers all facility and professional services rendered during a woman's pregnancy, labor and delivery, including care following delivery and services related to complications (including readmissions).
Episode Structure	Episode begins 270 days prior to triggering DRG and ends 60 days after the hospital discharge date for delivery stay.
Clinical Conditions (DRGs)	**Episode is triggered by one of the following DRGs:** • MS DRG 765: Cesarean section w CC/MCC • MS DRG 766: Cesarean section w/o CC/MCC • MS DRG 767: Vaginal delivery w sterilization &/or D&C • MS DRG 768: Vaginal delivery w O.R. procedures except sterilization &/or D&C • MS DRG 774: Vaginal delivery w complicating diagnoses • MS DRG 775: Vaginal delivery w/o complicating diagnoses

Standard Services	**Services expected within the episode period (may not be separately billed), include all professional and facility charges for:**
	• Amniocentesis
	• Antepartum Admission
	• Antepartum Care Only
	• Chorionic Villus Sampling
	• C-section Delivery
	• External Cephalic Version
	• Fetal Test
	• OB Lab
	• OB Ultrasound
	• Postpartum Curettage
	• Removal Cerclage Suture
	• Tocolytic Therapy
	• Tubal Ligation
	• Vaginal Delivery
	
	Services which, if they occur within the episode period, may not be separately billed:
	• Postpartum Complications within 60 days of discharge:
	  ○ DRG 769 Postpartum Diagnoses with OR procedure
	  ○ DRG 776 Postpartum Diagnoses without OR procedure
	
	Services excluded from Standard Definition, may be separately billed:
	• Outpatient prescription drugs

Component	Description

Patient Qualification	**For inclusion in the pilot, patient must be:**
	• Covered by participating health plan during complete episode period
	• Over age 13 and under age 50
	Patients are excluded from the pilot if:
	• Discharge status is:
	  ○ Left against medical advice
	  ○ Transferred during labor
	• Clinical history demonstrates:
	  ○ Active Cancer
	  ○ AIDS
	  ○ Fetal Surgery
	  ○ Multi-gestation 3+ (or twins that share one amniotic sac)
	  ○ Multiple Sclerosis
	  ○ Pulmonary Embolism
	  ○ Renal Dialysis
	  ○ Rupture of uterus
	  ○ Transplant

Payment Mechanism	TBD

<table>
<tr><th>Component</th><th>Description</th></tr>
<tr><td>Severity Markers/Risk Adjustment</td><td>No prospective risk adjustment.
Recommend reviewing experience on annual basis for following potential severity markers for population-based risk adjustment vs. risk-adjusting every episode.

<table>
<tr><th>Complications</th></tr>
<tr><td>Anesthetic complications during pregnancy</td></tr>
<tr><td>Hemorrhage in pregnancy</td></tr>
<tr><td>Pregnancy, with shock</td></tr>
</table>

<table>
<tr><th>Comorbidities</th></tr>
<tr><td>Abnormalities of genital tract in pregnancy</td></tr>
<tr><td>Anemia in pregnancy</td></tr>
<tr><td>Asthma</td></tr>
<tr><td>Bipolar disorder</td></tr>
<tr><td>Breech pregnancy</td></tr>
<tr><td>Cerebrovascular disorders of pregnancy</td></tr>
<tr><td>Diabetes (pre-existing)</td></tr>
<tr><td>Drug dependence in pregnancy</td></tr>
<tr><td>Eclampsia</td></tr>
<tr><td>Fetal complication in pregnancy</td></tr>
<tr><td>Gestational diabetes</td></tr>
<tr><td>Heart disease in pregnancy</td></tr>
<tr><td>Hemorrhage in pregnancy</td></tr>
<tr><td>Hypertension</td></tr>
<tr><td>Hypertension in pregnancy</td></tr>
<tr><td>Liver disease in pregnancy</td></tr>
<tr><td>Major depression</td></tr>
<tr><td>Morbid obesity</td></tr>
<tr><td>Other infectious diseases in pregnancy</td></tr>
<tr><td>Pregnancy, with deep vein thrombosis</td></tr>
<tr><td>Pregnancy, with mild preeclampsia</td></tr>
<tr><td>Pregnancy, with severe preeclampsia</td></tr>
<tr><td>Pre-term labor</td></tr>
<tr><td>Previous C-section</td></tr>
<tr><td>Pyelonephritis</td></tr>
<tr><td>Renal disease in pregnancy</td></tr>
<tr><td>Rheumatologic diagnosis</td></tr>
<tr><td>Schizophrenia</td></tr>
<tr><td>Sickle cell disease</td></tr>
<tr><td>Threatened labor</td></tr>
<tr><td>Twins with two amniotic sacs</td></tr>
</table>
</td></tr>
</table>

* *This project was supported by grant number R18HS020098 from the Agency for Healthcare Research and Quality. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.*

NEW YORK STATE OF OPPORTUNITY. Department of Health

Maternity Care

Maternity Care Clinical Advisory Group

Value Based Payment Recommendation Report

May 2016

NYS Medicaid Value Based Payment

Introduction

Delivery System Reform Incentive Payment (DSRIP) Program & Value Based Payment (VBP) Overview

The New York State DSRIP program aims to fundamentally restructure New York State's health care delivery system, reducing avoidable hospital use by 25%, and improving the financial sustainability of New York State's safety net.

To further stimulate and sustain this delivery reform, at least 80-90% of all payments made from Managed Care Organizations (MCOs) to providers will be captured within VBP arrangements by 2020. The goal of converting to VBP arrangements is to develop a sustainable system which incentivizes value over volume. The Centers for Medicare & Medicaid Services (CMS) has approved the State's multi-year VBP Roadmap, which details the menu of options and different levels of VBP that the MCOs and providers can select.

Maternity Clinical Advisory Group (CAG)

CAG Overview

For many VBP arrangements, a subpopulation or defined set of conditions may be contracted on an episodic/bundle basis. Clinical Advisory Groups (CAGs) have been formed to review and facilitate the development of each subpopulation or bundle. Each CAG is comprised of leading experts and key stakeholders from throughout New York State often including representatives from: providers, universities, State agencies, medical societies and clinical experts from health plans.

The Maternity CAG held a series of three meetings throughout the State and discussed key components of the maternity VBP arrangement, including bundle definition, risk adjustment, and the maternity bundle outcome measures. For a full list of meeting dates, times and overview of discussion please see Appendix A in the Quality Measure Summary.

Recommendation Report Overview & Components

The following report contains two key components:

Maternity Bundle Playbook

1. The playbook provides an overview of the bundle definition and clinical description including codes and a first impression of available data.

Maternity Bundle Outcome Measure Summary

2. The outcome measure summary provides a description of the criteria used to determine relevancy, categorization and prioritization of outcome measures, and a listing of the recommended outcome measures.

TABLE OF CONTENTS

Maternity Quality Measure Summary

NEW YORK STATE OF OPPORTUNITY. Department of Health

Maternity Bundle Playbook

Maternity Care Definition: Pregnancy, Delivery & Newborn Care

May 2016

NYS Medicaid Value Based Payment

Playbook overview - Maternity Care

New York State's VBP Roadmap[1] describes how the State will transition 80-90% of all payments from Managed Care Organizations to providers from Fee for Service (FFS) to Value Based Payments. 'Bundles' or 'episodes'[2] group together the wide range of services performed in the care for a patient with a specific condition. Episodes only include those services that are relevant to the condition, including services that are routine and typical for the care of the condition, as well as services that are required to manage complications that could potentially occur during the course of the (care for the) condition. Episodes open with a claim carrying a "trigger code" that may require a confirmatory claim before the signal is considered strong enough to suggest that an episode of care exists. An episode time window is then created to which all relevant claims are attributed. An episode of care thus created is patient-centered and time-delimited, and can be considered as a unit of accounting for purposes of creating a budget; as a unit of care for contracting purposes; as well as a unit for accountability for quality measurement.

New York State uses the HCI[3] (Prometheus) bundled payment methodology, including the standard episode definitions to maximize compatibility and consistency within the State and nationally. More information on how the episodes are developed is available on HCI[3]'s website[3]. The HCI[3] bundled payment methodology is also referred to as "the grouper."

This playbook describes the four episodes for maternity care, which include Pregnancy, Vaginal Delivery, C-Section, and Newborn. The playbook also explains how these are structured together into a Maternity Bundle as the unit of contracting and accountability purposes. The table provides an overview of this playbook.

Section	Short Description
Description of Episodes	Description of the four episodes that together form the maternity episode
Maternity Care Quality Measures	The quality measures that need to be reported when contracting for maternity care
Attachment A: Glossary	List of all important definitions
Attachment B: Top 10 PAC's per Maternity Episode	The top 10 PACs per maternity episode
Attachment C: Workbook With Codes for Episode	Overview of all maternity care specific ICD-9 codes
Attachment D: Data Available for Maternity Bundle Analysis	Data overview of the maternity care episode

[1] https://www.health.ny.gov/health_care/medicaid/redesign/dsrip/docs/1st_annual_update_nystate_roadmap.pdf
[2] The terms can be used interchangeably. Sometimes, the term 'bundle' is used to refer to a combination of individual episodes.
[3] http://www.hci3.org/content/online-courses

Description of episodes - Maternity Care

The maternity care episode targets Medicaid-only members and includes all pregnancy, delivery, post-delivery care and newborn related care from onset of the pregnancy to 60 days after discharge of the mother as well as 30 days after discharge of the newborn. The maternity bundle is built up combining three separate episodes: pregnancy, vaginal delivery or C-section, and newborn care.

Why is the maternity bundle created?

A comprehensive maternity bundle creates an integrated view on the care during the pregnancy, the delivery and the care received by the mother and the baby in the post-natal period. The creation of the maternity bundle is an attempt to capture care received from "womb to crib", stimulating, for example, the appropriateness of C-Sections and the reduction of early elective inductions. Additionally, the bundle aims to improve outcomes for both the mother and the newborn by tracking preterm and low birth weight babies and linking them back to "gaps in care" and potential improvements (in e.g. health education and reducing the number of teen pregnancies) during the ante-natal period.

How are the maternity episodes triggered?

The maternity bundle consists of four episodes: pregnancy, vaginal delivery, C-section delivery and newborn care. The delivery episodes, vaginal delivery and C-section delivery, are both triggered by procedure codes. The delivery episode then automatically triggers the pregnancy episode which retrospectively looks back 9 months (270 days) to capture relevant claims during the pregnancy. The newborn episode is triggered by the claim for the initial hospital stay of the newborn.

If there is no delivery episode, the maternity bundle is not triggered. For example, when the pregnancy is terminated or either the mother or the fetus (<20 weeks) dies during the pregnancy, none of the maternity episodes are triggered.

Budgets are set upon delivery, retrospectively for the pregnancy and prospectively for the care of the newborn and mother. Due to lack of clinically significant risk factors in the pregnancy episode, only the delivery is risk adjusted based on the mode of delivery (C-section vs. vaginal delivery).

How is the vaginal delivery episode triggered?

The vaginal delivery episode is triggered by one or more claims that carry a procedural code for vaginal delivery and meet the trigger criteria that is specified for this episode. There is only one trigger necessary (no confirming triggers needed).[4] However, if the professional trigger claim does not have a corresponding facility claim, it is considered as an orphan claim and the episode does not trigger (incomplete episode).

How is the C-section episode triggered?

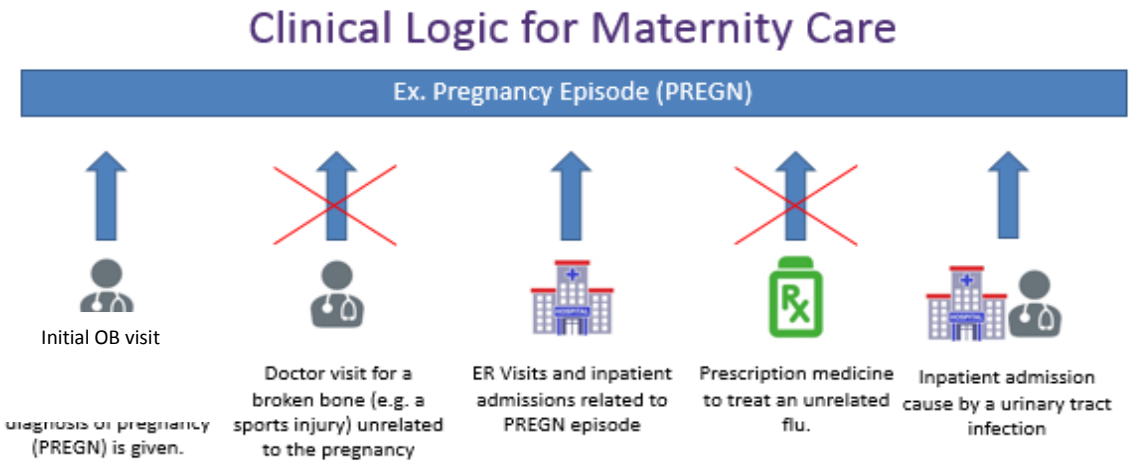
The C-section episode is triggered by one or more claims that carry a procedural code for C-section and meet the trigger criteria that is specified for this episode. There is only one trigger necessary (no

[4] Appendix C lists all codes for the maternity episodes. Additional information can also be found on this link: http://www.hci3.org/programs-efforts/prometheus-payment/evidence_informed_case_rates/ecrs-and-definitions. Note that the codes may be different than those found in Attachment C which contains codes being used for NYS.

confirming triggers needed).[4] However, if the professional trigger claim does not have a corresponding facility claim, it is considered as an orphan claim and the episode does not trigger (incomplete episode).

Which services are included in the maternity care episodes?

The maternity care episodes include all services (inpatient services, outpatient services, ancillary, laboratory, radiology, pharmacy and professional billing services) related to the care of the pregnancy, delivery and newborn[4], starting from the initial obstetrician (OB) visit. The diagram below shows the flow of an episode. All services for maternity care are included, while the episode omits encounters where services are provided for non-maternity care related diagnoses (see crossed out services in the example below).



What is excluded from the maternity bundle?

Maternity bundles will be excluded based on the following exclusion criteria:

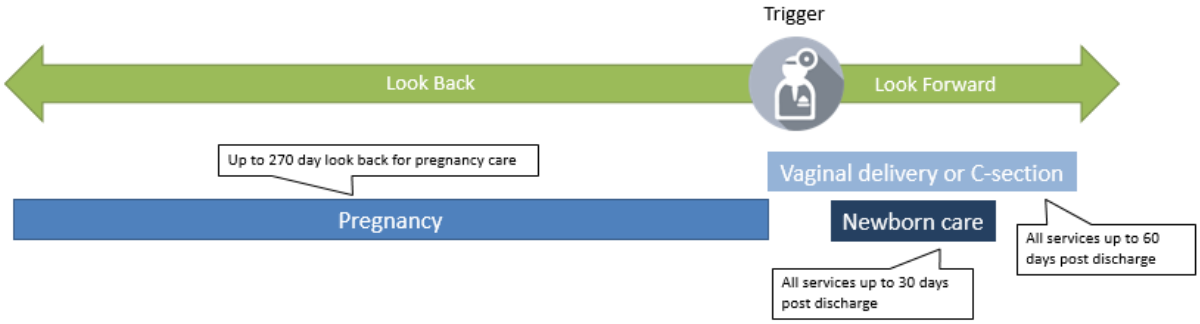
- **General Exclusions:**
  - An incomplete set of claims within the episode time window (when there are gaps in Medicaid coverage for enrollment reasons).
  - Orphan claims (e.g., where the delivery has a professional claim but no corresponding facility claim).
  - A delivery is outside the timeframe of the VBP contract.
- **Age:** All maternity bundles where the women are younger than 12 or 65 and older at the time of the delivery will be excluded.
- **Cost Upper and Lower Limit:** To create adequate risk models, individual episodes where the episode cost is below the first percentile or higher than the ninety-ninth percentile are excluded.
- **Stillborn & Multiple Live Births**: During the pilot period (2016/2017), maternity bundles with stillborns or multiple live births will be excluded and the consequences on the bundle will be analyzed.

Stop-loss

High costs bundles: When a maternity bundle exceeds a certain cost level (to be determined at a later date), the additional costs are excluded. For example, if the 'stop-loss' is set at $40,000, a bundle could never be counted as more than $40,000 towards the VBP contractor's total cost of care. The main reason for this stop-loss is to prevent NICU admissions from skewing the average costs of maternity care, and exposing providers to unwarranted insurance risk.

What are the time-windows for a maternity care episode?

Starting with the pregnancy, all services during the period of the pregnancy are included. For the delivery, all care up to 60 days post discharge are included. For the newborn, all care up to 30 days post discharge are included.



Time-Window for Pregnancy

The pregnancy episode is triggered with the delivery, and the entire pregnancy episode is in the look-back period of the delivery episode and could last the entire pre-natal care period (up to 270 days prior to delivery).

Time-Window for Delivery (Vaginal Delivery or C-Section)

Starting from the delivery procedure, there is a 3-day look back period for care related to the delivery. It then captures all the care around the delivery, e.g., while the mother is in an inpatient facility or a birthing center and extends to a 60-day look forward post-discharge period.

Time-Window for Newborn

The newborn episode captures all the care provided to the newborn from their initial Medicaid claim (corresponding to the inpatient nursery stay) extending to 30 days post-discharge.

Which Potentially Avoidable Complications (PACs) are related to the Maternity Care episode?

Potentially avoidable complications (PACs) related to maternity care can arise during pregnancy, during the delivery period as well as during the post-natal period while the mother is still in the hospital or after discharge.

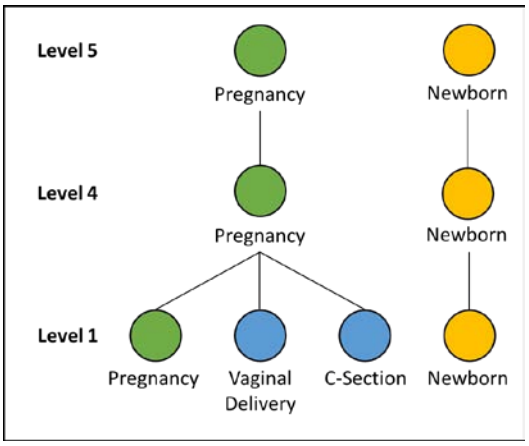
An episode contains services that are assigned as either typical or as potential complication. In order to be considered a potentially avoidable complication, or PAC, services must include complication diagnosis codes that either (1) directly relate to the index condition or (2) indicate a failure in patient safety. PACs can occur as hospitalizations, emergency room visits, and professional services related to these hospitalizations, but they can also occur in outpatient settings. As the term indicates, a PAC does not mean that something has gone wrong: it means that a type of care was delivered related to a clinical event that *may* have been preventable. As such, the goal is never to reduce PACs to zero, but to reduce PACs as much as possible, and to benchmark the risk-adjusted occurrences of these PACs between VBP contractors and MCOs.

Additionally, PACs can be identified by failure to comply with patient safety guidelines, such as HACs (CMS defined Hospital-Acquired Conditions) and PSIs (Agency for Healthcare Research and Quality (AHRQ) defined Patient Safety Indicators). Likewise, failure to avoid other situations related to patient safety (e.g. avoidable infection or drug interaction) may also be considered a PAC. In Maternity Care, PACs are relatively rare compared to e.g. the care for chronic conditions.

The top 10 PACs based on costs, for each of the maternity care episodes are listed in Appendix B. See Appendix C for the details of the most prevalent maternity-care related PACs in NYS Medicaid.

Which episodes roll up in the maternity bundle?

The overarching clinical logic of HCI^3's PROMETHEUS Analytics© is based on allowing a member to have multiple open episodes that may coexist concurrently and can be linked together when clinically relevant. Episodes can be analyzed individually based on their included services or rolled up into more comprehensive bundles through clinical association.



Specifically for maternity care, at level 4, all episodes care related to the mom (pregnancy, vaginal delivery and C-section) are rolled up under the pregnancy episode.

Which subtypes of the Maternity episode exist?

'Subtypes' are subgroupings that could help stratify a population for analytic purposes and are used for, amongst others, risk adjustment purposes.

A few examples of common subtypes for the maternity care episodes are:

- High risk pregnancy, bad obstetric history
- Antepartum hemorrhage
- Gestational diabetes
- Cardiovascular disease in mother
- Low birth weight baby 1500 - 2500 grams

The overview of all subtypes of the maternity care episodes can be found in appendix C.

How is the risk adjustment of Maternity Care episode done?

Risk adjustment takes into account the profile of the population insured (e.g., member demographics such as gender and age, as well as any comorbid conditions the member may have). HCI^3's PROMETHEUS Analytics© severity-adjustment is utilized for risk-adjustment of individual episodes of care and is open to refinement during pilot years (and beyond). HCI^3's severity-adjustment is computed separately for each of the State's nine managed care regions (provided by the DOH) which each have their own estimated models. For episodes not governed by traditional severity-adjustment, the regional average is also used as the expected cost for all episodes for members within each region.

In order to calculate risk adjusted expected costs, the total cost on a set of demographic and clinical risk variables is regressed, and the results are used to predict expected total cost based on those demographic and clinical factors.

Attachment A: Glossary

- **Complication code:** These are ICD diagnosis codes, which are used to identify a Potentially Avoidable Complication (PAC) services during the episode time window.
- **Diagnosis codes:** These are unique codes based on ICD-9 (or ICD-10) that are used to group and categorize diseases, disorders, symptoms, etc. These identify clinically-related inpatient, outpatient, and professional typical services to be included in the episode in conjunction with the relevant procedure codes. These may include trigger codes, signs and symptoms and other related conditions and are used to steer services into an open episode.
- **Episode:** An episode of medical care that spans a predefined period of time for a particular payer-provider-patient triad, as informed by clinical practice guidelines and/or expert opinion. The episode starts after there is a confirmed trigger for that episode (e.g. a diagnosis).
- **Episode type:** Episodes are grouped under four main categories:
    - *Chronic Condition* – care for a chronic medical condition.
    - *Acute Medical* – care for an acute medical condition.
    - *Procedural (Inpatient (IP) or Outpatient (OP))* – a major procedure and its follow-up care; the procedure may treat a chronic or acute condition.
    - *Other Condition* – care for pregnancy and cancer episodes.

  In addition, there is one generic episode type included:
    - *System-related Failures* – inpatient and follow-up care for a condition caused by a systemic patient-safety failure.
- **Exclusions:** Some episodes have specific exclusion criteria, which are either exclusions from the episode based on clinical reasons or exclusions from eligibility for Medicaid.
- **ICD-10 codes:** The ICD-9 diagnosis codes and the ICD-9 procedure codes for the above categories of codes have been cross-walked to ICD-10 codes leveraging the open-source GEM (Generalized Equivalence mapping) tables published by CMS.
- **Index Condition:** The index condition refers to the specific episode that the PAC relates to.
- **Initial and Confirming Triggers:** An initial trigger initiates an episode based on diagnosis and / or procedure codes found on institutional or non-institutional claims data. For many episodes, a second trigger, the confirming trigger, is necessary to actually trigger the episode. Sometimes an episode itself could serve as a trigger for another episode, e.g., pregnancy episode in delivery episode.
- **Clinical Association**: HCI^3's PROMETHEUS Analytics© allows episodes to be connected to one another based on clinical relevance. For any individual patient, conditions and treatments, all of which trigger different episodes, are often related to one another from a clinical perspective. Episodes can be linked together as either typical or complication.
- **Look-back & Look-forward:** From the point in which an episode is triggered, episode costs / volume are evaluated within the associated time window for a predetermined number of days

before and after the trigger date. Costs, volume, and other episode components that fall within this range are captured within the episode.

- **Pharmacy codes:** These are codes used to identify relevant pharmacy claims to be included in the episode. HCI[3]'s PROMETHEUS Analytics© groups pharmacy NDC codes into higher categories using the National Library of Medicine's open-source RxNorm system of drug classification.
- **Potentially Avoidable Complication (PAC):** Potentially avoidable complications (PACs) related to maternity care can arise during pregnancy, during the delivery period as well as during the post-natal period while the mother is still in the hospital or after discharge.

  An episode contains services that are assigned as either typical or as potential complication. In order to be considered a potentially avoidable complication, or PAC, services must include complication diagnosis codes that either (1) directly relate to the index condition or (2) indicate a failure in patient safety. PACs can occur as hospitalizations, emergency room visits, and professional services related to these hospitalizations, but they can also occur in outpatient settings. As the term indicates, a PAC does not mean that something has gone wrong: it means that a type of care was delivered related to a clinical event that *may* have been preventable. As such, the goal is never to reduce PACs to zero, but to reduce PACs as much as possible, and to benchmark the risk-adjusted occurrences of these PACs between VBP contractors and MCOs.

  Additionally, PACs can be identified by failure to comply with patient safety guidelines, such as HACs (CMS defined Hospital-Acquired Conditions) and PSIs (Agency for Healthcare Research and Quality (AHRQ) defined Patient Safety Indicators). Likewise, failure to avoid other situations related to patient safety (e.g. avoidable infection or drug interaction) may also be considered a PAC. In Maternity Care, PACs are relatively rare compared to e.g. the care for chronic conditions
- **Procedure codes:** These are codes used to identify clinically-related services to be included in the episode in conjunction with the typical diagnosis codes. Procedure codes include ICD procedures, CPT, and HCPCS codes.
- **Roll-Up:** Some episodes are associated with each other through HCI[3]'s PROMETHEUS Analytics© clinical logic and grouped under an 'umbrella' episode, including the grouped episode's costs/volume.
- **Subtypes (code):** Episodes often have subtypes or variants, which are useful to adjust for the severity of that episode, and reduce the need to have multiple episodes of the same type.
- **Time-window:** This is the time that an episode is open for analytic purposes. It includes the trigger event, a look-back period and a look-forward period and could extend based on rules and criteria.
- **Trigger code:** A trigger code is the diagnosis or procedure code indicating the condition in question is present or procedure in question has occurred. Trigger codes are used to open new episodes and assign a time window for the start and end dates of each episode (depending on the episode type). Trigger codes can be ICD diagnosis or procedure codes, CPT or HCPCS codes, and could be present on an inpatient facility claim, an outpatient facility claim, or a professional claim.

Attachment B: Top 10 PACs per Maternity Episode

The top 10 PACs based on costs, for each of the maternity care episodes are listed below.

Top 10 PACs for Pregnancy

The top 10 PACs (based on cost) related to pregnancy in NYS Medicaid are:

1. Failed induction, abnormal forces, obstructed labor
2. Fetal distress
3. Fetal abnormalities (decreased fetal movements)
4. Urinary tract infection
5. Thrombophlebitis, DVT during pregnancy
6. Other major puerperal complications
7. Sepsis, pyrexia during labor
8. Infections of breast & nipple associated with childbirth
9. Obstetrical embolism, air, amniotic fluid, pulmonary embolism
10. Fever & chills

Top 10 PACs for Vaginal Deliveries

The top 10 PACs (based on cost) related to vaginal deliveries in NYS Medicaid are:

1. Post-partum hemorrhage, retained placenta
2. Obstetrical trauma
3. Other major puerperal complications
4. Puerperal sepsis
5. Urinary tract infection
6. Obstetrical wound complications
7. Complications from anesthesia during labor/delivery
8. Hypotension / syncope
9. Fever & chills
10. Acute esophagitis, acute gastritis, duodenitis

Top 10 PACs for C-Sections

The top 10 PACs (based on cost) related to C-sections in NYS Medicaid are:

1. Obstetrical wound complications
2. Disruption wound C-Section
3. Puerperal sepsis
4. Other major puerperal complications
5. Post-partum hemorrhage, retained placenta
6. Urinary tract infection
7. Wound infections
8. Complications of surgical procedures
9. Wound dehiscence
10. Obstetrical Embolism, Air, Amniotic Fluid

Top 10 PACs for Newborns

The top 10 PACs (based on cost) related to newborns in NYS Medicaid are:

1. Respiratory complication in newborn
2. Sepsis of newborn
3. Other complications in newborn
4. Complications of body temperature in newborn
5. Metabolic complications in newborn
6. Cerebral complications in newborn
7. Infections in newborn
8. Meconium aspiration syndrome
9. Cardiac arrest in newborn
10. Necrotizing enterocolitis

Attachment C: Workbook with codes for Maternity Care episode

The file below includes all ICD-9 pregnancy specific codes.

Workbook with ICD-9 codes

The file below includes all ICD-9 vaginal delivery specific codes.

Workbook with ICD-9 codes

The file below includes all ICD-9 C-section specific codes.

Workbook with ICD-9 codes

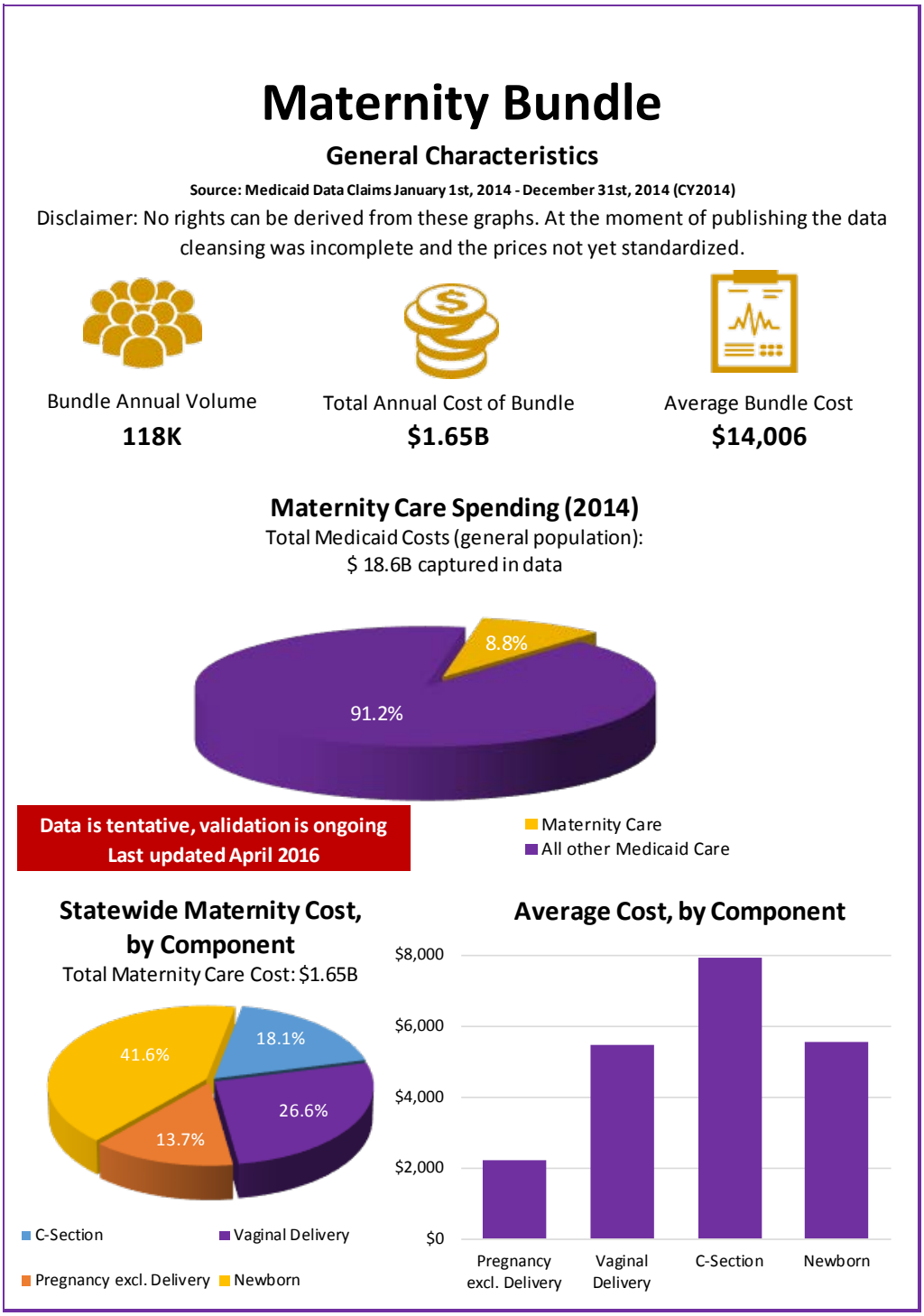
The file below includes all ICD-9 newborn specific codes.

Workbook with ICD-9 codes

ICD-10 codes are forthcoming.

Attachment D: Data Available for Maternity Bundle Analysis

When contracting the maternity bundle the mother and child must be linked via an external data source, but for the purposes of this report the mothers' and children's costs are independently analyzed and aggregated.



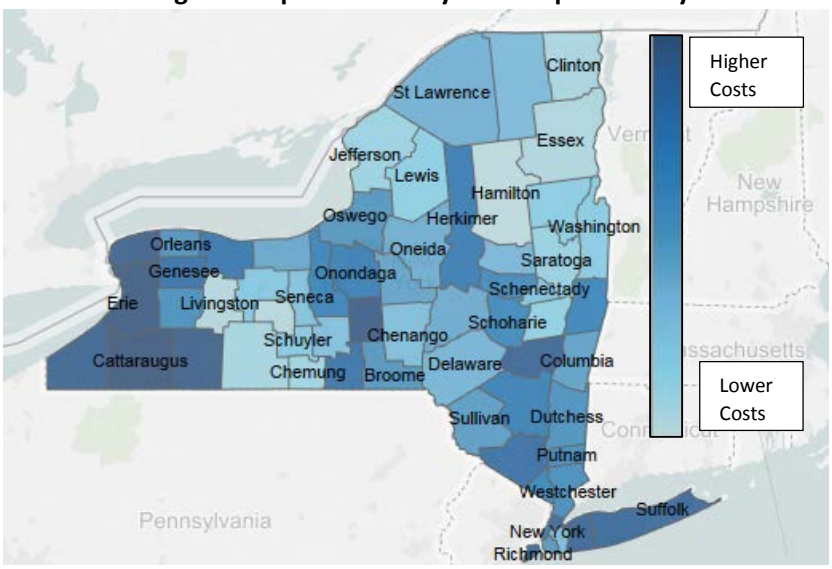
Maternity Bundle

Variations in Costs per County

Source: Medicaid Data Claims January 1st, 2014 - December 31st, 2014 (CY2014)

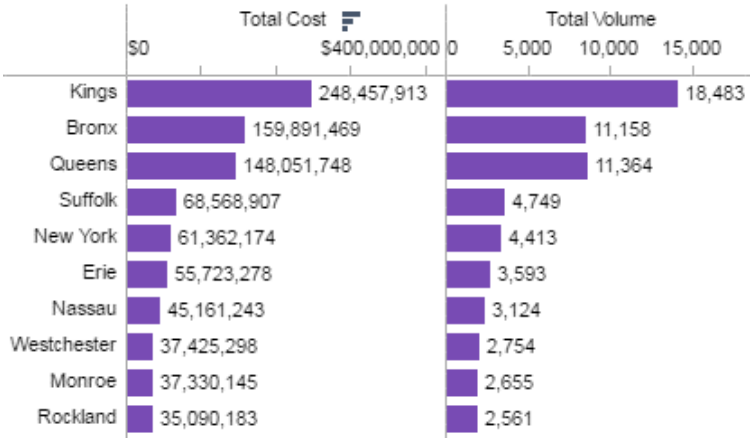
Disclaimer: No rights can be derived from these graphs. At the moment of publishing the data cleansing was incomplete and the prices not yet standardized.

Average Costs per Maternity Bundle per County



Data is tentative, validation is ongoing
Last updated April 2016

Costs and Volume per County for Top 10 Counties

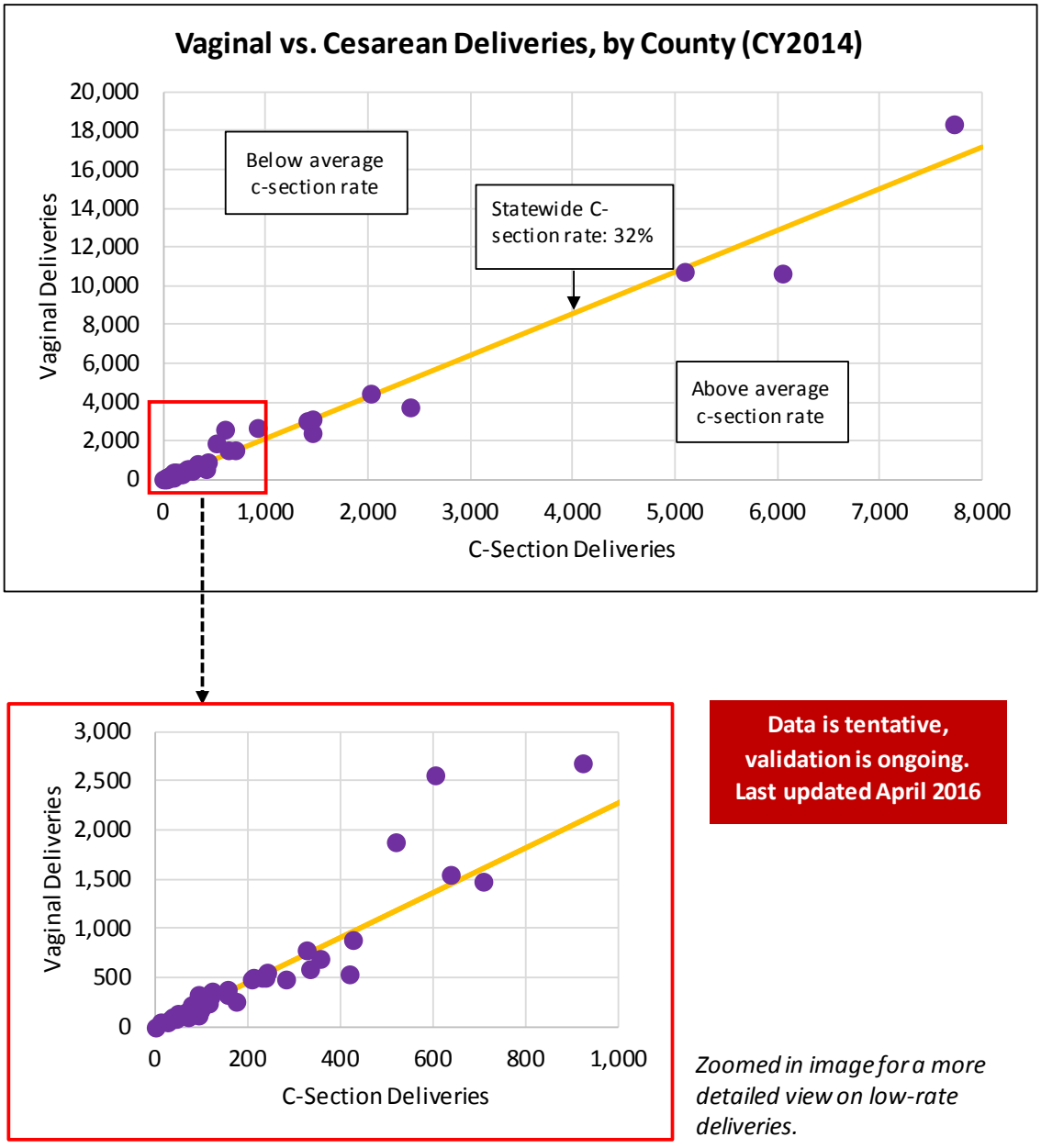


Vaginal vs. Cesarean Deliveries per County

Variations in Deliveries per County

Source: Medicaid Data Claims January 1st, 2014 - December 31st, 2014 (CY2014)

Disclaimer: No rights can be derived from these graphs. At the moment of publishing the data cleansing was incomplete and the prices not yet standardized.



Data is tentative, validation is ongoing. Last updated April 2016

Zoomed in image for a more detailed view on low-rate deliveries.

NEW YORK STATE OF OPPORTUNITY. Department of Health

Maternity Care Quality Measure Summary

Draft

May 2016

NYS Medicaid Value Based Payment

Maternity Clinical Advisory Group (CAG) Quality Measure Recommendations

Introduction

Over the course of three meetings, the Maternity CAG has reviewed, discussed and provided feedback on the proposed maternity bundle to be used to inform value based payment contracting for Levels 1-3.

A key element of these discussions was the review of current, existing and new quality measures used to measure relevant for the maternity bundle. This document summarizes the discussion of the CAG and their categorization of outcome measures.[5]

Selecting quality measures: criteria used to consider relevance[6]

In reviewing potential quality measures for utilization as part of a VBP arrangement, a number of key criteria have been applied across all Medicaid member subpopulations and disease bundles. These criteria, and examples of their specific implications for the Maternity VBP arrangement, are the following:

Clinical relevance

Focused on key *outcomes* of integrated care process

I.e. outcome measures (postpartum depression) are preferred over process measures (screening for postpartum depression); outcomes of the total care process are preferred over outcomes of a single component of the care process (i.e. the quality of one type of professional's care).

For process measures: crucial evidence-based steps in integrated care process that may not be reflected in the patient outcomes measured

I.e. focus on postpartum contraceptive care is key but will not be captured in outcomes of current maternity episode

Existing variability in performance and/or possibility for improvement

i.e., blood pressure measurement during pregnancy is unlikely to be lower than >95% throughout the State

Reliability and validity

Measure is well established by reputable organization

By focusing on established measures (owned by e.g. NYS Office of Patient Quality and Safety (OQPS), endorsed by the National Quality Forum (NQF), Healthcare Effectiveness Data and Information Set (HEDIS) measures and/or measures owned by organizations such as the Joint Commission, the validity and reliability of measures can be assumed to be acceptable

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[5] The following sources were used to establish the list of measures to evaluate: existing DSRIP/QARR measures; AHRQ PQI/IQI/PSI/PDI measures; CMS Medicaid Core set measures; other existing statewide measures; NQF endorsed measures; measures suggested by the CAG.

[6] After the Measurement Evaluation Criteria established by the National Quality Forum (NQF), http://www.qualityforum.org/uploadedFiles/Quality_Forum/Measuring_Performance/Consensus_Development_Process%E2%80%99s_Principle/EvalCriteria2008-08-28Final.pdf

Outcome measures are adequately risk-adjusted
I.e. measuring '% preterm births' without adequate risk adjustment makes it impossible to compare outcomes between providers

Feasibility

Claims-based measures are preferred over non-claims based measures (clinical data, surveys)
I.e. ease of data collection data is important and measure information should not add unnecessary burden for data collection

When clinical data or surveys are required, existing sources must be available
I.e. the vital statistics repository (based on birth certificates) is an acceptable source, especially because OQPS has already created the link between the Medicaid claims data and this clinical registry

Data sources preferably are patient-level data
Measures that require random samples (e.g. sampling patient records or using surveys) are less ideal because they do not allow drill-down to patient level and/or adequate risk-adjustment, and may add to the burden of data collection. An exception is made for such measures that are part of DSRIP/QARR.

Data sources must be available without significant delay
I.e. data sources should not have a lag longer than the claims-based measures (which have a lag of six months). This is an issue with the vital statistics repository, for example, which have a one year lag (at least for the NYC data).

Meaningful and actionable to provider improvement in general

Measures should not only be related to the goals of care, but also something the provider can impact or use to change care.

Categorizing and Prioritizing Quality Measures

Based on the above criteria, the CAG discussed the outcome measures in the framework of three categories:

- **Category 1** – Category 1 is comprised of approved outcome measures that are felt to be clinically relevant, reliable and valid, and feasible.
- **Category 2** – Category 2 outcome measures were felt to be clinically relevant, valid and probably reliable, but where the feasibility could be problematic. These outcome measures should be investigated during the 2016 or 2017 pilot but would likely not be implementable in the immediate future.
- **Category 3** – Category 3 measures were decided to be insufficiently relevant, valid, reliable and/or feasible.

Ultimately the use of these measures, particularly in Category 1 and 2 will be developed and further refined during the 2016 (and possibly 2017 pilots). The CAG will be re-assembled on a yearly basis during at least 2016 and 2017 to further refine the Category 1 and 2 measures.

The HCI[3] grouper creates condition-specific scores for Potentially Avoidable Complications (PACs) for each condition. The 'percentage of total episode costs that are PACs' is a useful measure to look for potential improvements; it cannot be interpreted as a quality measure. PAC *counts* however, *can* be considered clinically relevant and feasible outcome measures. For Maternity Care, however, the PAC counts are low, and the events that the grouper considers to be PACs are not all considered validated outcome measures by the CAG. (Individual PACs may be 'mined' to be considered to be future quality measures, such as post-partum depression etc.)

Maternity CAG Recommended Quality measures – Category 1 and 2

	#	Measure	Measure Steward/Source
Category 1	**1**	Frequency of Ongoing Prenatal Care	National Committee for Quality Assurance
	2	Prenatal and Postpartum Care (PPC)	National Committee for Quality Assurance
	3	% of Vaginal Deliveries With Episiotomy*	Christiana Care Health System
	4	Vaginal Birth After Cesarean (VBAC) Delivery Rate	Office of Quality and Patient Safety (eQARR)
	5	C-Section for Nulliparous Singleton Term Vertex (NSTV) (risk adjusted)*	The Joint Commission
	6	% of Early Elective Deliveries*	The Joint Commission
Category 2	**7**	Antenatal Steroids*	The Joint Commission
	8	Antenatal hydroxyl progesterone	Texas Maternity Bundle
	9	Experience of Mother With Pregnancy Care	New
	10	Appropriate DVT Prophylaxis in Women Undergoing Cesarean Delivery*	Hospital Corporation of America
	11	Intrapartum Antibiotic Prophylaxis for Group B Streptococcus (GBS)*	Massachusetts General Hospital
	12	Birth Trauma Rate – Injury to Neonate	Agency for Healthcare Research & Quality- Quality Indicators
	13	Live Births Weighing Less than 2,500 Grams (risk adjusted)	Bureau of Vital Statistics
	14	% Preterm births	Bureau of Vital Statistics
	15	Under 1500g Infant Not Delivered at Appropriate Level of Care*	California Maternal Quality Care Collaborative
	16	Postpartum Blood Pressure Monitoring	Texas Maternity Bundle
	17	LARC uptake	CMS - set of 'Contraceptive Use Performance Measures' for Medicaid
	18	Neonatal Mortality Rate	New York State Prevention Agenda
	19	Hepatitis B Vaccine Coverage Among All Live Newborn Infants Prior to Discharge*	Centers for Disease Control and Prevention
	20	% of Babies Who Were Exclusively Fed with Breast Milk During Stay*	The Joint Commission
	21	Monitoring and reporting of NICU referral rates	New
		**= NQF Endorsed*	

CAG categorization and discussion of measures

	Topic	#	Quality Measure (* = NQF Endorsed)	Type of Measure	Measure Steward/Source	DSRIP	QARR	HEDIS	Data Required		Quality Measure Categorization & Comments	
									Medicaid Claims Data	Vital Statistics[1]	Category	Comments
PREGNANCY	Prenatal Care	1	Frequency of Ongoing Prenatal Care	Process	National Committee for Quality Assurance/HEDIS		X	X	YES	-	1	Scores high on all criteria. HEDIS measure in QARR.
		2	Prenatal and Postpartum Care (PPC)	Process	National Committee for Quality Assurance / HEDIS		X	X	YES	-	1	Scores high on all criteria. HEDIS measure in QARR.
	Screening / Prevention	3	Behavioral Health Risk Assessment	Process	American Medical Association – convened Physician Consortium for Performance Measurement ® (AMA-PCPI)				NO	YES	3	Low relevance since this measure only looks at whether or not the screening was done. Vital statistics data on this topic have limited reliability. Postpartum depression is being considered as a Potentially Avoidable Complication (PAC) in the Maternity bundle.
		4	Antenatal Depression Screening	Process	Texas Maternity Bundle				NO	NO	3	As the previous measure, with the addition that this measure is not included in the vital statistics dataset.
		6	Risk-Appropriate Screening During Pre-Natal Care Visits (Gestational Diabetes)	Process	AHRQ guideline: National Collaborating Centre for Women's and Children's Health. Antenatal care: routine care for the healthy				NO	YES	3	Clinically relevant, but should be focused on broader set of risk factors. More relevant to focus on outcome measure – many of the complications of not doing this screening properly will be captured as Potentially Avoidable Complications (PACs). Risk-appropriate screening is currently an OPQS quality improvement target. Measures that may be forthcoming from this project could at a later stage be considered by the CAG.

	Topic	#	Quality Measure (* = NQF Endorsed)	Type of Measure	Measure Steward/Source	DSRIP	QARR	HEDIS	Data Required		Quality Measure Categorization & Comments	
									Medicaid Claims Data	Vital Statistics[1]	Category	Comments
					pregnant woman.							
		7	Antenatal Steroids*	Process	The Joint Commission				NO	YES	2	Clinically very relevant because it is a key intervention to increase the incidence of fetal maturation (reduce respiratory distress reduce intraventricular hemorrhage, and reduce neonatal death) The size of the relevant population is small. In addition, the quality of these data in the vital statistics is deemed to be questionable. Given the clinical relevance, these issues merit further attention during the 2016 Pilot. One concern that was mentioned was that 'receiving the full course' could be too high a goal.
		8	Antenatal Hydroxyl Progesterone	Process	Texas Maternity Bundle				NO	YES	2	Clinically very relevant because it is a key intervention to reduce the incidence of preterm births.The size of the relevant population is small. In addition, the quality of these data in the vital statistics is deemed to be questionable. This specific intervention is not yet an established process measure. Given the clinical relevance, these issues merit further attention during the 2016 Pilot.
		9	Antenatal Blood Pressure Monitoring	Process	Not available				NO	NO	3	Low feasibility and low clinical relevance because of expected uniformly high score.
	Organization	10	Shared Decision Making	Process	Informed Medical Decisions Foundation				NO	NO	3	This measure was suggested by clinical experts. Although the clinical relevance is high, the feasibility is low and this is currently not standard practice.
	Experience	11	Experience of Mother With Pregnancy Care	Outcome	New				NO	NO	2	To be further discussed during pilot. The experience (or perhaps even Patient Reported Outcomes) of maternity care is of course highly clinically relevant and a focus on this quality aspect is a core element of DSRIP and the NYS Medicaid VBP roadmap. The feasibility of this measure, however, is currently very low, because the required data for this measure is currently not even gathered.

	Topic	#	Quality Measure (* = NQF Endorsed)	Type of Measure	Measure Steward/Source	DSRIP	QARR	HEDIS	Data Required		Quality Measure Categorization & Comments	
									Medicaid Claims Data	Vital Statistics[1]	Category	Comments
DELIVERY	Vaginal Delivery	12	% of Vaginal Deliveries With Episiotomy*	Process	Christiana Care Health System				NO	YES	1	Episiotomies are increasingly seen as mostly unnecessary. Scores high on all criteria.
		13	3rd or 4th Degree Perineal Laceration During Vaginal Delivery	Outcome	Beth Israel Deaconess Medical Center				NO	YES	3	The CAG considered this measure to create the wrong incentive: overuse of C-sections or episiotomies was seen as a worse side effect than the (small) chance on significant lacerations. Moreover, this is already captured as a PAC.
		14	Vaginal Birth After Cesarean (VBAC) Delivery Rate	Process	Office of Quality and Patient Safety (eQARR)		X		NO	YES	1	Key QARR measure, calculated by OQPS.
	C-Sections	15	C-Section for Nulliparous Singleton Term Vertex (NSTV) (risk adjusted)*	Outcome	Office of Quality and Patient Safety (eQARR)		X		proxy	YES	1	Key QARR measure, calculated by OQPS.
		16	Appropriate DVT Prophylaxis in Women Undergoing Cesarean Delivery*	Process	Hospital Corporation of America				NO	NO	2	Clinical relevance is high: preventing DVT in maternity care in general is one of the three major initiatives of the motherhood initiative in NYS, together with post-partum hemorrhage and high post-partum blood pressure. During the pilot, a discussion with ACOG NYS will be continued on the feasibility of linking their database to MDW data.
		17	Appropriate Prophylactic Antibiotic Received Within One Hour Prior to	Process	Massachusetts General Hospital / Partners Health Care System				NO	NO	3	Information not available. Can't tell when the antibiotic is given. Process measure; outcomes are captured in PACs.

	Topic	#	Quality Measure (* = NQF Endorsed)	Type of Measure	Measure Steward/Source	DSRIP	QARR	HEDIS	Data Required		Quality Measure Categorization & Comments	
									Medicaid Claims Data	Vital Statistics[1]	Category	Comments
			Surgical Incision for Women Undergoing Cesarean Delivery*									
	Prevention	18	Intrapartum Antibiotic Prophylaxis for Group B Streptococcus (GBS)*	Process	Massachusetts General Hospital				NO	NO	2	As DVT prophylaxis.
	Trauma	19	Birth Trauma Rate – Injury to Neonate	Outcome	Agency for Healthcare Research & Quality- Quality Indicators				YES	YES	2	Clinical relevance and feasibility are high. The CAG would like to consider adapting the exclusions (currently too narrow) and adding a stratification by weight.
		20	Obstetric Trauma Rate – Vaginal Delivery With Instrument	Outcome	Agency for Healthcare Research & Quality- Quality Indicators				YES	YES	3	The CAG considered this measure to create the wrong incentive: overuse of especially C-sections to reduce this score was seen as a worse side effect than the (small) chance on significant lacerations. Moreover, this is already captured as a PAC.
		21	Obstetric Trauma Rate – Vaginal Delivery Without Instrument	Outcome	Agency for Healthcare Research & Quality- Quality Indicators				YES	YES	3	As previous measure.
	Overall	22	% of Early Elective Deliveries*	Outcome	The Joint Commission	X			NO	YES	1	DSRIP measure. High score on all criteria

	Topic	#	Quality Measure (* = NQF Endorsed)	Type of Measure	Measure Steward/Source	DSRIP	QARR	HEDIS	Data Required		Quality Measure Categorization & Comments	
									Medicaid Claims Data	Vital Statistics[1]	Category	Comments
		23	Live Births Weighing Less than 2,500 Grams (risk adjusted)	Outcome	Bureau of Vital Statistics		X	X	proxy	YES	2	Clinical relevance is high, and measure is widely used and part of QARR. Yet CAG members question how much influence providers really have on this outcome. Ethnicity can play a significant role. Adequacy of risk adjustment needs to be further investigated during pilot (there is already a very advanced model created by OQPS).
		24	% Preterm births	Outcome	Bureau of Vital Statistics	X			NO	YES	2	Although this is a DSRIP measure, this is a Domain 4 measure, reported at State level and not risk-adjusted. Given the importance of this topic, this could be further investigated during the pilot.
		25	Under 1500g Infant Not Delivered at Appropriate Level of Care*	Process	California Maternal Quality Care Collaborative				NO	YES	2	Clinical relevance high. Also important measure to 'counteract' potential unwanted effect of saving costs by underutilizing adequate but more costly care. Can create difficult discussions on access of care. To be investigated.
POST DELIVERY MOTHER CARE	Monitoring	26	Prenatal and Postpartum Care (PPC)	Process	National Committee for Quality Assurance / HEDIS		X	X	YES	-	1	Measure discussed above (prenatal care).
		27	Postpartum Blood Pressure Monitoring	Process	Texas Maternity Bundle				NO	NO	2	Clinically relevant, but data is currently absent.
	Screening	28	Postpartum Depression Screening	Process	American College of Obstetricians and Gynecologists				NO	NO	3	It's important to do the screening, but even more important to have the correct follow up. The follow up is not measured with this indicator.
		29	Postpartum Glucose Intolerance / Diabetes Screening	Process	Suggested by ACOG, CDC and ADA				NO	NO	3	It's important to do the screening, but even more important to have the correct follow up. The follow up is not measured with this indicator.

	Topic	#	Quality Measure (* = NQF Endorsed)	Type of Measure	Measure Steward/Source	DSRIP	QARR	HEDIS	Data Required		Quality Measure Categorization & Comments	
									Medicaid Claims Data	Vital Statistics[1]	Category	Comments
	Contraceptive Use	30	Use of Most or Moderately Effective Contraceptive Services, Postpartum	Process	CMS - set of 'Contraceptive Use Performance Measures' for Medicaid				YES	NO	2	Highly relevant, feasible and valid. Reliability requires additional investigation. CAG suggests broadening the measure to overall contraceptive use (not merely counseling). A caveat is that it is difficult to establish a percentage that is 'adequate', since simply striving to 'as high as possible' would create a dangerous incentive.
NEWBORN	Overall	31	Neonatal Mortality Rate	Outcome	National Committee for Quality Assurance / HEDIS				YES	YES	2	Clinical relevance is high. Small numerators may create low reliability, and risk adjustment needs to be adequate.
		32	Hepatitis B Vaccine Coverage Among All Live Newborn Infants Prior to Discharge*	Process	Centers for Disease Control and Prevention				YES	NO	2	Scores high on all criteria, except possibly the room for improvement.
		33	% of Babies Who Were Exclusively Fed with Breast Milk During Stay*	Process	The Joint Commission				NO	YES	2	High score on all criteria, the CAG suggests that some adaptations are made to the definition. 'Exclusive' seems inappropriately strict. Combining breastfeeding with bottle feeding in the beginning can help rather than higher ongoing breastfeeding. Options could be to modify the measure to "predominantly breastfed" rather than "exclusively breastfed". These data are available in vital statistics.
NICU	Referral Rates	34	Monitoring and reporting of NICU referral rates	Process	New				YES		2	It will be critical to monitor the referral rates to Level 4 to ensure providers are not over-referring babies to Level 4 level of care.

1. Source: http://www.nyc.gov/html/doh/downloads/pdf/vs/birth-limited-use08.pdf
2. CMS has created a set of 'Contraceptive Use Performance Measures' for Medicaid. The indicator '% of women ages 15–44 who are at risk of unintended pregnancy that adopt or continue use of long-acting reversible contraception (LARC)' is on that list. www.medicaid.gov/medicaid-chip-program-information/by-topics/quality-of-care/downloads/contraceptive-measure-faqs.pd
3. Neonatal Mortality Rate is a key public health measure that is part of the State's Prevention Agenda (www.health.ny.gov/prevention/prevention_agenda/healthy_mothers)
4. Claim data can identify specific conditions. If these measures are only for preterm babies, we need the vital statistics to identify the prematurity.

Appendix A:

Meeting Schedule

	Date	Agenda
CAG #1	7/21/2015	Part I A. Introduction to Value Based Payment B. Clinical Advisory Group Roles and Responsibilities C. HCI^3 101- Understanding the HCI^3 Grouper and Development of Care Bundles Part II A. Maternity Bundle – Definition
CAG #2	8/11/2015	1. Bundle Criteria 2. Characteristics of the Maternity Population in the Medicaid Data 3. Risk Adjustment for Maternity Care 4. Performance Measurements
CAG #3	9/9/2015	1. Welcome & Recap 2. Outcome Measures for Maternity Episode 3. Conclusion and Next Steps

Division of
Health Care
Finance & Administration

Health Care
Innovation Initiative

Detailed Business Requirement

Perinatal Episode of Care

Table of Contents

1. INTRODUCTION

1.1 Scope of this document

This Detailed Business Requirements (DBR) document serves as a guide to understand the definition of the perinatal episode. The DBR addresses the following questions:

- Overview of the episode
  - **Patient journey**: What patient cases are addressed by the episode?
  - **Sources of value**: At which points in the patient journey do providers have most potential to improve quality of care and outcomes?
  - **Design dimensions**: What decisions underlie the design of the episode?
  - **Input data**: What inputs does the episode algorithm require to build the episode?
  - **Configuration**: What set of factors (e.g., ICD-9 codes, durations of time) need to be specified to define the episode?
  - **Outputs**: What are suggested outputs of an episode algorithm?

The section 'Design dimensions' specifically addresses the following questions:

- **Trigger**: What events trigger an episode?
- **Episode duration**: What is the duration of the episode?
- **Claim inclusions and exclusions**: What claims are included in or excluded from the episode?
- **Total cost**: What is the total cost of an episode?

- **Quarterback**: Which provider is primarily held accountable for the outcomes of an episode?
- **Episode exclusions**: Which episodes are excluded from a Quarterback's average costs for the purposes of calculating any gain/risk sharing?
- **Quality metrics**: Which quality metrics need to be met for the Quarterback to be eligible for gain sharing?
- **Risk adjustment**: What approach can be taken to adjust episodes for risk factors that cannot be directly influenced by the Quarterback?
- **Gain/risk sharing**: What additional parameters define gain and risk sharing for Quarterbacks?

The DBR does not cover the following topics:

- Clinical rationale for inclusions and exclusions
- Intermediate analyses used during design of the episode
- Meeting materials used during design of the episode
- Guidance on data collection/transformation/storage
- Guidance on the episode algorithm coding approach
- Generation of risk adjustment coefficients
- Derivation of specific gain/risk sharing thresholds
- Generation and design of provider reports
- Background on how episodes compare to the current payment system

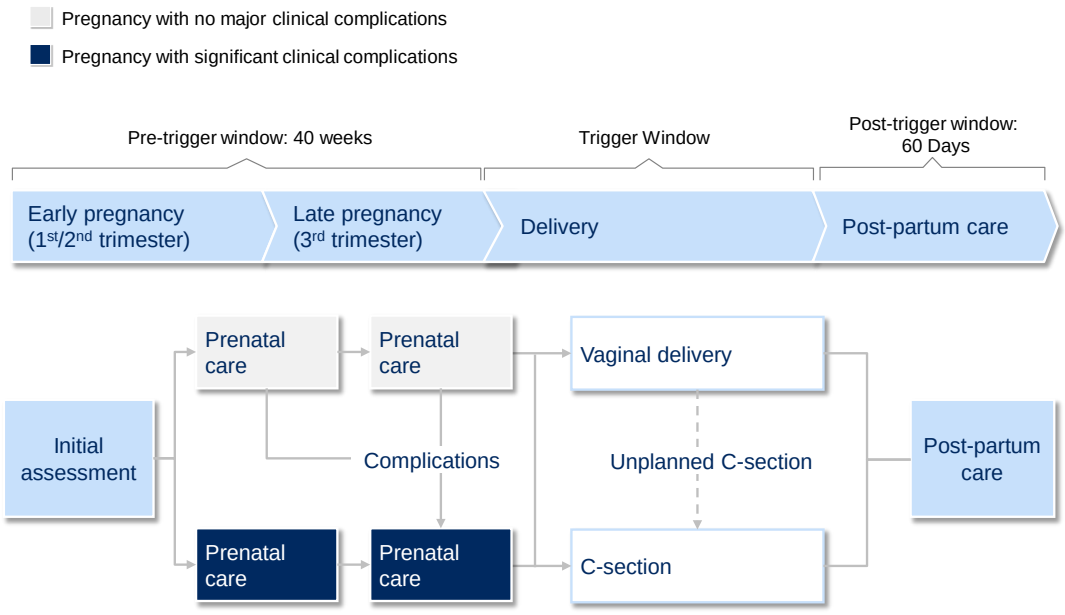
2. DESCRIPTION OF THE EPISODE

2.1 Patient journey

The episode pertains to women who undergo a low- to medium-risk pregnancy and who give birth to a live baby. As depicted in Exhibit 2, a perinatal episode begins 40 weeks prior to the admission for the live birth[1]. During the pregnancy, the woman may receive pregnancy-related care to improve and ensure the health of the mother and the baby. This pregnancy-related care could include lab tests and screening for certain conditions, ultrasound imaging, and necessary support during labor and delivery. Following delivery, the mother may receive post-partum maternal care.

[1] If the live birth occurs in an outpatient or other setting, the episode begins 40 weeks prior to the live birth

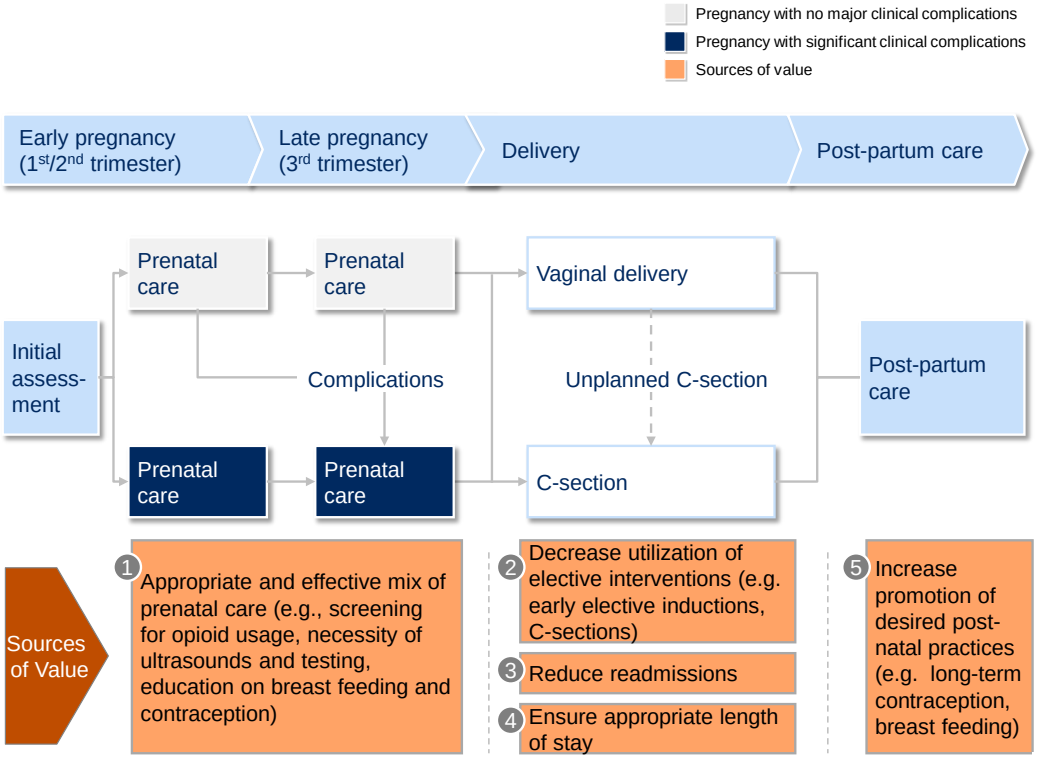
EXHIBIT 1 – PATIENT JOURNEY FOR THE PERINATAL EPISODE



2.2 Sources of value

In giving care to expecting perinatal patients, providers have several opportunities to improve the quality and cost of care (see Exhibit 3). For example, providing an appropriate and effective mix of prenatal care may reduce complications during labor and delivery. The provider can also influence the utilization of elective interventions (e.g., C-sections). During a hospital stay, the provider can influence the use of appropriate support during labor and delivery and a suitable length of stay. In the post-partum period, the provider can ensure appropriate post-partum care, including education on desired post-natal practices such as proper nutrition and breast feeding. In general, these practices could reduce the likelihood of avoidable complications, readmissions, and the total cost of perinatal care. Further, providing high-quality care during the perinatal episode may ultimately improve neonate outcomes, which is a major source of value, although this is not captured directly within the perinatal episode.

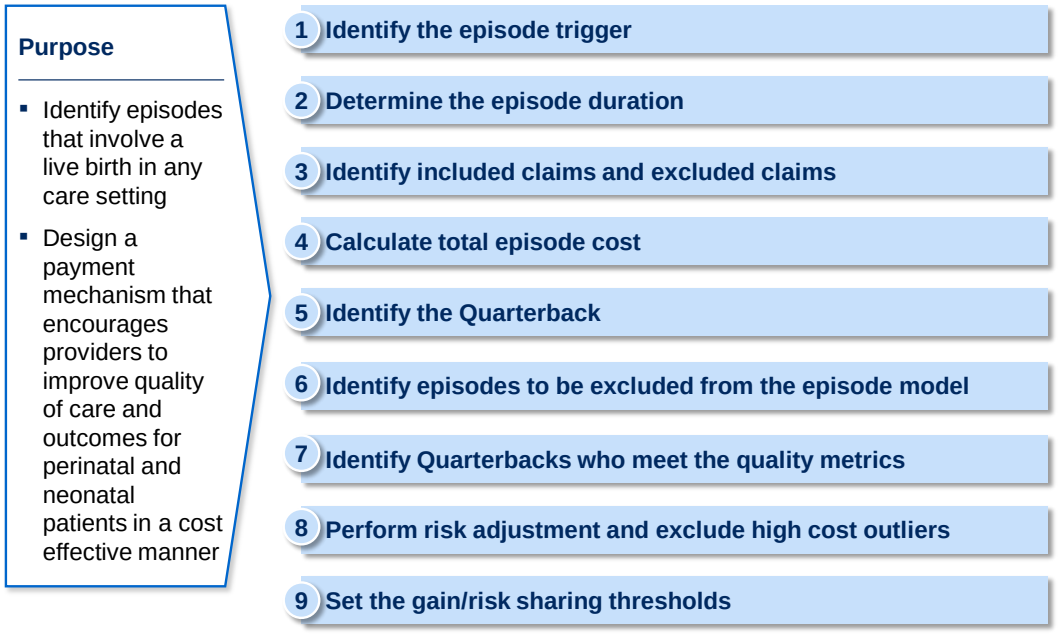
EXHIBIT 2 – SOURCES OF VALUE IN THE PERINATAL EPISODE



2.3 Design dimensions

The perinatal episode comprises nine dimensions, as depicted in Exhibit 4.

EXHIBIT 3 – DESIGN DIMENSIONS OF THE PERINATAL EPISODE



2.3.1 Trigger

The trigger for a perinatal episode is a live birth diagnosis code or delivery procedure code in any claim type and any care setting that does not contain a modifier exclusion. If the triggering professional claim includes a trigger exclusion modifier, the episode is not valid. See the attached Configuration file's 'Trigger Codes' tab for the list of trigger codes.

2.3.2 Episode duration

A complete perinatal episode begins 40 weeks prior to the start of the trigger window and ends 60 days after the end of the trigger window. The duration of the episode can be divided into three time windows:

- **Pre-trigger window**:
  - When the delivery occurs in an inpatient facility, the pre-trigger window begins 40 weeks prior to the day of admission for delivery in that facility. It extends to (and is inclusive of) the day before the admission for delivery.
  - When the delivery does not occur in an inpatient facility, the pre-trigger window begins 40 weeks prior to the live birth and extends to (and is inclusive of) the day before the live birth.
- **Trigger window**:
  - When the delivery occurs in an inpatient facility, the trigger window begins on the day of admission for delivery in that facility and extends to (and is inclusive of) the day of discharge[2] from the delivery facility.
  - When the delivery does not occur in an inpatient facility, the trigger window begins and ends on the day of delivery.
  - Trigger events can be identified through the presence of qualifying diagnosis or procedure codes[3]. If a trigger event is identified by both a procedure (CPT or ICD-9 PX) as well as a

[2] When determining the date of discharge of the delivery inpatient stay, ensure to take into account the possibility of continuous billing of inpatient facility claims on consecutive days for the same patient.

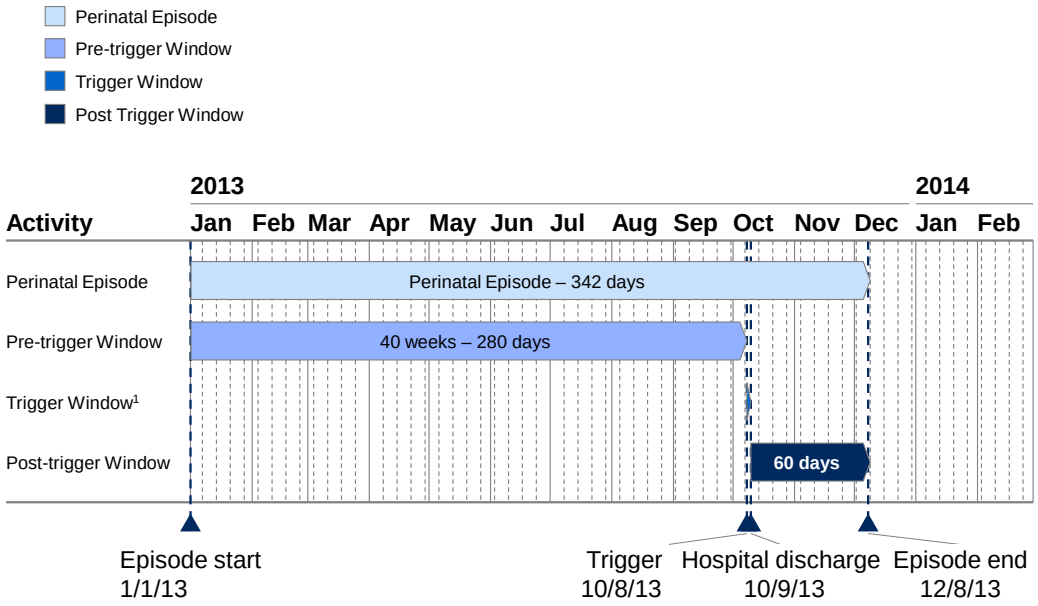
[3] See Configuration file tab 'Trigger codes,'

diagnosis code, the trigger begins on the first date of service of the qualified procedure.

- **Post-trigger window**:
  - When the delivery occurs in an inpatient facility, the post-trigger window begins on the day after the discharge[1] from the delivery facility and ends 60 days after the day of discharge.
  - When the delivery does not occur in an inpatient facility, the post-trigger window begins the day after delivery and ends 60 days after delivery.

Only complete episodes can be used to calculate total episode cost. Exhibit 5 provides an example of a perinatal episode duration for a delivery that occurs in an inpatient facility.

EXHIBIT 4–EXAMPLE PERINATAL EPISODE WITH INPATIENT DELIVERY



1 In this example, the trigger window is a 2 day inpatient facility stay

2.3.3 Claim inclusions and exclusions

To determine which claims, claim detail lines and medications are included in the cost of an episode; different approaches are used depending on the time window (Exhibit 6). Related medical claims refer to claims or claim detail lines that match a specific list of diagnosis codes and that do not contain an excluding procedure code. Related medication refers to all of the mother's pharmacy claims that do not contain an excluded HIC3 group.[4] Unless otherwise specified, when a match occurs on an inpatient facility claim, the whole claim (all detail lines) are included or excluded. When a match occurs on any other type of claim, only the detail line is included or excluded. Note that diagnosis codes are at the header level and therefore are considered to be part of all detail lines.

- **Pre-trigger window**:
  - Related medical claims, related medication, or emergency department claims[5].
- **Trigger window**: All claims are included
- **Post-trigger window (day 1 – day 30)[6]:** During the post-trigger window the following sequence is applied to determine which claims count towards the total cost of the episode:

[4]Refer to columns A-L of the attached "Configuration" file's Claim Incl. & Claims Excl. tab for the list of related medical claims and to column N of the same file for the list of medication exclusions. Medication exclusions are based on HIC3 groups.

[5] ED claims to include are identified in the following way:

- On inpatient or other facility claims, ED is identified using revenue code = 0450-0459 **OR** the presence of any of the following CPT codes = 99281, 99282, 99283, 99284, 99285, 99291, 99292
- On professional claims, ED is identified using the place of service code = 23 = emergency room **OR** the presence of any of the following CPT codes = 99281, 99282, 99283, 99284, 99285, 99291, 99292

- 1. Scan inpatient claims for readmission exclusion codes (see the file “Configuration” for a list of the readmission exclusion codes):
  - If the inpatient claim contains a readmission exclusion code, exclude the inpatient claim and all ED, other facility, professional, and pharmacy claims that occur during the time window of the inpatient stay. If two inpatient claims occur on the same day, only one of them needs to contain a readmission exclusion code for an exclusion to occur.
  - If the inpatient claim does not contain a readmission exclusion code, include the inpatient claim and all ED, other facility, professional, and pharmacy claims that occur during the time window of the inpatient stay.
- 2. Scan ED claims that have not been addressed under 1 (i.e., that do not overlap with an inpatient stay) for readmission exclusion codes:
  - If the ED claim contains a readmission exclusion code, exclude the ED claim and all other facility, professional, and pharmacy claims that occur during the time window of the ED stay. If two ED claims occur on the same day (e.g., a UB-04 and a CMS1500 ED claim), only one of them needs to contain a readmission exclusion code for an exclusion to occur.
  - If the ED claim does not contain a readmission exclusion code, include the ED claim and all other facility, professional, and pharmacy claims that occur during the time window of the ED claim.
- 3. Scan other facility, professional, and pharmacy claims that have not been addressed by 1 or 2 (i.e., that do not overlap with an

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6 Refer to exhibit 8 for a description of the claim types (inpatient, other facility, professional, pharmacy)

inpatient or ED visit) for claims inclusion codes (see the file "Configuration" for a list of the claims inclusion codes):

- If the other facility, professional, or pharmacy claim contains an inclusion code, include the detailed line with the inclusion code (in the case of a procedure and drug inclusion code) or the entire claim (in the case of a diagnosis inclusion code).
- If the other facility, professional, or pharmacy claim does not contain an inclusion code, exclude the detailed line with the inclusion code (in the case of a procedure and drug inclusion code) or the entire claim (in the case of a diagnosis inclusion code).

Exhibit 7 shows a schematic of the sequence of claims inclusions and exclusions during the post-trigger window (day 1 – day 30).

- Post-trigger window (day 31 – day 60): All related medical claims and related medications are included
- Neonatal care and medication is not included in the perinatal episode

EXHIBIT5 – CLAIMS INCLUDED AND EXCLUDED OVERVIEW

- All claims
- Related medical claims or related medical claim detail lines
- All claims excluding specific readmissions
- Related medical claims or related medical claim detail lines only OR claims that occur during an included post-trigger (day 1-30) readmission
- Related medication

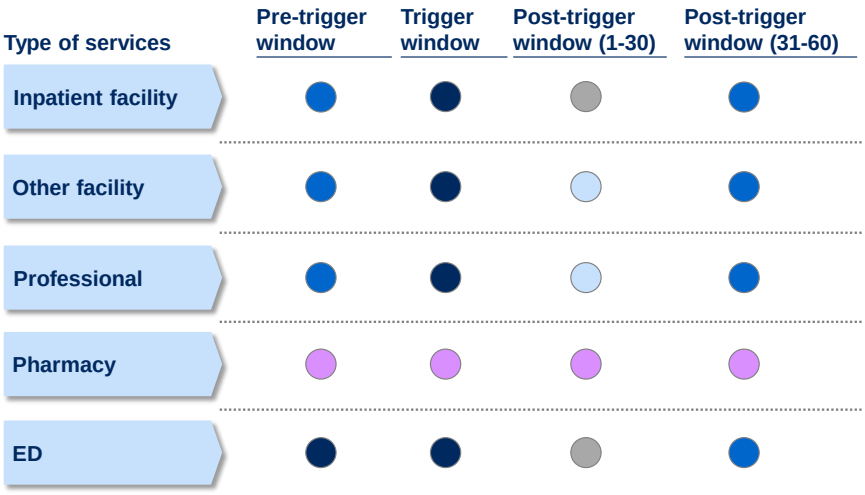

EXHIBIT 7 – CLAIMS INCLUSIONS AND EXCLUSIONS DURING THE POST-TRIGGER WINDOW (DAY 1 – DAY 30)

1. Inpatient claim

Contains code from the list "readmission exclusions"?	Inpatient claim	Concurrent ED, outpatient, professional, or pharmacy claims
Yes	Entire claim excluded[1]	Entire claim excluded
No	Entire claim included	Entire claim included

2. ED claim not concurrent with inpatient claim

Contains code from the list "readmission exclusions"?	ED claim	Concurrent outpatient, professional, or pharmacy claims
Yes	Entire claim excluded[1]	Entire claim excluded
No	Entire claim included	Entire claim included

3. Outpatient, professional, or pharmacy claim not concurrent with inpatient or ED claim

Contains code from a list "claims included xxx"?	If procedure or drug code…	If diagnosis code…
Yes	Claim line included	Entire claim included
No	Claim line excluded	Entire claim excluded

1 If two ED claims or two inpatient claims occur on the same day, only one of them needs to contain a readmission exclusion code for an exclusion to occur

2.3.4 Total cost

The total episode cost is the sum of the amount that reflects that totality of all costs for claims included in the episode. The field that reflects the totality of costs is the lesser of allowed amount or paid amount plus member cost share.

Breakdowns of total cost by category (e.g., inpatient, outpatient, professional, etc.) or by time window in the episode (pre-trigger, trigger, post-trigger) may be included for further analysis of the outputs and/or for reporting to providers as applicable. Guidance on how to define care categories in the provider reporting is included within the configuration file.

2.3.5 Quarterback

The Quarterback is the provider deemed to have the greatest accountability for the quality and cost of care for a patient during a perinatal episode. For detailed methodology on hierarchy of quarterback assignment, please see the Quarterback tab of the Configuration file.

- **Episodes with a claim(s) submitted with a global bundle billing code**[7]: The Quarterback is the provider or provider group that is responsible for billing the global bundle. The tax id of the billing provider (or group) of the delivery will be used to identify the Quarterback.
- **Episodes without a claim submitted using the global bundle billing code**: The Quarterback is the provider or provider group that is responsible for billing the delivery. The tax id of the billing provider (or group) of the delivery will be used to identify the Quarterback.
- If no Quarterback is identified (likely due to a data or coding issue), the episode is not considered valid.

2.3.6 Episode exclusions

Episode exclusions ensure that the remaining episodes are comparable to each other and allow fair comparisons between patient panels. The exclusions applied for the perinatal episodes are:

- **Comorbidities**: An episode is excluded if the patient has a comorbidity code in any diagnosis fields or in a detailed claim line

[7]The list of global bundle bill codes and detailed quarterback assignment logic is included in the Quarterback tab of the attached "Configuration" file

during the specified time period. All claims should be scanned for comorbidities with the exception of DME, laboratory and transportation claims. See the attached file "Configuration" for a list of codes that lead to exclusion of an episode. Examples of excluded episodes are those where the patient received a code for:

- Active cancer management
- HIV/AIDS
- Multiple Sclerosis
- Blood clotting disorders such as hemophilia

If a patient was not continuously enrolled during the year prior to the episode, comorbidities are checked in the data that are available. Lack of continuous enrollment during the prior year does not lead to exclusion of an episode.

- **General exclusions:** Some exclusions apply to any type of episode, i.e., are not specific to a perinatal episode. An episode is excluded when:
  - A patient has dual coverage of primary medical services at any moment during the episode
  - A patient is NOT continuously enrolled if the patient shows more than 45 days total of gap(s) in enrollment between the day of the earliest claim included in the episode and the end of the episode[8]

8The intent is to include a patient's episode even if that patient was only enrolled partway through the pregnancy. However, the patient must maintainless than or equal to 45 total days of disenrollment through to the end of the episode. Note that when required to search claims data in the time period prior to the episode start, for co-morbidities for example, it is not required that the patient be enrolled.

- The patient dies in the hospital during the episode
- The patient has a discharge status of "left against medical advice" on any facility claim within the episode
- The episode trigger occurs in a Federally Qualified Health Center (FQHC) or a Rural Health Clinic (RHC)
- Third-party liability charges are present on any line of any claim within an episode, indicating that more than one payer was involved in reimbursing the claim(s)
- Incomplete data, miscoding, or incomplete claims during the episode. Incomplete episodes are defined as lowest 2.5% of all non-risk adjusted episodes or episodes with a $0 professional claim trigger.

2.3.7 Quality metrics

A Quarterback must meet all quality metrics tied to gain sharing in order for the Quarterback to be eligible for gain sharing[9]. In addition, Quarterbacks receive information on additional quality metrics that allow them to assess their performance, but that do not affect their eligibility to participate in gain sharing[10]. It is important to note that quality metrics are calculated on a per Quarterback basis across all of a Quarterback's valid episodes. They are based on information contained in the claims filed during an episode. Failure to meet all quality metrics tied to gain sharing will eliminate that Quarterback from gain sharing

[9] Risk sharing is not dependent on the Quarterback meeting any quality metrics.

[10] Quality metrics are assessed using the information contained within the patient's claims during the episode timeframe. Note that this includes all claims, and not only claims with a pregnancy diagnosis code. Additional details are included in the configuration file.

for the performance period in question. Risk sharing is not dependent on the Quarterback meeting any quality metrics.

- **Quality metrics tied to gain sharing[11]:**
  - Screening rate for HIV
  - Screening rate for Group B streptococcus (GBS)
  - C-section rate
- **Quality metrics not tied to gain sharing (i.e., included for information only):**
  - Screening rate for gestational diabetes
  - Screening rate for asymptomatic bacteriuria
  - Screening rate for hepatitis B specific antigen
  - Tdap vaccination rate

2.3.8 Risk adjustment

For the purposes of determining a Quarterback'sperformance, the average episode cost attributable to the Quarterback is adjusted to reflect risk factors captured in recent claims data in order to be fair to providers with high-risk patients, to avoid any incentive for adverse selection of patients, and to encourage high-quality, efficient care.

The following four steps describe the high-level approach of a possible risk adjustment methodology. It should be noted that providing a specific risk adjustment approach is beyond the scope of

[11] All of these must be met in order to partake in gain sharing. For example, if only two of three quality metrics are met by a Quarterback in a performance period, that Quarterback will not be eligible for gain sharing.

this document. It should also be noted that the exclusions listed under 2.3.6 are applied before risk adjustment.

- **Flag risk factors**: Flag the risk factors that may contribute to systematically increased costs. The attached "Configuration" file lists a series of proposed risk factors and the codes used to identify them.
- **Determine risk coefficients**: A risk adjustment model is used to determine risk coefficients that explain systematic variation of costs in recent claims data. A description of the risk adjustment model and the resulting risk coefficients is beyond the scope of this document. It is possible that not all of the potential risk factors suggested by the episode design advisory group have a significant impact on costs.
- **Calculate risk adjusted episode cost**: Multiply the total episode cost of each episode by the risk coefficients associated with the given episode. The calculation of risk-adjusted episode costs is out of scope for this document.
- **Flag high cost outliers**: After episodes have been risk-adjusted, there may remain episodes that are very high cost and should be excluded from the episode model. High cost outliers are defined as episodes with risk adjusted costs greater than three standard deviations above the mean risk adjusted cost across all episodes.

2.3.9 Payment thresholds

Gain/risk sharing is determined based on the comparison of the average risk adjusted episode cost of each Quarterback to a pre-determined set of thresholds. Note that there is no requirement for a minimum number of episodes a provider needs to treat in order to be included in gain/risk sharing. The decision criteria for setting these thresholds are beyond the scope of this document.

2.4 Input data

To build the perinatal episode, four categories of input data are needed:

- **Medical claims**: Raw institutional (UB-04 claim form) or professional (CMS1500 claim form) claims at the patient level.
- **Pharmacy claims**: Raw pharmacy claims (NCPDP claim form) at the patient level.
- **Provider information**: Full list of providers in the geography where episodes areimplemented. The list should contain at a minimum provider ID, name, address and tax id.
- **Beneficiary enrollment information**: The full list of patients and their health insurance program eligibility and enrollment information.

While preparing the input data for an episode, the following questions need to be addressed:

- Is the input data quality and completeness the same for all years?
- Were there any changes over the reporting / performance time period? Potential changes may include:
  - Types of claims reported
  - Reporting procedures
  - Reporting entities (e.g. change from Fee-for-Service to Managed Care)
  - The way claims were recorded or formatted
  - Policy changes that impacted eligibility or enrollment and therefore the composition of the population on which the claims data are based

- How often are the medical claims, pharmacy claims, provider information, enrollment, and eligibility data sets refreshed?How will the updated data be incorporated into the episode analyses?

2.5 Configuration

The details of which codes trigger an episode, which claims are included in an episode, etc., are captured in the attached "Configuration"file. The file includes:

- **Trigger codes**: Codes that indicate a delivery or a live birth. The formats of these codes are CPT, ICD-9 procedure codes (also known as PX or surgical codes), and ICD-9 diagnosis codes (DX).
- **Claim inclusions**: Codes relevant to the typical care received throughout the perinatal episode. Claim inclusions will be bundled into the episode. The formats of these codes are CPT, ICD-9 DX, and HIC3.
- **Claim exclusions**: Codes that represent procedures or medication that should not be bundled into the episode. The formats of these codes are CPT, ICD-9 DX, ICD-9 PX and HIC3.
- **Quarterback**:
  - **Live birth or delivery:** Codes that represent a live birth or delivery of a baby that will be used to identify the Quarterback. The formats of these codes are CPT and ICD-9 PX.
  - **Global bundle codes:** Codes used to identify if the Quarterback provided services to the patient using a global bundle billing code. The format of these codes is CPT.
- **Readmission exclusions:** Codes that are used to identify readmissions during the post-trigger window that are excluded from the episode. The format is ICD-9 procedures and CPT. The codes are derived from the MS-DRG based readmission exclusion

lists published by the Centers for Medicare and Medicaid Services for the Bundled Payments for Care Improvement (BPCI) Initiative.

- **Episode exclusions**: Codes indicating additional disorders, diseases, clinical conditions, or other reasons that result in the exclusion of an episode from gain/risk sharing. The formats of these codes are ICD-9 DX, ICD-9 PX and CPT.
- **Quality metrics**: Codes used to assess the performance of Quarterbacks on the quality metrics. The formats of these codes are CPT, ICD-9 DX, and HIC3.

2.6 Outputs

Using the input data tables, an episode algorithm will create a bundled account of all claims relating to perinatal episodes. A suggested output of an episode algorithm consists of four tables:

- **Episode output table**: Contains one episode per row with information such as total cost, start/end date, Quarterback, patient ID, etc. Multiple episodes of the same patient in the performance period appear as separate rows.
- **Claims output table**: Contains the complete set of claims (medical and pharmacy) that were bundled to create the episode table. Each claim has an episode identifier that will allow the user to link the claims to their corresponding episode.
- **Quarterback output table:** Contains one row for each Quarterback (identified by tax id) with information such as the average total episode cost, performance on quality metrics, number of episodes, etc. Additional information such as Quarterback name and address are also included.
- **Testing table:** Contains a comprehensive set of metrics for quality control and validation of episode outputs

3. RESOURCES AND VALIDATION

3.1 Attachments

Accompanying the Detailed Business Requirements document is the attachment:

- Detailed Business Requirements Configuration Perinatal.xlsx

3.2 Glossary

- CPT: Current Procedural Terminology
- Dx: Medical diagnosis
- HCPCS: Healthcare Common Procedure Coding System
- HIC: Hierarchical Ingredient Code
- ICD-9: International Classification of Diseases, Ninth Revision
- NDC: National Drug Code
- NPI: National Physician Identifier
- Px: Medical procedure
- Rx: Medical prescription
- Tax ID: Federal tax identification number