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Executive Office of Health and Human Services
Department of Public Health
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April 20, 2021

Steven T. James
House Clerk
State House Room 145
Boston, MA 02133

William F. Welch
Senate Clerk
State House Room 335
Boston, MA 02133

Dear Mr. Clerk,

Pursuant to FY20 State Budget Earmark line item 4510-0112 requiring a plan to track the annual perinatal mental health outcomes for all deliveries in the Commonwealth, please find enclosed a report from the Department of Public Health entitled, "Massachusetts Perinatal Mental Health Data Analysis Plan."

Sincerely,

A handwritten signature in black ink, appearing to read "mBharel".

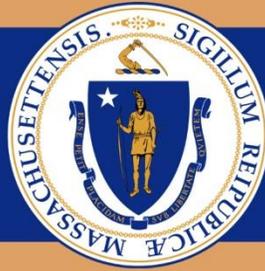
Monica Bharel, MD, MPH
Commissioner
Department of Public Health

Cc: Representative James O'Day (PPD Legislative Commission Co-Chair)
Senator Joan Lovely (PPD Legislative Commission Co-Chair)

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Charles D. Baker
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Marylou Sudders
Secretary

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Commissioner

Massachusetts Perinatal Mental Health Data Analysis Plan

April 2021



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Legislative Mandate

The following report is hereby issued pursuant to FY20 State Budget Earmark line item 4510-0112 as follows:

“that said department may expend funds to produce a report, in consultation with other state agencies and hospital systems, to define a set of measures to track the annual perinatal mental health outcomes for all deliveries in the Commonwealth and to outline a process for the collection and reporting of said measures; provided further, that said measures shall include, but not be limited to, the rate of screening for postpartum depression, the identification of perinatal mental health diagnoses, and the incidence of postpartum psychosis; provided further, that said report shall include, but not be limited, to the cost, timing, and feasibility thereof; “

Executive Summary

About one in nine American mothers experienced depressive symptoms after delivery in 2012. Untreated postpartum depression (PPD) has negative consequences for both children and birthing parents. To promote the health and well-being of birthing parents, children and family, on August 19, 2010, Chapter 313 of the Acts of 2010, An Act Relative to Postpartum Depression, was signed into law in Massachusetts. Pursuant to this law, a PPD Special Legislative Commission was established, and the PPD Regulations (105 CMR 271.000) were promulgated in December 2014 requiring data reporting by a provider during a routine clinical appointment in which medical services are provided to a birthing parent who has given birth within the previous six months.

To further improve the PPD screening data reporting and to investigate the status of perinatal mental health and its impacts on birthing parents and their children, the state FY20 Budget line item 4510-0112 earmarked funding and required the Department of Public Health to develop a data plan to track the annual perinatal mental health outcomes for all deliveries in the Commonwealth.

In response, a Massachusetts Perinatal Mental Health Data Analysis Work Group, comprised of policy makers, health care system leaders, clinicians, and public health researchers, was formed. The Work Group identified seven mental health conditions to track for birthing parents up to 1 years after delivery, with the overarching goals to promote mental health and reduce inequities for mothers in the Commonwealth.

This Massachusetts Perinatal Mental Health Data Analysis Plan contains detailed information on the specific aims, process and outcome measures, data sources, feasibility, costs, and timeline. The plan proposes a state-wide, population-based data tracking system and recommends an on-going linkage of three existing state databases. The plan further seeks to collaborate with the Massachusetts Child Psychiatry Access Program (MCPAP) for Moms to investigate the effects of perinatal mental health care provider training, care coordination and resource referrals on the health of birthing parents and infants in the Commonwealth, as well as their access to and costs of health care.

Introduction

About one in nine American mothers experienced depressive symptoms after delivery in 2012.¹ Untreated postpartum depression (PPD) has negative consequences for both children and birthing parents. Children born to mothers with PPD were more likely to have poor cognitive functioning, behavioral inhibition, emotional maladjustment, violent behavior, externalizing disorders, or psychiatric and medical disorders²⁻⁹ Furthermore, mothers with PPD were more likely to have weight problems, alcohol and illicit drug use, social relationship problems, breastfeeding problems, or persistent depression.¹⁰⁻¹⁵ A recent study of 2017 births in the United States further estimated that untreated mood and anxiety disorders costs \$14 billion dollars from conception to 5 years postpartum, with an average of \$31,800 per mother infant dyad.¹⁶

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 3. Carter AS, Garrity-Rokous FE, Chazan-Cohen R, et al. Maternal depression and comorbidity: predicting early parenting, attachment security, and toddler social-emotional problems and competencies. *J Am Acad Child Adolesc Psychiatry* 2001; 40(1): 18–26.
 4. Sohr-Preston SL, Scaramella LV. Implications of timing of maternal depressive symptoms for early cognitive and language development. *Clin Child Fam Psychol Rev* 2006; 9(1): 65–83.
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 6. Weissman MM, Pilowsky DJ, Wickramaratne PJ, et al. Remissions in maternal depression and child psychopathology: a STAR*D-child report. *JAMA* 2006; 295(12): 1389–1398.
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 10. Xiao RS, Kroll-Desrosiers AR, Goldberg RJ, et al. The impact of sleep, stress, and depression on postpartum weight retention: a systematic review. *J Psychosom Res* 2014; 77(5): 351–358.
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 13. Jones E, Coast E. Social relationships and postpartum depression in South Asia: a systematic review. *Int J Soc Psychiatry* 2013; 59(7): 690–700.
 14. Dias CC, Figueiredo B. Breastfeeding and depression: a systematic review of the literature. *J Affect Disord* 2014; 171: 142–154.
 15. Vliegen N, Casalin S, Luyten P. The course of postpartum depression: a review of longitudinal studies. *Harv Rev Psychiatry* 2016; 22(1): 1–22.
 16. Luca DL, Margiotta C, Staatz C, Garlow E, Christensen A, Zivin K, “Financial Toll of Untreated Perinatal Mood and Anxiety Disorders Among 2017 Births in the United States”, *American Journal of Public Health* 110, no. 6 (June 1, 2020): pp. 888-896.

To promote the health and well-being of birthing parents, children and family, on August 19, 2010, Chapter 313 of the Acts of 2010, An Act Relative to Postpartum Depression, was signed into law in Massachusetts. It requires that the Department of Public Health (MDPH)

“shall issue regulations that require providers and carriers to annually submit data on screening for postpartum depression. Following the receipt of data, the commissioner of public health shall issue an annual summary of the activities related to screening for postpartum depression, including best practices and effective screening tools. The department shall annually file the summary with the commissioner of public health and the clerks of the house of representatives and the senate not later than June 30; provided, however, that the first report is due not later than June 30, 2011.”

This Law established a special legislative commission with different stakeholders to study and report on research and policy initiatives on PPD and make recommendations to address PPD. Since its first meeting in December 2011, the Commission has met a total of 21 times and has assisted on many various PPD issues that have benefited birthing parents and families across the Commonwealth. The Commission publishes annual reports on its activities, including its successes on:

- Collaborating with MDPH to promulgate PPD screening reporting requirements
- Laying the ground work for MCPAP for Moms
- Funding PPD Community Health Center pilot programs to help establish lessons learned for screening and referral systems in women’s health and pediatric settings
- Advocating for PPD screening and reimbursement in pediatric and obstetrical settings
- Establishing an annual Perinatal Mental Health Awareness Day at the State House
- Updating the MDPH website on PPD to educate providers and families
- Filing a joint resolution after the Governor’s office proclaiming May as Maternal Mental Month

The PPD Regulations (105 CMR 271.000) promulgated in December 2014 require data reporting by a provider that conducts or oversees screening for PPD, using a validated screening tool, during a routine clinical appointment in which medical services are provided to a parent who has given birth within the previous six months. Providers that are responsible for adhering to these regulations include OB-GYNs, Family Medicine Practitioners, and Advanced Practice Nurses including Nurse Midwives and Nurse Practitioners, and Physician Assistants, who practice in a family medicine/OBGYN setting. The regulation also applies to health plans that receive claims for the PPD screening.

Under the current regulations, there are two ways for providers and carriers to report the PPD Screening data to the MDPH:

1. Through an annual written report: In calendar year 2018, only two Annual PPD Data Reporting Forms were received. One from an insurance carrier that reported no postpartum patient encounters or screens in 2018, and the other from a medical practice that reported screening 860 (93.0%) of 926 postpartum patients seen. The practice used the Patient Health Questionnaire -9 (PHQ-9) to screen birthing parents for PPD and an overall 53 (7%) of the screened women were positive for PPD.
2. Through the All Payer Claims Database (APCD), using claims codes of S3005 (Performance Measurement, Evaluation of Patient Self-Assessment, Depression) with a diagnostic range Z39.2 (Routine Postpartum follow up, formerly ICD9 V24 - Screening for Postpartum Depression) and a modifier (U1: positive PPD screen, U2: negative PPD screen). APCD is situated at the Center for Health Information and Analysis (CHIA), an independent agency established pursuant to M.G.L. c. 12C to serve as the Commonwealth's primary hub for health care data. In calendar year 2016, 48,732 (69.6%) of the 69,998 deliveries in MA were linked to APCD claims. Of which, 5,879 (12.1%) women were screened for PPD and 634 (10.8%) had a positive screen based on the claim and diagnostic codes.

The low PPD screening rates based on data from provider written reports and APCD claims indicated **significant data underreporting** when compared to the results from the Massachusetts Pregnancy Risk Assessment and Monitoring System (PRAMS).

The Massachusetts PRAMS, a population-based sampling survey of new birth parents, has been used to monitor the health of birth parents and children in the Commonwealth since 2007. The survey asks a set of two questions related to experience with PPD. In 2019, 87.8% of Massachusetts birth parents reported that their health care providers asked if they were depressed (proxy for PPD screening) and 10.2% reported experiencing PPD symptoms.

The 2019 Massachusetts PRAMS data further revealed **inequities exist in PPD screening and diagnosis**. Compared to White non-Hispanic mothers (90.4%), Hispanic mothers (81.4%) were less likely to be screened for PPD. Asian non-Hispanic mothers (17.7%) were most likely to report experiencing PPD symptoms, followed by Black non-Hispanic mothers (16.7%) and Hispanic mothers (13.9%). Maternal education played a significant role as well. Mothers with less than a high school education and a high school diploma were less likely to be screened for PPD (73.1% and 80.5%, respectively) compared to mothers with a college degree (90.9%). Mothers with less than a high school education, a high school diploma, and some college education were more likely to report PPD symptoms (13.7%, 14.7%, and 13.0%, respectively) when compared to mothers with a college degree (6.8%).

| | Provider asked if depressed | Experiencing PPD symptoms |
|----------------------|-----------------------------|---------------------------|
| Race/ethnicity | | |
| White non-Hispanic | 90.4% | 6.9% |
| Black non-Hispanic | 85.2% | 16.7%* |
| Hispanic | 81.4%* | 13.9%* |
| Asian non-Hispanic | 87.0% | 17.7%* |
| Others non-Hispanic | 83.7% | 15.0% |
| Maternal education | | |
| < High school | 73.1%* | 13.7%* |
| High school graduate | 80.5%* | 14.7%* |
| Some college | 89.7% | 13.0%* |
| College graduate | 90.9% | 6.8% |

Data source: 2019 MA PRAMS

*There was a statistically significant difference between the reference group and the comparison group. The reference groups: White non-Hispanic, and college graduate.

While the PRAMS data provides a population-based estimates on the prevalence of PPD screening and diagnosis using its proxy indicators, it does not allow an individual-level tracking and follow-up. To improve the PPD screening, diagnosis, and services delivery for each mother in the Commonwealth, FY20 State Budget earmarked line item 4510-0112 to include language:

“that said department may expend funds to produce a report, in consultation with other state agencies and hospital systems, to define a set of measures to track the annual perinatal mental health outcomes for all deliveries in the Commonwealth and to outline a process for the collection and reporting of said measures; provided further, that said measures shall include, but not be limited to, the rate of screening for postpartum depression, the identification of perinatal mental health diagnoses, and the incidence of postpartum psychosis; provided further, that said report shall include, but not be limited, to the cost, timing, and feasibility thereof; “

In response to this Budget earmark, a MDPH Perinatal Mental Health Team (the Team) and a Massachusetts Perinatal Mental Health Data Analysis Work Group (the Work Group), comprised of policy makers, health care system leaders, clinicians, and public health researchers was formed (Addendum 1). The Work Group proposed seven mental health conditions to be tracked during the perinatal period, with the overarching goals to promote mental health and reduce inequities for mothers in the Commonwealth. Three specific aims along with the process and outcome measures and data sources are proposed. The feasibility, timeline, and costs in implementing such proposal are also included in this Massachusetts Perinatal Mental Health Data Analysis Plan.

Report Body

The Work Group has determined seven perinatal mental health conditions to be tracked. Specific ICD-9 and ICD-10 codes are included in the Addendum 2.

1. Depression
2. Psychosis
3. Obsessive-compulsive disorder (OCD)
4. Post trauma stress syndrome (PTSD)
5. Anxiety
6. Bipolar disorder
7. Substance use

Specific Aims

Three specific aims are included in this Plan: (1) to establish an effective data reporting system for PPD screening and diagnosis for Massachusetts birth parents during perinatal period, (2) to investigate the diagnosis and treatment status of depression, psychosis, OCD, PTSD, anxiety, bipolar disorder, and substance use for Massachusetts birth parents during perinatal period, and its effects on birth parents and children, and (3) to collaborate with the MCPAP for Moms on its program evaluation activities.

The MCPAP for Moms was established in 2014 based on the successful pediatric MCPAP model created in 2004. The MCPAP for Moms helps front-line obstetric providers identify and address the mental health and substance use concerns of their pregnant and postpartum patients. It includes three core components: (1) trainings and toolkits for providers and their staff; (2) real-time psychiatric consultation and resource and referral for providers; and (3) linkages with community-based resources. Currently, over 140 practices in Massachusetts implement the MCPAP for Moms model.

Results from this plan will provide a baseline of perinatal mental health conditions in the Commonwealth, identify at-risk groups and locations, understand the effects of the perinatal mental health conditions on birth parents and their children, and determine gaps and best practices. Based upon the information acquired, policymakers will be able to effectively allocate resources to support the most needed initiatives including an ongoing perinatal mental health data system.

Specific Aim 1: To establish an effective data reporting system for PPD screening and diagnosis for Massachusetts mothers during the perinatal period. Prevalence of PPD screening and diagnosis for MA birth parents will be tracked via electronic medical records, insurance claims, and APCD. Unfortunately, the linkage of these data sources has significant data underreporting problems. This proposal will start to address the data reporting improvement

with the current PPD pilot programs in five community health centers, followed by MassHealth providers, and eventually expand to all providers that deliver health care services to birth parents up to 1 year postpartum. PPD prevalence will be reported on an annual basis. Disparities by geography and patient characteristics will be examined.

Specific Aim 2: To investigate the diagnosis and treatment status of depression, psychosis, OCD, PTSD, anxiety, bipolar disorder, and substance use for Massachusetts birth parents during the perinatal period and their effects on mothers and their children. A data linkage between Pregnancy to Early Life Longitudinal (PELL) and APCD is proposed. The PELL provides socio-demographic information on mother-child pair birth cohort longitudinally, whereas APCD provides data on diagnosis and treatment. Prevalence of depression, psychosis, OCD, PTSD, anxiety, bipolar disorder, and substance use diagnosis and treatment for MA birth parents will be reported on an annual basis. Disparities by geography and patient characteristics will be examined.

Hypothesis 1: Compared to birth parents without perinatal mental health conditions, we hypothesize that birth patients with perinatal mental health conditions are more likely to experience pregnancy-related complications and adverse outcomes. Complications to be examined include gestational diabetes, pregnancy-induced hypertension/preeclampsia/eclampsia, cardiac disease, infection, and asthma. Uses and costs of health services including ambulatory, emergency, observational and inpatient care will also be evaluated.

Hypothesis 2: Compared to infants born to patients without perinatal mental health conditions, we hypothesize that infants born to patients with perinatal mental conditions are more likely to experience adverse outcomes and use health care services. Conditions and outcomes to be investigated include preterm delivery, low birth weight, feeding problems, asthma. Neonate and infant mortality, as well as ambulatory, emergency, observational, inpatient, intensive care unit admissions and costs will also be examined.

Specific Aim 3: To collaborate with the MCPAP for Moms program on its program evaluation activities. The Team will work with the MCPAP for Moms(M4M) to investigate its effects on birth parents experiencing perinatal mental health conditions and their children. The birth cohort will be divided into two groups: M4M vs. non-M4M based on the MCPAP for Moms enrollment status of the earliest prenatal care visit providers.

Hypothesis 1: Compared to non-M4M practices, we hypothesize that practices enrolled in the MCPAP for Moms identify more perinatal depression and treat more depressed women.

Hypothesis 2: Of patients identified with perinatal mental health conditions, we hypothesize that those exposed to M4M practices are more likely to receive mental health treatment; we further hypothesize that those exposed to M4M practices are less likely to experience pregnancy-related complications and adverse outcomes and use fewer non-

mental- health, non-preventive services. Outcomes of interest include preterm delivery, low birth weight, neonate and infant mortality, ambulatory, emergency, observational and inpatient admissions.

Hypothesis 3: To examine budget impact of the MCPAP for Moms program. Of all mother-child pairs, we hypothesize that those receiving services from M4M providers have lower total health care costs due to use of ambulatory care services versus hospital based services, compared to those receiving services from non-M4M providers.

Data Sources

Three databases will be used for this Plan. The PELL data will be used to identify mother-child pairs in a given year and their hospitalization uses and public program participations longitudinally. The APCD will provide office-based screening, diagnosis, and treatment data from outpatient visits, as well as information on referrals to specialists and prescription data. The M4M will provide data on the practice characteristics for the practices enrolled in the MCPAP for Moms.

MA DPH Pregnancy to Early Life Longitudinal (PELL) contains (1) live birth and fetal death records from the Registry of Vital Records linked to birth and delivery in-patient hospital discharge records from CHIA resulting in *maternal-child dyadic linkages* (core PELL); (2) non-birth hospital-related utilization data (inpatient admissions, observational stays, and emergency visits) for mothers and children over time; (3) surveillance datasets such as the Pregnancy Risk and Assessment Monitoring System (PRAMS); and (4) other program participation data such as Early Intervention. Addendum 3 shows the data make up in the PELL. The PELL has linked MA births to hospital discharge and public health programs data longitudinally since 1998. Its most recent linked cohort is 1998-2017 births. The PELL is housed at the MDPH.

MA CHIA All Payer Claims Database (APCD) contains standardized health care claims from commercial payers, third party administrators and public programs (Medicare and Medicaid). Claims come both from medical carriers and specialty services including pharmacy, mental health/chemical dependency, therapy and psychiatry visits. APCD includes four files of key interest: product (including characteristics of the health insurance plan and individual and family deductibles), member (demographics, benefit coverage), claims (utilization) and provider. The APCD is housed at the MA CHIA.

MA DMH MCPAP for Moms (M4M) contains practice demographics, including location, FTE of providers, information about on-site co-located behavioral health supports, enrollment date, and utilization patterns (e.g. number and frequency of calls, call indication and date, care coordination services facilitated) for enrolled practices. The M4M is housed at the MA Department of Mental Health (DMH).

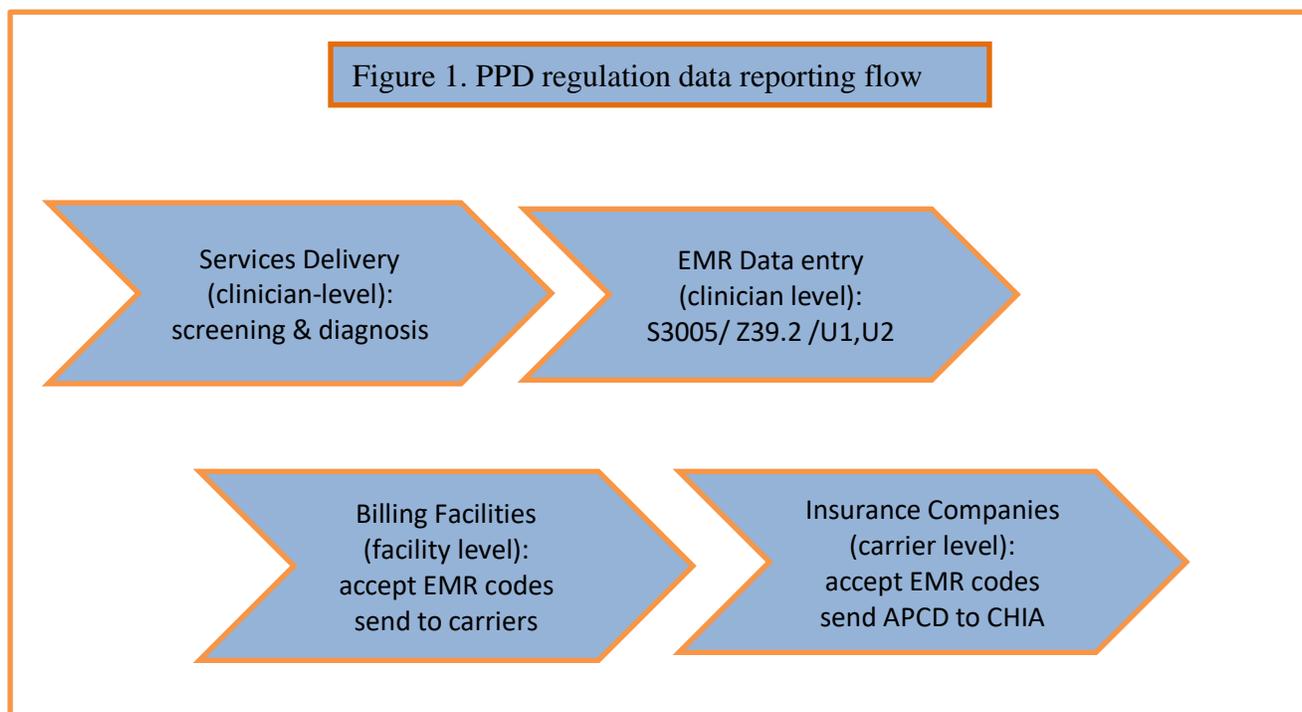
Study Population Inclusions and Exclusions

This Plan proposes to track all Massachusetts resident patients who delivered in state, starting from 2016 birth cohort, one year after the PPD regulations were promulgated. The follow-up timeframes are from pregnancy up to postpartum 1 year for patients and from birth to first year of life for infants.

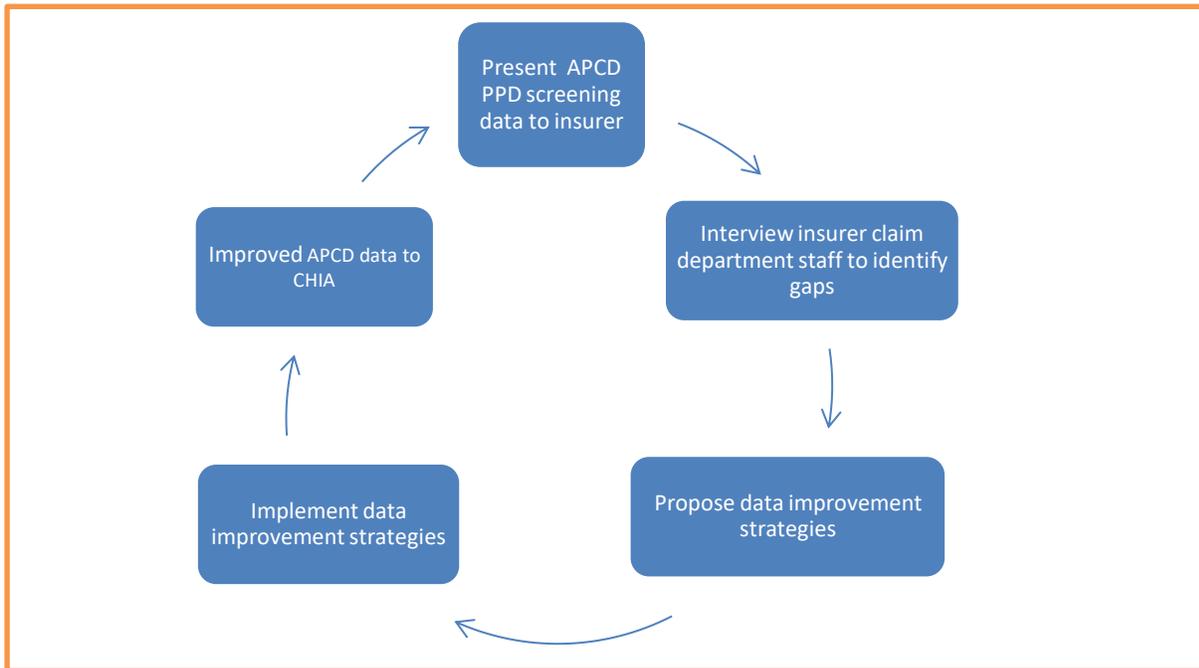
Qualitative Methods

Quality improvement efforts for the PPD screening and diagnosis data in APCD will start from identifying the gaps and barriers in the five existing PPD Pilot Programs: Holyoke Health Center, Family Health Center in Worcester, North Shore Community Health Center in Salem, Stanley Street Treatment & Resources (SSTAR) Family Health Care Center in Fall River, and Lynn Community Health Center. Upon the success with the PPD Pilot Programs, strategies will be replicated to the MassHealth and its providers, and finally to the remaining commercial carriers and their providers.

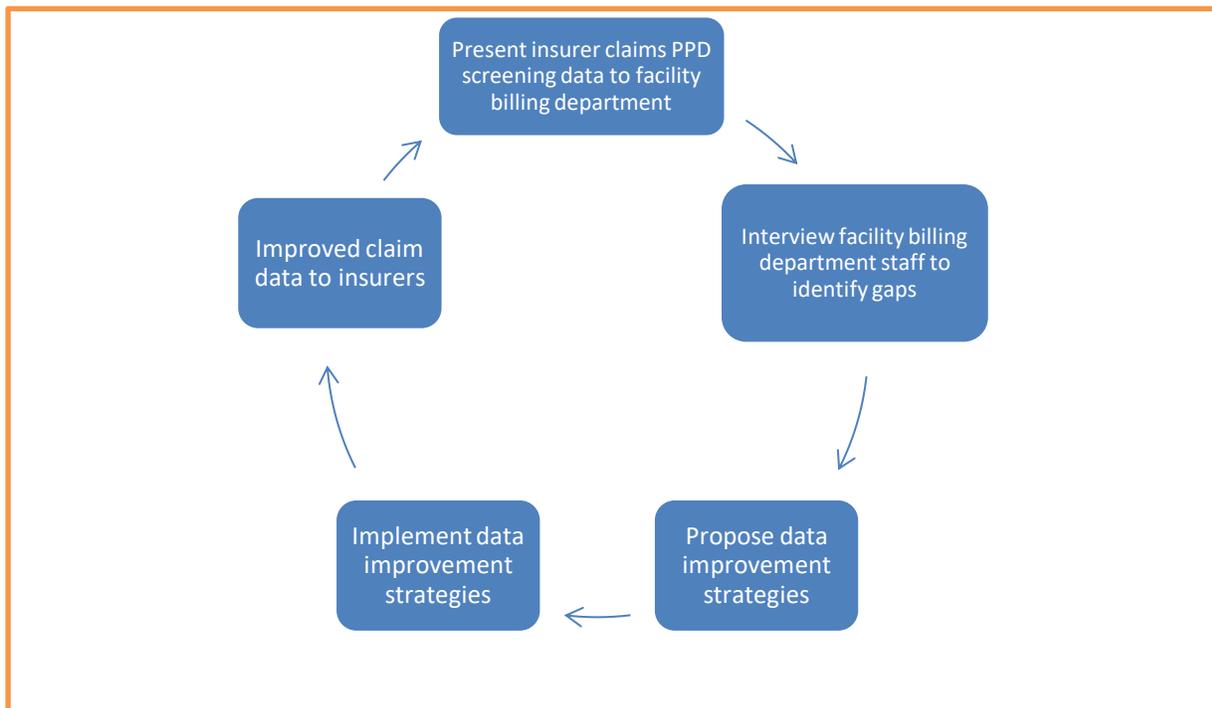
The Plan proposes to use key informant interviews in each step of data reporting. Figure 1 illustrates the PPD screening and diagnosis data flow from health care encounters to data deposit at the CHIA.



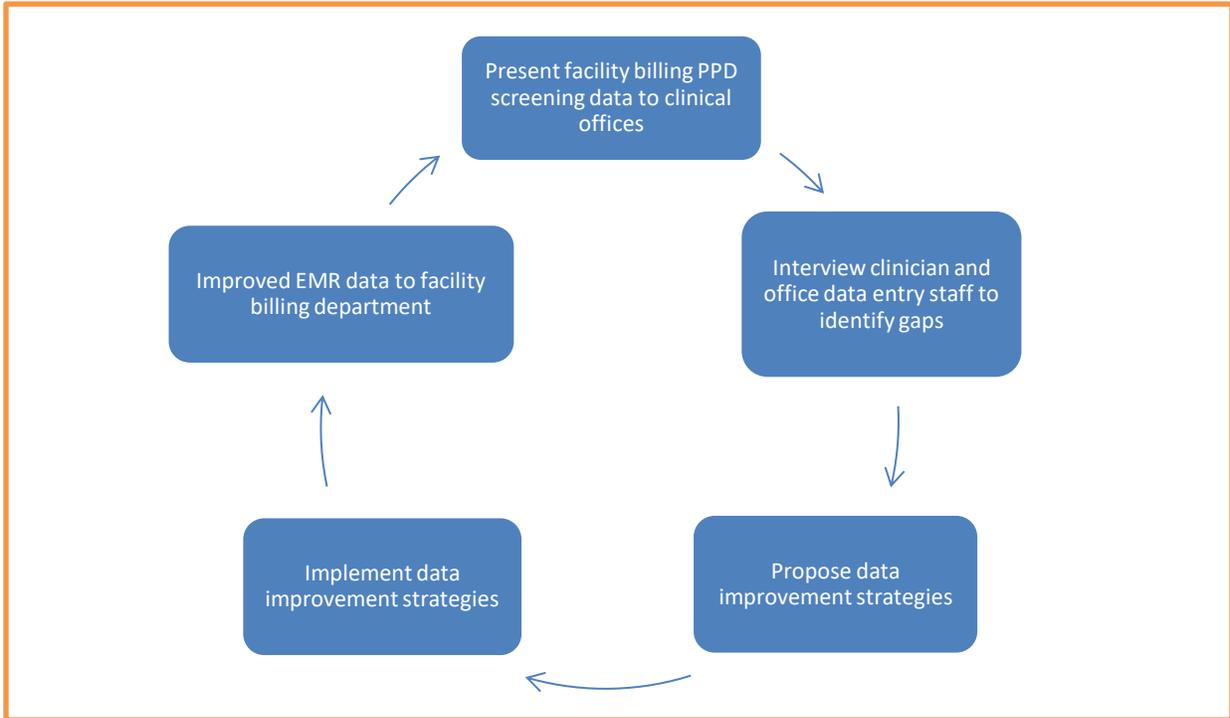
This Plan proposes to identify gaps at each data step backward: starting from insurers, then facilities, then clinicians. In Year 1, the Team will work with the APCD Analyst to obtain PPD screening and diagnosis data for encounters from the five PPD Pilot Programs. A list of insurers for these encounters will also be generated. The Team will work with insurers to implement the quality improvement cycle listed below to identify gaps and improve the quality of PPD screening data submitted via APCD to CHIA. Depending on capacity and resources, the plan will be to repeat the process in subsequent years.



Second, the Team will work with the billing departments in the three PPD Pilot Programs to implement the quality improvement cycle listed below to identify gaps and improve the quality of PPD screening data submitted to insurers.



Finally, the Team will work with facility billing departments to create a list of clinicians that provides care to pregnant and postpartum patients at the PPD Pilot Program to implement the quality improvement cycle listed below to identify gaps and improve the quality of billing data submitted to the facility billing department.



The data quality improvement efforts described above will be expanded to MassHealth providers in Year 2 and commercial insurance providers in Year 3. Clinicians will share the seven mental health conditions and their corresponding ICD-10 codes under this Proposal with the team to inform the statewide perinatal mental health tracking efforts.

Quantitative Methods

Upon the linkage of the PELL-APCD, the prevalence of the selected seven mental health conditions during the perinatal period will be estimated for all deliveries in the Commonwealth, as a whole and by socio-demographic characteristics. Univariate analyses for each outcome, exposure, and covariates will be conducted. Unadjusted bivariate analyses will be performed for each study outcome and all potential confounding variables. Based on findings from unadjusted analysis, multivariate adjusted analyses will be developed to control for confounding for each outcome. Stratified analyses will be performed for subgroups of special interest. Mediation analyses will be pursued if such effects appear. Appropriate statistical methods will be used based on the characteristics of variables (i.e., continuous, categorical, count-based). Generalized estimating equations (GEE) for categorical and count-based

outcomes and mixed linear models for continuous outcome variables will be used to take into account multiple deliveries per patient and within-patient correlation of the data. These models can also accommodate time-dependent variables including treatment received by patients across all deliveries. All analyses will be done using statistical software SAS 9.4.

Feasibility

This plan built upon existing perinatal health collaborations and databases makes it a feasible, cost-efficient, and valuable project. The Chapter 313 of the Acts of 2010, along with the establishment of the PPD special legislative commission and the PPD Regulations, lay the legal foundation for the universal PPD screening and data reporting across the Commonwealth. The existing close relationships between MDPH and the PPD Community Health Center pilot programs and MCPAP for Moms makes proposed collaborations achievable and efficient.

On the data front, the PELL has already linked to APCD via several ad hoc projects (e.g., PPD screening reports and Massachusetts Outcomes Study of Artificial Reproductive Technology) in the past. Feasibility of the PELL-APCD linkage has been tested. Furthermore, the PELL has already linked MA mother-child dyads longitudinally. There is no need to reinvent the wheel. Data use agreements (DUAs) and memorandum of understanding (MOUs) between the PELL and APCD from previous projects will serve as the templates for this project. The DUAs and MOUs will be created in the beginning of the project and renewed every year provided ongoing funding for the project is available.

The data quality improvement action cycles and quantitative analytical support are working together in endorsing the success of this plan. A project coordinator conducting key informant interviews and working with health care providers and carriers will ensure needed data are correctly entered and submitted to the APCD to support the quantitative work. A research consultant building a new qualitative data system, analyzing both qualitative and quantitative data, and generating feedback reports for the data quality improvement action cycles will provide ongoing data needed to identify gaps in quality improvements. They will generate annual reports to inform policymakers and stakeholders about the prevalence and treatment of the selected perinatal mental health conditions, as well as health outcomes and costs among those with positive diagnoses. The Maternal Health Director overseeing the project implementation, supervising the project personnel, and providing administrative supports will ensure smooth operations of the project to meet the project aims.

Timeline

We proposed a four-year grant starting from FY22 to FY25.

| Funding Year | Year 1 | | | | Year 2 | | | | Year 3 | | | | Year 4 | | | |
|---|-----------|----|----|----|-----------|----|----|----|-----------|----|----|----|-----------|----|----|----|
| Calendar Year | 2021-2022 | | | | 2022-2023 | | | | 2023-2024 | | | | 2024-2025 | | | |
| Calendar Quarter | Q3 | Q4 | Q1 | Q2 |
| Conduct site visits and QI activities in 5 PPP Pilot Programs | X | X | X | X | | | | | | | | | | | | |
| Analyze PPD screening data for 2022 Q2 visits (APCD data from 5 PPD Pilot sites) | | | | | X | X | | | | | | | | | | |
| Conduct site visits and QI activities with MassHealth and its providers | | | | | X | X | X | X | | | | | | | | |
| Analyze PPD screening data for 2023 Q2 visits (APCD data from MassHealth providers) | | | | | | | | | X | X | | | | | | |
| Conduct site visits and QI activities with commercial carriers and its providers | | | | | | | | | X | X | X | X | | | | |
| Analyze PPD screening data for 2024 Q2 visits (APCD data from commercial insurance providers) | | | | | | | | | | | | | X | X | | |
| Obtain data sharing agreements for PELL-APCD, M4M | X | X | | | X | X | | | X | X | | | | | | |
| Conduct 2016-2018 PELL-APCD linkage; PELL-M4M linkage | | | X | X | | | | | | | | | | | | |
| Conduct data analysis and generate reports for 2016-2018 births | | | | | X | X | X | X | | | | | | | | |
| Conduct data analysis for hypothesis testing for 2016-2018 births and prepare reports and manuscripts | | | | | | | X | X | X | X | | | | | | |
| Conduct 2019 PELL-APCD linkage | | | | | | | X | X | | | | | | | | |
| Conduct data analysis and generate reports for 2016-2019 births | | | | | | | | | X | X | X | X | | | | |
| Conduct 2020 PELL-APCD linkage; PELL-M4M linkage | | | | | | | | | | | X | X | | | | |
| Conduct data analysis and generate status reports for 2016-2020 births | | | | | | | | | | | | | X | X | X | X |

| | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|---|---|
| Conduct data analysis for hypothesis testing for 2016-2020 births and prepare reports, dashboard data, and manuscripts | | | | | | | | | | | | | | | | | | | X | X | X | X |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|---|---|

Costs \$300,000

In Response to FY20 State Budget Earmark line item 4510-0112, this plan proposes an annual funding support of \$300,000 with 3% yearly adjustment as follows, with a total of \$1,300,000 over the four-year grant period. The MDPH Pregnancy, Infancy, and Early Childhood Division will house the project. Under the supervision of the Maternal Mental Health (MMH) Director, a full-time project coordinator will be hired to implement and coordinate the proposed activities and a research consultant to conduct data analyses and generate reports and publications. This Plan will cover 5% FTEs for the PELL and M4M Analysts to prepare data sets for linkage, and 10% FTEs for APCD Analyst to conduct the PELL-APCD linkage.

| Personnel | Cost | Justifications |
|---------------------------------------|--------------------|---|
| Maternal Mental Health (MMH) Director | \$65,000 (50% FTE) | Oversee and manage the activities of the Maternal Mental Health Initiative. Responsibilities include working with health care providers and health plans to implement standards for effective postpartum depression screening and to oversee the implementation of regulations requiring annual data reporting. In addition, provide leadership and support for the postpartum depression screening pilot programs at five community health centers across the Commonwealth. |
| MMH Coordinator Consultant | \$90,000 annually | Under the supervision of the MMH Director, the MMH Coordinator Consultant will: <ul style="list-style-type: none"> - Provide administrative support to the Project - Coordinate with PPD Pilot Program sites, conduct key informant interviews and facilitate CQI activities - Organize and collect data collected from the key informant interviews and CQI activities in collaboration with the MMH Research Consultant - Facilitate the process for establishing data sharing agreement (DUAs/MOUs) between PELL-APCD, APCD-M4M and PELL-M4M - Assist MMH Director and Research Consultant as needed. |

| | | |
|-------------------------|--------------------|--|
| MMH Research Consultant | \$100,000 annually | <p>Under the supervision of the MMH Director, the MMH Research Consultant will:</p> <ul style="list-style-type: none"> - Provide analytical support to the Project - Build a new data system for key informant interviews - Analyze data from the key informant interviews and APCD to generate feedback reports to identify gaps and best practices - Analyze PELL-APCD data to investigate MMH trends and at-risk groups. - Generate annual reports, dashboard data, and publications - Assist MMH Director and Coordinator as needed. |
| APCD Data Analyst | \$20,000 | Link PELL-APCD data using linkers prepared by PELL Data Analyst |
| PELL Data Analyst | \$10,000 | Prepare PELL linkage file for CHIA to conduct PELL-APCD linkage |
| M4M Data Analyst | \$10,000 | Prepare M4M file for PELL-M4M and APCD-M4M linkage |

Conclusion

As often is the case, Massachusetts has been leading the way in innovative health policies. In 2010, Chapter 313 of the Acts of 2010, An Act Relative to Postpartum Depression, was signed into law in Massachusetts. The law established a special legislative commission to study research and policy initiatives on PPD and make recommendations to address PPD. Following the law, the PPD Regulations were promulgated in 2014 requiring PPD screening and diagnosis data reporting by health care providers and insurers. Thus far, the data received are significant underreported.

The FY20 state Budget earmarked line item 4510-0112 requiring the DPH to produce a data plan to track the annual perinatal mental health outcomes for all deliveries in the Commonwealth. The Massachusetts Perinatal Mental Health Data Analysis Plan details an approach to develop a data tracking system to collect PPD screening and diagnosis data for Massachusetts mothers during the perinatal period, to link two existing state databases to evaluate the status of seven selected mental health conditions for Massachusetts birthing parents during the perinatal period and their effects on health outcomes and costs, to collaborate with a statewide mental health resource referral program for pregnant and postpartum patients, MCPAP for Moms, to investigate its program effects on patients who experience perinatal mental health conditions and their children.

This Plan will build a data infrastructure to enable researchers and program analysts to inform legislators, policymakers, funding sources and the general public on the gaps and opportunities with regarding to improving perinatal mental health for all birthing parents in the Commonwealth. The Plan capitalizes on the existing legislature, tested data linkage methodologies and confidentiality procedures, and ongoing collaborations within the Work Group and with other state agencies. Nonetheless, there is also a recognition that the regulations involving claims data reporting may change over time. Any changes in the Massachusetts Perinatal Mental Health Data Analysis Plan will involve additional examination of options which could necessitate revisions to this plan.

The estimated cost of implementing the Massachusetts Perinatal Mental Health Data Analysis Plan for 4 years is estimated at \$1,300,000.

Addendum 1. Massachusetts Perinatal Mental Health Data Analysis Work Group Members and State Team Members

| Work Group Members | Affiliation |
|-----------------------------------|--|
| Samantha Aigner-Treworgy | MA Department of Early Education and Care |
| Arlene Ash, PhD | University of Massachusetts Medical School |
| Anne Boffa, MPH, CPHQ | Harvard Pilgrim Health Care |
| Jesse Colbert | PPD Foundation |
| Soraya DosSantos, M.Ed | Psychotherapist |
| Krista HuyBrechts, PhD | Harvard Medical School/Brigham & Women's |
| Katie Jahreis | MA League of Community Health Centers |
| Monica Le, MD, MPH | MassHealth |
| Senator Joan Lovely | MA Legislator |
| Tiffany Moore-Simas, MD, MPH, MEd | University of Massachusetts Medical School |
| Liz Murphy | MA Association of Health Plans |
| Pat Noga | MA Hospital Association |
| Representative James O'Day | MA Legislator |
| Lisa Scarfo, MD | Allways Health Partners |
| John Straus, MD | MCPAP for Moms |
| Heather Strothers | MA Department of Mental Health |

| State Team Members | Affiliation |
|---------------------------|--|
| Abigail Averbach | MDPH Office of Population Health |
| Beth Buxton | MDPH Bureau of Family Health and Nutrition |
| Hafsatou Diop | MDPH Bureau of Family Health and Nutrition |
| Karin Downs | MDPH Bureau of Family Health and Nutrition |
| Susan Manning | CDC MCH Epidemiologist |

Addendum 2. ICD-9 and ICD-10 Codes for Perinatal Mental Health Conditions

Postpartum Depression Screening and Diagnosis

| | |
|------------------|---|
| Services | ICD codes |
| Screening | S3005 with a diagnostic range Z39.2 (ICD-10), V24 (ICD-9) |
| Modifier | U1: positive PPD screen, U2: negative PPD screen |

ICD10-CM (Services on or after 10/1/2015)

| Conditions | ICD-10 |
|-------------------|---|
| Depression | <p>F53.1 postpartum depression</p> <p>F32 Major depressive disorder, single episode</p> <ul style="list-style-type: none"> • F32.0 Major depressive disorder, single episode, mild • F32.1 Major depressive disorder, single episode, moderate • F32.2 Major depressive disorder, single episode, severe without psychotic features • F32.3 Major depressive disorder, single episode, severe with psychotic features • F32.4 Major depressive disorder, single episode, in partial remission • F32.5 Major depressive disorder, single episode, in full remission • F32.8 Other depressive episodes <ul style="list-style-type: none"> ○ F32.81 Premenstrual dysphoric disorder ○ F32.89 Other specified depressive episodes • F32.9 Major depressive disorder, single episode, unspecified <p>F33 Major depressive disorder, recurrent</p> <ul style="list-style-type: none"> • F33.0 Major depressive disorder, recurrent, mild • F33.1 Major depressive disorder, recurrent, moderate • F33.2 Major depressive disorder, recurrent severe without psychotic features • F33.3 Major depressive disorder, recurrent, severe with psychotic symptoms • F33.4 Major depressive disorder, recurrent, in remission <ul style="list-style-type: none"> ○ F33.40 unspecified ○ F33.41 Major depressive disorder, recurrent, in partial remission ○ F33.42 Major depressive disorder, recurrent, in full remission • F33.8 Other recurrent depressive disorders • F33.9 Major depressive disorder, recurrent, unspecified <p>O90.6 Postpartum mood disturbance</p> <p>O99.34 Other mental disorders complicating pregnancy, childbirth, and the puerperium</p> |
| | Anxiety |

| | |
|-------------------------------|---|
| | <ul style="list-style-type: none"> • F41.0 Panic disorder [episodic paroxysmal anxiety] • F41.1 Generalized anxiety disorder • F41.3 Other mixed anxiety disorders • F41.8 Other specified anxiety disorders • F41.9 Anxiety disorder, unspecified |
| PTSD | <p>F43.1 Post-traumatic stress disorder (PTSD)</p> <ul style="list-style-type: none"> • F43.10 Post-traumatic stress disorder, unspecified • F43.11 Post-traumatic stress disorder, acute • F43.12 Post-traumatic stress disorder, chronic |
| Psychosis | <p>F53.0 Puerperal psychosis</p> <p>F29 Unspecified psychosis not due to a substance or known physiological condition</p> |
| Bipolar | F31 Bipolar disorder |
| Substance use | <p>O99.31 Alcohol use complicating pregnancy, childbirth, and the puerperium</p> <p>O99.32 Drug use complicating pregnancy, childbirth, and the puerperium</p> <p>F10 Alcohol related disorders</p> <p>F11 Opioid related disorders</p> <p>F12 Cannabis related disorders</p> <p>F13 Sedative, hypnotic, or anxiolytic related disorders</p> <p>F14 Cocaine related disorders</p> <p>F15 Other stimulant related disorders</p> <p>F16 Hallucinogen related disorders</p> <p>F17 Nicotine dependence</p> <p>F18 Inhalant related disorders</p> <p>F19 Other psychoactive substance related disorders</p> |
| Obsessive-compulsive disorder | <p>F42 Obsessive-compulsive disorder</p> <ul style="list-style-type: none"> • F42.2 Mixed obsessional thoughts and acts • F42.3 Hoarding disorder • F42.4 Excoriation (skin-picking) disorder • F42.8 Other obsessive-compulsive disorder • F42.9 Obsessive-compulsive disorder, unspecified |

ICD9 (Services before 10/1/2015)

| Conditions | ICD-9 |
|------------|-------|
|------------|-------|

| | |
|-------------------------------|---|
| Depression | 648.4 Mental disorders complicating pregnancy childbirth or the puerperium 296.2 Major depressive disorder single episode 296.3 Major depressive disorder recurrent episode 311 Depressive disorder, not elsewhere classified |
| Anxiety | 300.0 Anxiety states |
| PTSD | 309.81 Posttraumatic stress disorder |
| Psychosis | 298.0 Depressive type psychosis 298.9 Unspecified psychosis |
| Bipolar | 296.0 Bipolar disorder, single manic episode 296.4 Bipolar disorder, most recent episode (or current) manic 296.5 Bipolar disorder, most recent episode (or current) depressed 296.6 Bipolar disorder, most recent episode (or current) mixed 296.7 Bipolar disorder, most recent episode (or current) unspecified 296.8 Other and unspecified bipolar disorders |
| Substance use | 648.3 Drug dependence complicating pregnancy childbirth or the puerperium 291 Alcohol-induced mental disorders 292 Drug-induced mental disorders 303 Alcohol dependence syndrome 304 Drug dependence 305 Nondependent abuse of drugs |
| Obsessive-compulsive disorder | 300.3 Obsessive-compulsive disorders |

PELL Data System

