

**CHILDREN’S ASTHMA CARE NATIONAL HOSPITAL INPATIENT QUALITY MEASURES**

<b>Set Measure ID #</b>	<b>Measure Short Names</b>
<b>CAC-1a<sup>1</sup></b>	Relievers for Inpatient Asthma (age 2 <b>through</b> 17 years) – Overall Rate
<b>CAC-1b<sup>1</sup></b>	Relievers for Inpatient Asthma (age 2 <b>through</b> 4 years)
<b>CAC-1c<sup>1</sup></b>	Relievers for Inpatient Asthma (age 5 <b>through</b> 12 years)
<b>CAC-1d<sup>1</sup></b>	Relievers for Inpatient Asthma (age 13 <b>through</b> 17 years)
<b>CAC-2a<sup>1</sup></b>	Systemic Corticosteroids for Inpatient Asthma (age 2 <b>through</b> 17 years) – Overall Rate
<b>CAC-2b<sup>1</sup></b>	Systemic Corticosteroids for Inpatient Asthma (age 2 <b>through</b> 4 years)
<b>CAC-2c<sup>1</sup></b>	Systemic Corticosteroids for Inpatient Asthma (age 5 <b>through</b> 12 years)
<b>CAC-2d<sup>1</sup></b>	Systemic Corticosteroids for Inpatient Asthma (age 13 <b>through</b> 17 years)
<b>CAC-3<sup>1</sup></b>	Home Management Plan of Care (HMPC) Document Given to Patient/Caregiver

<sup>1</sup>The Joint Commission ONLY

## CAC DATA ELEMENT LIST

General Data Element Name	Collected For:
<i>Admission Date</i>	All Records (Used in Algorithm for All CAC Measures)
<i>Birthdate</i>	All Records (Used in Algorithm for All CAC Measures)
<i>Discharge Date</i>	All Records
<i>Discharge Status</i>	All Records (Used in Algorithm for CAC-3)
<i>ICD-9-CM Other Diagnosis Codes</i>	All Records
<i>ICD-9-CM Other Procedure Codes</i>	All Records
<i>ICD-9-CM Other Procedure Dates</i>	All Records
<i>ICD-9-CM Principal Diagnosis Code</i>	All Records (Used in Algorithm for All CAC Measures)
<i>ICD-9-CM Principal Procedure Code</i>	All Records
<i>ICD-9-CM Principal Procedure Date</i>	All Records
<i>Payment Source</i>	All Records
<i>Point of Origin for Admission or Visit</i>	All Records
<i>Sample<sup>1</sup></i>	Used in transmission of the Joint Commission's aggregate data file and the Hospital Clinical Data file <sup>1</sup>
<i>Sex</i>	All Records

Algorithm Output Data Element Name	Collected For:
<i>Measure Category Assignment<sup>1</sup></i>	Used in the calculation of the Joint Commission's aggregate data and in the transmission of the Hospital Clinical Data file <sup>1</sup>

Children's Asthma Care Data Element Name	Collected For:
<i>Clinical Trial</i>	All CAC Measures
<i>Home Management Plan of Care Document Addresses Arrangements for Follow-up Care</i>	CAC-3
<i>Home Management Plan of Care Document Addresses Environmental Control and Control of Other Triggers</i>	CAC-3
<i>Home Management Plan of Care Document Addresses Methods and Timing of Rescue Actions</i>	CAC-3
<i>Home Management Plan of Care Document Addresses Use of Controllers</i>	CAC-3
<i>Home Management Plan of Care Document Addresses Use of Relievers</i>	CAC-3
<i>Home Management Plan of Care Document Given to Patient/Caregiver</i>	CAC-3
<i>Home Management Plan of Care Document Present</i>	CAC-3
<i>Reason for Not Administering Relievers</i>	CAC-1
<i>Reason for Not Administering Systemic Corticosteroids</i>	CAC-2
<i>Relievers Administered</i>	CAC-1
<i>Systemic Corticosteroids Administered</i>	CAC-2

<sup>1</sup>Transmission Data Element

## Children’s Asthma Care (CAC) Initial Patient Population

The population of the children’s asthma care (CAC) measure set can be identified by using four data elements that are common to all of the performance measures in the set:

- *ICD-9-CM Principal Diagnosis Code*
- *Admission Date*
- *Birthdate*
- *Discharge Date*

The CAC Topic Population (common to all CAC measures) is defined as patients admitted to the hospital for inpatient acute care with an *ICD-9-CM Principal Diagnosis Code* for asthma as defined in Appendix A, Table 6.1, a Patient Age (*Admission Date – Birthdate*)  $\geq 2$  years and  $< 18$  years (age 2 through 17 years), and a Length of Stay (*Discharge Date - Admission Date*)  $\leq 120$  days. There are three distinct strata or sub-populations within the CAC Topic Population, each identified by a specific age range. The patients in each stratum are counted in the Initial Patient Population of multiple measures.

<b>Measures</b>	<b>Age Strata</b>	<b>Initial Patient Population definition</b>
CAC-1a and 2a (overall measures)	Age 2 years through 17 years	The count of all patients in strata 1, 2, and 3
CAC-1b and 2b	Age 2 years through 4 years	The count of all patients in stratum 1
CAC-1c and 2c	Age 5 years through 12 years	The count of all patients in stratum 2
CAC-1d and 2d	Age 13 years through 17 years	The count of all patients in stratum 3
CAC-3	Age 2 years through 17 years	The count of all patients in strata 1, 2, and 3

Patients admitted to the hospital for inpatient acute care with an *ICD-9-CM Principal Diagnosis Code* for asthma as defined in Appendix A, Table 6.1 are included in one of the CAC ICD Strata Populations and are eligible to be sampled if they have:

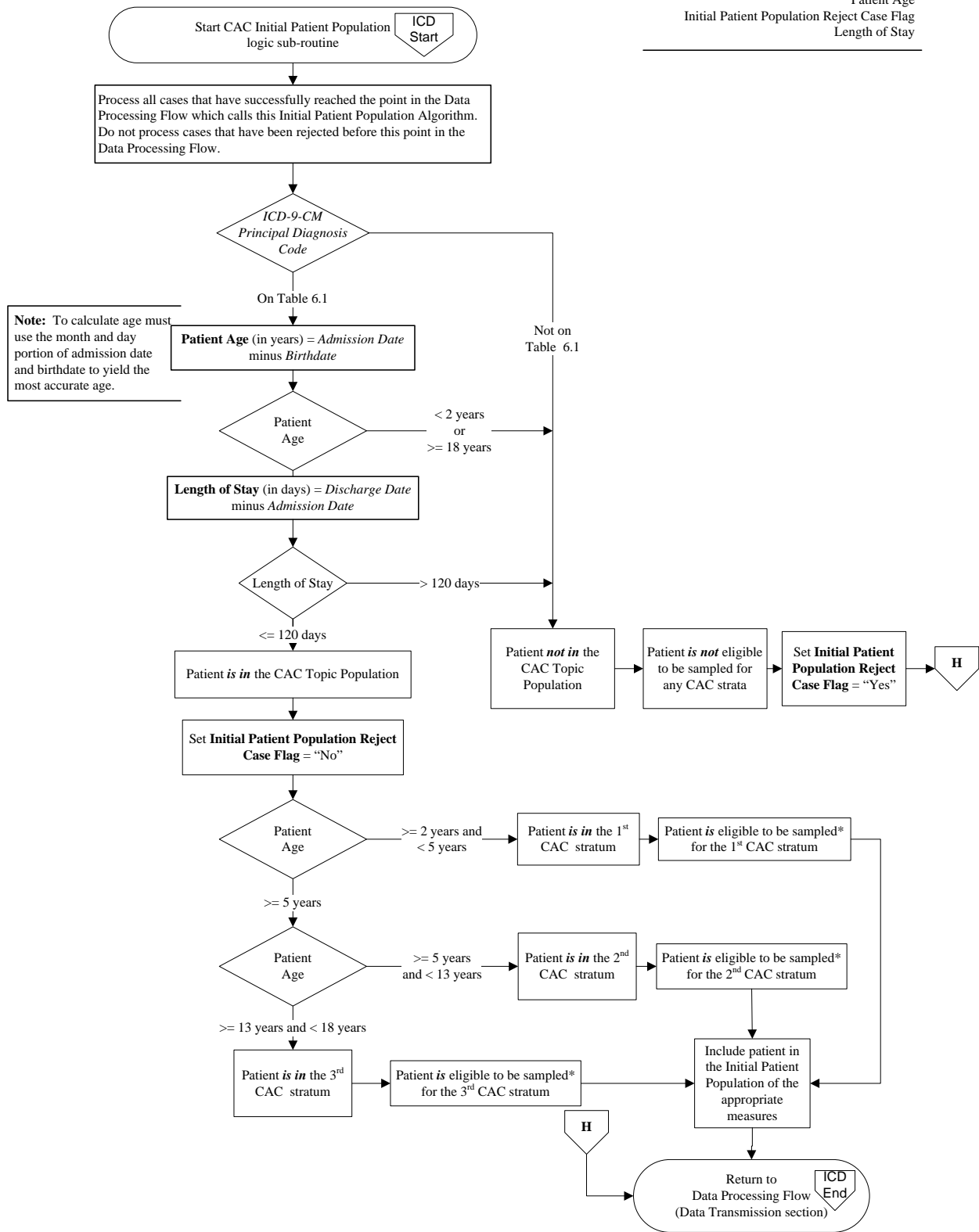
Stratum 1 – Age 2 years through 4 years stratum – A Patient Age (*Admission Date – Birthdate*)  $\geq 2$  years and  $< 5$  years, and a Length of Stay (*Discharge Date - Admission Date*)  $\leq 120$  days.

Stratum 2 - Age 5 years through 12 years stratum – A Patient Age (*Admission Date – Birthdate*)  $\geq 5$  years and  $< 13$  years, and a Length of Stay (*Discharge Date - Admission Date*)  $\leq 120$  days.

Stratum 3 - Age 13 years through 17 years stratum – A Patient Age (*Admission Date – Birthdate*)  $\geq 13$  years and  $< 18$  years, and a Length of Stay (*Discharge Date - Admission Date*)  $\leq 120$  days.

## CAC Initial Patient Population Algorithm

**Variable Key:**  
 Patient Age  
 Initial Patient Population Reject Case Flag  
 Length of Stay



## CAC Sample Size Requirements

Hospitals that choose to sample have the option of sampling quarterly or sampling monthly. A hospital may choose to use a larger sample size than is required. Hospitals whose Initial Patient Population size is less than the minimum number of cases per quarter/month for the stratum cannot sample that stratum. Hospitals that have five or fewer CAC discharges for the entire measure set (both Medicare and non-Medicare combined) in a quarter are not required to submit CAC patient level data to the Joint Commission’s Data Warehouse.

Regardless of the option used, hospital samples must be monitored to ensure that sampling procedures consistently produce statistically valid and useful data. Because the sample for a measure set will rarely be equal to the effective sample due to exclusions, hospitals selecting sample cases MUST submit AT LEAST the minimum required sample size.

The following sample size tables for each option automatically build in the number of cases needed to obtain the required sample sizes. For information concerning how to perform sampling, refer to the Population and Sampling Specifications section in this manual.

### *Quarterly Sampling*

For hospitals selecting sample cases for CAC, a modified sampling procedure is required. Hospitals selecting sample cases for this set must ensure that each individual stratum’s population and effective quarterly sample size meets the following conditions:

- *Select within each of the three individual measure strata. The effective quarterly sample size within a stratum is at least 39 cases. Cases are placed into the appropriate stratum based upon the patient’s age.*
- *The required quarterly sample size is at least 20% of the stratum population for the quarter.*

**Quarterly Sample Size  
Based on Initial Patient Population Size for the CAC Measure Set**

<i>Hospital’s Measure</i>	
Average Quarterly Stratum Initial Patient Population Size “N”	Minimum Required Stratum Sample Size “n”
≥ 971	195
196 - 970	20% of Initial Patient Population size
39 – 195	39
< 39	No sampling; 100% Initial Patient Population required

### Monthly Sampling

For hospitals selecting sample cases for CAC, a modified sampling procedure is required. Hospitals selecting sample cases for this set must ensure that each individual strata population and effective monthly sample size meets the following conditions:

- *Select within each of the three individual measure strata. The effective monthly sample size within a stratum is at least 13 cases. Cases are placed into the appropriate stratum based upon the patient's age.*
- *The required monthly sample size is at least 20% of the stratum population for the month.*

#### Monthly Sample Size Based on Initial Patient Population Size for the CAC Measure Set

<i>Hospital's Measure</i>	
<b>Average Monthly Stratum Initial Patient Population Size "N"</b>	<b>Minimum Required Stratum Sample Size "n"</b>
≥ 321	65
66- 320	20% of Initial Patient Population size
13 – 65	13
< 13	No sampling; 100% Initial Patient Population required

### Sample Size Examples

#### Note:

All sampled strata in CAC should be used in the calculation of all CAC measures. All of the CAC measures' specific exclusion criteria are used to filter out cases that do not belong in the measure denominator. Using CAC-2b as an example, include cases covering all sampled strata, although the measure-specific exclusion criteria would only allow cases with an age of 2 years through 4 years to be included in the denominator.

- *Quarterly sampling:*  
When applicable, larger hospitals must also abide by the required quarterly sample sizes for the three individual measure **stratums with** a minimum of 39 required sample cases per stratum when Initial Patient Population size is 39 or greater.
  - The CAC Initial Patient Population sizes for a hospital are 5, 301, and 1000 patients respectively per **stratum for the quarter. Since the total Initial Patient Population for CAC is 1306, the hospital must submit patient level data.** The required quarterly sample sizes would be 5, 61, and 195.
  - The 1<sup>st</sup> stratum is less than the minimum required quarterly sample size, so 100% of this stratum is sampled.
  - The 2<sup>nd</sup> stratum has 301 patients per quarter, which requires a 20% sample size, of 61 cases (twenty percent of 301 equals 60.2 rounded to the next highest whole number = 61).
  - The 3<sup>rd</sup> stratum has 1000 patients per quarter, which is more than the maximum condition, so a minimum of 195 cases are required to be sampled.

- The CAC Initial Patient Population sizes for a hospital are 2, 0, and 3 patients respectively per stratum for the quarter. Since the total Initial Patient Population for CAC is 5, the hospital may choose to not submit patient level data. If the hospital chooses to submit patient level data, the required quarterly sample sizes for each stratum would be 2, 0, and 3.
  - The 1<sup>st</sup> and 3<sup>rd</sup> strata are less than the minimum required quarterly sample size, so 100% of each of these strata are sampled.
  - There is no data to sample for the 2<sup>nd</sup> stratum.

- *Monthly sampling*

When applicable, larger hospitals must also abide by the required monthly sample sizes for the three individual measure strata a minimum of 13 required sample cases per stratum when Initial Patient Population size is 13 or greater.

- The CAC Initial Patient Population sizes for a hospital are 5, 301, and 350 patients respectively in July. The required monthly sample sizes would be 5, 61, and 195.
  - The 1<sup>st</sup> stratum is less than the minimum required monthly sample size, so 100% of this stratum is sampled.
  - The 2<sup>nd</sup> stratum has 301 patients per month, which requires a 20% sample size, of 61 cases (twenty percent of 301 equals 60.2 rounded to the next highest whole number = 61).
  - The 3<sup>rd</sup> stratum has 350 patients per month, which is more than the maximum condition, so a minimum of 65 cases are required to be sampled.