

**CHIPRA Methods:
CHIPRA's Core Set of Children's
Quality Measures**

Provider Agreement Effective July 1, 2012 to June 30, 2013

Issued: June 2012

TABLE OF CONTENTS

CHIPRA MEASURES.....	4
Percentage of Live Births Weighing Less than 2,500 grams.....	4
Annual Number of Asthma Patients with at least One Asthma-related Emergency Room Visit...	9
Appendix A: Registry Plus™ Link Plus.....	11
Overview.....	11
Comparison of Link Plus and The Link King Software	11

These methods are based on the CHIPRA Initial Core Set Technical Specifications Manual 2011 developed by the Centers for Medicare & Medicaid Services (CMS), Center for Medicaid, CHIP and Survey & Certification Children and Adults Health Programs Group.

The sources of the data for these measures are as follows:

- (1) MCP submitted encounter data as submitted and accepted by ODJFS.
- (2) Vital statistics data file from the Ohio Department of Health to identify birth weight.
- (3) ODJFS' data warehouse file to obtain recipient demographic, enrollment, and eligibility information.
- (4) ODJFS' pharmacy claims data.

NOTE: Unless otherwise noted, codes are stated to the minimum specificity required. For example, if a code is presented to the third digit, any valid fourth or fifth digits may be used for reporting. When necessary, a code may be specified with an "x," which represents a required digit.

In addition, CMS' CHIPRA Initial Core Set Technical Specifications Manual 2011 does not specify a minimum enrollment criterion for these measures. Therefore, a minimum enrollment criterion is not included.

CHIPRA MEASURES

Percentage of Live Births Weighing Less than 2,500 grams

The percentage of women who delivered live births less than 2,500 grams during the reporting year.

Numerator: Number of resident live births less than 2,500 grams in the denominator. Data from the Vital Statistics file will be used to determine birth weight.

Denominator: Number of resident live births during the reporting year (see *Steps for Identifying Live Births* below).

Data Source: Encounter Data, Vital Statistics Data, Data Warehouse Demographic and Enrollment data

Report Period: January 1, 2012 - December 31, 2012

Measure Steward: Centers for Disease Control and Prevention (CDC)

Steps for Identifying Live Births:

Step 1: Identify live births. For the desired date range, identify all members that have claims containing any of the codes listed in *Table 1: Codes to Identify Live Births*. Exclude all deliveries whose admission date (first date of service) is not during the reporting year.

Table 1: Codes to Identify Live Births
<u>ICD-9-CM Diagnosis Codes</u>
650 -Normal Delivery
V27.0 - Single liveborn
V27.2 - Twins, both liveborn
V27.3 - Twins, one liveborn and one stillborn
V27.5 - Other multiple birth, all liveborn
V27.6 - Other multiple birth, some liveborn
V30 - Single liveborn
V31 - Twin, mate liveborn
V32 - Twin, mate stillborn
V33 - Twin, unspecified
V34 - Other multiple, mates all liveborn
V35 - Other multiple, mates all stillborn
V36 - Other multiple, mates live- and stillborn
V37 - Other multiple, unspecified
V39 - Unspecified

Step 2: Identify deliveries for members not identified in Step 1. For the reporting period, identify all members that have encounters containing any of the codes listed in *Table 2: Codes Used to Identify Deliveries*. Exclude all deliveries whose admission date (first date of service) is not during the reporting year.

Table 2: Codes Used To Identify Deliveries
<p><u>ICD-9-CM Procedure Codes:</u></p> <p>72.x Forceps, vacuum, and breech delivery</p> <p>73.x Other procedures inducing or assisting delivery</p> <p>74.0 Cesarean section and removal of fetus; Classical cesarean section</p> <p>74.1 Cesarean section and removal of fetus; Low cervical cesarean section</p> <p>74.2 Cesarean section and removal of fetus; Extraperitoneal cesarean section</p> <p>74.4 Cesarean section and removal of fetus; Cesarean section of other specified type</p> <p>74.99 Cesarean section of unspecified type</p> <p><u>ICD-9-CM Diagnosis Codes:</u></p> <p>640.x1, 641.x1, 642.x1, 642.x2, 643.x1, 644.21, 645.x1, 646.x1, 646.x2, 647.x1, 647.x2, 648.x1, 648.x2, 649.x1, 649.x2, 651.x1, 652.x1, 653.x1, 654.x1, 654.02, 654.12, 654.32, 654.x2, 655.x1, 656.01, 656.11, 656.21, 656.31, 656.51, 656.61, 656.71, 656.81, 656.91, 657.01, 658.x1, 659.x1, 660.x1, 661.x1, 662.x1, 663.x1, 664.x1, 665.01, 665.x1, 665.x2, 666.x2, 667.x2, 668.x1, 668.x2, 669.x1, 669.x2, 670.02, 671.x1, 671.x2, 672.02, 673.x1, 673.x2, 674.x1, 674.x2, 675.x1, 675.x2, 676.x1, 676.x2, 678.x1, 679.x1, 679.x2</p> <p><u>CPT Codes:</u></p> <p>59400 Routine obstetrical care including antepartum and postpartum care and vaginal delivery</p> <p>59409 Vaginal delivery (with or without episiotomy and/or forceps)</p> <p>59410 Obstetrical care for vaginal delivery only, including postpartum care</p> <p>59510 Cesarean delivery</p> <p>59514 Cesarean delivery only</p> <p>59515 Cesarean delivery only; including postpartum care</p> <p>59610 VBAC delivery</p> <p>59612 Vaginal delivery only, after previous cesarean delivery (with or without episiotomy and/or forceps)</p> <p>59614 VBAC care after delivery; vaginal delivery only, after previous cesarean delivery, including postpartum care</p> <p>59618 Attempted VBAC delivery</p> <p>59620 Cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery</p> <p>59622 Attempted VBAC after care, cesarean delivery only, following attempted vaginal delivery after previous cesarean delivery, including postpartum care</p>

Step 3: For members identified in Step 2, use *Table 3: Codes Used to Verify Live Births* to exclude members that have a delivery claim not resulting in a live birth.

Table 3: Codes Used to Verify Live Births
<u>Exclude Deliveries Not Resulting in a Live Birth:</u>
630-637 Other abnormal product of conception, hydatidiform mole, ectopic or abdominal pregnancy, missed or spontaneous abortion, legally/illegally induced abortion, legally unspecified abortion
639 Complications following abortion or ectopic and molar pregnancies
656.4 Intrauterine death affecting management of mother
768.0 Fetal death from asphyxia or anoxia before onset of labor or at unspecified time
768.1 Fetal death from asphyxia or anoxia during labor
V27.1 Outcome of delivery, single stillborn
V27.4 Outcome of delivery, twins, both stillborn
V27.7 Outcome of delivery, other multiple birth, all stillborn

Step 4: Attach member's demographic information for all live births identified in steps 1 and 3.

Step 5: For any claims identified as mother's claims (where the member's date of birth is not the reporting year), attach possible infant demographics to each claim.

An infant pool is created by looking at all members whose date of birth in the demographics file is during the reporting year. Mothers and infants are considered a potential match if the infant's date of birth is within 14 days of the admission date of the claim and either the last names are the same for the mother and infant or the address and zip code are the same for mother and infant. The resulting data file should contain the elements listed in *Table 4: Birthfile Data Elements*.

While delivery claims are most often assigned to the mother, the infant's demographic information gives additional fields to match to information in the vital statistics file and helps to limit the erroneous matches that could occur based on the mother's information alone. Also, for mothers with multiple births, the mothers' information should be matched to multiple infants in the vital statistics file. Attaching the infants' information to the mothers' prior to linking to the vital statistics file aids in ensuring that all infants are included in the measure. Where it was not possible to match a mother with an infant, only the mother's information was used to link to the vital statistics file.

Table 4: Birthfile Data Elements		
Claim Number	Child's Middle Initial	Mother's First Name
Child's Member ID	Child's Last Name	Mother's Last Name
Plan Name	Child's Gender	Mother's Middle Initial
CRISE ID	Child's Date of Birth	Mother's Race
Child's First Name	Mother's Member ID	Mother's Date of Birth

Step 6: Attach demographic information from the name and address file provided by the Ohio Department of Health (ODH) to the vital statistics file by matching unique certificate numbers in each file. The resulting file should contain the data elements listed in *Table 5: Vital Stats File Data Elements*.

Table 5: Vital Stats File Data Elements			
Certificate Number	Mother’s First Name	Mother’s Date of Birth	Birth weight
Child’s First Name	Mother’s Middle Initial	Child’s Date of Birth	Plural Birth Indicator
Child’s Middle Initial	Mother’s Last Name	Child’s Gender	Birth Order
Child’s Last Name	Mother’s Race	County of Birth	Indicator of Live Birth

Step 7: Common unique identifiers derived from ODJFS’ demographic data and encounter data (i.e., birthfile), and the vital statistics data (i.e., vital stats file) are used to match infants and mothers to the birth weight information recorded in the vital statistics data. This linking process is performed using the software Link Plus. Additional information about Link Plus can be found in Appendix A. Using Link Plus, three iterations of linking were performed. Prior to performing the second and third iterations, mothers and infants that were matched in a previous iteration were removed before attempting to link the files again. The following are parameters used in the configuration for Link Plus.

- a. Blocking the Data – The blocking variable used in the first iteration was County of Birth. This was based on ODJFS’ and ODH’s long-term research with the data. This means that two people will be compared only if their county of birth is the same. For subsequent iterations, a dummy variable was used for blocking so that all members in the first file would be compared to all members of the second file.
- b. Identify Matching Variables – A total of 9 variables were used to match the records between the two files. These variables and the corresponding match methods used are listed in Table 6: Matching Variables. The same matching variables were used in all iterations. All nine variables were used together to derive a probability of the matching rate.

Table 6: Matching Variables	
Variable Name	Match Method
Child’s Date of Birth	Date
Mother’s Date of Birth	Date
Child’s Last Name	Last Name
Child’s First Name	First Name
Child’s Middle Initial	Middle Name
Mother’s Last Name	Last Name
Mother’s First Name	First Name
Mother’s Middle Initial	Middle Name
Child’s Gender	Exact

- c. Select ID Variables -- ID variables are the unique identifiers in each file. The ID variables for the Birthfile were the Child’s Member ID, the Mother’s Member ID, and the CRISE ID. The ID variable for the vital stats file was the Certificate Number.

- d. Determining Method and Cutoff Value – For this configuration, the Direct Method was used in all iterations.

Link Plus uses the Expectation-Maximization (EM) algorithm to determine a linkage score for each compared set of data. The score resulting from the EM algorithm is the maximum-likelihood estimate of the parameters of an underlying distribution from a given data set when the data is incomplete or has missing values. In the linking process of Link Plus, a higher match score represents that the match is more likely to be accurate while a lower match score is less likely to be a “true” match. The Cutoff Value is the linkage score above which comparison pairs are accepted as potential links.

A Cutoff Value of 9.9 was used during the first iteration. This is a value historically used by ODJFS and ODH in their analyses of these data. The Cutoff Value will vary depending on the data for subsequent iterations.

Step 8: Manually review the matches found after each iteration that have a lower linkage score and remove any matches that are not “true” matches. For example, a pair might be considered a match based on the mother's date of birth and the infant's date of birth being the same in both files but the names are vastly different. This pair would not be considered a “true” match.

A score of 11 was used as a starting value for manual review for all iterations.

Step 9: Calculate rates using the birth weight listed in the vital statistics file.

Annual Number of Asthma Patients with at least One Asthma-related Emergency Room Visit

The percentage of pediatric patients with an asthma diagnosis who have one or more asthma-related ED visit during the reporting period.

Numerator: Patients with one or more asthma-related ED visits (Table 9). The asthma diagnosis (Table 7) must be the primary diagnosis on the ED encounter.

Denominator: Children two through 20 years of age as of the end of the reporting period with a diagnosis of asthma (Table 7) or at least two short-acting beta adrenergic agents (Table 8) during the reporting period. A list of corresponding NDC codes can be found in Table 11. Members with a diagnosis code in Table 10 should be excluded.

Data Source: Encounter Data, Pharmacy Claims Data, Data Warehouse Demographic and Enrollment Data

Report Period: January 1, 2012 - December 31, 2012

Measure Steward: Alabama Medicaid

Table 7: Diagnosis Codes to Identify Asthma
493.00, 493.01, 493.02, 493.10, 493.11, 493.12, 493.81, 493.82, 493.90, 493.91, 493.92

Table 8: Short-Acting Beta Adrenergic Agents Generic Sequence Numbers
04963, 04964, 04966, 04967, 04968, 05032, 05033, 05034, 05037, 05039, 05040, 16033, 22230, 28090, 41848, 41849, 48698, 48699, 49871, 51197, 51198, 54687, 57879, and 58890

Table 9: CPT Codes to Identify ED Visits
99281-99285

Table 10: Diagnosis Code Exclusions
493.20, 493.21, 493.22

CHIPRA's Core Set of Children's Quality Measures SFY 2013

Table 11: Short-Acting Beta Adrenergic Agents NDC Codes*

00085061402	00378412401	00591379730	23490502202	51079065720	54569616600	54868605000	58016060315	63874070112
00085113201	00378699052	00591379760	23490502300	51079065801	54569616700	54868605001	58016060320	63874070912
00085180601	00378699058	00591379783	23490502301	51079065820	54838050780	54868605100	58016060324	63874070924
00089081521	00378699091	00597007017	23490502302	52959009403	54868030801	55045239005	58016060330	65271000205
00093066116	00378699093	00603100758	23490502501	52959015303	54868104101	55045349401	58016402101	65271000206
00172439018	00378699152	00603100858	23490797201	52959015306	54868104301	55289000930	58016609901	66116017984
00172640544	00378699252	00603142258	24208034720	52959015309	54868107302	55289000960	58016640401	66116066417
00172640549	00378699393	00677135901	29336081521	52959015500	54868107303	55289004530	58016653701	66267001030
00173068200	00440704524	00677135905	35356016601	52959015806	54868107304	55289036320	58016656901	66267099517
00173068220	00440704530	00677136001	35356048903	52959029300	54868107306	55289036324	59310057920	66336005430
00173068221	00440704630	00677136005	49502067624	52959042520	54868107403	55289036330	59930151701	66336005490
00173068224	00472082504	00904765855	49502067824	52959042530	54868107405	55289054408	59930151702	66336028520
00173068254	00472082516	12280024125	49502069203	52959056901	54868107407	55289054460	59930156001	66336028530
00173068281	00472083123	12280040915	49502069303	52959074120	54868247200	55289081030	59930164702	66794000125
00182601465	00472083130	16252009722	49502069724	52959090620	54868247201	55887081218	60346039476	66794000130
00247026415	00472083160	16252009733	49502069729	52959095260	54868282101	57866005101	60346040876	66794000160
00247026420	00472083230	16252009766	49502069730	53489017601	54868288700	58016040200	60346042747	66794000330
00247026430	00487030101	16590000417	49502069761	53489017605	54868317900	58016040330	60505080701	66993023057
00247026515	00487030102	17270072101	49884025801	53489017701	54868340700	58016047300	60505080801	68030005101
00247026520	00487950101	21695015324	49884025901	53489017705	54868347900	58016047312	60505580209	68115000830
00247026530	00487950102	21695019801	49999017117	54569005200	54868370900	58016047315	62037079444	68115000860
00247035030	00487950103	21695024520	49999033816	54569287401	54868440900	58016047320	63402051001	68115000915
00247058841	00487950125	21695033225	49999034425	54569340900	54868545900	58016047324	63402051124	68115000930
00247065765	00487950160	21695035016	49999090120	54569389900	54868554200	58016047330	63402051224	68115071120
00247065865	00487990102	21695042308	49999090767	54569390000	54868554201	58016047390	63402051324	68115076917
00247087120	00487990130	21695085185	49999090885	54569424500	54868564600	58016048224	63402051530	68115099517
00378025501	00487990401	23490501901	49999092215	54569462100	54868564601	58016048248	63629182801	68774040001
00378025505	00487990402	23490502001	50383074016	54569474800	54868564602	58016048724	63629186601	68774040101
00378057201	00487990425	23490502002	50383074120	54569544500	54868568900	58016048748	63629263801	68774060001
00378057205	00591346753	23490502102	50383074225	54569577700	54868570900	58016060300	63629263802	68774060101
00378412201	00591346853	23490502201	51079065701	54569585300	54868602100	58016060312	63629273601	

* Includes valid NDC codes that map to the GSNs through May 18, 2011. The NDC list will be updated prior the generation of rates to ensure that all applicable NDCs are included in the evaluation. A list of the NDCs can also be found in the CHIPRA Asthma NDC.xls excel spreadsheet.

Appendix A: Registry Plus™ Link Plus

Overview

Link Plus is a probabilistic record linking program developed by the Centers for Disease Control and Prevention (CDC). This program was originally designed as a linkage tool for cancer registries to support the CDC's Nation Program of Cancer Registries (NPCR). Although originally designed to be used by cancer registries, the program can be used with any type of data in fixed with or delimited format.

Link Plus has become a valuable tool for researchers and organizations that maintain public health data. It is an easy to use, standalone application for Microsoft Windows. The program, RPLinkPlus 2.0.exe, is available for download on the CDC's Web site at the following location: http://www.cdc.gov/cancer/npcr/tools/registryplus/lp_tech_info.htm.

Comparison of Link Plus and The Link King Software

There are several software programs available to perform linking between two disparate data sources. After a comparison of Link Plus to The Link King (a different record linkage software), ODJFS chose to use Link Plus with the vital statistics data. Both Link Plus and The Link King run on a Microsoft Windows based computer; however, The Link King requires a base SAS license, while Link Plus is a stand-alone application.

Link Plus allows for more flexibility in the variables used for linking. Link Plus allows up to 15 variables to be specified including user-defined variables, while The Link King allows for several pre-defined variables and one user-defined variable. Both programs allow the user to adjust blocking criteria. Link Plus allows the user to specify up to five blocking variables. The Link King allows the user to select from one of three "Blocking Levels" (low, medium, and high).

Link Plus allows ODJFS more versatility to tailor the record linking process to the fit their needs using the data available (i.e., vital statistics data).