



New York State Department of Health Office of Quality and Patient Safety

Medicaid Perinatal Care Study

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EXECUTIVE SUMMARY

Introduction

The 2009 New York State Medicaid Prenatal Care Standards (NY Standards) were developed as a component of legislation that replaced the Prenatal Care Assistance Program (PCAP) model with care standards appropriate to all pregnant women eligible for Medicaid coverage, regardless of provider or delivery system. The updated NY Standards incorporate evidence-based practice, professional guidance from the American Congress of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP), as well as expert input attained through collaboration with the New York State Department of Health (NYSDOH) and an advisory group comprised of key stakeholders in the field of perinatal care. The comprehensive model of care set forth in the standards addresses many components including access to prenatal care, management of pre-existing conditions, psychosocial risk assessment/re-assessment (including counseling, referral and follow-up), care coordination and postpartum services.

The purpose of this study is to provide a baseline characterization of provider practices relative to the updated standards, identify focus areas for practice improvement, and develop recommendations to support quality improvement.

Methodology

Medicaid members having delivered a live birth on or between January 1 and December 31, 2009 were eligible for the study. A random sample of 740 cases included 540 women enrolled in Medicaid Managed Care (MMC) and 200 women who were not in a health plan (Fee-For-Service - FFS). Ultimately, 601 medical records (81%) were available for analysis after exclusion, with approximately 80% of records from MMC and 20% from FFS.

Study indicators were chosen around eight domains of perinatal care: demographic information and medical/obstetrical history, initial visit assessment, third trimester assessment, perinatal health education, prenatal care services, coordination of care, immunizations, ultrasound use and the postpartum period.

Results

Member Characteristics: Demographics, obstetric risk and medical risk

Many of the Medicaid-enrolled women comprising the study sample had documented demographic, medical/obstetric and psychosocial risk factors associated with poor birth outcomes. These factors include younger age (12% less than 20 years old), unmarried (68% of those with known marital status) and lower educational attainment (22% of records contained explicit documentation the mother lacked a high school diploma). Prior preterm birth was noted in 8% of records, and 10% of the study sample did not present for care until the third trimester of pregnancy.

Forty percent of the women had at least one medical or psychiatric condition, most commonly obesity (14%), anemia (11%), asthma (10%) and depression (10%). Among pregnancy-related conditions, gestational diabetes was noted in 7%, and hypertensive disorders of pregnancy in 5%, of records.

Race and ethnicity data from the NYSDOH eligibility data indicated the majority of study cases were White (41%) with the remaining cases more evenly distributed between Black (21%) and Hispanic (27%) categories. Multivariate analyses demonstrated Hispanic women were more likely than women of other racial/ethnic groups to enter prenatal care early, and receive thorough initial visit assessments, perinatal education and referral to WIC (Special Supplemental Nutrition Program for Women, Infants and Children).

NYSDOH data indicated the majority of study cases (62%) resided outside of New York City. No significant differences in services were noted by residence, other than a higher likelihood of initial visit tobacco/alcohol/drug assessment outside of New York City. As noted, 80% of women in this study were enrolled in Medicaid Managed Care; these women were more likely to receive early prenatal care, and postpartum visits, than those in Fee-For-Service.

Initial Visit Risk Assessment

Approximately 84% of records contained an initial comprehensive risk assessment, defined as addressing at least one element in each of multiple risk categories (medical/obstetrical, psychosocial, behavioral, nutritional, environmental and genetic). However, assessment of specific risk factors for adverse birth outcomes within these categories varied, with little or no improvement for assessment of some risk factors since an earlier study of prenatal care for women in MMC conducted on behalf of NYSDOH in 2002. Rates of initial assessment for alcohol, drug and tobacco use were high and remained relatively constant between 2002 (approximately 84%) and 2009 (approximately 86-87%). Rates of initial assessment for domestic violence and environmental tobacco smoke exposure also remained relatively constant but are not at ideal levels (68% assessed for domestic violence and 7% assessed for exposure to environmental tobacco smoke).

Depression, Body Mass Index (BMI), and oral health evaluation, which had not been included in prior studies, were documented at rates with significant room for improvement. Depression was assessed in only 63%, of cases, and the use of standardized depression screening tools was rarely documented, noted in only 7% of cases. Pre-pregnancy or initial visit BMI was documented in 17% of records and oral health evaluation in 37% of records.

While intervention for alcohol, tobacco, and drug use, either office-based or referral, was documented in over 80% of cases, rates of follow-up ranged from only 8% (alcohol use) to 26% (tobacco use).

Third Trimester Assessment

Ongoing reassessment of risk in subsequent prenatal visits is advocated by ACOG to establish a prenatal management plan based on patient need. The 2009 NY Standards stipulate comprehensive risk assessments be reviewed at each visit and formally repeated early in the third trimester and postpartum. Among women presenting for care prior to the third trimester, only 6% of records contained a comprehensive risk assessment performed in the third trimester. Reassessment rates of individual risk factors were as follows: tobacco use 12%, depression 11% and all other risk factors <10%. Despite low levels of re-assessment, cases of tobacco use, depression and nutritional risk not detected earlier were identified in the third trimester.

Perinatal Health Education

Recommended components of health education set forth in the NY Standards include complications of pregnancy, labor and delivery, diet and exercise, parenting preparation, newborn screening, family planning and HIV risk reduction. At least one of these components was documented in 68% of records. Regardless of risk status, physical activity counseling was documented in 39% and nutritional counseling in 37% of records. General counseling regarding gestational weight gain was documented in 30% of records, and specific BMI-based gestational weight gain as per the Institute of Medicine (IOM) guidelines was noted in an additional 5% of records. Education regarding breastfeeding was evident in 22% and exclusive breastfeeding for the first six months of life in 2%, of records. There was no statistical difference between rates of education provided to women with or without a prior live birth.

Prenatal Care Services

Based on ACOG guidelines, the NY Standards recommend routine laboratory testing at specific gestational ages. Routine prenatal care services were generally documented at high rates, and initial visit rates of testing for Chlamydia increased between 2002 and 2009 (74%, 81%), as did 12-16 week/initial visit culture for bacteriuria (59%, 74%). At 35-37 weeks gestation, culture rates for Group B Streptococcus also increased from 50% in 2002 to 73% in 2009.

The NY Standards also recommend HIV testing be performed during the initial visit/first trimester and repeated during the third trimester to identify sero-conversion; initial testing was found in 83% of current study records, but third trimester testing for only 24% of women whose initial visit did not occur in the third trimester.

Referrals and Coordination of Care

The most common referrals were to the WIC program (29%), a nutritionist (23%) and social services (18%). Diagnosis of a chronic medical or pregnancy-related condition was the one significant predictor of referral to Maternal Fetal Medicine (MFM) or a high-risk obstetrician. A referral to MFM/high-risk obstetrics was seen in 9% of all records, and to other medical specialists in 8% of records. Communication with the referral provider, as specified in the NY Standards, was noted in over 60% of records of women referred to MFM/high risk obstetrics. Behavioral Health referrals were less frequent (4% of records), as was documented communication with the Behavioral Health specialist (36%). Referrals to diabetes educators were documented for 36% of women with a diagnosis of pre-pregnancy or gestational diabetes and 3% of women with asthma had a documented referral to an asthma educator.

Immunizations

The NY Standards, following Centers for Disease Control and Prevention and NYSDOH Bureau of Immunization guidelines, strongly recommend influenza vaccination for all pregnant women. Of 582 women pregnant during the flu season, 14% of records documented an offer of vaccination, and 67% of these women were vaccinated.

The Postpartum Period

Approximately 48% of prenatal charts recorded a postpartum visit. Of the 288 women with a documented postpartum visit, 51% were assessed for depression. Postpartum assessment rates between 2002 and 2009 for alcohol (24%, 22%), tobacco (28%, 27%) and drug use (24%, 20%) had not increased. In the current study, when analysis was limited to women with known risk identified during the index pregnancy who had a postpartum visit, reassessment rates remained low: depression (56%), alcohol (9%), tobacco (35%) and drug use (21%).

The NY Standards, based on ACOG recommendations for postpartum education, address discussions specific to breastfeeding and inter-conception care. A discussion of infant eating choices was noted in 19% of postpartum records, but the nutritional advantages of breastfeeding in only 2%. Family planning was addressed in 73% of records, while care recommended prior to the next pregnancy in 52%.

Electronic Medical Records

The use of electronic medical records (EMR), which was noted in 34% of cases, was found to be positively associated with documentation of key components of prenatal care: BMI (OR 2.42), BMI-based discussion of weight gain (OR 1.90), pregnancy/labor/delivery education (OR 1.71) and postpartum visit (OR 1.46).

Limitations

Limitations to this study include a low retrieval rate of records with adequate information for review from FFS providers (62%) and the possibility that care was provided but not documented in the record of the submitting provider. In addition, the records reviewed reflect care provided prior to the publication of the 2009 New York State Medicaid Prenatal Care Standards in early 2010. Care may have since improved in many of these clinical areas over the past four years since this care was initially received.

Conclusion and Recommendations

2009 New York State Medicaid Prenatal Care Standards focus on dynamic risk assessment, risk-appropriate interventions and care coordination to improve birth outcomes for low-income, high-risk women. This study of prenatal and postpartum care relative to the NY Standards revealed many elements of care for which there were high rates of alignment with NY Standards, such as initial visit assessment, intervention for identified risk, and routine prenatal services. However, other elements of care offer opportunities for improvement, including elements that are important to the Medicaid population, who are at increased risk for adverse birth outcomes.

While initial visit assessment of medical, obstetric, genetic and some elements of psychosocial risk was documented in most records, initial assessment of other psychosocial risks associated with adverse birth outcomes, including depression and intimate partner violence, is in need of improvement. Reassessment and follow-up of the status of identified risks was not commonly documented, even for tobacco use, which is among the most prevalent, modifiable causes of adverse pregnancy outcomes.

Other evidence-based elements of care that are associated with improved pregnancy and birth outcomes also offer opportunity for improvement, including identification and treatment of asymptomatic bacteriuria, Group B strep screening, influenza vaccination, and postpartum visit content relevant to inter-conception care. Despite the documented high-risk nature of the Medicaid-enrolled women, few were documented to receive augmented care coordination services; this area warrants further exploration and improvement.

With the increasing prevalence of obesity, improvement of nutritional risk assessment, including assessment of pre-pregnancy BMI, BMI-based appropriate weight gain counseling as per IOM guidelines, and breastfeeding counseling should be a priority. Initiatives to address areas with opportunity for improvement, including MCO initiatives and provider education and self-assessment, should focus on these areas for which there is evidence of the efficacy of interventions. Although not evaluated in this study, efforts to address adverse birth outcomes should include promotion of the use of 17-OH progesterone for pregnant women with prior preterm birth, a level A recommendation of ACOG.

Proposed initiatives to address these issues will be strengthened by coordination with existing NYSDOH initiatives; e.g., findings related to obesity, referrals and postpartum care are relevant to existing initiatives regarding hypertensive disorders in pregnancy and maternal mortality.

INTRODUCTION

Background

New York State standards for the provision of comprehensive perinatal care to low-income, uninsured and underinsured pregnant women were first developed in 1990, following the creation of the Prenatal Care Assistance Program (PCAP), a preferred provider model within the New York State Medicaid Program.¹ The standards were updated in 2000 and revised in 2009 in response to legislation which replaced PCAP certification and reimbursement rates with a model of comprehensive care appropriate to all pregnant women eligible for Medicaid coverage, regardless of provider or delivery system.²

The 2009 New York State Medicaid Prenatal Care Standards (NY Standards), which were published in January 2010, incorporate evidence-based practices, updated standards of professional practice and guidance from the American Congress of Obstetricians and Gynecologists (ACOG) and the American Academy of Pediatrics (AAP). The standards reflect expert consensus attained through collaboration of the New York State Department of Health (NYSDOH) Office of Health Insurance Programs and Division of Family Health, and an advisory group comprised of key stakeholders in the field of prenatal care. The comprehensive model of care set forth in the standards addresses access to care, management of pre-existing conditions, psychosocial/nutritional risk assessment, counseling, referral and care coordination, and health education, in addition to prenatal and postpartum services.³ While some of these categories of care were addressed in prior PCAP regulations and guidance documents, the 2009 NY Standards include additional elements and increased specificity. The updated 2009 NY Standards include detailed focus on tobacco use, substance abuse, domestic violence and depression screening counseling and referral; appropriate weight gain based on pre-pregnancy Body Mass Index (BMI); and special considerations for overweight/obese women. The 2009 NY standards also include increased focus on lead poisoning prevention, oral health, screening for genetic disorders, HIV services, ultrasound, immunizations, care coordination and information sharing, breastfeeding counseling, and preconception (interconception) care. It should be noted that the 2009 NY Standards include laboratory testing based on AAP/ACOG recommendations, which are not specifically listed since they are updated over time based on evolving evidence. Earlier studies conducted by IPRO on behalf of the NYSDOH Office of Managed Care followed expanded enrollment in Medicaid Managed Care (MMC) and evaluated prenatal care received by MMC members in relation to PCAP guidelines. A 2003 study concluded prenatal care could be specifically improved with attention to risk assessment/reassessment (tobacco exposure, domestic violence and nutrition), laboratory testing (asymptomatic bacteriuria and group B streptococcus) and interventions to increase members' participation with postpartum care and enhance the content of the postpartum visit. Some of these elements became prominent components in the updated NY Standards (2009).

The goal of this study is to re-evaluate perinatal care services in the context of the recently disseminated NY Standards. Medical records of women enrolled in Medicaid who delivered a live birth in calendar year 2009 were reviewed in order to understand baseline practices relative to the updated NY Standards, to inform outreach, education and future priority performance measurement. Because the NY Standards were not disseminated until 2010, it was not expected that the new NY Standards would have been incorporated into care provided during the measurement year. However, since the 2009 NY Standards were based on ACOG and other national guidelines, it was anticipated that many of the elements of care addressed in the Standards may have already been incorporated into routine prenatal care and documented in the medical record.

Study results will be used to generate recommendations specific to providers, health plans, the Department of Health, and consumers with the aim of sustaining and continually improving the high quality of perinatal care provided to lower-income women in New York State.

Objectives

This study was designed to provide:

- a characterization of provider practices relative to the updated NY Standards, with emphasis on baseline assessment of adherence to key elements. Rates of compliance with key elements overall, with subanalyses to investigate variances by selected patient/provider attributes;
- potential metrics for ongoing monitoring and evaluation of perinatal care provided to Medicaid recipients;
- recommendations to inform development of quality improvement strategies;
- identification of those groups of women currently receiving, or those who could benefit from receiving, augmented services such as case management and home visitation.

METHODS

Identification of Eligible Population and Case Selection

Medicaid members having delivered a live birth on or between January 1 and December 31, 2009 were eligible for the study. Eligible members enrolled in a Managed Care Organization (MCO) were identified from the MCO-submitted 2009 Quality Assurance Reporting Requirements (QARR) birth file, and those receiving care within a fee-for-service (FFS) delivery model were identified from 2009 Medicaid claims data. All 18 health plans administering Medicaid Managed Care (MMC) in New York State are represented in the study. A random sample of 30 cases per MMC health plan, 200 FFS cases, and a ten percent oversample for each reimbursement category was generated.

Health plans were responsible for obtaining the provider’s perinatal care record for each MMC case selected; 88.5% (478/540)¹ of records were included in the review. Forty eight records were excluded from review: 1.1% (6/540) of cases were documented to have no prenatal care, while limited information (e.g., only lab results only or only hospital record) was provided for 7.7% of records (42/540). No record was received for 2.6% (14/540) of the cases. For each FFS case, IPRO staff requested the provider’s perinatal care record; 61.5% (123/200) of records were included in the review. Twenty five percent (50/200) of cases were excluded from the review; 1.0% (2/200) of cases were documented to have no prenatal care, and limited information was provided for 24.0% (48/200). No record was received for 13.5% of cases (27/200). In total, medical records for 81.2% (601/740) of the sample were reviewed and analyzed. The final sample was comprised of approximately 80% managed care and 20% fee-for-service records (**Table 1**). Note in all tables with the column heading ‘Survey Item,’ the number of the medical record abstraction tool field, as well as the name of the field and values, are provided on the left.

Table 1. Fee for Service/Managed Care Organization Medical Record Sample (n = 601)

Survey Item		n	%
	FFS	123	20.5
	MMC	478	79.5
2	Affinity	25	4.2
	Amerigroup	16	2.7
	CDPHP	31	5.2
	Excellus	29	4.8
	Fidelis Care	31	5.2
	HealthPlus	37	6.2
	Healthfirst	22	3.7
	HealthNow	29	4.8
	HIP (EmblemHealth)	27	4.5
	Hudson	32	5.3
	Independent Health	30	5.0
	MetroPlus	27	4.5
	MVP	28	4.7
	Neighborhood Health Providers	18	3.0
	Total Care	27	4.5
	United Healthcare Community Plan	31	5.2
Univera Community Health	16	2.7	
WellCare	22	3.7	

¹ Throughout this report, if less than all records (601), or all postpartum records where appropriate (288), are included in the denominator, the numerator and denominator are provided in the narrative.

Study Domains and Components of Care

General member demographic information and eight domains of prenatal/postpartum care were designated for review. Each domain is presented below, followed by categories of indicators used to evaluate documented care. Specific indicators were suggested by NYSDOH and IPRO researchers, in addition to key stakeholders in the field of prenatal care. The indicators selected represent new evidence-based recommendations, particular areas of focus in the updated NY Standards, and/or areas with opportunity for improvement based on results of prior NYSDOH prenatal studies. A comprehensive list of indicators is provided with the data abstraction tool in Appendix A, and with instructions for abstraction in Appendix B.

A. General Member Information

- Demographics
- Obstetric (OB) history
- Current pregnancy risk

B. Initial Visit Assessment

- Initial visit content
- Comprehensive risk assessment
- Assessment, identification, and follow-up of specific risk factors

C. Third Trimester Assessment

- Initial visit in third trimester
- Comprehensive risk assessment repeated
- Assessment, identification, and follow-up of specific risk factors
- Reassessment of members with known risk

D. Perinatal Health Education

- Pregnancy, labor, and delivery
- Benefits of breastfeeding
- Parenting preparation
- Family planning

E. Prenatal Care Services

- Screening for genetic disorders
- Routine laboratory testing by recommended gestational age
- Follow-up and ongoing monitoring

F. Referrals and Coordination of Care

- Documented plan of care
- Referrals to specialty care and augmented services
- Communication with referral provider

G. Immunizations

H. Use of Ultrasound

I. The Postpartum Period

- The postpartum visit
- Assessment, identification, and follow-up of specific risk factors
- Postpartum patient education
- Postpartum immunizations

Data Collection

For each case, data abstraction covered the perinatal period up to 10 months prior to and 6 weeks following delivery. Records were abstracted by IPRO nurse reviewers with data collected in a Microsoft

Office Access 2007 database developed specifically for the study that contained all study indicators. Inter-rater reliability testing was performed during abstractor training and internal quality control monitoring occurred throughout data collection to ensure consistency of reviews.

Statistical Analysis

Data were imported into SAS version 9.3 for compilation, cleaning and analysis. Descriptive statistics (frequencies and proportions associated with care indicator values) were first calculated by aggregating data for all cases, with the resultant tables presented by domain as noted above. For some indicators (e.g., referrals) descriptive statistics were also calculated for subsets of cases, such as those with known risk factors. The total number of cases upon which proportions are based varies for each indicator depending on availability of information and applicability of the item to the case. The indicator-specific denominator is presented for each item, after excluding 'Unable to Determine' (UTD) and 'Not Applicable' (NA) responses.

Multivariate analyses were performed to identify predictors of member behaviors and provider practices, and assess statistical significance after controlling for potentially confounding factors. Evaluation of care focused on content of the initial two prenatal visits, risk assessment, patient education, referrals, and postpartum follow-up. Member groups were categorized by age, race/ethnicity, residence, parity, prior poor birth outcomes, chronic medical and pregnancy-related conditions, obesity, and use of tobacco, alcohol or illicit drugs. Providers were categorized by type of delivery system (MMC or FFS) and use of electronic medical records (EMR). Results are presented as odds ratios for statistically significant predictors of care.

RESULTS

Patient and Provider Demographics (General Member Information)

Several key demographic features of this sample were poorly documented in the medical record; race, ethnicity, or primary language could not be determined for 45–66% of cases. For this reason, NYSDOH demographic data from the NYSDOH eligibility file for the sample was utilized for group comparisons and are referenced in discussion. It should also be noted that, for medical record abstraction, race and ethnicity were treated as distinct variables. NYSDOH administrative data reports Hispanic ethnicity as one value of a combined race/ethnicity variable, contributing to the differences seen in **Table 2**.

Medical record review of members for whom race and ethnicity were known indicated that 52.6% (175/333) of members were white and 52.5% (106/202) were Hispanic. According to the administrative data, 41.3% of members were white, 21.3% were black, and 27.0% Hispanic. Approximately 71% (227/320) of members reported English, and 21% (66/320) Spanish, as their primary language. For those members whose primary language was Spanish or ‘Other,’ 89.3% (50/56) were offered translation services, as noted in the medical record.

Age of members at delivery was predominantly between 20 and 34 years (78.7%, 473/601). Marital status was available for three-quarters of the members; the majority of members were single (67.7%, 295/436). Level of education was obtained for less than half the members; of those with known education level, most had not graduated high school (54.3%, 133/245).

The study sample resided primarily outside of New York City (62.4%, 375/601). This finding is reflective of the fact that fewer MMC plans are located in New York City (NYC) than in the Rest of the State (ROS), and plans were equally sampled. In addition, Fee for Service (FFS) Medicaid members, who reside more commonly in ROS than NYC, were included in the study. Where reported, care was provided by a medical doctor/doctor of osteopathy (MD/DO; 54.3%, 189/348) or a combination of MD/DO and nurse practitioner (NP), physician’s assistant (PA), or midwife (38.2%, 133/348). Few women received prenatal care solely from a midwife. An electronic medical record (EMR) was utilized for 33.9% (204/601) of the records.

The American Congress of Obstetricians and Gynecologists recommends 8–10 prenatal care visits for a full term pregnancy with no complications.⁴ Over half the women in this study (63.3%, 372/588) had 10 or more visits, although entry to care, degree of risk and length of gestation were not evaluated for this indicator.

Table 2. Patient and Provider Characteristics

Survey Item		n	%
10a	Race: From Medical Record Review (n = 333)		
	White	175	52.6
	Black	86	25.8
	Asian	35	10.5
	Other	37	11.1
	UTD	268	
10b	Ethnicity: From Medical Record Review (n = 202)		
	Hispanic	106	52.5
	Non-Hispanic	96	47.5
	UTD	399	

Table 2. Patient and Provider Characteristics – continued

Survey Item		n	%
	Race and Ethnicity: From NYSDOH data (n = 601)		
	White	248	41.3
	Black	128	21.3
	Hispanic	162	27.0
	Other	63	10.5
11a	Primary Language (n = 320)		
	English	227	70.9
	Spanish	66	20.6
	Other	27	8.4
	UTD	281	
11b ♦	Translator Offered (n = 56)		
	Yes	50	89.3
	No	6	10.7
	No need	5	
	UTD	32	
	Age at delivery (n = 601)		
	15–19	72	12.0
	20–34	473	78.7
	35–44	56	9.3
9	Marital Status (n = 436)		
	Married	136	31.2
	Single	295	67.7
	Divorced	3	0.7
	Widowed	2	0.5
	UTD	165	
14	Education (n = 245)		
	Grades 1–8	22	9.0
	High School	111	45.3
	High School Graduate	52	21.2
	Any College	40	16.3
	College Graduate	19	7.8
	Graduate School	1	0.4
UTD	356		
	Region (n = 601)		
	NYC	226	37.6
	ROS	375	62.4
4b	Provider Type (n = 348)		
	MD/DO	189	54.3
	Midwife	16	4.6
	NP	9	2.6
	PA	1	0.3
	Combination of above	133	38.2
	UTD	253	

Table 2. Patient and Provider Characteristics – continued

Survey Item		n	%
7	Electronic Medical Record (n = 601)		
	Yes	204	33.9
	No	397	66.1
4a	Number of Prenatal Visits (n = 588)		
	1–4	53	9.0
	5–9	163	27.7
	10–14	284	48.3
	15–27	88	15.0

◆ Item based on skip pattern (cases with Spanish or Other as primary language)

Obstetrical History

Women having had no previous births are at higher risk for adverse birth outcomes (preterm delivery and low-birthweight infant) than those having had at least one previous birth.⁵ For this study, the number of previous pregnancies (vs. births) was abstracted; 24.1% (144/598) of women were documented to be pregnant for the first time. Preterm birth (PTB) and low birthweight (LBW) were examined independent of parity. Of 457 records where it could be determined whether or not a prior poor birth outcome had occurred, 7.7% (35) documented a preterm birth, 5.5% (25) the delivery of a low-birthweight infant and 19.3% (88) delivery by Cesarean section (C-section; **Table 3**).

Information regarding prior spontaneous termination of pregnancy by gestational age was obtained for 421–423 records, depending on the gestational age category. Miscarriage (termination at less than 20 weeks gestation) was documented for 7.6% (32/423) of cases and stillbirth (termination at 20 weeks or greater) for 1.9% (8/421) of cases. However, prior spontaneous termination of pregnancy with unspecified gestational age was documented for another 16.5% (70/423) of cases. In total, 23.9% (101/423) of cases in the study sample was known to have experienced prior spontaneous termination of pregnancy, some more than once, within different gestational age categories.

Table 3. Obstetrical History

Survey Item		n	%
15	Number of Previous Pregnancies (n = 598)		
	0	144	24.1
	1	162	27.1
	2	121	20.2
	3+	171	28.6
16a ◆	Previous Live Births - Living (n = 453)		
	0	80	17.7
	1+	373	82.3
16b ◆	Previous Live Births - Dead (n = 448)		
	0	434	96.9
	1+	14	3.1

Table 3. Obstetrical History – continued

Survey Item		n	%
17 ◆	Previous Low Birthweight (n = 457)		
	Yes	25	5.5
	No	432	94.5
18 ◆	Previous Preterm Birth (n = 457)		
	Yes	35	7.7
	No	422	92.3
19a ◆	Prior Spontaneous Termination – Less than 20 weeks (n = 423)		
	0	391	92.4
	1+	32	7.6
19b ◆	Prior Spontaneous Termination – Greater or equal 20 weeks (n = 421)		
	0	413	98.1
	1+	8	1.9
19c ◆	Prior Spontaneous Termination – GA not specified (n = 423)		
	0	353	83.5
	1+	70	16.5
19d ◆	Non-Spontaneous Termination (n = 452)		
	0	320	70.8
	1+	132	29.2
20 ◆	Previous C-Section (n = 457)		
	Yes	88	19.3
	No	369	80.7

◆ Items based on skip pattern (cases with previous pregnancies)

Note: A prior birth outcome history may have been documented, although the number of prior pregnancies was not. This resulted in a larger denominator for Items 17 and 18 (women with previous LBW and PTB) than the sum of the numerator in Item 15 (women with previous pregnancies).

Current Pregnancy Risk

Comorbid Conditions

Sixty percent of study records had no evidence of comorbid conditions, either at presentation for prenatal care or developed during the course of pregnancy (**Table 4**). The most frequently documented comorbidities were obesity (14.0%), anemia (11.0%), asthma (10.1%) and depression (9.7%). Two diagnoses of human immunodeficiency virus (HIV) were recorded.

Eighty-six percent of study records contained no diagnosis of maternal infection, either as the result of initial visit screening or testing later in pregnancy. Although common in pregnant women,⁶ bacterial vaginosis (BV) and genital herpes were documented in only 7.2% and 3.5% of records, respectively. Chlamydia (detected in 2–13% of pregnant women in various studies)⁷ was documented in 2.5% of study records. Gonorrhea, hepatitis B, and hepatitis C were noted in $\leq 1.0\%$ of charts. No instances of syphilis or tuberculosis were documented.

Pregnancy-related Conditions

Eighty-four percent of records contained no diagnosis of pregnancy-related conditions. Gestational diabetes mellitus (GDM), reported in 2–10% of pregnancies in the U.S.,⁸ was documented in 7.3% of study records. Gestational hypertension (HTN), reported in 6–8% of all pregnancies in the U.S.,⁹ was

documented in 1.7% of records. However, 4.7% of records noted at least one hypertensive disorder of pregnancy, including pre-existing HTN, pregnancy-related HTN, preeclampsia, eclampsia or HELLP (hemolysis, elevated liver enzymes, low platelet counts) syndrome.

Multiple pregnancy increases the risk of complications during pregnancy, labor and delivery. Information regarding plurality was available in 374 prenatal records; 2.9% documented twin pregnancies. Hospital records were not reviewed for this study; 288 prenatal records contained a postpartum visit entry and only 230 of those entries contained the method of delivery. Thirty-three percent of documented deliveries were by C-section, equivalent to the national rate in 2009.¹⁰

Table 4. Current Pregnancy Risk

Survey Item		n	%
21	Plurality (n = 374)		
	Singleton	363	97.1
	Twins	11	2.9
	UTD	227	
22 ♦	Method of Delivery (n = 230)		
	Vaginal	154	67.0
	C-Section	76	33.0
	UTD	58	
23 ♦	Infant Birthweight Documented (n = 288)		
	Yes	172	59.7
	No	116	40.3
24 ♦	Infant Gestational Age Documented (n = 288)		
	Yes	80	27.8
	No	208	72.2
26	Initial Clinical Estimate EDD Changed (n = 601)		
	Yes	248	41.3
	No	353	58.7
27	Method of Determining EDD (n = 558)		
	LMP	176	31.5
	US	382	68.5
	UTD	43	
28 @	Pregnancy-related Conditions Developed During Current Pregnancy (n = 601)		
	None	503	83.7
	Vaginal Bleeding	47	7.8
	Gestational Diabetes	44	7.3
	HTN Pregnancy Related	10	1.7
	Pre-eclampsia	10	1.7
	Eclampsia	2	0.3
	HELLP Syndrome	1	0.2
Abruptio Placenta	0	0.0	

Table 4. Current Pregnancy Risk – continued

Survey Item		n	%
29 @	Maternal Infections (n = 601)		
	No Infections	519	86.4
	Bacterial Vaginosis	43	7.2
	Genital Herpes	21	3.5
	Chlamydia	15	2.5
	Gonorrhea	6	1.0
	Hepatitis B	4	0.7
	Hepatitis C	3	0.5
	Syphilis	0	0.0
	Rubella	0	0.0
	Tuberculosis	0	0.0
29 @	Medical / Psychiatric Comorbidity (n = 601)		
	No Maternal Medical Conditions	358	59.6
	Obesity	84	14.0
	Anemia	66	11.0
	Asthma	61	10.1
	Depression	58	9.7
	Other Serious Chronic Disease	30	5.0
	Other Psychiatric Illness	24	4.0
	Thyroid Disorder	16	2.7
	Pre-pregnancy HTN	15	2.5
	Pre-pregnancy Diabetes	9	1.5
	Cardiac Disease	3	0.5
	Chronic Pulmonary Disease	2	0.3
	HIV	2	0.3
	Eating Disorder	1	0.2
	Renal Disease	1	0.2
Autoimmune Disease	0	0.0	
Thromboembolic disease (DVT/PE)	0	0.0	
	Any Hypertension (i.e., pre-eclampsia, eclampsia, HELLP syndrome, pregnancy-related HTN, pre-pregnancy HTN; n = 601)		
	Yes	28	4.7
	No	573	95.3

◆ Items based on skip pattern (cases with a postpartum visit documented)

@Multiple responses

Initial Visit Assessment

Comprehensive Risk Assessment

To allow an opportunity for all required services to be performed, “initial visit” was defined as the first two encounters with a licensed prenatal care provider (e.g., physician, physician’s assistant, or nurse practitioner) for each pregnancy. A visit only to confirm pregnancy was not considered a prenatal visit. Select elements of the initial visit are presented in **Table 5a**.

A comprehensive risk assessment was defined as addressing at least one element in each of the following risk categories: medical/obstetrical, psychosocial, behavioral, nutritional, environmental and genetic. Medical reviewers determined a comprehensive risk assessment had been documented in 83.7% of records. A practice-specific assessment tool was found in 44.6%, and a standardized assessment tool in 37.1% of records. Standardized tools included the ACOG Antepartum Record and Postpartum Form, Hollister Maternal/Newborn Record System or POPRAS Problem Oriented Perinatal Risk Assessment System.

Knowledge of pre-pregnancy Body Mass Index (BMI) is necessary to promote appropriate weight gain in pregnancy;¹¹ 17.3% of records documented a pre-pregnancy or initial visit BMI, and 5.0% a BMI-based discussion of weight gain. A total of 17.5% of records documented a prescription for medication other than prenatal vitamins; 42.7% (44/103) of those prescriptions were for supplemental iron.

Table 5a. Initial Visit: Comprehensive Risk Assessment

Survey Item		n	%
B1a	Comprehensive Risk Assessment Conducted (n = 601)		
	Yes	503	83.7
	No	98	16.3
B1b	Standardized Tool Used (n = 601)		
	Yes - Standardized	223	37.1
	Yes - Practice-specific	268	44.6
	No - Free text	58	9.7
	No - None	52	8.7
B3 ♦	Standardized Depression Screening Tool Used (if Depression Assessed; n = 377)		
	Yes	27	7.2
	No	350	92.8
B4a	Prescriptions Written for Patient on Initial Visit (n = 601)		
	Yes - Multivitamins only	198	32.9
	Yes - Other medication only	30	5.0
	Yes - Both multivitamins and other medication	75	12.5
	No	298	49.6
B4b ♦@	Type of Medication (n = 103)		
	Antidepressant	2	1.9
	Antimicrobial	18	17.5
	Aspirin	2	1.9
	Asthma	3	2.9
	Hypertension	1	1.0
	Insulin	1	1.0
	Iron	44	42.7
	Progesterone	2	1.9
	Other	35	34.0
B5a	Pre-pregnancy Height and Weight or BMI Assessed (n = 601)		
	Yes	233	38.8
	No	368	61.2
B5a	Initial Visit Height and Weight or BMI Assessed (n = 601)		
	Yes	317	52.7
	No	284	47.3

Table 5a. Initial Visit: Comprehensive Risk Assessment – continued

Survey Item		n	%
	Pre-pregnancy BMI value and/or Initial Visit BMI value documentation (n = 601)		
	Yes	104	17.3
	No	497	82.7
B5b	Appropriate Weight Gain During Pregnancy Discussed (n = 601)		
	Yes - BMI based	30	5.0
	Yes - Other	178	29.6
	No	393	65.4

◆ Items based on skip pattern (cases screened for depression; cases receiving prescriptions)

@ Multiple responses

Assessment, Identification, Intervention and Follow-up of Specific Risk Factors

Table 5b details specific elements of a comprehensive risk assessment. The table follows the frequency with which risk factors were assessed or discussed and identified, with the appropriate practice intervention (“addressed in practice”) or referrals and follow-up or reassessment documented. Some factors may have been addressed in practice (counseling) regardless of individual risk (e.g., alcohol avoidance); however, rates of counseling or other practice-based intervention are presented only for those women with an identified risk.

Medical and Obstetrical History. Documentation of obstetrical history was present in 92.2% of records, with 18.2% of records with the history assessed in practice noting a prior poor pregnancy outcome, as shown in **Table 5b**. Poor pregnancy outcomes may have included PTB, LBW, spontaneous fetal death, incompetent cervix/ cerclage, fetal structural or chromosomal abnormality, macrosomia, multiple gestation, small for gestational age birth, or intrauterine growth restriction (IUGR). Where identified, 92.1% (93/101) of records demonstrated the risk was addressed or the patient was referred, and 12.9% (13/101) included documentation that the condition was followed-up or reassessed at a later visit.

A medical/surgical history was present in 88.9% of records, with 21.7% (116/534) of records with the history assessed noting one or more of the chronic conditions listed above **Table 4**. Among those with a chronic condition, 95.7% (111/116) of the records contained evidence that the condition was addressed in practice or the patient was referred, and 13.8% (16/116) included documentation that the condition was followed-up or re-assessed at a later visit.

Substance Use. The potential for alcohol, tobacco, and illegal drug use was examined extensively; over 85% of records contained documentation of initial visit assessment for each. Tobacco use was identified in 21.9% of those with the risk assessed or discussed in practice, drug use in 7.8%, and alcohol use in 5.0%. A large proportion of records with identified substance use also documented counseling or referral (82.6–87.5%); however, reassessment or follow-up of identified risks at later visits was not as commonly documented (7.7–26.1%).

Overall, exposure to environmental tobacco smoke was the risk factor least often assessed or discussed; only 40 members (6.7%) were noted to have been asked about second-hand smoke, with 4 (9.8%) responding positively.

Psychosocial Risk Factors. Assessment for some psychosocial risk factors was documented in over 60% of records: ‘Other’ psychiatric illness was documented in 61.1% of records, depression in 62.7%, and domestic violence in 67.6%. Evaluation for other psychosocial risk factors (sexual abuse, stress, housing

stability or safety) was less commonly documented. As shown in **Table 5a**, a standardized screening tool for depression was used for only 7.2% (27/377) of depression assessments. Depression was identified in 18.4% of those with the risk assessed or discussed, 'Other' psychiatric illness in 9.5% and domestic violence in 5.7%. Again, a large proportion of records with identified risk documented some form of risk management.

Lead Exposure. As required by NYS Public Health Law and Regulations (NYCRR Subpart 67-1.5), at the initial prenatal visit, each pregnant woman should be assessed for exposure to lead. Only 43.1% of study records documented assessment for exposure to lead. At least one potential source of exposure was identified in 4.2% of those with the risk assessed or discussed. Interventions such as counseling, testing or referral were documented in all but one record identifying exposure risk; however specific blood lead level testing and results were not collected as a part of this study.

Oral Health. The NY Standards and NYSDOH Oral Health Practice Guidelines specify an initial visit assessment of oral health care needs, with referral to a dentist preferably before 20 weeks of gestation. Integration of oral health care into prenatal services includes patient education and coordination of care between the prenatal and dental providers.¹² In this study, only 37.1% of records included an assessment of oral health; 23.8% of those with oral health assessed or discussed identified risk (pain, caries, bleeding, or lack of dental care for over six months). A majority of records with documented risk also documented counseling or referral (94.3%), but follow-up or reassessment of the identified risk at a later visit was documented in only 17.0% of records.

Nutrition. Underweight women are at increased risk for preterm delivery and giving birth to low birthweight infants,¹³ while overweight women are at increased risk for GDM, HTN, C-section and infants with macrosomia or other abnormalities.¹⁴ The NY Standards require nutritional/physical activity screening, counseling, and referral beginning with the first visit for prenatal care.

A general assessment of nutritional status was documented in 58.9% of records; however, as noted above, only 17.3% documented a pre-pregnancy or initial visit BMI. Nutritional risk was identified in 43.3% of those with nutritional status assessed or discussed, with practice-based intervention or referral documented for 96.8% (149/154) of those with risk identified. Of those with identified nutritional risk, 58.4% were documented as having follow-up or reassessment at a later visit.

Nutritional counseling, recommended for all pregnant women regardless of risk status, was documented in 37.3% of records (data not shown).

Table 5b. Initial Visit: Assessment, Identification and Follow-up of Specific Risk Factors

Survey Item: B2 (n = 601)	Assessed		Identified ♦		Among Identified, Addressed in Practice or Referred ♦		Among Identified, Followed-up or Reassessed ♦	
	n	%	n	%	n	%	n	%
Obstetrical History	554	92.2	101	18.2	93	92.1	13	12.9
Medical/Surgery History	534	88.9	116	21.7	111	95.7	16	13.8
Alcohol Use	525	87.4	26	5.0	22	84.6	2	7.7
Tobacco Use	523	87.0	115	21.9	95	82.6	30	26.1
Illicit/Illegal Drug Use	516	85.9	40	7.8	35	87.5	10	25.0
Genetic Risk	480	79.9	101	21.0	84	83.2	24	23.8
Domestic Violence	406	67.6	23	5.7	22	95.7	4	17.4
Depression	377	62.7	69	18.4	60	87.0	19	27.5
Other Psychiatric Illness	367	61.1	35	9.5	30	85.7	6	17.1
Nutrition	354	58.9	154	43.3	149	96.8	90	58.4
Other Environmental Toxin Exposure	312	51.9	8	2.6	8	100.0	0	0.0
Prescription Drug Use	304	50.6	55	17.9	51	92.7	12	21.8
Non-prescription Drug Use	261	43.4	11	4.2	8	72.7	2	18.2
Maternal Lead	259	43.1	11	4.2	10	90.9	1	9.1
Oral Health	223	37.1	53	23.8	50	94.3	9	17.0
Supplements	209	34.8	12	5.7	8	66.7	0	0.0
Safety	194	32.3	10	5.2	10	100.0	4	40.0
Housing Stability	160	26.6	16	9.9	16	100.0	7	43.8
Stress	129	21.5	23	17.8	22	95.7	10	43.5
Sexual Abuse	124	20.6	15	12.0	11	73.3	4	26.7
Second-hand Smoke Exposure	40	6.7	4	9.8	3	75.0	1	25.0

♦ Items based on skip pattern (cases with risk factor assessed or discussed; cases with risk identified)

Note 1: Denominator for cases with risk identified comprised of cases with risk factor assessed or discussed

Note 2: Denominator (cases with risk identified) < 20

Third Trimester Assessment

Comprehensive Risk Assessment

For the 10.3% of study members whose first visit for prenatal care occurred in the third trimester, information regarding that visit is included in the section “Initial Visit Assessment.” For members presenting earlier in pregnancy, information regarding reassessment is presented in **Tables 6a** and **6b**.

The NY Standards stipulate that the risk assessment be reviewed at each visit, with an assessment formally repeated early in the third trimester and postpartum to identify issues developed over time. Some elements of the initial visit comprehensive risk assessment would not change over time, such as medical and obstetric history and genetic risk. ACOG recommends ongoing monitoring for pregnancy-associated medical risks, such as evaluation of blood pressure, weight, and urine for protein, at every visit, as well as lab testing at specified gestational ages. These assessments are addressed later in this document. A comprehensive reassessment of behavioral, psychosocial, nutritional, and environmental risk in the third trimester was documented in only 5.8% (31/539) of records. The ACOG Committee Opinion *Screening for Depression during and after Pregnancy* notes that there are multiple depression screening tools available for use that can usually be completed in less than 10 minutes.¹⁵ Use of a standardized depression screening tool was documented in 10.3% (6/58) of records of women with a depression assessment in the third trimester.

Table 6a. Third Trimester: Comprehensive Risk Assessment

Survey Item		n	%
C1a	Patient's Initial Visit in Third Trimester (n = 601)		
	Yes	62	10.3
	No	539	89.7
C1b ♦	If No, Comprehensive Risk Assessment Repeated in Third Trimester (n = 539)		
	Yes	31	5.8
	No	508	94.2
C3 ♦	Standardized Depression Screening Tool Used (if Depression Assessed) (n = 58)		
	Yes	6	10.3
	No	52	89.7

♦ Items based on skip pattern (cases with initial visit prior to third trimester; cases assessed for depression)

Assessment, Identification, and Follow-up of Specific Risk Factors

Categories of risk designated for reassessment include psychosocial, nutritional, oral health and exposure to second-hand smoke (**Table 6b**). Reassessment specific to depression, nutritional issues or tobacco use was documented for 10–15% of the 539 women who presented for prenatal care prior to the third trimester. Reassessment for all other risk factors in the third trimester was documented even less frequently.

As shown in **Table 6b**, third trimester reassessment identified risk in almost every category. Risk for depression was documented in 20.7% (12/58), tobacco use in 27.7% (18/65) and nutritional risk in 65.4% (53/81) of records with the specific risk assessed or discussed. Some of the women identified with these risk factors in the third trimester had not been identified in the initial visit risk assessment: 5.6% (1/18) of tobacco users, 22.2% (12/53) of women with

nutritional risk, and 33.3% (4/12) with depression (data not shown). Practice-based intervention or referral was documented for all women with observed risk in any category, aside from two tobacco users.

Table 6b. Third Trimester: Assessment, Identification, and Follow-up of Specific Risk Factors

Survey Item: C2 ♦ (n = 539)	Assessed		Identified♦		Among Identified, Addressed in Practice or Referred ♦		Among Identified, Follow-Up ♦	
	n	%	n	%	n	%	n	%
Nutrition	81	15.0	53	65.4	53	100.0	31	58.5
Tobacco Use	65	12.1	18	27.7	16	88.9	2	11.1
Depression	58	10.8	12	20.7	12	100.0	5	41.7
Domestic Violence	50	9.3	4	7.8	4	100.0	2	50.0
Illicit/Illegal Drug Use	45	8.3	7	15.6	7	100.0	4	57.1
Alcohol Use	41	7.6	1	2.4	1	100.0	1	100.0
Safety	27	5.0	6	22.2	6	100.0	2	33.3
Prescription Drug Use	23	4.3	9	37.5	9	100.0	3	33.3
Stress	22	4.1	8	36.4	8	100.0	1	12.5
Housing Stability	20	3.7	5	22.7	5	100.0	3	60.0
Oral Health	18	3.3	10	52.6	10	100.0	3	30.0
Non-prescription Drug Use	12	2.2	0	0.0	NA	NA	NA	NA
Supplements	12	2.2	0	0.0	NA	NA	NA	NA
Sexual Abuse	7	1.3	1	14.3	1	100.0	0	0.0
Second-hand Smoke Exposure	4	0.7	1	25.0	1	100.0	0	0.0

♦ Items based on skip pattern (cases with initial visit prior to third trimester; cases with risk factor assessed or discussed; cases with risk identified)

Note 1: Denominator for cases with risk identified comprised of cases with risk factor assessed or discussed

Note 2: Denominator (cases with risk identified) < 20

Perinatal Health Education

Recommended components of perinatal health education as set forth in the NY Standards are listed in **Table 7**. Education was most frequently documented in the area of pregnancy/delivery, followed by personal health, and finally parenting. Half of all records documented education on complications of pregnancy, approximately 30% on HIV risk reduction and family planning, and less than 30% regarding parenting or newborn screening. A total of 31.6% of records did not include documentation of any recommended health education. Breastfeeding education was documented in 22.0%, with a recommendation of exclusive breastfeeding for the first six months in only 2.0%, of records. There was no statistical difference between rates of receipt of education by women with a prior live birth and those without a prior live birth (data not shown).

Table 7. Perinatal Health Education

Survey Item		n	%
D1 @	Patient Received Education (n = 601)		
	Signs and symptoms of complications of pregnancy	306	50.9
	Labor and delivery	278	46.3
	Physical activity, exercise	235	39.1
	Risks of HIV and risk reduction behaviors	188	31.3
	Family planning and optimum inter-pregnancy interval	177	29.5
	Parenting preparation	161	26.8
	Newborn screening program	98	16.3
	None	190	31.6
	UTD	25	4.2
D2a	Patient Counseled Regarding Benefits of Breastfeeding (n = 601)		
	Yes	132	22.0
	No	469	78.0
D2b	Patient Counseled Regarding Exclusive Breastfeeding for First Six Months of Life (n = 601)		
	Yes	12	2.0
	No	589	98.0

@ Multiple responses

Prenatal Care Services

The frequency of recommended counseling, screening, diagnostic testing, monitoring, treatment, and/or other follow-up is presented in **Tables 8a, 8b, and 8c**.

Screening for Genetic Disorders

The NY Standards require screening to identify fetal abnormalities/genetic problems to be offered to all women and note that pregnant women should be counseled regarding the risks and benefits of screening and invasive diagnostic testing for aneuploidy. Invasive testing should be available to all women regardless of age. The frequency of counseling and an offer to test for aneuploidy and cystic fibrosis (CF) carrier status is presented in **Table 8a**.

Aneuploidy screening was offered to 70.3% (393/559) of women as documented in their prenatal care records. Counseling concerning the differences between screening and invasive testing, and the risks/benefits of invasive testing, was documented for 22.2% (111/499), with an offer of invasive testing for 21.4% (108/505). Women presenting at greater than 20 weeks gestational age were excluded from these proportions.

Cystic fibrosis, once considered a disorder affecting the non-Hispanic white population, is no longer associated with a single ethnic or racial risk category.¹⁶ The NY Standards require information and carrier screening to be offered to all couples, regardless of race or ethnicity. Guidance was documented in 24.5%, and an offer of carrier screening in 40.6%, of records.

A summary of testing, abnormal results, and follow-up is presented in the following section.

Table 8a. Prenatal Care Services: Screening for Genetic Disorders

Survey Item		n	%
E1	Patient Counseled Regarding Differences Between and Risk/Benefits of Screening and Invasive Diagnostic Testing for Aneuploidy (n = 499)		
	Yes	111	22.2
	No	388	77.8
	NA	4	
	UTD	90	
E2	Patient Offered Screening Testing for Aneuploidy (n = 559)		
	Yes	393	70.3
	No	166	29.7
	NA	9	
	UTD	29	
E3	Patient Offered Invasive Diagnostic Testing for Aneuploidy (n = 505)		
	Yes	108	21.4
	No	397	78.6
	NA	10	
	UTD	80	
E4	Patient Counseled Regarding Cystic Fibrosis Screening (n = 601)		
	Yes	147	24.5
	No	454	75.5
E5	Patient/Partner Offered Cystic Fibrosis Carrier Screening (n = 601)		
	Yes	244	40.6
	No	357	59.4

Routine Laboratory Testing by Recommended Gestational Age

Based on ACOG guidelines, the NY Standards recommend routine laboratory testing at specific gestational ages: At initial visit (CF carrier status, infectious disease, blood group and antibodies, hemoglobin and hematocrit), at 8–20 weeks (screening/invasive testing for aneuploidy and urine culture), 24–28 weeks (diabetes), and 28–37 weeks (vaginal culture for group B streptococcus and repeat hemoglobin and hematocrit). Testing at specified gestational ages only, abnormal results, and follow-up are summarized in **Table 8b**. Since diabetes testing could be conducted earlier than 24–28 weeks for women at risk due to obesity or other factors, diabetes testing at any gestational age was included in rates for diabetes testing.

Testing at Initial Visit

Cystic Fibrosis Carrier Status. As noted, 40.6% of records documented an offer of patient/partner screening test for CF carrier status. Screening test at initial visit was accomplished for 35.1%, and refusal was documented for 5.5%, of cases.

Infectious Disease. Antepartum and intrapartum infection are a significant cause of fetal/neonatal morbidity and mortality.¹⁷ This study sought to evaluate the frequency of screening tests for sexually transmitted infections during the initial prenatal visit, and culture for group B streptococcus (GBS) prior to delivery.

Over 80% of prenatal records contained initial visit screening test results for hepatitis B, syphilis, gonorrhea and chlamydia. Syphilis and gonorrhea were rare; all women with positive results received documented follow-up in the form of further testing or antibiotic therapy. Chlamydia prevalence (generally 2% to 13% in pregnant women)¹⁸ was also low; 2.9% (14/486) of women screened tested positive, and 92.9% (13/14) had documented treatment.

New York State Public Health Law (2500-e) requires all pregnant women be tested for hepatitis B surface antigen (HBsAg), with the test date and results documented in the prenatal record. Infants of women with positive, or unknown, test results are to be treated at birth with hepatitis B vaccine and hepatitis B immunoglobulin (HBIG). Testing was evident in 88.7% of records, with 1.3% (7/533) of test results HBsAg positive. Follow-up in the form of counseling, referral, or newborn post-exposure prophylaxis (PEP) was documented for 57.1% (4/7) of women found to be HBsAg positive. It should be stressed that hospital records were not reviewed and, therefore, documentation of hospital administered PEP was likely not available to reviewers.

Over 80% of records also contained an assessment of susceptibility to rubella infection; 88.5% of women were serologically tested, 5.5% (29/532) were found to be non-immune, and 20.7% (6/29) of records of women at risk for infection showed follow-up such as exposure counseling or postpartum immunization.

Blood Group and Antibodies. Blood group and Rh status was present in 89.7% of records, with 7.4% (40/539) reporting a D- (Rh-) status. Follow-up was documented for 77.5% (31/40) of women with D-negative blood type, and if unsensitized (without prior exposure to the D antigen and development of antibodies), may have included anti-D immune globulin administration at 26–30 weeks gestation.

Blood group antibody screening test results were present in 88.5% of records, with 0.4% (2/532) indicating isoimmunization to D (existing antibodies). The records of both women found to be sensitized documented follow-up, which may have included referral to a MFM specialist.

Hemoglobin and Hematocrit. A national study has shown 2.2% of pregnant women to be anemic when defined as a hemoglobin concentration of less than 10 g/dL. However, prevalence varied by race, age, income, and stage of pregnancy. ACOG recommends all pregnant women be screened for anemia, and treated with supplemental iron, or further evaluated as indicated.¹⁹

At the time of initial visit, 90.2% of study records contained hemoglobin and hematocrit (H/H) test results, of which 15.3% (83/542) were noted to be abnormal. Half of those with abnormal results (49.4%, 41/83) documented follow-up via further testing, monitoring, dietary counseling, iron supplements, or referral.

During the third trimester, 64.1% of study records contained repeated H/H results, of which 24.2% (93/385) were noted to be abnormal. Less than half of those with abnormal results (44.1%, 41/93) had documented follow-up. Lower rates of testing in the third trimester may be attributed, in part, to preterm delivery, since women with preterm delivery may not have had opportunity to have third trimester repeat H/H, typically conducted at 32–36 weeks, performed.

Testing at 8–20 Weeks Gestation

Aneuploidy. Several first- and second-trimester combined approaches to screening tests for trisomy 21 and 18 are available;²⁰ screening strategies were defined for reviewers and included ultrasound (nuchal translucency measurement) and serum biochemical markers (pregnancy-associated plasma protein, human chorionic gonadotropin, maternal serum alpha-fetoprotein, estriol and inhibin-A levels).²¹ Screening was documented in 48.3% of all records, but may not have been done if the member presented late for care or declined testing (14.6%). Abnormalities were reported for 6.9% (20/290) of those tested, and counseling, further testing or referral documented in 70.0% (14/20) of records with abnormal test results.

Invasive diagnostic testing was defined as chorionic villous sampling or genetic amniocentesis.²² Invasive testing was noted in 4.7% of records, but may not have been done with late presentation for care, if not indicated, or was refused (11.3%). No abnormalities were noted.

Bacteriuria. Detection and treatment of asymptomatic bacteriuria has been shown to decrease the incidence of low birthweight; the U.S. Preventive Services Task Force (USPSTF) recommends testing with urine culture at 12–16 weeks of gestation, or at the first prenatal visit if later.²³ Three-quarters of records reviewed (74.2%) contained urine culture results in the documentation submitted, and 16.8% (75/446) of results were positive for bacterial growth, including some bacterial growth that appeared to be contaminant (multiple organisms). Among records with positive test results, 69.3% (52/75) included documentation of retesting and/or antibiotic therapy and monitoring. Of the 23 cases for which there was no documentation in the record of a retest or treatment, four women were third trimester presenters, and may not have had opportunity for retest prior to delivery. Among the remaining 19 cases, there was documentation that a retest or antibiotic treatment was needed, but the corresponding orders or lab results could not be identified in submitted documentation. In one case an appointment was scheduled but was missed (multiple “no shows” documented).

Screening at 24–28 Weeks of Gestation

Gestational Diabetes Mellitus (GDM). Gestational diabetes usually develops, and glucose tolerance testing (GTT) often occurs, halfway through pregnancy. However, women with risk factors may have been tested earlier. Half of all records (49.4%) documented at least one risk factor for diabetes based on age, race/ethnicity, medical and family history. Glucose tolerance testing, at any gestational age, was documented in 81.0% of records and 15.4% (75/487) contained a one-hour glucose challenge result greater than 140 g/dL, two or more abnormal values for GTT, or a visit note indicating abnormality.

In 85.3% (64/75) of records with abnormal test results, documented follow-up included further testing, counseling regarding dietary modification and physical activity, referral to a diabetes educator or medication.

Screening at 28–37 Weeks of Gestation

Group B Streptococcus. Vertical transmission of group B *Streptococcus* (GBS) during labor and delivery may result in invasive disease in the newborn characterized by sepsis, meningitis,

and pneumonia. Maternal colonization is often both asymptomatic and transient, therefore, vaginal/perianal culture is recommended prior to delivery at 35–37 weeks gestation.²⁴ GBS culture results were present in 72.9% of study records. Some of the women who did not have evidence of GBS culture results may not have had opportunity for a prenatal GBS culture if they delivered prior to 35–37 weeks. Other women may have had known GBS bacteriuria in the current pregnancy or delivered a previous infant with invasive GBS disease, both of which would be indications for intrapartum antibiotics and may preclude third trimester screening for GBS colonization.²⁵

ACOG notes that 10–30% of pregnant women are typically colonized with GBS.²⁶ In this study, 22.1% (97/438) of documented culture results were positive for GBS; 38.1% (37/97) of records with positive results contained a plan of care (such as administration of intrapartum antibiotic prophylaxis) or a notation antibiotics were not indicated (planned C-section delivery without membrane rupture). In many cases, evidence of follow-up antibiotic prophylaxis was not available, since the hospital chart was not reviewed.

Table 8b. Prenatal Care Services: Routine Testing, Abnormal Results, and Follow-up

Survey Item: E6 (n = 601) Routine Laboratory Screening at Recommended Gestational Age	Test Performed		Abnormal Result Found♦		Abnormal Result Followed Up♦	
	n	%	n	%	n	%
Initial Visit: First 2 Visits						
Cystic Fibrosis Screening	211	35.1	0	0.0	NA	NA
(Declined)	33	5.5				
Hepatitis B Surface Antigen	533	88.7	7	1.3	4	57.1
Syphilis Screen	517	86.0	1	0.2	1	100.0
Gonorrhea Screen	490	81.5	4	0.8	4	100.0
Chlamydia Screen	486	80.9	14	2.9	13	92.9
Rubella Assessment	532	88.5	29	5.5	6	20.7
Blood Group and D (Rh)	539	89.7	40	7.4	31	77.5
Blood Group Antibody Screen	532	88.5	2	0.4	2	100.0
Hgb/Hct Testing	542	90.2	83	15.3	41	49.4
8–20 Weeks						
Screening Test for Aneuploidy	290	48.3	20	6.9	14	70.0
(Declined)	88	14.6				
Invasive Testing Aneuploidy	28	4.7	0	0.0	NA	NA
(Declined)	68	11.3				
Urine Culture (12–16 weeks or 1 st visit)	446	74.2	75	16.8	52	69.3
Any gestational age						
Diabetes Testing*	487	81.0	75	15.4	64	85.3
(Risk Factor Documented)	297	49.4				
28– 37 Weeks						
Group B <i>Streptococcus</i> (35–37 weeks)	438	72.9	97	22.1	37	38.1
Hgb/hematocrit (Repeat 3 rd trimester)	385	64.1	93	24.2	41	44.1

♦ Items based on skip pattern (cases with test performed; cases with abnormal test result)
Denominator (cases with abnormal test results) < 20

*Testing at any gestational is included in this rate

Follow-up and Ongoing Monitoring

An overview of HIV testing, follow-up for D-negative/unsensitized blood type, and ongoing monitoring of weight, blood pressure, and urinalysis is presented in **Table 8c**.

Anti-D Immune Globulin Administration. As noted in Table 8b, blood typing during the current pregnancy showed 7.4% (40/539) of results to be D-negative. Status may have been known prior to the current pregnancy, and in **Table 8c**, 8.7% (47/539) of records with known status were D-negative. For 20 of 47 women with D-negative status, sensitization status was known, and 95.0% (19/20) were unsensitized. Of these, 78.9% (15/19) had documented administration of anti-D immune globulin at 26–30 weeks gestation.

HIV Services. As described in the NY Standards, HIV counseling and testing should be provided, without regard to risk, to all pregnant women as early as possible in the pregnancy, and repeated in the third trimester to identify seroconversion after an initial negative result.

In the first trimester of pregnancy, or at initial visit if later, 82.9% (485/585) of records documented HIV testing and 0.5% (3/585) refusal. In the third trimester of pregnancy, for those who had presented for care earlier, only 23.7% (119/502) of records documented HIV testing, and 0.4% (2/502) refusal. Among the 97 records that did not include documentation of an HIV test performed in the initial visit, 30 included documentation of an HIV test in the 3rd trimester, while 67 did not (data not shown).

Ongoing Monitoring. Over 90% of all records documented ongoing assessment of weight gain (90.8%) and blood pressure (90.5%) at every visit. Only 79.0% recorded repeated urine-dip analysis (e.g., glucose, ketones, protein, leukocytes, pH) at each visit.

Table 8c. HIV Testing, Blood Typing Follow-up and Other Monitoring

Survey Item		n	%
E6p	Patient D (Rh) Negative (n = 539)		
	Yes	47	8.7
	No	492	91.3
	UTD	54	
E6q ♦	If Yes, Sensitization Status (n = 20)		
	Sensitized	1	5.0
	Unsensitized	19	95.0
	UTD/NA	27	
E6r ♦	If Unsensitized, Patient Received Anti-D Immune Globulin at 26–30 Weeks Gestation (n = 19)		
	Yes	15	78.9
	No	4	21.1
E7a	Ongoing Monitoring: Weight Gain Assessment (n = 601)		
	Yes	546	90.8
	No	55	9.2
E7b	Ongoing Monitoring: Blood Pressure Measurement (n = 601)		
	Yes	544	90.5
	No	57	9.5

Table 8c. HIV Testing, Blood Typing Follow-up, and Other Monitoring – continued

Survey Item		n	%
E7c	Ongoing Monitoring: Urine-dip Analysis (n = 601)		
	Yes	475	79.0
	No	126	21.0
E8a	HIV Services: HIV Test Performed in 1 st Trimester or Initial Visit (n = 585)		
	Yes	485	82.9
	Declined	3	0.5
	No	97	16.6
	UTD	10	
E8b ♦	HIV Services: HIV Test Performed in 3 rd Trimester (n = 502)		
	Yes	119	23.7
	Declined	2	0.4
	No	381	75.9
	UTD	26	
	NA	2	

♦ Items based on skip pattern (cases with D-negative blood type; cases with D-negative unsensitized status; cases presenting before the third trimester)

Referrals and Coordination of Care

Plan of Care

A care plan was defined as a problem list (including risks identified during assessment) and a plan of services to address these needs; any documentation of identified issues and plan of action was considered for this indicator. A total of 68.9% of records contained some documentation of care planning (**Table 9a**).

Only 1.5% of records indicated the involvement of a health plan high-risk obstetric case manager in care planning. And only 0.7% indicated the Baby Basics program (a prenatal health literacy program designed for low income populations) was being utilized.

Table 9a. Referrals and Coordination of Care: Documented Plan of Care

Survey Item		n	%
F1	Care Plan with Problem List Documented (n = 601)		
	Yes	414	68.9
	No	187	31.1
F2	Evidence of Engagement of Health Plan High Risk OB Case Manager (n = 601)		
	Yes	9	1.5
	No	592	98.5
F4	Baby Basics Program Utilized (n = 601)		
	Yes	4	0.7
	No	597	99.3

Referrals to Specialty Care and Augmented Services

Referrals to specialty care, case management, and educational, nutritional or other support services are summarized in **Table 9b**.

Medical Specialists. Referral to Maternal Fetal Medicine was found in 8.8% of study records, and referral to another medical specialist in 8.0%. Communication between providers was noted in approximately 60% of those records. Referral to Behavioral Health was noted in 4.2% of records, with 36.0% (9/25) containing a consultation report or progress notes indicating communication with the psychiatrist, psychologist, social worker, or therapist.

Support Services. Social services involvement was documented for 18.3% of cases, but a request for formal case management (practice or health plan-based) in only 1.8%. When the Nurse Family Partnership, Healthy Families, Community Health Worker Program, and any other home visiting program (provider, local health department) were considered together, a total of 2.8% of records contained a referral for home visitation. (Seventeen women were referred to a single program and two women to two home visiting programs).

Nutrition Services. Members with children may have already been enrolled in WIC (Special Supplemental Nutrition Program for Women, Infants and Children) or SNAP (Supplemental Nutrition Assistance Program); however, 29.0% had documented referrals to WIC – and 0.3% received a dual referral to SNAP – during the current pregnancy. Members may have also received nutritional education or breastfeeding support through the WIC program; additionally, 22.8% had documented referrals to a nutritionist, but only 1.2% to lactation consultation or breastfeeding classes.

Patient Education. As noted earlier, 9 records contained a diagnosis of pre-pregnancy diabetes and 44 of gestational diabetes developed during the current pregnancy; nineteen women, or 35.8%, were referred to a diabetes educator. Also noted earlier were 61 records with an asthma diagnosis; two women, 3.2%, were referred to an asthma educator.

Table 9b. Referrals and Coordination of Care: Referrals by Specialty Area

Survey Item: F3 (n = 601)	Referred		Evidence of Communication with Referral Provider ♦	
	n	%	n	%
Maternal Fetal Medicine Specialist / High Risk Obstetrician	53	8.8	34	64.2
Other Medical Specialist (e.g., Internal Medicine, Endocrinologist)	48	8.0	29	60.4
Behavioral Health Provider	25	4.2	9	36.0
Social Services	110	18.3	46	41.8
Case Management	11	1.8	5	45.5
Nurse Family Partnership	2	0.3	0	0.0
Healthy Families	4	0.7	2	50.0
Community Health Worker Program	5	0.8	2	40.0
Other Home Visiting (e.g., Provider Home Visit, Local Health Dept)	8	1.3	4	50.0
Asthma Educator	2	0.3	0	0.0
Diabetes Educator	19	3.2	9	47.4
WIC Program	174	29.0	22	12.6
SNAP Program	2	0.3	0	0.0
Nutritionist	137	22.8	80	58.4
Lactation	7	1.2	1	14.3
Other	51	8.5	12	23.5

♦ Items based on skip pattern (cases referred)
Denominator (cases referred) < 20

Immunizations

Certain vaccines are strongly recommended during the prenatal period, as noted in the NY Standards. All women pregnant during flu season should be offered the trivalent inactivated influenza vaccine, and those determined to be at risk of contracting hepatitis B should begin/complete the hepatitis B vaccine series (three immunizations).²⁷ Influenza and hepatitis B immunization in the study group is outlined in **Table 10**.

Influenza immunization information was available for 591 women. Vaccination was not indicated for 9 women, who were not pregnant/not seen during influenza season, or already vaccinated. Among the remaining records, 14.4% (84/582) noted an offer of vaccination. Among those offered, 66.7% (56/84) documented acceptance and vaccine administration.

Risk of exposure to hepatitis B was assessed and documented in 40.6% of all records; an exposure risk was identified in 1.7%. Of the 10 women determined to be at risk, 1 completed and 3 started the vaccination series; 3 had already been vaccinated.

Table 10. Immunizations

Survey Item		n	%
G1	Patient Offered Trivalent Inactivated Influenza Vaccine if Pregnant during Flu Season (n = 582)		
	Yes	84	14.4
	No	498	85.6
	NA	9	
G2 ♦	Patient Accepted/Received Influenza Vaccine (n = 84)		
	Yes	56	66.7
	No	28	33.3
G3	Patient Offered H1N1 Vaccine (n = 586)		
	Yes	19	3.2
	No	567	96.8
	NA	5	
G4 ♦	Patient Accepted/Received H1N1 Vaccine (n = 19)		
	Yes	14	73.7
	No	5	26.3
G5	Patient Assessed for Risk Factors for Hepatitis B Exposure (n = 601)		
	Yes	244	40.6
	No	357	59.4
G5a	Hepatitis B Exposure Risk Identified (n = 601)		
	Yes	10	1.7
	No	591	98.3
G6 ♦	Patient Given Hepatitis B Vaccine (n = 10)		
	Hepatitis B vaccine series was completed	1	10.0
	Hepatitis B vaccine series was started but not completed	3	30.0
	No Hepatitis B vaccine was given	3	30.0
	NA	3	30.0

♦ Items based on skip pattern (cases offered influenza vaccine; cases with hepatitis B exposure risk identified)

Use of Ultrasound

Ultrasonography in pregnancy should be performed only when medically indicated; the NY Standards stipulate an indication for each examination must be documented.²⁸ The use of ultrasound imaging, as documented in study records, is examined in **Table 11**.

As shown in **Table 11**, 89.2% of records contained ultrasound examination results. Of those, 73.0% (390/534) contained more than one result. An indication for each test was found in 47.0% (252/536) of records with ultrasound results, for some tests in 12.3% (66/536), and for at least one test in 5.4% (29/536). The most commonly documented indications for ultrasound were gestational dating (53.0%, 184/347) and/or an assessment of fetal anatomy (53.9%, 187/347). In addition to the ultrasound indications specified for review, the ACOG Practice Bulletin *Ultrasonography in Pregnancy* lists additional indications for ultrasound in the first and second/third trimesters.²⁹ Among indications in the “other” category noted in medical records were indications listed in the ACOG practice bulletin, including evaluation of pelvic/abdominal pain, evaluation of vaginal bleeding, evaluation of fetal condition in late registrants for prenatal care, and evaluation of cervical insufficiency (cervical length).

Table 11. Use of Ultrasound

Survey Item		n	%
H1	Ultrasound Performed (n = 601)		
	Yes	536	89.2
	No	65	10.8
H2 ♦	Number of Ultrasounds (n = 534*)		
	1	144	27.0
	2	154	28.8
	3	100	18.7
	4+	136	25.5
H3 ♦	Indication for Ultrasound Documented (n = 536)		
	Yes, For All Tests	252	47.0
	Yes, For Some Tests	66	12.3
	Yes, UTD	29	5.4
	No	189	35.3
H4 @ ♦	Indications (n = 347)		
	Gestational Dating	184	53.0
	Anatomic Survey	187	53.9
	Evaluation of Fetal Number	1	0.3
	Evaluation of Fetal Viability	17	4.9
	Evaluation of Fetal Presentation	5	1.4
	Evaluation of Placenta Location-	6	1.7
	Aneuploidy Screening (Nuchal Translucency)	20	5.8
	Evaluation of Abnormal Amniotic Fluid Volume	9	2.6
	Evaluation of Fetal Growth Disturbance	44	12.7
	Evaluation of Fetal Anomaly	47	13.5
	Fetal Biophysical Profile	54	15.6
	Fetal Biometry	2	0.6
UTD	10	2.9	
Other	115	33.1	

♦ Items based on skip pattern (cases with ultrasound performed; cases with indications documented)
@Multiple responses

*Note: The use of ultrasound imaging may have been documented, when the specific number of ultrasound images was not. This resulted in a larger value for H1 “Ultrasound Performed” = Yes (536 records) than the sum of frequencies for H2 “Number of Ultrasounds Performed” = 1, 2, 3 and 4+ (534 records).

The Postpartum Period

Postpartum Visits

A postpartum visit was documented in 47.9% (288/601) of prenatal records (**Table 12a**). Postpartum visits are recommended at 4 to 8 weeks following an uncomplicated delivery, and within 7–14 days of a complicated gestation or delivery;³⁰ visit dates were available and determined to have occurred within the appropriate timeframe for 92.6% (263/284) of women with documented postpartum care. Birth outcomes were available for 76.4% (220/288) of postpartum visits; however in many cases it could not be determined if the delivery or postpartum provider had participated in prenatal care.

Table 12a. Postpartum Visits

Survey Item		n	%
I1	Postpartum Visit (n = 601)		
	Yes	288	47.9
	No	313	52.1
I3 ♦	Postpartum Visit Conducted in Appropriate Time Frame (n = 284)		
	Yes	263	92.6
	No	21	7.4
I4 ♦	Patient's Delivery/Birth Outcome Documented (n = 288)		
	Yes	220	76.4
	No	68	23.6
I5 ♦	Patient Saw the Delivery Provider at Any Time Antenatally (n = 102*)		
	Yes	36	35.3
	No	66	64.7
	UTD	184	
	NA	2	
I6 ♦	Patient Saw the Postpartum Provider at Any Time Antenatally (n = 165*)		
	Yes	90	54.5
	No	75	45.5
	UTD	121	
	NA	1	

♦ Items based on skip pattern (cases with postpartum visit documented)

*Denominator excludes UTD and NA responses

Assessment, Identification, and Follow-up of Specific Risk Factors

Postpartum assessment, identification, intervention and follow-up for specific risk factors among the 288 women with a postpartum visit documented in the prenatal record are summarized in **Table 12b**. Depression (51.4%), smoking (26.7%), and nutritional (23.3%) assessments were most frequently documented. An evaluation of drug or alcohol use was noted in approximately 20%, and of any remaining risk factor in less than 20%, of postpartum records.

The postpartum visit also provides an opportunity to assess the patient's adaptation to her newborn.³¹ In only 17% of records was an inquiry into the infant's medical or special needs apparent. Inquiry regarding infant exposure to second-hand smoke was documented in only three records, with no risk identified, although ten mothers were identified as smokers.

A description of women with identified risk and follow-up during the postpartum interval is difficult, since fewer than half had documented postpartum visits, and fewer than half of those were assessed for any risk factor beyond depression. Of those women with risk for depression assessed or discussed, 12.2% were identified as at risk, and 88.9% (16/18) were counseled, treated or referred as recorded during postpartum care.

Table 12b. Postpartum Assessment, Identification, and Follow-up of Specific Risk Factors

Survey Item: I7 ♦ (n = 288)	Assessed		Identified♦		Among Identified, Addressed in Practice or Referred ♦		Among Identified, Follow-Up ♦	
	n	%	n	%	n	%	n	%
Depression	148	51.4	18	12.2	16	88.9	3	16.7
Tobacco Use	77	26.7	10	13.0	8	80.0	0	0.0
Nutrition	67	23.3	14	20.3	12	85.7	2	14.3
Alcohol Use	62	21.5	2	3.2	1	50.0	0	0.0
Illicit/Illegal Drug Use	58	20.1	3	5.2	1	33.3	0	0.0
Medical Comorbidity	53	18.4	26	49.1	25	96.2	2	7.7
Domestic Violence	50	17.4	1	2.0	1	100.0	0	0.0
Infant Medical / Special Needs	49	17.0	4	8.0	2	50.0	0	0.0
Other Psychiatric Illness	25	8.7	4	16.0	3	75.0	1	25.0
Sexual Abuse	17	5.9	1	5.6	1	100.0	0	0.0
Infant Second-hand Smoke Exposure	3	1.0	0	0.0	NA	NA	NA	NA
Oral Health	3	1.0	0	0.0	NA	NA	NA	NA

♦ Items based on skip pattern (cases with postpartum visit; cases with risk factor assessed or discussed; cases with risk identified)

Note 1: Denominator for cases with risk identified comprised of cases with risk factor assessed or discussed

Note 2: Denominator (cases with risk identified) < 20

Postpartum Reassessment of Members with Known Risk

Approximately half of members with previously identified risk had a postpartum visit documented; 56.3% with a postpartum visit and previously identified risk (18/32) were reassessed for depression and 34.7% (17/49) for tobacco use.

Table 12c. Postpartum Reassessment of Cases with Identified Risk

Identified Risk Factor	Assessed Postpartum			
	Identified before 3 rd trimester	Identified risk and had postpartum visit	Reassessed	%
Depression	62	32	18	56.3
Tobacco Use	102	49	17	34.7
Illicit Drug Use	36	14	3	21.4
Alcohol Use	22	11	1	9.1
Domestic Violence	22	12	3	25.0

Denominator (cases with identified risk and postpartum visit documented) < 20

Postpartum Patient Education

While the postpartum checkup has routinely focused on pelvic examination and contraceptive education;³² to provide comprehensive inter-conception care the NY Standards include additional recommended educational components that are consistent with ACOG recommendations for postpartum care. These elements include postpartum review of immunizations, recommended care prior to next pregnancy, and a specific breastfeeding discussion.³³ Selected elements, and documented education for the 288 members with postpartum visit notes, are included in **Table 12d**.

Family planning was indeed addressed in 72.9% and inter-conception care (recommended care prior to the next pregnancy, including folic acid) in 52.4%, of postpartum records. The provision of other recommended counseling/anticipatory guidance was less frequently observed. A discussion of infant feeding choices was noted in 19.4% of all postpartum records, but breastfeeding nutritional advantages were discussed in only 2.2% (6/273), of records. There were 14 records that specifically documented that the mother was not breastfeeding (NA). Anticipatory guidance on preventing childhood lead poisoning, as recommended by the New York State Department of Health and ACOG District II document *Lead Poisoning Prevention Guidelines for Prenatal Care Providers*,³⁴ was noted for 1.0% of mothers in the postpartum interval. A postpartum home visitation referral was made for 3.2% (9/280) of mothers not already receiving related services.

Although evidence of assistance with health insurance application may have been found in social services notes (which were not available for this review) there was scant documentation of this in the medical chart; 8.3% of women were advised of the availability of Medicaid eligibility for their infant and 5.2% of possible ongoing coverage for themselves.

Table 12d. Postpartum Patient Education

Survey Item		n	%
I8 ♦	Anticipatory Guidance Provided on the Prevention of Childhood Lead Poisoning (n = 288)		
	Yes	3	1.0
	No	285	99.0
I9a ♦	General Counseling Regarding Infant Feeding Choices Discussed with Patient (n = 288)		
	Yes	56	19.4
	No	232	80.6
I9b ♦	Patient Couseled on Nutritional Advantages of Breast Milk for Infants (n = 273)		
	Yes	6	2.2
	No	267	97.8
	NA	14	
I10a ♦	Patient Advised or Referred for Assistance with an Application for On-going Medical Care Assistance for Herself (n = 288)		
	Yes	15	5.2
	No	273	94.8
I10b ♦	Mother Advised of the Availability of Medicaid Eligibility for Infant (n = 288)		
	Yes	24	8.3
	No	264	91.7
I11a ♦	Patient Couseled on Inter-conception Care (n = 288)		
	Yes	151	52.4
	No	137	47.6
I11b ♦	Patient's Family Planning Needs Addressed (n = 288)		
	Yes	210	72.9
	No	78	27.1
I12a ♦	Immunity/Immunization Status Assessed (n = 288)		
	Yes	23	8.0
	No	265	92.0
I13 ♦	Referral Made for Post-partum Home Visiting (n = 280)		
	Yes	9	3.2
	No	271	96.8

♦ Items based on skip pattern (cases with postpartum visit documented)

Postpartum Immunizations

The postpartum visit provides an opportunity to review immunization status, but as noted in **Table 12d**, assessment was documented in only 8.0% of records containing postpartum visits. Of 23 women with documented assessment, influenza vaccination was indicated for 10, and administered to 7; Human Papilloma Virus was indicated for 9, and administration begun for 5 (**Table 12e**).

Table 12e. Postpartum Immunizations

Survey Item: I12b ♦ (n = 23)	Indicated		Administered ♦	
	n	%	n	%
Influenza	10	43.5	7	70.0
(Declined)			2	20.0
MMR	0	0.0	NA	NA
Tdap	1	4.3	1	100.0
Varicella	0	0.0	NA	NA
Human Papilloma	9	39.1	5	55.6
(Declined)			1	11.1

♦ Items based on skip pattern (cases with immunization status evaluated)
 Denominator (cases with vaccination indicated) < 20

Performance Trended Over Time

Two earlier studies of prenatal care received by New York MMC members were conducted in 1999 and 2002. This study was not meant to replicate the prior studies, since the sample populations and many indicator definitions differed. The study samples in the earlier studies were limited to MMC members who were enrolled at least four months prior and two months after delivery, while this study included FFS Medicaid enrollees and there were no enrollment criteria.

Table 13 displays rates for some indicators that could be compared across study years, although some denominators differed as noted below. Significance testing was not conducted due to the sample population and indicator differences. With these cautions in mind, initial visit risk assessment rates appear similar across study years. Rates of urine culture, GBS testing and repeat hemoglobin and hematocrit in the third trimester appear to have improved. Rates of postpartum risk assessment are similar and remain low across study years.

Table 13. Performance Trended Over Time across Common Study Indications (1999, 2002, and 2009 NYSDOH/IPRO Prenatal Care Studies)

Study Year	1999		2002		2009	
	Den	%	Den	%	Den	%
Initial Visit Risk Assessment						
Nutrition	1,672	40.0	2,740	52.7	601	58.9
Domestic Violence			2,740	68.4	601	67.6
Genetic	1,672	82.2	2,740	80.8	601	79.9
Alcohol	1,672	87.4	2,740	83.8	601	87.4
Drug	1,672	86.7	2,740	84.2	601	85.9
Smoking	1,672	89.1	2,740	84.1	601	87.0
ETS			2,740	8.0	601	6.7
Problem Identified¹						
Alcohol			2,304	2.3	520	5.0
Drug			2,343	7.3	513	7.8
Smoking			2,343	21.0	525	21.9

Table 13. Performance Trended Over Time across Common Study Indications (1999, 2002, and 2009 NYSDOH/IPRO Prenatal Care Studies) – continued

Study Indicator	1999		2002		2009	
	Den	%	Den	%	Den	%
Problem Addressed in Practice or Referred²						
Alcohol			53	69.8	26	84.6
Drug			171	88.3	40	87.5
Smoking			492	78.0	115	82.6
Initial Visit Laboratory Testing						
Urine culture			2,733	59.4	601	74.2
Chlamydia	1,670	83.4	2,735	74.0	601	80.9
Additional Laboratory Testing						
Glucose challenge ³			2,032	80.9	601	81.0
H/H in 3 rd trimester ⁴	1,672	67.7	2,634	48.5	601	64.1
Group B strep culture ⁵			2,348	50.1	601	72.9
Postpartum Risk Assessment⁶						
Alcohol			1,597	23.8	288	21.5
Drug			1,597	23.8	288	20.1
Smoking			1,597	27.9	288	26.7

¹Denominator 2002 assessed at any visit; denominator 2009 assessed initial visit

²In the 2002 study, “followed-up” was defined as addressed in practice or referred

³Denominator 2002 includes only women identified as at-risk for diabetes

⁴Denominator 2002 excludes women who delivered prior to third trimester

⁵Denominator 2002 excludes women who delivered prior to third trimester or testing not indicated

⁶Denominator 2002 and 2009 includes only women with a postpartum visit

Multivariate Analyses

Logistic regressions were performed to identify predictors of member and provider behaviors. These analyses assessed whether group comparisons were statistically significant after controlling for potentially confounding characteristics. For those variables with significant associations ($P \leq .05$), the odds ratios and significance levels are given in **Table 14**. Note each regression was based on 597 members due to missing data for select independent variables in four cases.

Dependent Variables: Member and Provider Behaviors

A total of 12 logistic regressions were performed, one for each dependent variable listed below (with survey item number) and serving as column headings in **Table 14**:

- Initial Visit in Third Trimester (C1a)
- Depression Assessed on Initial Visit (B2)
- Domestic Violence Assessed on Initial Visit (B2)
- Tobacco, Alcohol, and Illegal Drug Use Assessed on Initial Visit (B2)
- Oral Health Assessed on Initial Visit (B2)
- Nutrition Assessed on Initial Visit (B2)

- Pre-pregnancy BMI or Initial Visit BMI Documentation (B5a)
- Appropriate Weight Gain During Pregnancy Discussed (B5b)
- Patient Received Education on Signs and symptoms of complications of pregnancy and Labor and delivery (D1)
- Referral to WIC Program (F3)
- Referral to Maternal Fetal Medicine Specialist/High Risk Obstetrician (F3)
- Postpartum Visit Received (I1)

Independent Variables: Demographics and Health Status

The following 13 variables served as independent variables in each of the regressions, reflecting demographics and health status. They are listed with data source and description, and serve as row labels in **Table 14**.

- Age at delivery (administrative data). Continuous variable, 15 to 44 years.
- Race/ethnicity (administrative data). White vs. all others; black vs. all others; and Hispanic vs. all others.
- Managed care (administrative data). MMC vs. FFS.
- Region (administrative data). New York City vs. rest of state.
- Electronic medical record (7). Yes vs. no.
- Previous live birth (16a). 1+ vs. 0.
- Previous low birthweight or previous preterm birth (17 and 18). Yes vs. no.
- Pregnancy-related conditions developed during current pregnancy (28). Gestational diabetes, pre-eclampsia, eclampsia, HELLP syndrome or pregnancy-related HTN vs. none.
- Chronic medical condition (29). Pre-pregnancy diabetes, pre-pregnancy HTN, asthma, other serious chronic disease, chronic pulmonary disease, renal disease, cardiac disease or HIV vs. none.
- Obesity (29). Yes vs. no.
- Depression (29). Yes vs. no.
- Illegal drug or alcohol use identified at initial visit (B2). Yes vs. no.
- Tobacco use identified at initial visit (B2). Yes vs. no.

Predictors of Member Behavior and Provider Practices

Member Characteristics

Hispanic Ethnicity. Hispanic ethnicity was the most frequent predictor of member/provider behaviors. Hispanic women were less likely than women of other racial/ethnic categories to initiate prenatal care late in pregnancy (OR 0.32), i.e., more likely to receive early prenatal care. In addition to entering care early, Hispanic women were much more likely to have documented initial visit assessments for domestic violence (OR 3.08), oral health (3.30), and nutritional status (5.87), and to receive a referral to WIC (OR 3.52). Being Hispanic was also strongly associated with documented education regarding pregnancy, labor, and delivery (OR 3.43).

Obesity and Depression. Obesity diagnosis was another frequent predictor of provider practices. Obese women were more apt to have documented initial visit assessments for domestic violence (OR 2.11), oral health (OR 1.85), and nutritional status (OR 3.82). Obesity was also associated with BMI documentation (OR 2.92) and with BMI-based or other discussion of appropriate weight gain during pregnancy (OR 1.89). Depression diagnosis was another condition associated with BMI documentation (OR 3.38) and weight gain discussion (OR 2.14).

Substance Use and Other Medical/Obstetrical Conditions. Tobacco use was associated with assessments for depression (OR 2.02) and domestic violence (OR 2.75). Alcohol and illegal drug use were not associated with any patient behaviors or provider practices.

Having a pregnancy-related or chronic medical condition were the only statistically significant predictors of referral to a MFM specialist or high-risk obstetrician (OR 4.42 and 2.72, respectively). Having previously delivered a low-birthweight or preterm infant was not associated with patient or provider behaviors.

Provider characteristics

Medicaid Reimbursement Model. Women enrolled in Medicaid Managed Care were less likely to enter care late in pregnancy (OR 0.22) and were more likely to have a postpartum visit (OR 2.99) compared to FFS members. However, members enrolled in managed care were less likely to have documented initial visit assessments of depression (OR 0.55), tobacco/alcohol/drug use (OR 0.46), oral health (OR 0.44), and nutritional status (OR 0.59).

Electronic Medical Records. The use of EMR was associated with documentation of many key components of prenatal care: BMI calculation (OR 2.42), discussion of appropriate weight gain (OR 1.90), education on the signs and symptoms of pregnancy complications and labor/delivery (OR 1.71), referral to WIC (OR 1.61), and a postpartum visit (OR 1.46).

Additional Findings

Age was not associated with any member or provider behaviors. New York City residence was associated only with a lower likelihood of recorded assessment for tobacco/alcohol/drug use (OR 0.42). Women who were black (OR 3.99) or had not previously given birth (previous live birth vs. no previous live birth, OR 0.57) were more likely to receive a referral to the WIC program.

Table 14. Multivariate Analysis: Odds Ratios for Predictors of Member and Provider Behaviors

Independent Variables: Demographics and Health Status	Dependent Variables: Member and Provider Behaviors											
	Initial Visit 3 rd Trimester	Depression Assess§	Domestic Violence Assess	Tobacco, Alcohol, and Illegal Drug Assess#	Oral Assess	Nutrition Assess	BMI Document	Weight Gain Discuss	Education Signs or Labor	WIC Refer	High Risk OB Refer	Post Partum Visit
Age	1.00	0.99	1.00	1.01	1.01	1.00	0.99	1.02	1.01	1.03	1.08	1.03
Race												
White	0.59	0.89	1.40	0.90	1.46	2.28*	0.70	1.14	1.57	1.48	0.75	1.28
Black	1.24	1.19	1.33	0.56	1.85	3.16***	1.04	1.08	1.56	3.99***	0.58	0.97
Hispanic	0.32*	1.74	3.08***	1.67	3.30***	5.87***	0.83	1.71	3.43***	3.52**	0.88	1.41
Managed Care	0.22***	0.55**	0.73	0.46*	0.44***	0.59*	0.76	1.18	0.93	1.00	1.34	2.99***
Region	1.78	0.75	0.89	0.42***	0.92	0.86	1.33	0.80	0.69	1.06	1.09	1.13
Electronic Medical Record	1.36	1.11	1.01	0.68	0.68	1.36	2.42***	1.90***	1.71**	1.61*	1.13	1.46*
Previous Live Birth	1.29	1.04	0.75	0.75	0.98	0.73	0.77	0.80	0.78	0.57**	0.57	0.95
Previous Low Birthweight or Previous Preterm	2.16	1.42	0.69	1.52	1.13	0.79	0.38	0.63	0.96	1.30	1.84	0.77
Pregnancy-related Condition	0.97	1.22	1.06	1.40	1.07	1.30	0.39*	1.34	0.93	1.17	4.42***	1.11
Chronic Medical Condition	0.74	0.96	1.25	0.67	1.14	0.89	1.45	1.15	1.00	0.79	2.72**	1.07
Obesity	1.10	1.74	2.11*	1.54	1.85*	3.82***	2.92***	1.89*	1.10	1.63	0.90	0.74
Depression	0.96		1.48	0.98	1.53	1.13	3.38***	2.14*	1.02	1.77	0.59	0.82
Illegal Drug or Alcohol Use Identified	0.87	0.98	0.52		0.69	1.65	0.90	0.81	0.77	1.32	0.50	0.65
Tobacco Use Identified	1.32	2.02**	2.75***		1.47	1.06	0.86	1.62	1.14	1.23	1.04	1.09

Note: In the analyses, NYC was internally coded 1 and ROS coded 0. For all other categorical items, "Yes" was coded 1 and "No" was coded 0.

§ Independent variable excluded: Depression

Independent variables excluded: Illegal Drug or Alcohol Use Identified and Tobacco Use Identified.

* $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$

DISCUSSION

The Institute of Medicine (IOM) report released in 1985, *Preventing Low Birthweight*, was followed by an expansion of Medicaid coverage for obstetric care that facilitated access to prenatal care for low income women. The IOM report also proposed that enhancing the content of prenatal care to ensure dynamic risk assessment and risk-appropriate intervention should be a focus of efforts to improve outcomes in general, and prevent preterm and intrauterine growth restriction (IUGR), in particular.³⁵ However, studies have shown the content of prenatal care delivered to low-income women varies widely.³⁶ The American Congress of Obstetrics and Gynecology/American Academy of Pediatrics (ACOG/AAP) Guidelines for Perinatal Care stress that antepartum care should include an established management plan that considers the medical, nutritional, psychosocial, and educational needs of the pregnant woman and her family. This comprehensive quality and patient-centered approach is particularly important for low-income women enrolled in Medicaid, among whom some risks for adverse birth outcomes are more prevalent than in the general population.³⁷ In New York State, the percentage of preterm births among Medicaid births was 12.6% compared to 11.5% of non-Medicaid births from 2008–2010.³⁸ The New York State Medicaid Prenatal Care Standards (NY Standards) released in 2010 reflect this patient-centered approach with a focus on ongoing risk assessment, risk-appropriate intervention, and care coordination for the low-income, high-risk women enrolled in Medicaid. Our study of prenatal and postpartum care relative to the NY Standards revealed many elements of care for which there was near universal adherence to the NY Standards. However, opportunity for improvement exists for other elements of care, particularly for ongoing assessment of risk factors especially relevant to the Medicaid population.

This study differed from prior studies of prenatal care for New York women enrolled in Medicaid Managed Care with regard to the eligible population, in that no continuous enrollment criteria were applied, and Medicaid enrollees receiving Fee-for-Service care were included. For these reasons, comparisons among studies are limited. However, in several areas, results are strikingly similar or somewhat improved, and these are discussed below where applicable.

Socioeconomic disparities in birth outcomes persist, and are associated with other factors impacting birth outcomes, such as maternal nutrition, drug use, and infection.³⁹ The Medicaid-enrolled women who comprised the study sample proved to be a high-risk group, underscoring these women's need for patient-centered management and coordinated care. Many of the women in the study sample had documented demographic, medical/obstetric, behavioral, and psychosocial risk factors for poor birth outcomes in addition to low socioeconomic status (SES). There were several prevalent demographic risk factors associated with poor birth outcomes among the study population, including age less than 20 years (12%) or age 35 years or older (9%) and unmarried status (68% of those for whom status was documented).^{40,41} Racial disparities in birth outcomes have been persistent despite advances in access and prenatal care. State-provided demographic data revealed 21% of the study population was black, a significant risk factor for poor birth outcomes such as preterm and low-birthweight births.⁴²

Patients with limited education or language proficiency may have health literacy challenges, which can impact the ability to understand health information.⁴³ Education level and primary language were poorly documented in medical records; however, at least 22.1% (133/601) of women were known to lack a high school degree and at least 15.5% (93/601) were documented to speak a primary language other than English.

In addition to sociodemographic factors, at least one maternal medical or psychiatric comorbidity was documented for 40% of the study population. Maternal medical comorbidity prevalence has been increasing over the past two decades, and the prevalence of obesity has also been increasing among pregnant women.⁴⁴ Overweight and obese women are at risk for complications such as gestational diabetes, hypertension and pulmonary emboli, as well as poor birth outcomes. Obesity was the most commonly documented condition among the study sample at 14%. It is possible the number of women who are obese was under-documented, since Body Mass Index (BMI) was documented in only 17% of records, whereas data from the National Health and Nutrition Examination Survey (NHANES) have shown that more than half of pregnant women are overweight or obese, and an entire 8% of women of reproductive age are extremely obese.⁴⁵ It is also possible that BMI was more commonly documented for women that providers suspected were obese.

Many women had evidence of other comorbidities associated with poor pregnancy outcomes, particularly when poorly controlled or not treated, such as asthma and anemia (10 and 11%, respectively).^{46,47} Depression, which has been associated with adverse health behaviors, was documented in 10% of records, and rates of pre-pregnancy diabetes (2%), gestational diabetes (7%), and hypertensive disorders (5%) were similar to reported national rates. Bacterial vaginosis, which is associated with poor pregnancy outcomes and occurs at rates of approximately 20% among pregnant women according to other studies, was documented in 7% of study records. A range of prior poor birth outcomes that confer risk were also documented among study members, including an 8% rate of prior preterm births among women with a prior pregnancy.

Early prenatal risk assessment and ongoing reassessment in subsequent visits are central components of the NY Standards, and are advocated by ACOG to establish a prenatal management plan based on patient and family needs, and to optimize pregnancy outcomes.^{48,49} Most records (84%) included initial visit comprehensive risk assessments, with attention to the areas of medical, obstetric, psychosocial, behavioral, nutritional, genetic, and environmental risk. Medical and obstetric historical risk factors were assessed and addressed, if identified, in the vast majority of cases. Some members were referred to Maternal Fetal Medicine specialists (9%), other medical specialists (8%) and behavioral health providers (4%) for care or consultation. Rates of assessment of other categories of risk varied, and reassessment was uncommon, with only 6% of records documenting a comprehensive reassessment of behavioral, psychosocial, nutritional, and environmental risk.

Behavioral risk factors can directly affect pregnancy outcomes as well as exacerbate other risk factors such as medical comorbidity. In addition to early assessment for these behavioral risks, reassessment is essential as emphasized in the NY Standards, since they may appear or persist after the initial visit.^{50,51} Several key behavioral risk factors were assessed at high rates during initial visits, although reassessment was less common and presents an opportunity for improvement.

Smoking is among the most prevalent, modifiable causes of adverse pregnancy outcomes, and is associated with low SES.^{52,53} The U.S. Preventive Services Task Force (USPSTF) recommends clinicians ask all pregnant women about tobacco use, and there is strong evidence that augmented, pregnancy-tailored counseling is of benefit for pregnant women who smoke.⁵⁴ Since smoking cessation at any point during pregnancy provides substantial maternal and infant benefit, ACOG advocates encouraging persistent smokers to quit at every visit and reviewing prevention strategies in the third trimester for smokers who have already quit to ensure continued abstinence.^{55,56}

Tobacco use was assessed in most cases, with 22% of women identified as smokers, and with documentation that most women identified as smokers received intervention (83%). The high rate of intervention for tobacco users predates Medicaid coverage for smoking cessation counseling during a medical visit to pregnant and postpartum women that became effective in January 2010 and may further improve rates of smoking cessation intervention. However, only 12% of records overall included documentation that tobacco use was reassessed in the third trimester. Similarly, alcohol and drug use, which can increase the risk of preterm births, fetal growth restriction, and other adverse outcomes, were assessed and addressed at high rates during initial visits, but reassessed in the third trimester in only about 8% of cases.^{57,58,59} Even members with identified tobacco, drug, and alcohol use in the initial visits were documented to have been reassessed or followed up at a later visit at rates of only 7.7–26.1%.

For some important risk factors highlighted in the NY Standards, including domestic violence, nutritional risk, oral health risk and lead exposure, documentation of assessment in the initial visits was less common than assessment of substance use and presents another opportunity for improvement. Domestic violence has been associated with poor pregnancy outcomes,^{60,61} and the ACOG Committee Opinion *Intimate Partner Violence* advocates assessment at the first prenatal visit and at least once per trimester, since violence often begins or escalates during pregnancy. Our study found initial visit screening in 68% of records; although not directly comparable due to different eligible population criteria, this rate is essentially unchanged from the 2004 New York Medicaid Managed Care (MMC) prenatal care study. Domestic violence was reassessed in the third trimester in only 9% of cases.

Depression, which, if untreated, has been associated with unfavorable health behaviors in pregnancy and subsequent poor pregnancy outcomes, was assessed in only 63%, and reassessed in only 11% of cases; standardized depression screening tools or questions were documented rarely (7% of those assessed). It was noted that depression and domestic violence were addressed at very high rates when identified (87% and 96%), as was the case for nearly all identified risk factors. Referral was especially common for depression risk, and one-third of the members with a risk for depression were referred for care or consultation (data not shown). However, even among members with identified risk for depression or domestic violence in the first two visits, reassessment or follow-up of risk at a later visit was documented in only 27.5% and 17.4% of cases, respectively.

Nutritional screening, counseling and referral are also areas of focus in the NY Standards. Underweight women are at increased risk for premature delivery and giving birth to low birthweight infants, while overweight women are at increased risk for maternal gestational diabetes and hypertension, C-section and giving birth to infants with macrosomia or other morbidities. Although nutritional risk can occur in women of any socioeconomic status, women with low SES can have particular barriers to adequate nutrition.⁶² The NY Standards require an individual nutritional assessment, including an initial visit evaluation of pre-pregnancy BMI, weight gain and specific risk factors, with continuing re-evaluation as indicated.

Assessment of nutritional risk, which was broadly defined as any query related to nutrition behaviors or documentation of nutritional status or BMI, was noted in only 59% of records, and only 37% of records documented general nutrition counseling. However, identified nutritional risks were addressed in nearly all cases (97%) and referrals for care were common, with 70% of women with identified risk referred for care. Referrals to nutritionists were among the most common referrals overall, with 23% of all women referred.

The provision of information regarding the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and Supplemental Nutrition Assistance Program (SNAP) programs is recommended for all low income pregnant women in the ACOG Committee Opinion *Psychosocial Risk Factors: Perinatal Screening and Intervention*, and referral to these programs as needed is specified in the NY Standards. Referral to WIC was the most common referral documented, with 29% of records including evidence of WIC referral. Referral to SNAP was noted in only 2 records. Since regression analysis revealed nulliparous women were more likely to be referred to WIC, it is possible women with children were already engaged in these programs, and therefore referral was not necessary.

The IOM guidelines for appropriate gestational weight gain are based on pre-pregnancy BMI, and the IOM report *Weight Gain during Pregnancy: Reexamining the Guidelines*, which was published in 2009, the same year as the births reviewed for the study, *recommends* offering services to pregnant women to help them achieve guideline-recommended weight gain to optimize birth outcomes. Notably, only 17% of records included documentation of pre-pregnancy or initial visit BMI. Although 35% of records documented some degree of weight gain counseling, only 5% included documentation of BMI-based weight gain discussion as recommended by the IOM. Obese women were more likely to have nutritional assessment, BMI and appropriate weight gain counseling documented, suggesting that women perceived to be at higher risk may be targeted for more intensive assessment and intervention.

The NY Standards require assessment of oral health needs at the initial visit. Emerging evidence links periodontal infection to adverse outcomes such as premature delivery and low birthweight. Women who become Medicaid-eligible due to pregnancy may not have had access to dental care prior to pregnancy.⁶³ Only 37% of records included documentation of oral health assessment; however, nearly one-fourth (24%) of those assessed were identified with an oral health problem or lack of dental care within the past six months, and most of these women were referred for care (87%; data not shown).

As noted in the NY Standards, New York State Public Health Law and Regulations require assessment of all pregnant women for risk of exposure to lead at the initial prenatal visit, with blood lead level testing for women identified as at-risk. Only 43% of records included documentation of lead exposure risk assessment or a lead screening test, and only 23% of records overall included documentation of counseling regarding lead exposure, which is required for all pregnant women by NYS Public Health Law.

Assessment for some risk factors particularly relevant to low income populations, such as stress and housing instability, were not commonly documented. Although there is evidence that psychosocial stress may be an independent risk factor for preterm and low-birthweight births, this was a difficult factor to define for the reviewers, and stress assessment is likely not useful as an ongoing evaluation indicator.^{64,65} It is possible that psychosocial stressors were identified but not documented, since over 18% of women were documented to have referrals to social services, which were also among the most common referrals.

The least commonly assessed risk factor was secondhand smoke exposure (7%); although the study populations are not directly comparable, this finding is similar to the rate of assessment for secondhand smoke exposure in prior studies (8%). Prenatal exposure to environmental tobacco smoke significantly increases the risk for low birthweight, and ACOG recommends that pregnant women who are exposed to smokers receive advice regarding strategies to address smokers and avoid exposure.⁶⁶

Health education and counseling as specified in the NY Standards were documented at varying rates; most records included documentation of at least one element of health education (68%). The most commonly documented discussion topics were signs and symptoms of complications of pregnancy (51%), and labor and delivery (46%). Interestingly, Hispanic women were more likely to receive education regarding these topics. Although the NY Standards reflect IOM guidelines that counseling on diet and physical activity should be offered to all pregnant women to help them achieve guideline-recommended gestational weight gain, physical activity counseling was documented in only 39% of records. Nutrition counseling in the practice was documented for only 37% of women (data not shown), but 23% were referred to a nutritionist and may have received counseling not documented by the provider.

Breastfeeding education is another care element offering opportunity for improvement, as rates of counseling were particularly low. Both ACOG and the AAP advocate providing accurate and sufficient information throughout the perinatal period to pregnant women so they can make informed decisions about infant feeding, and the NY Standards include counseling regarding the benefits of breastfeeding specifically. Documentation of breastfeeding counseling in general was included in only 22% of prenatal records, with only 2% documenting counseling regarding exclusive breastfeeding for the first six months of life.

Routine prenatal care services were generally documented at high rates. Over 90% of records included ongoing monitoring of weight gain and blood pressure at every visit. Most routine lab tests were documented at rates of 80–90%, including Chlamydia screening, which was noted at a higher rate than in the 2004 NY Medicaid Managed Care prenatal care study (81 vs. 74%). HIV testing documentation at initial visit was included in 83% of records, although documentation of repeat testing in the third trimester, which should be routinely offered as per NY Standards, was noted in only 24% of records.

Two testing rates noted to be low in previous NY Medicaid prenatal care studies, urine culture and group B *Streptococcus* (GBS) culture (59% and 50%), were documented at higher rates in this study (74% and 73%). These tests are critical for identifying and addressing infection in order to optimize birth outcomes. Identification of asymptomatic bacteriuria and treatment with antibiotics significantly reduces the incidence of low birthweight as well as maternal urinary tract infection. As such, urine culture to screen for bacteriuria at 12–16 weeks or the first initial visit for pregnant women is a USPSTF A recommendation. Administering IV antibiotics during labor to women at risk for transmitting GBS to their newborns prevents invasive disease in the first week of life. Continuing to improve critical testing rates should be a focus of future improvement initiatives.

Pregnant women are at increased risk for morbidity due to seasonal influenza (flu), and influenza during pregnancy has been associated with poor pregnancy outcomes.⁶⁷ The Centers for Disease Control and Prevention (CDC) recommends influenza vaccination for all women pregnant during the flu season regardless of gestational age, and vaccination has been associated with improved birth outcomes.⁶⁸ During the 2009 H1N1 pandemic, it was strongly recommended that pregnant women be vaccinated for H1N1, as pregnant women were severely impacted.⁶⁹

Study results revealed that few records included documentation that pregnant women were offered influenza vaccine if pregnant during flu season (14%) or H1N1 vaccine (3%) and even fewer were documented to have received vaccine, including vaccination at other healthcare sites. Influenza vaccine coverage among pregnant women has increased substantially over the past decade, and is estimated to be about 50% nationally.⁷⁰ The likelihood of vaccination has

been reported to increase substantially if providers recommend and offer flu vaccine to pregnant women.⁷¹ Ensuring flu vaccination for pregnant women, and vaccination for emerging infections, is an important opportunity for improvement. Quality improvement initiatives should focus on bringing influenza vaccination rates for Medicaid-enrolled pregnant women, at a minimum, to levels comparable to the national average.

Immunizations were also rarely addressed in the postpartum visit, with only 8% of records of women who had a postpartum visit documenting any assessment of immunization status. Notably, there were no documented postpartum administrations of Measles, Mumps and Rubella (MMR) vaccine, although 6% of women were noted to be non-immune to rubella.

As noted above, some women were referred to specialty care (9% to Maternal Fetal Medicine, 8% to other medical specialists), and documentation of information sharing with referral providers as specified in the NY Standards was evident for the majority of these referrals (60–64%). These referrals were more likely for women with medical comorbid conditions. Despite the high-risk nature of the study population, few members' records included documentation of referral for augmented services such as Managed Care Organization (MCO) or other case management (2%), or Community Health Worker Program, Nurse Family Partnership, Healthy Families or other home visitation program ($\leq 1\%$ each). It is possible these services were provided but not documented in medical records. It is notable that enrollment in Managed Care was associated with a lower likelihood of late (third trimester) entry to care and increased likelihood of having a postpartum visit, perhaps reflecting the outreach and care coordination the MCOs provide.

Despite the high-risk nature of the study population, only 48% of women had a documented postpartum visit in the prenatal care record. Other than enrollment in Medicaid Managed Care, only the use of an Electronic Medical Record (EMR) was associated with having a postpartum visit, while various high-risk comorbid medical and behavioral conditions were not. It is possible that practices with EMR may be more likely to coordinate prenatal and postpartum care. Since it appears that high-risk women are just as likely to miss postpartum visits as are other women, ensuring a postpartum visit is a critical area for improvement. The postpartum visit is especially important for women enrolled in Medicaid, who may have had no access to preconception care, and therefore may have no other opportunity for preventive care that can impact future births.

Reassessment of risk in the postpartum period was documented infrequently for most risk factors. The most commonly documented assessment was for depression, found in 51% of records. Tobacco use was reassessed in only 27% of records, although relapse rates postpartum for women who have quit during pregnancy have been reported to be as high as 60–80%.⁷² Domestic violence, which can increase in the postpartum period, was assessed in only 17% of records. Nutritional risk was assessed in 23% of records; this is an especially important area given the increasing prevalence of obesity, which ideally would be addressed prior to a subsequent pregnancy.⁷³

Counseling for family planning was documented for most women at the postpartum visit (73%). The report of the CDC/ATSDR (Agency for Toxic Substances and Disease Registry) Preconception Care Work Group and the Select Panel on Preconception Care recommends the enhancement of postpartum visit content to promote interconception health. The NY Standards specify providing interconception counseling at postpartum visits, including recommendations for daily folic acid and scheduling a preconception visit prior to subsequent pregnancies. Interconception care was documented in more than half of the records (52%).

A limited regression analysis was conducted that focused on factors associated with receipt of specific risk assessments, postpartum visits, referrals, and health education; the analysis was limited to component of care indicators with sufficient data completeness and variability for evaluation. This analysis revealed EMRs were more likely to include several components of prenatal care, such as documentation of BMI, weight gain counseling and other education, suggesting results may in part reflect completeness of documentation rather than services provided. However, other differences between practices with and without EMRs were not explored, and could also have impacted this finding. Hispanic ethnicity was also associated with earlier entry to care and an increased likelihood of receiving several elements of appropriate care, including those elements with general room for improvement, such as domestic violence, nutrition and oral health risk assessment, and health education. It has been suggested that potential explanations for the “Hispanic paradox”, rates of low birthweight and preterm among the US Hispanic population that are comparable to rates among US Whites despite lower socioeconomic status, may include promotion of healthier behaviors in Hispanic communities, though it is not clear that early care seeking is among these promoted behaviors.⁷⁴ Other factors that may have impacted these findings, such as individual patterns of provider practice across communities or differences across ethnic groups in initiating discussions with providers, were beyond the scope of this study. Prenatal tobacco use and other poor health behaviors can be associated with depression, and therefore the identification of tobacco use could have prompted further evaluation including assessment of depression, which was more likely to be assessed in tobacco users. Finally, women noted to be at high risk by virtue of previous poor outcomes (preterm or low-birthweight births) were not more likely to receive risk assessments or the components of health education that were evaluated, although they may have had higher need.

Limitations

Several limitations to this study could have impacted the observed results. Results reflect only information documented in the records received, and the records reviewed reflect care provided prior to the publication of the 2009 NY Standards in early 2010. It is possible care was provided but not documented, components of records such as lab results were not submitted, or that women changed providers during the prenatal period and records from the original provider were not available. It should be noted that all records received were abstracted, including documentation from other providers included in submitted records. Because Fee-for-Service (FFS) records were specifically sought, a higher proportion of records were included from outside New York City than is typically included in studies of New York State Medicaid Managed Care enrollees, since FFS members are more likely to be residents of upstate New York. Rates of retrieval of complete prenatal FFS records were low (62%), and providers who submitted records may differ from those who did not. Finally, about 10% of the population presented in the third trimester, which may have limited the opportunity for these women to receive certain assessments and services, although the vast majority of members attended at least 5 prenatal care visits.

Conclusion

This study of prenatal care provided to women enrolled in Medicaid revealed high rates of adherence to NY Standards for most initial visit risk factor assessments, initial intervention for identified risks, and routine prenatal services. However, opportunity for improvement exists in ensuring assessment for some risk factors associated with poor outcomes, including domestic violence, depression, nutrition and oral health, and reassessment of risk later in pregnancy and in the postpartum period. Follow-up of identified risks at a later visit is also an area with opportunity for improvement. With the increasing prevalence of obesity, improvement of

nutritional risk assessment, including assessment of pre-pregnancy BMI, BMI-based appropriate weight gain counseling, and breastfeeding counseling is of utmost importance. Despite the documented high-risk nature of the Medicaid-enrolled women, few were documented to receive augmented care coordination services and many did not attend a postpartum visit; these areas warrant further exploration and improvement.

Recommendations

1. Provider education and self-assessment should focus on areas with opportunity for improvement and evidence for efficacy of intervention including:

- Reassessment of tobacco, alcohol, and illicit drug use to identify the emergence of risk or relapse among substance users
- Assessment of domestic violence, oral health, depression, and environmental tobacco and lead exposure risk
- Nutritional risk assessment and counseling, including BMI assessment and appropriate weight gain and breastfeeding counseling
- Bacteriuria and GBS screening
- Immunization status assessment and provision of flu vaccine

2. Ongoing program evaluation and intervention activities (including health plan performance improvement projects) should also focus on components of care with demonstrated need for increased provider adherence to the NYS Medicaid Prenatal Care Standards.

3. MCO case management practices, including risk factors triggering outreach for case management enrollment, should be explored and supported.

4. Successful strategies to improve postpartum visit attendance and content must be developed, and might include a multi-faceted approach involving the health department, health plans, providers, and members.

5. Given the termination of the New York State PCAP program, the NYSDOH should conduct ongoing monitoring of its prenatal care providers, perhaps by requiring them to submit documentation that key services identified in the Prenatal Care Guidelines are being provided to their patients. Interim goals for improvement could be established for key indicators.

6. Initiatives that are implemented should be coordinated with other NYSDOH initiatives. Findings related to overweight/obesity, referrals and postpartum care are highly relevant to NYSDOH initiatives regarding hypertensive disorders in pregnancy and maternal mortality. In addition, the use of 17-OH progesterone for pregnant women with prior preterm birth should be incorporated into ongoing monitoring to improve birth outcomes.

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APPENDIX A
Prenatal Care Study
Data Collection Tool

Nurse Reviewer

A. Member General Information

IPRO ID

FirstName

LastName

1. Date of entry to care (Initial Visit)

2. Health plan

3. Date of enrollment in the health plan

4a. Total number of prenatal visits

4b. Provider Type

5. Date of last menses

6. Date of delivery

7. Was reviewed record an Electronic Health Record (EHR)?

8. Mother's date of birth

9. Marital status

10a. Mother's race

10b. Mother's ethnicity

11a. Mother's primary language (skip to 12 if English)

11b. Was a translator offered to the mother?

12. Mother's aid category

13. Was the mother enrolled in Medicaid prior to current pregnancy?

14. Level of education

Obstetric History - Prior Pregnancies

15. Total number of previous pregnancies

16a. Number of previous live births: living

16b. Number of previous live births: dead

17. Previous Low Weight Birth infant

18. Previous Preterm infant < 37 weeks

19a. Prior Spontaneous Termination at less than 20 weeks

19b. Prior Spontaneous Termination at >= 20 weeks

19c. Prior Spontaneous Termination GA not specified

19d. Prior Induced Abortion

20. Previous C-Section

Delivery Characteristics - Current Pregnancy

- 21. Plurality
- 22. Method of Delivery
- 23. Was the infant birth weight documented?
 If Yes, enter the birth weight in grams or pounds/ounces **gms** **lbs** **ozs**
- 24. Was infant gestational age documented?
 If Yes, enter gestational age in weeks

Pregnancy Associated Risk Factors Related To Current Pregnancy

- 25. Initial clinical estimate of EDD
- 26. Was the EDD changed?
 If yes, Final EDD
- 27. What was the method of determining the EDD?
- 28. What pregnancy-associated conditions developed during the current pregnancy?

- Gestational Diabetes
- HELLP syndrome
- HTN pregnancy related
- Pre eclampsia
- Eclampsia
- Vaginal Bleeding
- Abruptio Placenta
- None

29. Maternal Medical Risk Factors during current pregnancy.

STD/GYN Infections

- Gonorrhea
- Syphilis
- Chlamydia
- Genital Herpes
- Bacterial Vaginosis

Other Infections

- Hepatitis B
- Hepatitis C
- Rubella
- Tuberculosis
- No Infections

Medical Conditions during current pregnancy

- Prepregnancy HTN
- Prepregnancy diabetes
- Anemia
- Asthma
- Chronic Pulmonary Disease
- Autoimmune Disease
- Cardiac Disease
- Renal Disease
- Thyroid Disorder
- Depression
- Other Psychiatric illness
- Thromboembolic disease (DVT/PE)
- Eating Disorder
- HIV
- Obesity
- Other Serious Chronic Disease
- No maternal medical conditions as listed above

B. Comprehensive Risk Assessment - Initial Visit

Initial Visit (First two visits)

1a Was a Comprehensive Risk Assessment Conducted?

1b Was a Standardized Tool Used?

2 Risk Factors

	Assessed	Addressed in Practice	Identified	Patient Referred	Evidence of Follow-up at Subsequent Visit
Genetic Risk	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Depression	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Stress	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Domestic Violence	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sexual Abuse	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Safety	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tobacco Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2nd Hand Smoke Exposure	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Alcohol Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Illicit/Illegal Drug Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Prescription Drug Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Non-Prescription Drug Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Supplements	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Medical/Surgical History	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Obstetrical History	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Oral Health	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Nutrition	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Housing Stability	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Maternal Lead	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other Environmental Toxin Exposure	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other Psychiatric Illness	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

3 If depression was assessed in item 2, was a standardized depression screening tool used to assess patient for depression?

4 Prescriptions

a Were any prescriptions written for the patient on the initial visit?

b If medication(s) other than vitamins were prescribed, name med(s)

5 Nutrition

a Pre-pregnancy Assessed Height Ft Inches Weight lbs BMI
 Initial Visit Assessed Height Ft Inches Weight lbs BMI

b Was appropriate weight gain during pregnancy discussed with the patient?

C. Comprehensive Risk Assessment - 3rd Trimester Visit

1 General

- a Was patient's initial visit in 3rd trimester?
- b Was a comprehensive risk assessment repeated in 3rd trimester?

2 Behavioral and Psychosocial Risk Assessment

	Assessed	Addressed in Practice	Identified	Patient Referred	Evidence of Follow-up
Depression	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Stress	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Domestic Violence	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sexual Abuse	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Safety	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tobacco Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2nd Hand Smoke Exposure	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Alcohol Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Illicit/Illegal Drug Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Prescription Drug Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Non-Prescription Drug Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Supplements	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Oral Health	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Nutrition	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Housing Stability	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

- 3 If depression was assessed in item 2, was a standardized depression screening tool used to assess patient for depression?

D. Health Education

1 Did the patient receive education on the following topics at any point during her prenatal care?

- Signs and symptoms of complications of pregnancy including preterm labor (trouble signs)
- Labor and delivery (signs of labor, anesthesia/analgesia and delivery options)
- Parenting preparation, including infant development, feeding and care
- Newborn screening program
- Family planning and optimum inter-pregnancy interval
- Physical activity, exercise
- Risks of HIV and risk reduction behaviors
- None
- UTD

2 Nutrition

- a Was the patient counseled during pregnancy regarding the nutritional advantages of breast milk and benefits of breast feeding?
- b Was patient counseled regarding exclusive breast feeding for first six months of life?

E. Prenatal Care Services: Diagnostics and Treatment

- 1 Was patient counseled regarding the differences between and risk/benefits of screening and invasive diagnostic testing for aneuploidy?
- 2 Was patient offered screening testing for aneuploidy?
- 3 Was patient offered invasive diagnostic testing for aneuploidy?
- 4 Was patient counseled regarding cystic fibrosis screening?
- 5 Was patient/partner offered cystic fibrosis carrier screening?
- 6 Were the following prenatal laboratory tests/procedures performed

Initial testing (first two visits)	Test Performed	Abnormal Result Found	Abnormal Result Followed Up
a Syphilis screen	<input type="text"/>	<input type="text"/>	<input type="text"/>
b Chlamydia screen	<input type="text"/>	<input type="text"/>	<input type="text"/>
c Hepatitis B surface antigen	<input type="text"/>	<input type="text"/>	<input type="text"/>
d Blood group antibody screen	<input type="text"/>	<input type="text"/>	<input type="text"/>
e Blood group and D (Rh)	<input type="text"/>	<input type="text"/>	<input type="text"/>
f Cystic fibrosis screening	<input type="text"/>	<input type="text"/>	<input type="text"/>
g Rubella assessment	<input type="text"/>	<input type="text"/>	<input type="text"/>
h Hgb/Hct Testing	<input type="text"/>	<input type="text"/>	<input type="text"/>
i Gonorrhea screen	<input type="text"/>	<input type="text"/>	<input type="text"/>
8 - 20 weeks			
j Urine culture (12-16 wk or visit 1)	<input type="text"/>	<input type="text"/>	<input type="text"/>
k Screening test for aneuploidy	<input type="text"/>	<input type="text"/>	<input type="text"/>
l Invasive testing aneuploidy	<input type="text"/>	<input type="text"/>	<input type="text"/>
24 - 28 weeks Risk criteria documented			
m Diabetes screen <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
28 - 37 weeks			
n Group B Strep	<input type="text"/>	<input type="text"/>	<input type="text"/>
o Hgb/hematocrit (repeat 3rd trimester)	<input type="text"/>	<input type="text"/>	<input type="text"/>

- p Is patient D (Rh) negative? (If no or UTD, skipt to item 7 below)
- q If patient D (Rh) negative, what is sensitization status?
- r If D-negative and unsensitized, did patient receive anti-D immune globulin at 26-30 wks gestation?

7 Ongoing monitoring: Data to be collected regularly (at each visit)

- a Weight gain assessment
- b Blood Pressure measurement
- c Urine-dip analysis

8 HIV Services

- a Was an HIV test performed in 1st trimester or initial visit?
- b Was an HIV test repeated in 3rd trimester?
- c If any HIV was positive, was the patient referred elsewhere for HIV care?

F. Referrals and Coordination of Care

- 1 Was a care plan with problem list documented?
- 2 Was there evidence of engagement of the health plan high risk OB case manager?
- 3 **Were referrals made to any of the following services?**

	Referred	Evidence of communication with referral provider in chart?
Maternal Fetal Medicine Specialist / High Risk Obstetrician	<input type="text"/>	<input type="text"/>
Other Medical Specialist (Internal Medicine, Endocrinologist, etc.)	<input type="text"/>	<input type="text"/>
Behavioral Health Provider	<input type="text"/>	<input type="text"/>
Social Services	<input type="text"/>	<input type="text"/>
Case Management	<input type="text"/>	<input type="text"/>
Nurse Family Partnership	<input type="text"/>	<input type="text"/>
Healthy Families	<input type="text"/>	<input type="text"/>
Community Health Worker Program	<input type="text"/>	<input type="text"/>
Other Home Visiting (Provider Home Visit, Local Health Dept)	<input type="text"/>	<input type="text"/>
Asthma Educator	<input type="text"/>	<input type="text"/>
Diabetes educator	<input type="text"/>	<input type="text"/>
WIC Program	<input type="text"/>	<input type="text"/>
SNAP Program	<input type="text"/>	<input type="text"/>
Nutritionist	<input type="text"/>	<input type="text"/>
Lactation	<input type="text"/>	<input type="text"/>
Other	<input type="text"/>	<input type="text"/>

- 4 Was there documentation that Baby Basics program utilized?

G. Immunizations

- 1 Was the patient offered the trivalent inactivated seasonal influenza vaccine if pregnant during the flu season (generally from October through February)?
- 2 Did patient accept/receive the seasonal influenza vaccine?
- 3 Was patient offered H1N1 (or other emerging viral infection) vaccine?
- 4 Did patient accept/receive H1N1 (or other emerging viral infection) vaccine?
- 5 Was the patient assessed for risk factors for Hepatitis B exposure?
- 5a Was Hepatitis B exposure risk identified?
- 6 If yes, was patient given Hepatitis B vaccine? (Choose one answer)
 - Hepatitis B vaccine series was completed
 - Hepatitis B vaccine series was started but not completed
 - No Hepatitis B vaccine was given
 - NA

H. Ultrasound

- 1 Was an ultrasound performed at any point during the pregnancy? (If no, skip to section I)
- 2 Enter number of ultrasounds performed during the pregnancy
- 3 Was the indication for ultrasound testing documented (Choose one answer)
 - Yes, for all tests No
 - Yes, for some of the ultrasounds NA
- 4 If answer to 3 is yes (for any ultrasound), check all the indications that apply below
 - Gestational Dating Evaluation of Abnormal Amniotic Fluid Volum
 - Anatomic Survey Evaluation of Fetal Growth Disturbance
 - Evaluation of Fetal Number Evaluation of Fetal Anomaly
 - Evaluation of Fetal Viability Fetal Biophysical profile
 - Evaluation of Fetal Presentation Fetal Biometry
 - Evaluation of Placenta location UTD
 - Aneuploidy screening (nuchal translucency) Other

I. Post Partum Period

- 1 **Check if No Postpartum Visit ===**
- 2 Date of postpartum visit
- 3 Was the postpartum visit conducted in the appropriate time frame?
- 4 Was the patient's delivery / birth outcome documented in the chart?
- 5 Did the patient see the delivery provider at any time antenatally?
- 6 Did the patient see the postpartum provider at any time antenatally?

7 Behavioral and Psychosocial Risk Assessment

	Assessed	Addressed in Practice	Identified	Patient Referred	Evidence of Follow-up
Depression	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other Psychiatric Illness	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Domestic Violence	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sexual Abuse	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tobacco Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Infant 2nd hand Smoke Exposure	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Alcohol Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Illicit / Illegal Drug Use	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Oral Health	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Medical Comorbidity	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Nutrition	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Infant Medical / Special Needs	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

8 Lead Screening: Was anticipatory guidance provided on prevention of childhood lead poisoning?

Infant General Nutrition Education

9 a Was general counseling regarding infant feeding choices (breast vs.formula) discussed w/ patient?

b Was the patient counseled on the nutritional advantages of breast milk for infants?

Health Insurance

10 a Was the patient advised or referred for assistance with an application for on-going medical care assistance for herself?

b Was the mother advised of the availability of Medicaid eligibility for the infant?

Family Planning

11 a Was the patient counseled on inter-conception care?

b Were the patient's family planning needs addressed?

c If the patient was found to be overweight or obese, was the patient encouraged to continue nutrition and/or exercise programs before attempting another pregnancy?

Postpartum Immunizations

12 a Was immunity/immunization status assessed?

b If yes, were vaccines indicated and/or administered?

	Indicated	Administered
Influenza	<input type="text"/>	<input type="text"/>
MMR	<input type="text"/>	<input type="text"/>
Tdap	<input type="text"/>	<input type="text"/>
Varicella	<input type="text"/>	<input type="text"/>
Human papilloma	<input type="text"/>	<input type="text"/>

13 Was referral made for post-partum home visiting?

Comment:

APPENDIX B
Prenatal Care Study
Data Collection Instructions

Prenatal Care Study – Data Collection Instructions

Enter only data found in the prenatal/postpartum chart
Revision 3/23/11

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
Nurse reviewer identification	Select your initials from drop down box		
A. Member General Information	I PRO ID and member name will be prepopulated		
1. Entry to care date	1. Date of first visit- date on which mother first presented for prenatal care. Include only the visit to a private physician or to a clinic or outpatient department of a hospital in which the mother's health history was taken and an initial physical examination for this pregnancy was performed. Do not include a visit in which only the fact of pregnancy was confirmed. If date is documented as beginning, middle, or end of month, enter 7, 15 or 24 respectively for the day.	Visit notes	
2. Health Plan 3. Enrollment date	2. Name of health plan 3. Date of enrollment in health plan	Prepopulated	
4. Number of prenatal visits	4a. Enter total number of times patient seen for prenatal care as documented in the medical record. Enter total number of visits to a physician or clinic for the purpose of prenatal care. Include all regular visits to a doctor or clinic and any other visits to a doctor, clinic or emergency room for treatment of pregnancy related problem. Do not include ultrasound visit if not also seen by prenatal provider. Do not include postpartum visits in this count.	Visit notes	
4b. Provider type	4b. Choose the provider type that was responsible for the majority of the member's prenatal care. If care is evenly divided between two or more provider types choose the response "combination of the above." If the provider type for the majority of the visits is not clear, choose UTD.		
5. Date of last menses	5. Enter month day and year on which the mother's last normal menses began for this pregnancy. If date is documented as beginning, middle or end of month, enter 7, 15 or 24 respectively for the day.	Visit notes, ACOG antepartum Form A	
6. Date of delivery	6. Date of infant delivery	Prepopulated	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
7. EHR	7. If clinician record is an electronic health record select yes otherwise no.		
8. Member date of birth	8. Maternal date of birth _____	Prepopulated	
9. Marital status 10. Race/ethnicity 11a. Primary language	9. Select marital status as documented in record (Single, married, widowed, divorced, separated). Select UTD if not documented. 10 a and b. Race/ethnicity- select race/ethnicity as documented in the chart. If these items are not documented, choose UTD. Choose "other" only if a race other than black, white or Asian is documented. "Hispanic" refers to ethnicity. If "Hispanic" is found, list "UTD" for Race and "Hispanic" for Ethnicity. 11a. Select primary language as documented in chart; if record indicates patient primarily speaks language other than English or Spanish select other. If not documented or not specifically addressed select UTD.	Visit notes, ACOG antepartum Form A ACOG antepartum Form A, face sheet, initial visit note Visit notes, ACOG antepartum Form A	
11b. Translator	11b. If answer to 11a is English, 11b will be auto-populated with NA. If answer to 11a is Spanish or other, select yes if translation services were offered at any visit, either face to face or telephonic. Select no if there is indication that unable to provide translator, documentation of language barrier but no note of translator. Select NA/no need if there is explicit documentation that translator is not needed due to member speaking English well or proficient in English. Select UTD if not clear from documentation or illegible. Family interpretation is not acceptable for member offered translation.	Provider notes	
12. Aid category 13. Prior Medicaid enrollment	12. Category of aid: SSI aid category or other 13. Enrolled in Medicaid more than 10 months prior to delivery	Prepopulated Prepopulated	
14. Education level	14. Enter highest level of schooling completed: Elementary school 01-08 High School: Grades 09-12 without receipt of diploma or GED High school graduate or GED recipient Some college but no degree Associate, Bachelor's, Master's, Doctorate/Professional Unknown		
15. Previous pregnancies	15. Enter total number of times mother pregnant prior to this pregnancy; count every previous pregnancy whether resulted in live birth or fetal death. A previous multiple pregnancy counts as one pregnancy. Notation may be in format G _ P_ where G is the total number of pregnancies including current pregnancy. If prior pregnancies = 0, items 16-20 will be auto-populated with NA.	Provider note, first section of ACOG antepartum record (Form A)	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
16. Previous live births	<p>16a. Live births living: Enter number of previous children born alive to this mother who are still alive at the time of this birth. Do not include index birth. Select none if this is first delivery or all previous live births dead. May be in format G_P_ where P is number of births. May be in format G_P_ _ _ _ , with four entries for Para indicating full term births, preterm births, abortions and living children.</p> <p>16b. Previous live births now dead For previous live births now dead record number of previous children born alive now dead; exclude index birth.</p>	Provider notes, first section of ACOG antepartum record (Form A)	Miscarriages, termination
Obstetric history-past pregnancies			
17. Previous low birthweight births	17. Select yes if medical record indicates prior delivery of low birthweight infant <2500 grams or <5 pounds 9 ounces. Select UTD if prior birth noted but not birth weight.	Visit notes, ACOG antepartum Form A	
18. Previous preterm infant	18. Select yes if medical record indicates prior preterm delivery of infant < 37 completed weeks of gestation. Select UTD if prior birth noted but not gestational age.	Visit notes, ACOG antepartum Form A	
19. Previous spontaneous termination fetal death/ stillbirth/induced abortion	<p>19a. Spontaneous termination \leq 20 weeks, fetal death: Select yes if documentation indicates spontaneous fetal death of fetus <20 weeks gestation-defined as death before complete expulsion; i.e., fetus shows no evidence of life after expulsion. Select no if documentation indicates no prior spontaneous termination. Select UTD if OB history not documented.</p> <p>19b. Spontaneous termination \geq20 weeks, stillbirth: Select yes if documentation indicates the death of a fetus \geq20 weeks gestation prior to delivery. Select no if documentation indicates no prior spontaneous termination. Select UTD if OB history not documented.</p> <p>19c. Select yes if documentation indicates any past induced or therapeutic abortion. Select no if documentation indicates no past induced abortions. Select UTD if OB history not documented.</p>	Visit notes, ACOG antepartum Form A	
20. Previous C-section	20. Select yes if documentation indicates prior C-section (operative delivery in which fetus extracted through incision in maternal abdominal and uterine walls). Select UTD if prior birth noted but not mode of delivery.	Visit notes, ACOG antepartum Form A	
<i>Delivery characteristics index pregnancy</i>	Enter only delivery characteristics for index pregnancy that are found in the prenatal/postpartum record either in a postpartum visit note or from a hospital delivery summary that is clearly part of the prenatal/postpartum record		
21.Plurality	21. The number of fetuses delivered alive or dead at any time during the pregnancy regardless of gestational age or if the fetuses were delivered on	Delivery/birth	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
<p>22. Method of delivery</p> <p>23. Infant birthweight documented</p> <p>24. Infant gestational age documented</p>	<p>different dates in the pregnancy. Specify type of delivery as single, twin, triplet etc. by using 1, 2, 3 etc. Select appropriate characterization of pregnancy- singleton or multiple gestation as documented in visit notes or delivery summary. Select UTD if not specifically documented.</p> <p>22. Select how delivery finally accomplished, regardless of whether other procedures attempted prior to successful delivery (vaginal delivery, cesarean section) as documented in record; if not documented select UTD.</p> <p>23. Enter No if infant birthweight not documented. If yes, enter birthweight of infant as grams or pounds and ounces as recorded in record.</p> <p>24. Enter no if infant gestational age at birth not documented in record. If yes, enter gestational age at birth as documented in record.</p>	<p>outcome in ACOG postpartum form, Postpartum provider notes, hospital delivery summary if Included as part of the prenatal/postpartum record.</p>	
<p>25. Initial clinical estimate of EDD. _____</p>	<p>25. Enter first estimated date of delivery (month, day, year) as documented in the record</p>	<p>Provider notes, ACOG Form C antepartum record.</p>	
<p>26. EDD changed</p>	<p>26. If estimated date of delivery is changed or updated from initial estimate, choose yes and enter the last recorded EDD in the record.</p>	<p>Provider notes, ACOG Form C antepartum record</p>	
<p>27. Final EDD estimate method for question 25-26</p>	<p>27. If there is only one EDD in the record, the initial EDD is the final EDD. If there is more than one EDD, the last recorded EDD in the record is the final EDD. If final determination of EDD is estimated from menstrual dates select LMP (last menstrual period). If final EDD is determined or confirmed/updated by ultrasound select ultrasound. If unable to determine method of final EDD estimation select UTD.</p>	<p>Provider notes, ACOG Form C antepartum record</p>	
<p>28. Pregnancy associated conditions index pregnancy</p>	<p>28. Select all comorbidities that were not present prior to pregnancy but developed during index pregnancy. Select all that are documented in the chart. Select none if no conditions documented</p> <p>a. Gestational DM-Glucose intolerance requiring treatment diagnosed during this pregnancy; notation of glucose intolerance, gestational diabetes or documented abnormal one hour glucose challenge <u>≥ 140 mg/dL</u></p> <p>b. Eclampsia: (toxemia with seizures) is diagnosed when convulsions not caused by any coincidental neurological condition such as epilepsy develop in a woman with clinical criteria for preeclampsia (hypertension, proteinuria and edema post 20 weeks gestation)</p>	<p>Form C and D of ACOG antenatal form, provider notes, problem list, postpartum form, hospital discharge summary if part of the prenatal/postpartum record.</p>	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	<ul style="list-style-type: none"> c. HELLP syndrome: (hemolysis, elevated liver enzymes, low platelet counts) d. Hypertension-gestational; pregnancy related: (pregnancy related hypertension, PIH, preeclampsia): elevation of BP above normal for age, gender and physiologic condition diagnosed during this pregnancy (> 140/90 after 20 weeks gestation in woman with previously normal BP). e. Pre-eclampsia-characterized by hypertension, proteinuria and edema after 20 weeks gestation. Can be graded mild to severe. If pre-eclampsia is selected, by definition pregnancy related hypertension should also be selected. f. Vaginal bleeding: bleeding prior to onset of labor, any reported or observed bleeding per vaginum any time in the pregnancy presenting before onset of labor. Include placenta previa here. g. Abruptio placenta: placental abruption, premature detachment of placenta h. None: if none of the above noted 		
29. Maternal medical risk factors index pregnancy	<p>29. Select all comorbidities that were present on presentation or develop or are treated during index pregnancy.</p> <p>Infections</p> <ul style="list-style-type: none"> a. STD/gynecologic infections <ul style="list-style-type: none"> i. Gonorrhea: select if mother had a diagnosis of or received treatment for gonorrhea during this pregnancy. (Neisseria Gonorrhoeae) ii. Syphilis: select if mother had a diagnosis of or received treatment for syphilis during this pregnancy (Treponema palidum) iii. Chlamydia: select if mother had a diagnosis of or received treatment for a positive test for Chlamydia trachomatis during this pregnancy iv. Genital herpes select if mother had a diagnosis of or received treatment for herpes simplex virus during this pregnancy (HSV) v. Bacterial vaginosis: select if mother had a diagnosis of or received treatment for bacterial vaginosis during this pregnancy (BV) b. Hepatitis B (HBV, serum hepatitis) Select this item if mother had a positive test for the hepatitis B virus. Exclude administration of Hepatitis B vaccine. c. Hepatitis C (non-A non-B hepatitis, HCV); Select this item if mother had a positive test for the hepatitis C virus. 	Visit notes, lab results, problem lists, postpartum form, Hospital discharge summary if part of prenatal/postpartum record	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	<p>d. Rubella: Select this item if mother had a diagnosis of infection with rubella or “German measles” during this pregnancy. Exclude positive rubella antibody test without mention of active infection.</p> <p>e. Tuberculosis select if mother had a diagnosis of or received treatment for active tuberculosis during this pregnancy. Exclude positive skin test for tuberculosis without mention of treatment and/or diagnosis of active tuberculosis. (TB)</p> <p>f. No infections; select if no conditions listed in 28a-e documented, even if other infections exist.</p> <p>Medical conditions</p> <p>g. Hypertension pre-pregnancy: if preexisting hypertension(chronic): elevation of BP above normal for age, gender and physiologic condition diagnosed before onset of this pregnancy</p> <p>h. Diabetes pre pregnancy: Glucose intolerance requiring treatment diagnosed before this pregnancy</p> <p>i. Anemia (HCT < 33% or Hgb < 11g/dL first or third trimester, HCT <32% or Hgb<10.5 g/dL second trimester)</p> <p>j. Asthma</p> <p>k. Other chronic pulmonary condition</p> <p>l. Autoimmune disease: can include Systemic Lupus Erythematosus, Grave’s Disease, Hashimoto’s Thyroiditis, Celiac Disease, Crohn’s/ulcerative colitis</p> <p>m. Cardiac disease: can include murmurs, valvular disease, congenital disorder, arrhythmia</p> <p>n. Renal disease</p> <p>o. Thyroid disorder</p> <p>p. Depression: if pre-existing or develops during pregnancy</p> <p>q. Other psychiatric illness: psychiatric illness other than depression, which is listed separately. Can include bipolar disorder, schizophrenia, anxiety disorder</p> <p>r. Thromboembolic disorder: DVT/PE is deep venous thrombosis and pulmonary embolus</p> <p>s. Eating Disorder: can include anorexia, bulimia, binge eating</p> <p>t.HIV</p> <p>u. Obesity -BMI \geq 30 pre-pregnancy</p> <p>v. Other serious chronic diseases (e.g. seizures, adrenal insufficiency,</p>		

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	malignancy, hemoglobinopathy) w. No medical conditions: select if no conditions listed in g-v above		
B. Comprehensive risk assessment-initial visit (for study purposes, initial visit is first two visits)			
1a. Comprehensive assessment conducted	1a.Select yes if assessment includes assessment of genetic, behavioral, psychosocial, nutritional, environmental and medical/obstetrical risk (all). Medical/obstetrical risk elements are listed in member general information items 28-29 and genetic risk in instructions below. Behavioral includes substance use. Psychosocial risk includes psychological, economic, emotional and/or social problems Environmental includes lead, environmental safety issues.	Provider notes, ACOG Forms A, B and E of antenatal record, standardized tool as listed in 1b, self administered assessment	
1b. Standardized tool used	1b.Select yes if risk assessment tool in record; examples include ACOG, Hollister, POPRAS, NY State Prenatal Care Risk Screening form, or practice-specific form.		
2.Risk factor-General risk assessment instructions	For each element: <ul style="list-style-type: none"> • Risk assessed: select yes if there is evidence of specific risk discussion (evaluation of whether or not risk factor is present) in provider note, checklist completed that includes the specific risk yes or no, or documentation of testing for risk element as described below. • Addressed in practice refers to whether the risk topic area was addressed by the provider. This could include counseling, anticipatory guidance or prescription or other treatment provided in practice. Member may receive counseling even if risk not identified; for example, member may be counseled to avoid non-prescription drugs even if not currently taking them • Risk identified: select yes if there is documentation of presence of the risk factor or positive test result as described below; otherwise, select no. Select UTD if checklist or note indicates that risk was definitely assessed but there is no documentation regarding whether risk was identified. • Referral includes referral to another provider for counseling, treatment or further testing. Referrals should be counted even if patient refuses referral. • Evidence of follow-up at subsequent visits includes notation of re- 	Standard forms listed in 1b, notes from first two visits (Could include social work evaluation), checklists.	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	<p>assessment of problem, status of problem, review of consultation or test results. Select UTD if record not clear</p> <ul style="list-style-type: none"> If a risk factor was not assessed and not addressed, the remainder of the row will auto-populate with NA. If risk factor identified is "no", referral and follow up will auto-populate with NA. 		
<p>2. Risk Factors <i>Genetic risk</i></p>	<p>For genetic risk assessed, note or checklist indicates assessment for factors documented below or documentation regarding genetic risk or lab test ordered such as hemoglobinopathy screening. For genetic risk identified, select yes if patient had any of the following risk factors documented, no if none of the risk factors were documented, and UTD if risk is undetermined or not specified (e.g., genetic assessment checked off in checklist but no specific documentation about risk). Risk factors include:</p> <ul style="list-style-type: none"> Maternal age \geq 35 years old Maternal or paternal ethnicity/race of: <ul style="list-style-type: none"> Italian, Greek Mediterranean, Asian (Thalassemia) Ashkenazi Jewish: Tay-Sachs, Canavan Disease, Familial Dysautonomia Cajun, French-Canadian: Tay-Sachs African, Arabic, Asiatic Indian, Caribbean, Central and South American, Egyptian, Greek, Hispanic, Iranian, Italian, South East Asian, Turkish: Sickle Cell Disease or Trait Maternal or paternal personal or family history of: <ul style="list-style-type: none"> Thalassemia or MCV <80 NTD (neural tube defect) Congenital Heart Defect Down's Syndrome Tay-Sachs Canavan Disease Familial dysautonomia Sickle Cell Disease or Trait Hemophilia/other blood disorder Muscular dystrophy Cystic Fibrosis Huntington's Chorea Mental retardation/autism/Fragile X Maternal metabolic disorder Previous child with birth defect Recurrent pregnancy loss or stillbirth Medication history 	<p>ACOG antepartum forms B and D, provider notes, problem list, lab results</p>	<p>Do not select yes if assessment includes only maternal age</p>

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	<ul style="list-style-type: none"> ▪ Other <p>Addressed in practice for identified risk includes counseling, offering/provision of additional testing such as lab testing for hemoglobinopathy (hemoglobin electrophoresis), genetic disorder screening tests, partner testing noted Referral includes referral to specialist such as geneticist Follow up includes notation of lab results, documentation of consultation if referred.</p>		
<i>Depression</i>	<p>Assessment of depression includes any inquiry or discussion of mood or use of a standardized screening tool. Standardized depression screening tools include</p> <ol style="list-style-type: none"> 1. Beck Depression Inventory 2. EPDS (Edinburgh Postnatal Depression Screener) 3. Postpartum Depression Screening Scale 4. HANDS Depression Screening Tool 5. CES-D (Center for Epidemiologic Studies Depression Scale) 6. 2-Question screen 7. PHQ-2 8. PHQ-9 <p>Select yes for risk identified if a risk for depression was identified as a result of a depression screening tool, a general risk assessment tool has “depression” checked off as a problem, initial visit progress note indicates that patient at risk for or has /problem of depression. Addressed in practice includes further diagnostic testing, counseling or treatment by provider. Referrals include referral to behavioral health for further evaluation or treatment. Evidence of follow-up at subsequent visit includes notation addressing status of problem, documentation of consultation.</p>	Progress notes, copy of screening tool	
<i>Stress</i>	<p>Risk assessed: select yes if documentation in progress note regarding stress generally, risk factors for stress such as lack of social support or family instability, or completion of a separate psychosocial screening tool that identifies stress as a problem. Risk identified: select yes if there is documentation of elements of stress such as lack of income/employment, lack of social support, family instability, recent traumatic event, etc. Addressed In practice includes counseling in practice Referral includes referral to Licensed Social Worker, psychologist, psychiatrist, community organization or support group.</p>		
<i>Domestic violence Sexual abuse</i>	<p>Risk identified: any physical or verbal threat or abuse or sexual abuse documented in progress note or copy of screening tool.</p>		

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	Addressed in practice includes provider counseling or information given Referral includes referral to counseling, referral to legal services, referral to social services, referral to advocacy program.		
<i>Safety</i>	Risk assessed includes any documentation of discussion of safety concerns due to persons or environment such as abusive spouse or relative, unsafe neighborhood, unsafe housing, unsafe workplace. For example, if domestic violence is identified, there should be specific discussion of whether the patient feels safe in the home; if unstable housing is identified, there should be discussion of personal safety. Risk identified if any indication that the patient feels unsafe, appears to the provider to be unsafe or other safety issues are documented. Referrals include referrals to social services, case management, community organizations, advocacy groups, housing authority, police		
<i>Tobacco use</i>	Addressed in practice includes advice to quit, provision of literature, counseling regarding techniques for cessation, provision of cessation adjuncts. Referrals include referrals to quit line or behavioral therapist		
<i>Second hand smoke</i>	Risk assessed includes notation that environmental tobacco smoke discussed. Risk identified: smoke exposure in home, work or social setting Addressed in practice: counseling regarding avoidance.		
<i>Alcohol</i>	Assessment can include use of a standardized screening tool. Standardized alcohol screening tools include: CAGE Test T-ACE Test FAST Test AUDIT Test Select yes for risk identified if a risk for alcohol use was identified as a result of a screening tool, a general risk assessment tool has "alcohol" checked off as a problem, initial visit progress note indicates that patient at risk for or has /problem with alcohol. Addressed in practice includes advised to quit, provided literature, counseling. Referrals include referrals to alcohol treatment center or program, inpatient treatment, behavioral therapist, social work.		
<i>Illicit/illegal drug use</i>	Risk identified includes notation in visit note or marked on checklist that patient uses recreational drugs, abuses drugs, specific drugs noted such as marijuana, cocaine, heroin, methamphetamine. Referrals include referrals to drug treatment center or program, inpatient treatment, behavioral therapist, social work.		
<i>Prescription medication other than vitamins</i>	Risk identified includes documentation that patient's current medication poses a risk, should be changed or adjusted, or patient advised to stop prescription		

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	medication, Addressed in practice would include advising patient of risks, counseling, changing medication. Referrals would include referral to specialist or back to prescriber for consultation regarding medication.		
<i>Non prescription medication</i>	Risk assessment includes documentation of non prescription medications such as pain relievers, cold medicines, allergy medicine, acid reducers. Risk identified includes documentation that patient's non prescribed medication poses a risk, should be stopped or patient should use alternative. Addressed in practice would include advising patient of risks, advice to cease or limit medication or use alternative.		
<i>Supplements</i>	Risk assessed if dietary supplements, herbal preparations, alternative medicines, vitamins and minerals discussed. Risk is identified if documentation that poses a risk or should be stopped. Addressed in practice would include advising patient of risks, advice to cease or limit.		
<i>Previous medical/surgical conditions</i>	Risk identified if pre-existing medical condition as listed in A29 is identified or other chronic medical condition documented. Referral includes referral to medical/ surgical specialist, maternal-fetal medicine specialist, high risk obstetrician, perinatologist,		
<i>Obstetrical history</i>	Risk identified is documentation of prior high risk pregnancy or poor pregnancy outcome including: Prior preterm (infant <37 weeks gestation) Prior low birthweight (infant <2500 grams or <5.5 pounds) Prior spontaneous fetal death Prior incompetent cervix/ cerclage Second trimester pregnancy loss Previous fetal structural or chromosomal abnormality Previous macrosomia (Birth Weight >4500 grams or >9.9 lbs) Previous multiple gestation Prior small for gestational age birth or intrauterine growth restriction (IUGR) Referral includes referral to maternal-fetal medicine specialist, high risk obstetrician, perinatologist,		
<i>Oral health</i>	Risk assessment can include documentation of examination of teeth. Risk identified includes tooth pain, gum bleeding, caries, no dental care for greater than 6 months. Addressed in practice includes counseling on oral health, dental care. Referral is referral to dental care.		
<i>Nutritional risk assessment</i>	Risk assessed includes query regarding nutritional habits, categorization of BMI. Risk identified includes underweight, overweight/obesity, eating disorders, frequent dieting, and unusual food habits, hypertension, anemia, multiple		

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	pregnancy. Addressed in practice includes provision of counseling/information on appropriate diet, healthy diet, appropriate weight gain, physical activity. Referral includes referral to nutritionist, behavioral health.		
<i>Housing stability</i>	Risk assessed includes query about housing situation, where patient is living. Examples of unstable housing risk situations include homelessness/at risk for homelessness, frequent moves, inability to pay rent/mortgage, “staying with friends” rather than own home, threat of eviction or foreclosure, physically unsafe housing. Referral includes referral to social services, shelter.		
<i>Maternal lead exposure risk</i>	<p>Risk assessed includes specific documentation that risk for lead exposure assessed, and should include questions recommended by New York State Department of Health including:</p> <ul style="list-style-type: none"> Occupational risk Eating paint chips Living in an old house undergoing renovation (dust) High level lead in water Use of traditional folk remedies or cosmetics High risk hobbies Use of non-commercially prepared pottery or leaded crystal <p>Blood lead testing would also indicate risk assessed, and presence of a blood lead test is evidence of risk assessment. Risk is present if any one of the items is positive or there is documentation of elevated lead level. Addressed in practice includes lead testing based on risk, counseling regarding eliminating lead exposure such as anticipatory guidance on preventing lead poisoning, information on the major sources of lead and the means to prevent exposure provided. This could include avoiding pottery and using lead free dishes and pots, eating foods rich in calcium, iron and vitamin C, avoiding traditional medicines, cosmetics or spices from other countries. Referral includes referral for management, occupational health referral.</p>		
<i>Other environmental toxin exposure risk</i>	Other environmental risk includes toxoplasmosis, chemical or other environmental risk identified in home/work environment. Documentation that indicates home/work environment assessed is acceptable. Addressed in practice includes counseling regarding avoidance of home/work environmental exposures to chemicals, cat litter, etc.		
<i>Other psychiatric illness</i>	Risk assessed includes documentation of psychiatric history, either positive or negative . Risk identified includes conditions such as those listed in A29q (bipolar disorder, schizophrenia, anxiety disorder). Referral includes referral to behavioral health provider		

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
3. Depression screening tool	3.If depression was assessed, select yes for a standardized tool used if there is documentation of any of the following tools: Beck Depression Inventory EPDS (Edinburgh Postnatal Depression Screener) Postpartum Depression Screening Scale HANDS Depression Screening Tool CES-D (Center for Epidemiologic Studies Depression Scale) 2-Question screen PHQ-2 PHQ-9 Select no if no tool identified or in chart and UTD if documentation not clear, NA if not assessed.		
4. Prescriptions	4a.Select appropriate category of new or refill of existing medication prescribed by prenatal care provider as noted in first visit note care plan. Select No if none prescribed and UTD if prescribed but category not clear 4b. If medications other than vitamins were prescribed on first prenatal visit, please list names of medications in free text box	Initial visit note, ACOG antepartum record form C	
5. Nutritional status documentation-any visit			
5a. Height, weight BMI	5a.Select yes for pre pregnancy assessment if any element noted in visit notes either self reported or documented from a pre-pregnancy visit. Enter pre-pregnancy height, weight and BMI (record all that are available) as documented in visit notes. Select yes for initial visit assessment if any element noted in visit note. Enter initial visit height, weight and BMI as available in visit notes.	Visit notes, ACOG antepartum record form B	
5b. Appropriate weight gain (IOM)	5b.Select yes-BMI based if discussion of appropriate weight gain based on IOM guidelines or discussion based on patient's BMI is documented or weight gain range given is based on patient's BMI (see table 1). Select yes-other if there is general discussion of weight gain. In any visit	Visit note, ACOG antepartum record form E	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION																				
	<p>TABLE 1 NEW RECOMMENDATIONS FOR TOTAL AND RATE OF WEIGHT GAIN DURING PREGNANCY, BY PREPREGNANCY BMI</p> <table border="1" data-bbox="575 297 1297 621"> <thead> <tr> <th>Prepregnancy BMI</th> <th>BMI* (kg/m²) (WHO)</th> <th>Total Weight Gain Range (lbs)</th> <th>Rates of Weight Gain* 2nd and 3rd Trimester (Mean Range in lbs/wk)</th> </tr> </thead> <tbody> <tr> <td>Underweight</td> <td><18.5</td> <td>28–40</td> <td>1 (1–1.3)</td> </tr> <tr> <td>Normal weight</td> <td>18.5-24.9</td> <td>25–35</td> <td>1 (0.8–1)</td> </tr> <tr> <td>Overweight</td> <td>25.0-29.9</td> <td>15–25</td> <td>0.6 (0.5–0.7)</td> </tr> <tr> <td>Obese (includes all classes)</td> <td>≥30.0</td> <td>11–20</td> <td>0.5 (0.4–0.6)</td> </tr> </tbody> </table> <p>+ To calculate BMI go to www.nhlbisupport.com/bmi/ * Calculations assume a 0.5–2 kg (1.1–4.4 lbs) weight gain in the first trimester (based on Siega-Riz et al., 1994; Abrams et al., 1995; Carmichael et al., 1997)</p>	Prepregnancy BMI	BMI* (kg/m ²) (WHO)	Total Weight Gain Range (lbs)	Rates of Weight Gain* 2nd and 3rd Trimester (Mean Range in lbs/wk)	Underweight	<18.5	28–40	1 (1–1.3)	Normal weight	18.5-24.9	25–35	1 (0.8–1)	Overweight	25.0-29.9	15–25	0.6 (0.5–0.7)	Obese (includes all classes)	≥30.0	11–20	0.5 (0.4–0.6)		
Prepregnancy BMI	BMI* (kg/m ²) (WHO)	Total Weight Gain Range (lbs)	Rates of Weight Gain* 2nd and 3rd Trimester (Mean Range in lbs/wk)																				
Underweight	<18.5	28–40	1 (1–1.3)																				
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Obese (includes all classes)	≥30.0	11–20	0.5 (0.4–0.6)																				
<p>C. Comprehensive Risk Assessment- Third trimester visits (weeks 28-41)</p>	<p>C.1a. Include documentation from visits at any time during the third trimester (weeks 28-41). If member's initial visit was in third trimester, skip to section D, since third trimester information will have been entered in Section B, Comprehensive Risk Assessment-initial visit.</p>	<p>Visit notes, ACOG form E</p>																					
<p>C.1b-3.</p>	<p>Comprehensive risk assessment in third trimester would include behavioral, psychosocial, nutritional and environmental risk assessment. Environmental risk assessment could be an assessment of safety. For items 2-3 in third trimester visit, follow same instructions as for risk assessment initial visit as detailed above. Except</p>																						
<p>D. Health education and services</p>																							
<p>1. Health Education</p>	<p>D.1. Select all items for which there is documentation of discussion at any visit; 1a. Select if discussion of signs/symptoms of preterm labor or other complications 1b. Includes labor and delivery process and availability of various delivery options, including signs of labor, anesthesia and analgesia. 1d. Newborn screening includes distribution of newborn screening literature 1e. Select if discussion of family planning, birth control, and/or optimum interpregnancy interval 1f. Physical activity: select if physical activity and exercise during pregnancy addressed 1g. HIV: select if risks of HIV and risk reduction behaviors are addressed</p>	<p>Visit notes, ACOG Form E</p>																					

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	1h. None 1i. Select Unable to Determine if documentation of general education/ anticipatory guidance not otherwise specified		
2a.Nutrition/breastfeeding	2a.Select yes if documentation of any discussion of breastfeeding is documented or listed as an educational topic , choose UTD if checklist indicates breast/bottle feeding choice only , no if no evidence topic addressed.	Visit notes	
2b. Nutrition/ breastfeeding exclusivity	2b.Select yes if any documentation of discussion of recommended 6 months exclusive breastfeeding/ UTD if checklist indicates only intention to breast/bottle feeding, no if no evidence topic addressed		
E. Prenatal care services			
Prenatal diagnostics and treatment			
1. Aneuploidy counseling	1. Select yes if there is documentation of counseling regarding the differences between screening and invasive diagnostic testing for aneuploidy, risks and benefits of the invasive test compared with other available screening tests. Select NA if patient presented after 20 weeks. Select UTD if illegible or not clear if counseling provided	Visit notes	
2. Aneuploidy screening testing offered	2. Select yes if documentation that patient was offered screening testing whether accepted or not; select yes if evidence that aneuploidy testing performed. Select NA if patient presented after 20 weeks. Select UTD if illegible or not clear Aneuploidy screening tests include: <ul style="list-style-type: none"> • First trimester combined serum screening (pregnancy associated plasma protein A and free β-hCG) plus fetal nuchal translucency ultrasound at 10-13 weeks, second trimester maternal serum AFP, MSAFP • Second trimester triple screen (alpha fetoprotein (AFP), estriol, β-hCG) • Second trimester quadruple screen (AFP, estriol, β-HCG, inhibin-A serum screening • Common terms for aneuploidy screening tests include "quad screen" "sequential screening" and "integrated screening" 	Visit notes, lab slips, ACOG Form D	
3. Aneuploidy invasive diagnostic testing offered	3. Select yes if documentation that patient was offered invasive testing (amniocentesis or chorionic villous sampling-CVS) or evidence that these tests were performed. Select NA if patient presented after 20 weeks. Select UTD if illegible or not clear	Visit notes, lab slips, ACOG Form D	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
4.Cystic fibrosis counseling	4.Select yes if evidence that patient offered information regarding cystic fibrosis screening for patient and partner Select UTD if illegible or not clear		
5.Cystic fibrosis screening offered	5.Select yes if evidence that patient advised that screening available for her and for partner Select UTD if illegible or not clear		
6. Lab tests/procedures	<p>6.General instructions:</p> <ul style="list-style-type: none"> • Select yes for test performed if result documented in notes in time frame or there is lab result in chart. • Select yes for abnormal result if abnormal result noted in visit note or lab slip. • Select UTD for abnormal test result if test ordered but no result in chart, NA if test not ordered. • Select yes for follow up if abnormal result addressed in subsequent visit by treatment, referral, further testing or counseling. Select NA for follow up if result is not abnormal or test not ordered. • If an item is inapplicable, Access form will disable (i.e. "gray out") the responses. For example, if a test was not performed (answer "No"), all columns to the right will be "grayed-out." 	Visit notes, lab slips, ACOG form D	
6a-f. Initial visit (testing first two visits)	<p>6a-f.Testing and follow up first two visits</p> <ol style="list-style-type: none"> a. Syphilis screen (RPR): Syphilis follow up (RPR positive) includes further testing, antibiotic therapy. b. Chlamydia follow up includes antibiotic therapy. c. Hepatitis B surface antigen positive screen follow-up includes documentation of status and counseling regarding transmission risk and ways to prevent newborn infection, referral for counseling or management, further testing, administration of hepatitis B vaccine and immunoglobulin to newborn within 12 hours of birth. d. Blood group antibody screen-screening for blood group antibodies first or second visit. Abnormal antibody screen is a positive screen for antibodies. Rh or other blood group isoimmunization follow-up could include referral to MFM specialist. Follow up of D negative/unsensitized includes anti-D immune globulin administration at 26-30 weeks. e. Blood group and D (Rh) type. Select "abnormal result" if D negative. f. Cystic fibrosis: Select yes for testing if evidence of carrier screening; select no if no evidence offered and not done, select declined if documentation that testing offered but patient declined. 	Visit notes, lab slips, ACOG form D, delivery summary	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	<p>g. Rubella assessment: serologic assessment of immunity to rubella; select abnormal result if non immune (at risk). Follow up could include immunization post partum.</p> <p>h. Hgb/Hct Testing</p> <p>i. Gonorrhea Screen</p>		
6j-l. 8-20 weeks	<p>j. Urine culture: Choose yes for urine culture if test performed at 12-16 weeks or first visit if later. Positive urine culture (bacterial growth) follow up includes antibiotic therapy and monitoring.</p> <p>k-l. Aneuploidy screening and invasive testing: Select yes if evidence of screening tests outlined in item E2 above performed or amniocentesis or chorionic villous sampling done for invasive testing. If patient offered testing but there is documentation that patient declined testing select declined. Follow up for abnormalities on aneuploidy screening includes counseling, further testing, referral to maternal fetal medicine specialist or geneticist.</p>	Visit notes, lab slips, ACOG form D	
6m.24-28 weeks	<p>m. Diabetes screen: select yes, risk criteria met if women have any one of the following:</p> <ul style="list-style-type: none"> • Age greater than 25 • Race/ethnicity Hispanic, African, Native American, South or East Asian, Pacific Islander • BMI greater than 25 • History of abnormal glucose tolerance • History of adverse pregnancy outcomes usually associated with GDM such as macrosomia, large for gestational age • Diabetes mellitus in first degree relative (parents, siblings) <p>Select yes for test performed if evidence of 1 hour glucose challenge, or glucose tolerance test (GTT) performed at any point during prenatal care (women with obesity may have earlier test). May say glucola or 50 g GCT. Select yes for abnormal if visit note indicates abnormality or abnormal result reported as follows: Abnormal one hour glucose challenge greater than 140 g/dL, two or more abnormal values on GTT considered diagnostic of gestational diabetes. Select UTD if result not clear. Follow up of abnormal test can include further testing, counseling regarding physical activity and dietary medication, referral to diabetes educator or nutritionist, medication</p>	Visit notes, lab slips, ACOG form D	
6n-o.28-37 weeks	n. Choose yes for Group B strep culture done if done at 35-37 weeks	Visit notes, lab slips,	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	<p>gestation. Choose NA if documentation indicates member has had Group B Strep bacteriuria in current pregnancy or previous infant with invasive Group B Strep disease (intrapartum antibiotics already indicated), or delivers prior to 37 weeks</p> <p>Follow-up of positive culture includes notation of status and plan for intrapartum antibiotic prophylaxis or evidence that antibiotics administered intrapartum from delivery summary or notation that not indicated (women undergoing planned c-section delivery without labor or membrane rupture).</p> <p>o. Hemoglobin/ hematocrit: Select yes if evidence that repeat Hgb/Hct test performed in third trimester(after 28 weeks), NA if delivery prior to 28 weeks</p>	ACOG form D, delivery summary	
6p. Patient D(Rh) negative	m. Select yes if documented (D) Rh negative, no if positive, UTD if not documented. If item 6p (D) Rh negative response is no or UTD, items 6q and 6r will auto-populate with NA.	Visit notes, ACOG Form D	
6q. Isoimmunization status	n. Select sensitized if D (Rh) sensitized is specifically noted in chart, unsensitized if D (Rh) not sensitized specifically documented in chart, UTD if isoimmunization status not addressed.	Visit notes, ACOG antepartum form A – medical history.	
6r. Anti D immune globulin	o. If documentation indicates member is D(Rh) negative and unsensitized-, select yes if patient received anti D immune globulin at 26-30 weeks, no if not received or not documented, UTD if hospitalized prior to 26 weeks or no visits post 26 weeks.		
7. Ongoing monitoring			
a. Weight	7a. Select yes if weight measured at each visit in which patient seen	Visit notes	
b. BP	7b. Select yes if BP measured at each visit in which patient seen	Visit notes	
c. Urine dip/ analysis	7c. Select yes if urine dip/analysis for protein monitored each visit	Visit notes	
8. HIV services			
a. First trimester test (initial visit)	8a. HIV test done in first trimester: select yes if documentation that test performed or result in chart before 13 completed weeks or initial visit if later; select no if not offered or performed, select declined if offered but patient declined, and UTD if not legible.	Visit notes, ACOG Form D	
b. Third trimester test	8b. Select yes if documentation that test performed or result in chart 28-41 weeks, select no if not offered or performed, select declined if offered but patient declined, and UTD if not legible. Select NA if initial visit is in third trimester.	Visit notes, ACOG Form D	
c. Referral for HIV care	8c. Select yes if documentation that patient referred outside practice for continued care, NA if test negative and UTD if not clear whether patient referred.	Visit notes	
F. Referrals and coordination of			

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
care			
1. Care plan with problem list	1. Select yes if documentation of plan for care that includes a problem list and plan for services to address these needs at any point during prenatal care. Problem list should include risks identified in risk assessment. Problem list and plan for addressing problems need not be contiguous in record. Any documentation of identified issues and plan of action is acceptable for care plan.	Visit notes, ACOG Form C, E	
2. Evidence of health plan CM involvement	2. Select yes if any evidence of information exchange between the prenatal care provider and health plan high risk OB case managers or program staff at any point during prenatal care	Visit notes, office notes, referral forms	
3 Referrals	3. Select yes for each type of referral if documentation indicates patient referred regardless of whether appointment kept. Select yes for evidence of communication with referral provider if visit note or office notes indicate that information exchanged with referral provider, consult reviewed, copy of consultation in chart. <ul style="list-style-type: none"> • Maternal fetal medicine specialist/high risk OB: includes maternal fetal medicine, high risk obstetrics, perinatologist • Other medical specialist: pulmonologist, neurologist, endocrinologist, etc. • Behavioral health: psychiatrist, psychologist, licensed social worker if referred for behavioral health problem • Social services, such as county department of social services, social worker referral for other than behavioral • Case management: health plan or other • Nurse Family Partnership • Health Families • Community Health Worker • Other home visiting program, such provider home visit, local health department, Asthma educator • Diabetes educator • WIC program • SNAP program (food stamps) • Lactation consultant/breastfeeding classes • Nutritionist-include dietitian here • Other-could include other community services • If an item is not applicable, Access form will auto-populate with NA. For example, if not referred (answer "No"), all columns to the right will be NA. 	Visit notes, office notes, copy of consultation form	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
4. Baby Basics	4. Select yes if there is documentation in the record that the Baby Basics program was used, Baby Basics book and planner given member, or there is reference to Baby Basics in visit notes. Select UTD if documentation not clear.		
G. Immunizations			
1. Offered flu	1.If patient pregnant during flu season (October through March): Select yes if patient offered vaccine, select no if no evidence it was offered and select NA if not pregnant or not seen during flu season.	Visit notes	
2 Received flu	2.Select yes if patient administered vaccine in office or documentation indicates received flu vaccine elsewhere	Visit notes	
3. Offered H1N1/ other	3. This indicator will apply only if novel virus for which additional vaccine is indicated for pregnant women has been identified. For the 2009-2010 season H1N1 was such a virus. For 2010-2011 an H1N1 virus will be included in the seasonal flu vaccine and would not be a separate vaccine.	Visit notes	
4. Received H1N1/other	4.Select yes if patient administered vaccine in office or documentation indicates received H1N1 vaccine elsewhere	Visit notes	
5. Assessed for hepatitis B exposure risk	5.Hepatitis B risk assessed: Select yes if documentation of screening for risk factors such as intravenous drug use, recurrent STDs, risk behaviors	Visit notes	
5a. Hepatitis B exposure risk identified?	5a.Select yes if visit note indicates risk for hepatitis, history IV drug use, recurrent STDs, risk behaviors. If no is selected, item 6 will grey out. If vaccine was provided, it should be inferred that an exposure risk was identified.		
6. Received hepatitis B vaccine	6.Pregnant women who have been identified as being at risk for HBV infection should be vaccinated. If member identified at risk, was Hepatitis B vaccine series (three immunizations) completed <ul style="list-style-type: none"> a. Hepatitis B vaccine series was started but not completed (1 or 2 immunizations) b. No hepatitis B vaccine was given c. NA if already vaccinated or no risk identified 	Visit notes	
H. Ultrasound			
1. Ultrasound performed	1. Enter yes if any ultrasounds were performed during this pregnancy. If no ultrasounds performed, item H2 will auto-populate with NA and H3 and H4 will grey out.	Visit notes, radiology reports	
2. Number of ultrasounds	2.Enter total number of ultrasounds performed as documented in chart	Visit notes, radiology reports	
3. Indication documented	Select all that apply. If c or d selected, skip to section I. 3a. Enter a if all ultrasounds have a documented indication for the ultrasound	Visit notes, radiology	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	3b. Enter b if some but not all ultrasounds have a documented indication for the test 3c. Enter c if none of the ultrasounds have a documented indication	reports	
4. Indications	4.If any indications are documented, check each indication found in the record a. Gestational dating, including size-date discrepancy, imprecise dates b. Anatomic survey (assessment of fetal anatomy) c. Evaluation of fetal number (multiple gestation) d. Evaluation of fetal viability (e.g. cardiac activity) e. Evaluation of fetal presentation f. Evaluation of placenta location (e.g. previa) g. Aneuploidy screening (nuchal translucency) h. Evaluation of abnormal amniotic fluid volume i. Evaluation of fetal growth disturbance j. Evaluation of fetal anomaly-e.g. neural tube defect or if suspected on basis of history, biochemical screen, other ultrasound exam- this would include fetal ECHO k. Fetal biophysical profile-real time ultrasound test of being: fetal breathing movements, fetal movement, tone, amniotic fluid volume l. Fetal biometry-fetal growth assessment m. UTD-illegible n. Other if indication that is not listed	Visit notes, radiology reports	
I. Post partum			
1. Postpartum visit 2. Date of postpartum visit	1-If there is no indication of postpartum visit, indicate with check in box 2. Enter date of first visit that occurs with OB provider post partum; visits for incision check would count. For items below, enter information from any postpartum visit in review period.		
3. Was postpartum visit in appropriate time frame	3. Visit should occur 4-6 weeks but no later than 8 weeks after delivery-choose yes if visit occurs 4-8 weeks after delivery if uncomplicated. Choose yes if women with a complicated gestation (such as preeclampsia, infection, hemorrhage, hypertensive disorders of pregnancy, diabetes) or delivery by C-section have a visit scheduled within 7 – 14 days of delivery. Choose UTD if delivery history not available.		
4. Was delivery/birth	4. Choose yes if delivery outcome documented. Documentation could include	Hospital discharge	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
outcome in chart	delivery complications/ no complications, and weeks of gestation at birth.	summary, provider notes, postpartum form	
5. Did patient see delivery provider at any time antenatally	5. Select yes if provider identified in delivery hospitalization summary provided prenatal services at any prenatal visit. Select UTD if antenatal or postpartum providers illegible. Select NA if no delivery information regarding provider in chart.	Hospital discharge summary, provider notes, postpartum form	
6. Did patient see postpartum provider at any time antenatally	6. Select yes if provider identified at postpartum visit provided prenatal services at any prenatal visit. Select UTD if postpartum provider or antenatal providers illegible.	Prenatal and postpartum provider notes, postpartum form	
7. Behavioral and psychosocial risk assessment	<p>7. General instructions are the same as those for initial visit and third trimester visit, as are specific instructions for items evaluated in initial visit and third trimester. Referral for risk includes referral for home visitation. Evidence of follow up would include a subsequent visit in which problem is referenced or notation that patient followed up elsewhere.</p> <ul style="list-style-type: none"> • Depression • Other psychiatric illness • Domestic violence • Sexual abuse • Tobacco use • Infant second hand smoke exposure: select yes for assessed if smoking in household documented or specific query regarding infant exposure is documented; yes for identified if smoking in household or other exposure documented. • Alcohol • Illicit/illegal drug use • Oral health • Medical comorbidity- select yes for identified if any pre-existing comorbidities or any medical problems such as gestational diabetes developed over course of current pregnancy. Evaluation in practice and follow up of gestational diabetes could include glucose testing and discussion of results. • Nutrition- nutritional risk includes excessive weight gain/obesity and addressed in practice can include 	Postpartum visit note, postpartum form. Copies of screening tools	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
	<p>counseling for continued nutrition and exercise regimen to encourage weight loss prior to subsequent pregnancy.</p> <ul style="list-style-type: none"> • Infant special needs: risk assessed includes inquiry regarding infant medical, nutritional and psychosocial needs and identification of infant provider. Referral includes referral for infant preventive and special care services, maternal referral social or other services. 		
8. Infant lead	8. Select yes for documented evidence of childhood lead poisoning prevention counseling such as sources of lead, means to prevent exposure.	Postpartum visit note, postpartum form	
9. Infant nutrition a. General counseling b. Breast milk advantages	<p>9a. Select yes for general counseling if documentation that infant Feeding was discussed, infant feeding habits, breast/bottle feeding, difficulty feed</p> <p>9b. Select yes for breast milk advantages if documentation Includes notation of nutritional advantages of breast milk and/or maternal and infant benefits of breastfeeding, recommendations for exclusive breastfeeding first six months of life and continuation of breastfeeding with supplemental foods after first six months. Choose mother not breastfeeding.</p>	Postpartum visit note, postpartum form	
10. Health insurance a. Maternal b. Infant	<p>10a. Select yes if mother advised about (counseled) or referred for assistance with application for ongoing medical care assistance for herself.</p> <p>10b. Select yes for infant if documentation that mother advised of the availability of Medicaid eligibility for infants or referred for assistance.</p>	Postpartum visit note, postpartum form, social services notes	
11. Family planning a. Counseling on interconception care b. Family planning needs addressed c. For obese and overweight, weight loss encourage prior to subsequent pregnancy	<p>11a. Select yes for interconception care if documentation of discussion or counseling provided regarding recommended care prior to next pregnancy such as need for preconception visit prior to subsequent pregnancy, recommendation for folic acid prior to subsequent pregnancy.</p> <p>11b. Select yes for family planning need addressed if documentation that contraception needs discussed, contraception prescribed, referral for contraception services. A documentation of tubal ligation would be evidence that family planning needs addressed.</p> <p>11c. Select yes if overweight/obese members counseled regarding achieving healthy weight, NA if member not overweight, obese</p>	Postpartum visit note, postpartum form	

Prenatal Care Study – Data Collection Instructions

FIELD	INSTRUCTIONS	Location in chart	Inclusion/ EXCLUSION
12. Postpartum immunization	<p>12a. Select yes if documentation indicates that immunization status was discussed with patient, vaccines were administered, or documentation specifically addresses immunity status/ immunization history for influenza, MMR (measles, mumps, rubella), Tdap, varicella and human papilloma virus.</p> <p>12b. Select yes if documentation indicates patient requires vaccine, not immune, or vaccine was administered. Select no if documentation indicates patient requires no vaccine. Select UTD if immunity status not documented.</p> <p>12c. Select yes if vaccine administration documented, select no if no documentation of vaccine administered but patient not noted to decline, select no-declined if there is documentation that patient declined offered vaccine. If yes, select which vaccine was (were) administered at postpartum visit from drop down box influenza, MMR (measles, mumps, rubella), Tdap, varicella and human papilloma virus, none.</p>	Postpartum visit note, ACOG postpartum form	
13. Was referral made for postpartum home visiting?	13. Select yes if postpartum record indicates that a referral was made for postpartum home visiting. Do not include ongoing programs Nurse Family Partnership or Healthy Families as a yes response here; these will be collected in item F3.		
Missing items	Note that when data entry for a record is complete and you press Main Menu button, a pop up will appear if there are blank fields. Please check for missing items before proceeding to another record.		