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.

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Maternity Bundle Playbook

Maternity Care Definition: Pregnancy, Delivery & Newborn Care

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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?

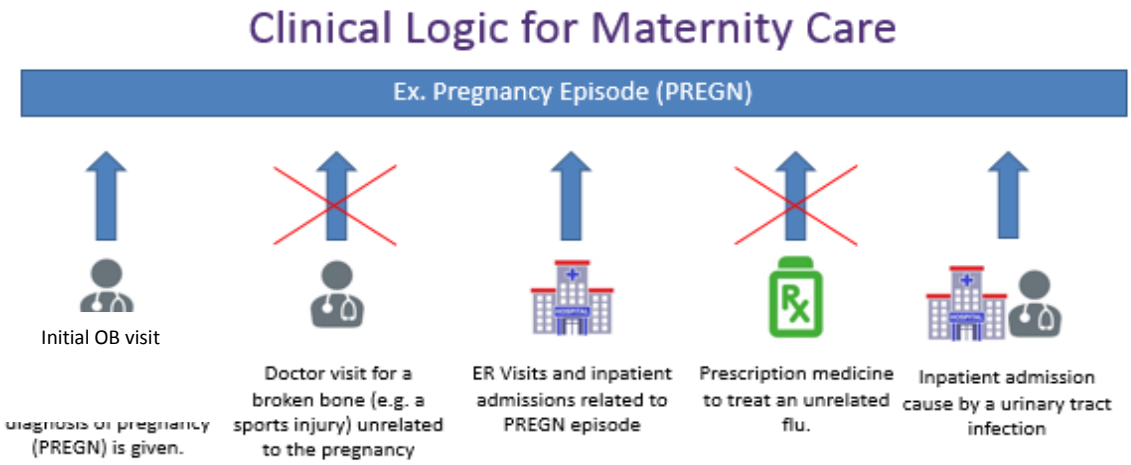
The C-section episode is triggered by one or more claims that carry a procedural code for C-section and meet the trigger criteria that is specified for this episode. There is only one trigger necessary (no

[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:

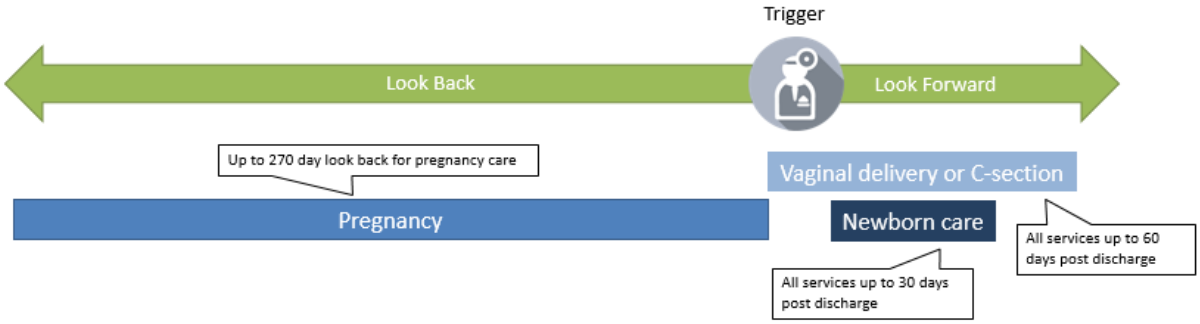
- **General Exclusions:**
  - An incomplete set of claims within the episode time window (when there are gaps in Medicaid coverage for enrollment reasons).
  - Orphan claims (e.g., where the delivery has a professional claim but no corresponding facility claim).
  - A delivery is outside the timeframe 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.

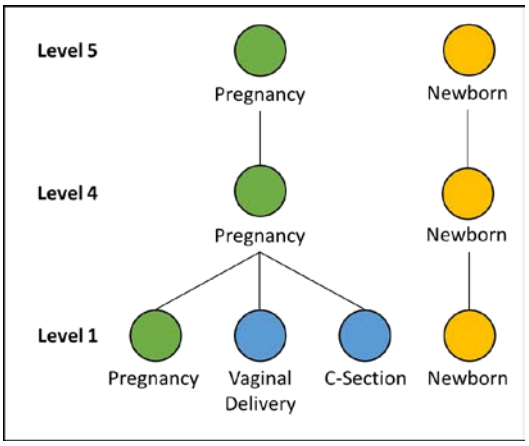
An episode contains services that are assigned as either typical or as potential complication. In order to be considered a potentially avoidable complication, or PAC, services must include complication diagnosis codes that either (1) directly relate to the index condition or (2) indicate a failure in 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

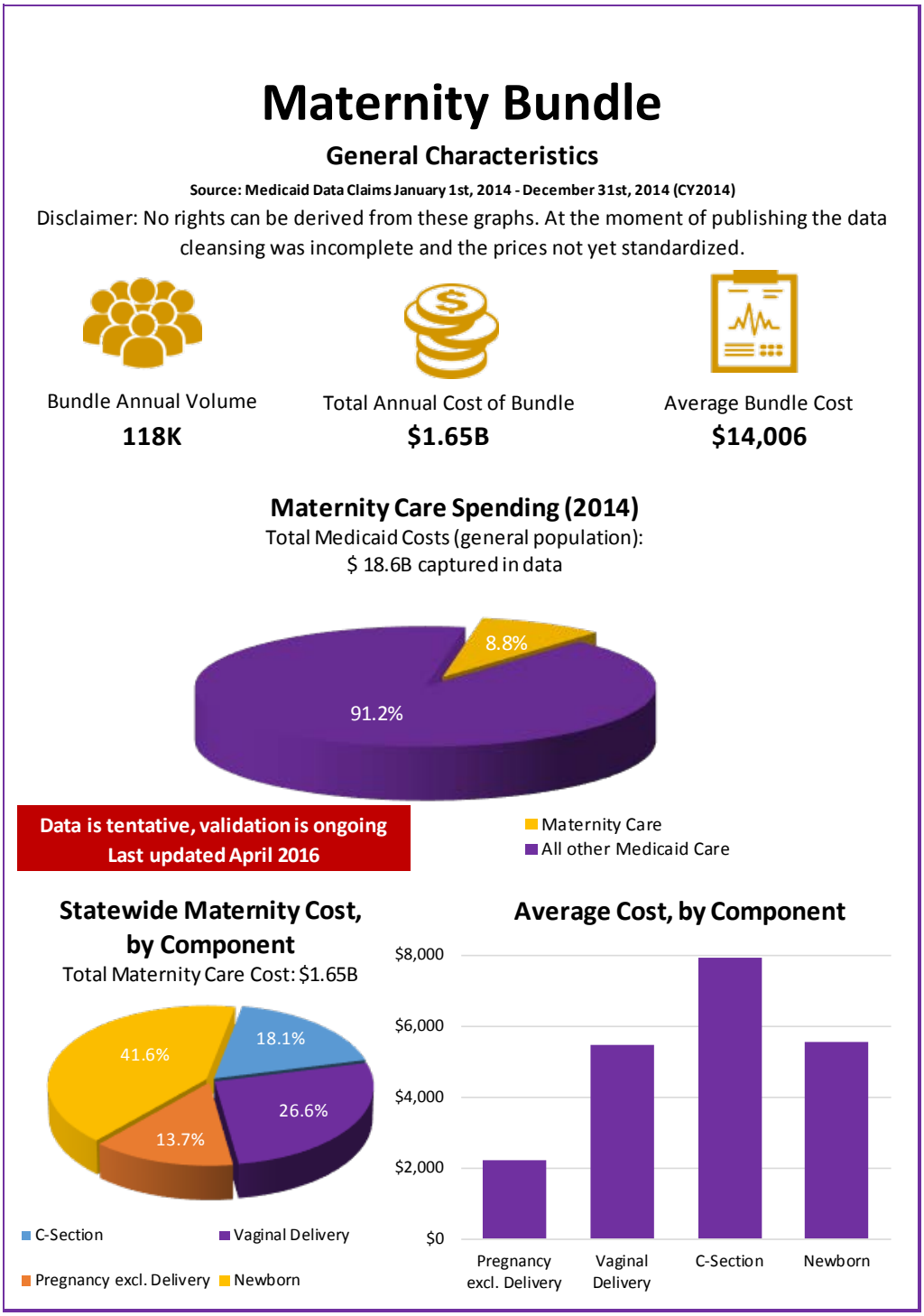
The file below includes all ICD-9 newborn specific codes.

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.



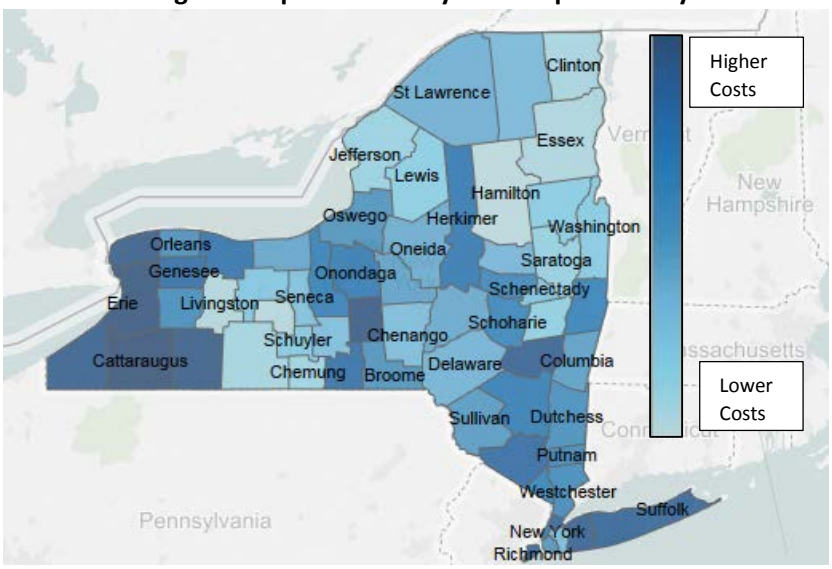
Maternity Bundle

Variations in Costs per County

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

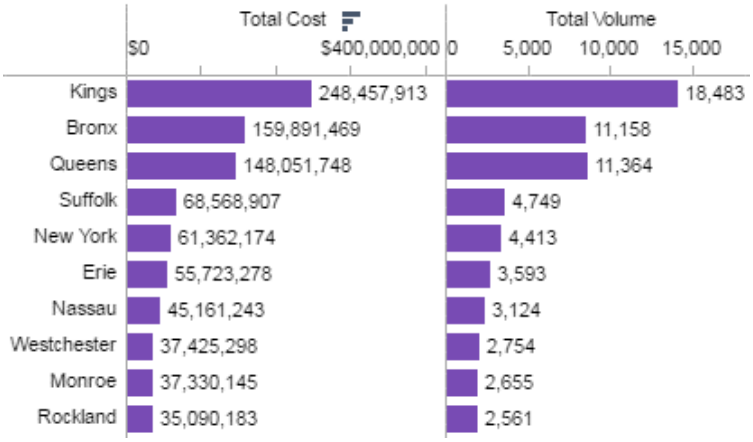
Disclaimer: No rights can be derived from these graphs. At the moment of publishing the data cleansing was incomplete and the prices not yet standardized.

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

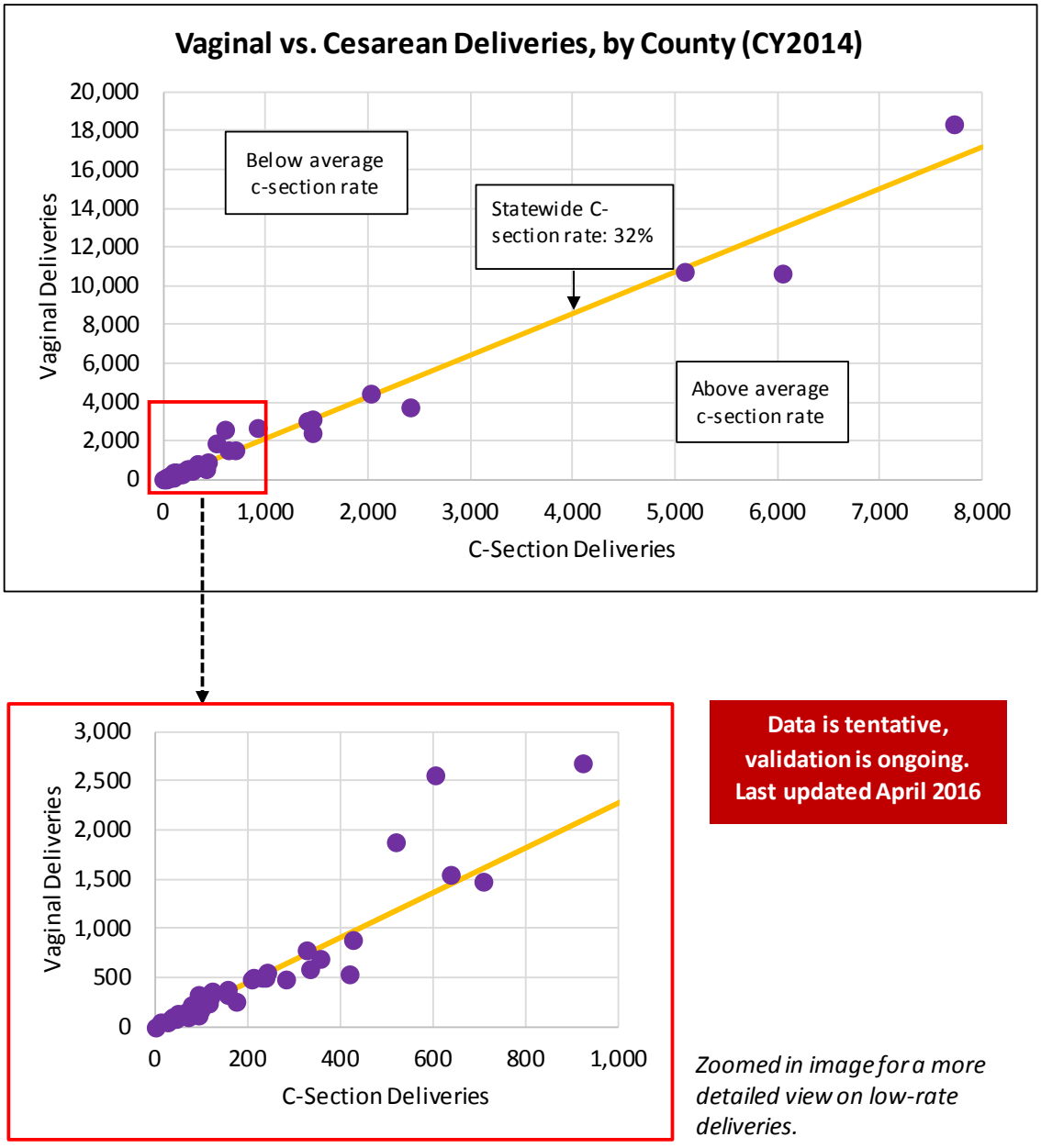


Vaginal vs. Cesarean Deliveries per County

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