

Asthma Measures

Core and Optional Process and Outcome

National Improvement Partnership Network



AcademyHealth

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Table of Contents

Introduction	3
Measures.....	3
Data Sources	3
Sampling Strategy	3
Target Goals (Possible Methods)	4
Definitions	5
Appendices List	5
Core Process and Outcome Measures	6
Core Asthma Process Measure Definitions	6
Core Asthma Outcome Measure Definitions.....	8
Optional Process and Outcome Measures.....	10
Optional Asthma Process Measure Definitions	10
Optional Asthma Outcome Measure Definitions	13
Optional Asthma Surveys on Experience of Care and Quality of Life	15



Asthma Core Measures

Introduction

As a step towards strengthening the reporting of improvement partnership (IP) outcomes, the National Improvement Partnership Network (NIPN) established a set of standard process and outcome measures for IPs. Establishing a set of core measures for each topic area is important for standardizing and measuring improvement across all IPs and to aid in the reporting of outcomes and impact. The core measures for asthma listed in this document are based on asthma guidelines from the National Heart, Lung and Blood Institute (NHLBI)¹, measures from the Healthcare Effectiveness Data and Information Set (HEDIS)², and the Core Set of Children’s Health Care Quality Measures for Medicaid and CHIP (Child Core Set)³.

These measures were developed in collaboration with IPs involved in NIPN, especially the IPs in Vermont, Oregon and Maine, and were selected because they are relevant, feasible, and measurable.

Measures

Measures #1-6 are **core measures** for each asthma IP initiative. NIPN recommends that each IP initiating an asthma improvement project use these six measures for tracking process and outcome data. Optional measures are also provided (measures #7-19). If sites choose to use optional measures, it is recommended that they first consider the HEDIS or CHIPRA optional measures (these measures are labeled “Recommended”).

Data Sources

Data for the measures included in this document can be obtained from:

- Conducting chart reviews
- Practices’ electronic health records (EHRs)
- Claims for some measures if available

Sampling Strategy

Based on collective experience and the methodology referenced below, many IPs approach data collection in the following manner. Data should be collected from 30 charts at the beginning of the project and at the end of the project (pre- and post-test data), with 10 charts selected for at least two review periods (10 charts reviewed one-third of the way through the project and then 10 charts reviewed two-thirds of the way through

¹ National Heart, Lung and Blood Institute (2011). Asthma care Quick Reference: Diagnosing and Managing Asthma. Retrieved from http://www.nhlbi.nih.gov/guidelines/asthma/asthma_qrg.pdf

² National Committee for Quality Assurance (2012). Healthcare Effectiveness Data and Information Set: Technical Specifications for Health Plans. Volume 2.

³ Centers for Medicare and Medicaid Services. (May 2013). Core Set of Children’s Health Care Quality Measures for Medicaid and CHIP: Technical Specifications and Resource Manual for Federal Fiscal Year 2013 Reporting.

the project period) to gauge progress.⁴ Many sites select 10 charts for review each month of the project, in order to increase the number of Plan-Do-Study-Act (PDSA) cycles and are able to demonstrate achievement gained by the project's end.

If practices have a pediatric asthma registry or they are able to pull up a full list of pediatric patients diagnosed with asthma in their EHR, they should randomly select 30 patient charts using a [random number generator](#) (at the beginning and end of the project, with a certain number selected at the mid-point) from the child and adolescent population diagnosed with asthma. The patients included for selection should be under the care of the participating practice for at least 6 months (or had at least two visits to the practice) prior to measurement. If sites do not have a registry or EHR, they should select charts by choosing every *n*th chart, where *n* is a randomly selected number.⁵ If there are less than 30 pediatric patients with asthma at the site, the site should select all of the charts that fit the aforementioned criteria for data collection.

Target Goals (Possible Methods)

IPs and participating practices should agree on target goals for the asthma initiative. For core and optional **process** measures (measures #1-4 and #7-12), sites should aim for achieving a high target goal, between 60% and 80% of each targeted measure, depending on the baseline scores. An 80% of each targeted measure has been attained by some IP sites and is often a benchmark for these indicators.

For core and optional **outcome** measures (measures #5-6 and #13-15), less rigid standards may be applied. One method for choosing target goals for outcome measures is to adapt a method developed by the Minnesota Department of Health's Quality Incentive Payment System⁶ and used by the Oregon Health Authority.⁷ This methodology "requires participants to have had at least a 10% reduction in the gap between its baseline and the benchmark to qualify for incentive payments."⁸ For example, if at baseline, a practice performs 50% on a particular measure, the IP may assign a target of 75%. There is a 25% difference between the baseline and the target, and the practice must reduce this gap by 10%, or by 2.5 percentage points (25 x 0.10) to meet the improvement target. In this example, the practice must improve to 52.5% to meet the improvement target.

Oregon has added improvement "floors" to cases where the improvement target is minimal. Under this option, the IP could institute a floor of 1-3 percentage points improvement, depending on the measure. In this example, if the IP chose an improvement floor of 3 percentage points, the practice would need to improve from 50% to 53% to meet the improvement target, rather than to 52.5%.

⁴ Thirty charts were chosen based on sample size calculations using the following assumptions: 1) Power of 0.80; 2) P-value of 0.05; Standard deviation of 0.50; and 3) Effect size of 0.40. The calculation uses the sample size formula provided in, "Kadam, P., & Bhalariao, S. (2010). Sample size calculation. *International journal of Ayurveda research*, 1(1), 55" and the assumptions were based on results reported in, "Shaw, J. S., Norlin, C., Gillespie, R. J., Weissman, M., & McGrath, J. (2013). The National Improvement Partnership Network: State-Based Partnerships That Improve Primary Care Quality. *Academic pediatrics*, 13(6), S84-S94." If estimated effect sizes are below 0.36, a larger sample size will be necessary.

⁵ Gearing, R. E., Mian, I. A., Barber, J., & Ickowicz, A. (2006). A methodology for conducting retrospective chart review research in child and adolescent psychiatry. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 15(3), 126

⁶ Additional details on this report are available online at www.dhs.stat.mn.us [click here](#).

⁷ Oregon Health Authority. June 20, 2013. CCO Incentive Measures Methodology. Available at www.oregon.gov [click here](#).

⁸ Oregon Health Authority. June 20, 2013. CCO Incentive Measures Methodology; page 3.

Definitions

ACT: Asthma Control Test for ages 4-11 years old and ≥ 12 years old. See **Appendix B** (ages ≥ 12) and **Appendix C** (ages 4-11).

Asthma Education: Measure #11 refers to “asthma education.” Asthma education includes teaching patients about: self-monitoring to assess level of asthma control and to recognize signs of worsening asthma; taking medications correctly (long-term control or quick-relief medications); avoiding environmental factors that worsen asthma; agreeing on treatment goals; teaching patients how to use the asthma action plan and encouraging adherence to the asthma action plan.⁹

Asthma Visit: Measure #10 refers to “asthma visits.” The types of interactions that can be counted as part of an asthma visit depend on the severity of a given patient’s asthma. For patients with intermittent asthma, a phone visit about their asthma will suffice. For patients with persistent asthma who use controller medication, a face-to-face visit about asthma is necessary for this interaction to count as an “asthma visit.” If asthma was specifically assessed / addressed during a well-child visit or if asthma was addressed during an encounter for illness, this would also count as an “asthma visit.”

ATAQ: Asthma Therapy Assessment Questionnaire. See **Appendix E** for Pediatric/Adolescent ATAQ and **Appendix F** for the Adult ATAQ.

TRACK: Test for Respiratory and Asthma Control in Kids for children ≤ 5 years old. See **Appendix D**.

Appendices

Appendix A – Asthma Care Quick Reference: Diagnosing and Managing Asthma

Appendix B – Asthma Control Test™ (ACT)

Appendix C – Childhood Asthma Control Test for children 4-11 years

Appendix D – Test for Respiratory and Asthma Control in Kids (TRACK™)

Appendix E – Pediatric/Adolescent Asthma Therapy Assessment Questionnaire (ATAQ)

Appendix F – Adult Asthma Therapy Assessment Questionnaire (ATAQ)

Appendix G – Asthma Action Plan

Appendix H – CAHPS® Clinician & Group Surveys, version: 12-Month Survey with Patient-Centered Medical Home (PCMH) Items

⁹ National Heart, Lung and Blood Institute (2011). Asthma care Quick Reference: Diagnosing and Managing Asthma; page 3. Retrieved from http://www.nhlbi.nih.gov/guidelines/asthma/asthma_qrg.pdf

Core Process and Outcome Measures

Measure	#	Measure Steward	Core Asthma Process Measure Definitions	Ages	Target Goal
Asthma Severity Documented	1	NHLBI	<p>Percentage of children with asthma whose asthma severity was documented during the defined measurement period.</p> <p>Numerator: Number of patients 2 - 21 years with a diagnosis of asthma whose severity was documented during the defined measurement period.</p> <p>Denominator: Number of patients between the ages of 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma</p> <p>See Appendix A page 5 for specifications on asthma severity, excerpt from NHLBI's Asthma Care Quick Reference Guide.</p>	2 - 21	
Asthma Control Assessed with Validated Tool	2	NHLBI	<p>The percentage of children with asthma whose control has been assessed with a validated tool during the defined measurement period. Examples of tools include ACT, TRACK, and ATAQ.</p> <p>Numerator: Number of patients between the ages of 4 - 21 years with a diagnosis of asthma who completed an ACT and/or patients 2 - 4 who completed the TRACK; patients 5 - 17 years who completed the Pediatric/Adolescent ATAQ; or patients ≥ 18 years who completed the Adult ATAQ during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p> <p>See Appendix B (ages ≥ 12) and Appendix C (ages 4 - 11) for examples of an ACT and Appendix D for the TRACK Appendix E for Pediatric/Adolescent ATAQ and Appendix F for the Adult ATAQ</p>	2 - 21	
Inhaled Corticosteroids Prescribed	3	NHLBI , HEDIS & MU	<p>Percentage of children with persistent asthma that were prescribed inhaled corticosteroids (ICSs) during the defined measurement period. Include prescriptions from elsewhere (e.g. ED).</p> <p>Numerator: Number of patients between the ages of 2 - 21 years with a diagnosis of persistent asthma who were prescribed ICSs during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of persistent asthma.</p>	2 - 21	

<p>Asthma Action Plan Updated</p>	<p>4</p>	<p>NHLBI</p>	<p>Percentage of children with asthma whose asthma action plan was updated during the defined measurement period.</p> <p>Numerator: Number of patients between the ages of 2 - 21 years with a diagnosis of asthma whose asthma action plan was updated during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p> <p>See Appendix G for specifications of an asthma action plan.</p>	<p>2 - 21</p>	
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Measure	#	Measure Steward	Core Asthma Outcome Measure Definitions	Ages	Target Goal
<p>Standardized Tests of Asthma Control</p> <p>e.g. Asthma Control Test (ACT), Test for Respiratory and Asthma Control in Kids (TRACK), Asthma Therapy Assessment Questionnaire (ATAQ)</p>	5	NHLBI	<p>Percentage of children with asthma that have ACT scores ≥ 19 during the defined measurement period.</p> <p>Numerator: Number of patients between 4 - 21 years with a diagnosis of asthma who have ACT scores ≥ 19 during the defined measurement period.</p> <p>Denominator: Number of patients between 4 - 21 years who had a visit to the participating practice during the defined measurement period and have completed an ACT test.</p> <p>Percentage of children with asthma that have TRACK scores ≥ 80 during the defined measurement period.</p> <p>Numerator: Number of patients between 2 - 4 years with a diagnosis of asthma who have TRACK scores ≥ 80 during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 4 years who had a visit to the participating practice during the defined measurement period and have completed a TRACK test.</p> <p>Percentage of children with asthma that have Pediatric/Adolescent ATAQ of zero during the defined measurement period.</p> <p>Numerator: Number of patients between 5 - 17 years with a diagnosis of asthma who have Pediatric/Adolescent ATAQ scores of zero during the defined measurement period.</p> <p>Denominator: Number of patients between 5 - 17 years who had a visit to the participating practice during the defined measurement period and have completed a Pediatric/Adolescent ATAQ test.</p> <p>Percentage of children with asthma that have Adult ATAQ of zero during the defined measurement period.</p> <p>Numerator: Number of patients ≥ 18 years with a diagnosis of asthma who have Adult ATAQ scores of zero during the defined measurement period.</p> <p>Denominator: Number of patients ≥ 18 years who had a visit to the participating practice during the defined measurement period and have completed a Adult ATAQ test.</p> <p>See Appendix B (ages ≥ 12) and Appendix C (ages 4 - 11) for examples of an ACT and Appendix D for the TRACK Appendix E for Pediatric/Adolescent ATAQ and Appendix F for the Adult ATAQ</p>	4 - 21	

<p>Asthma Well Controlled</p>	<p>6</p>	<p>NHLBI</p>	<p>Percentage of children with asthma whose asthma is well-controlled.</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma whose asthma is well controlled.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and whose asthma control has been assessed.</p> <p>See Appendix A page 6 for asthma control specifications, excerpt from NHLBI's Asthma Care Quick Reference Guide.</p>	<p>2 - 21</p>	
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Optional Process and Outcome Measures

In order to more fully evaluate progress and measure the impact of asthma initiatives, optional measures are provided below.

- Measures #7-14 are optional process measures
- Measures #15-18 are optional outcome measures
- Measures #19-22 are optional surveys that sites can use to track improvement

Since the HEDIS and CHIPRA measures have been developed for national reporting purposes and are commonly used and are tied to increased reimbursement in some states and communities, we recommend that sites first consider using these optional measures. These recommended measures are labeled below.

Measure	#	Measure Steward	Optional Asthma Process Measure Definitions	Ages	Target Goal
Asthma patients remained on medications	7	HEDIS & CHIPRA	<p>Percentage of children between the ages 2 – 21 years who were identified as having persistent asthma and were dispensed appropriate medications that they have continued taking. Two rates are reported: Percentage of children that remained on an asthma controller medication for at least 50% of the project period. Percentage of children that remained on an asthma controller medication for at least 75% of the project period.</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma who were dispensed appropriate medications that they have continued taking.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have been prescribed asthma controller medications.</p> <p>See Core Set of Children’s Health Care Quality Measures for Medicaid and CHIP, page 93 from www.medicaid.gov</p> <p><i>Note: This measure may be more appropriate later in the project period.</i></p>	2 - 21	
Received influenza vaccine	8	HEDIS & CHIPRA	<p>The percentage of children with asthma between 2 - 21 years of age who have had influenza (flu) vaccine.</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma who received a flu vaccine.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p> <p>See Core Set of Children’s Health Care Quality Measures for Medicaid and CHIP, page 24 from www.medicaid.gov</p> <p><i>Note: Project staff should consider using this measure for yearlong projects that begin and end in the late fall/winter, due to the seasonality of influenza vaccine administration. Or if sites implement a project that is</i></p>	2 - 21	

Measure	#	Measure Steward	Optional Asthma Process Measure Definitions	Ages	Target Goal
			<i>either less than a year or does not begin in the fall, that data from the same time period (e.g. fall) be used to measure the impact of the project.</i>		
Assessment of Tobacco Exposure and Use	9	Bridges to Excellence	<p>The percentage of children with asthma between 2 - 21 years of age who have been assessed for exposure to tobacco or use of tobacco.</p> <p>Numerator: Number of patients: a) ages 2 - 21 years with a documentation assessment of tobacco exposure¹⁰ and; b) ages 10 - 21 years assessed for tobacco use within the last 12 months.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p>	2 - 21	
Have an annual asthma visit	10	NHLBI	<p>Percentage of children with asthma that have had at least one asthma visit within the past year. The visit should be a planned asthma encounter where management and control are discussed.</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma who had at least one asthma visit.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p> <p>See definition of asthma visit on page 5.</p>	2 - 21	
Asthma patients received education	11	NHLBI	<p>Percentage of children and caregivers of children with asthma that were provided education about their asthma (e.g. information about asthma triggers and self-management).</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma who received education about their asthma during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p> <p>See Appendix A: NHLB's Asthma Care Quick Reference Guide, page 3.</p> <p>See definition of asthma education on page 5.</p>	2 - 21	
Device teaching	12	NA	<p>Percentage of children with asthma who were provided instruction on how to use their asthma medication delivery device.</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma who were provided instruction on how to use their asthma medication delivery device.</p>	2 - 21	

¹⁰ Tobacco exposure is defined as someone who uses tobacco who lives in the patient's household or is a primary caregiver.

Measure	#	Measure Steward	Optional Asthma Process Measure Definitions	Ages	Target Goal
			<p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period, have a documented diagnosis of asthma, and are using an asthma medication delivery device.</p>		
Self-management support	13	NA	<p>Percentage of children or caregivers with asthma that were provided self-management support. Self-management support is based on two questions from the CAHPS measure set.</p> <ol style="list-style-type: none"> 1. In the last 12 months, did anyone in this provider’s office talk with you about specific goals for you (if question directed to patient) or your child’s health (if question directed to the caregiver)? Answer “yes” or “no”. 2. In the last 12 months, did anyone in this provider’s office ask you if there are things that make it hard for you to take care of yourself (if question directed to patient) or your child’s health(if question directed to the caregiver)? Answer “yes” or “no”. <p>Providers should combine these two measures to achieve a composite score.</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma who received self-management support.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p>	2 - 21	
Spirometry test completed	14	NHLBI	<p>Percentage of children with asthma that completed a spirometry test at least once within the last 24 months.</p> <p>Numerator: Number of patients 5 - 21 years with a diagnosis of asthma who received a spirometry test at least once during the last 24 months.</p> <p>Denominator: Number of patients between 5 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p>	5 - 21	

Measure	#	Measure Steward	Optional Asthma Outcome Measure Definitions	Ages	Target Goal
ER Visits	15	CHIPRA & HEDIS	<p>Percentage of children between the ages of 2 - 21 diagnosed with asthma during the defined measurement period with one or more asthma-related emergency room (ER) visit (<i>note that this question is part of the ACT test, see Appendix B</i>).</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma with one or more asthma-related ER visit during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p>	2 - 21	
Hospital Admission	16	CHIPRA & HEDIS	<p>Percentage of children between the ages of 2 - 21 diagnosed with asthma during the defined measurement period with one or more asthma-related hospital visit (note that this question is part of the ACT test, see Appendix B).</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma with one or more asthma-related hospital visit during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 21 years who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p>	2 - 21	
Ratio of controller to total medication of 0.50	17	HEDIS	<p>Percentage of children who were identified as having persistent asthma and had a ratio of controller medications to total asthma medication of 0.50 or greater during the defined measurement period.</p> <p>Numerator: Number of patients between 2 - 21 years with a diagnosis of asthma who have a ratio of controller medications to total asthma medications of 0.50 or greater during the defined measurement period.</p> <p>Denominator: Number of patients between 2 - 21 who had a visit to the participating practice during the defined measurement period and have a documented diagnosis of asthma.</p> <p>See HEDIS 2014, Volume 3: Technical Specifications for Health Plans for additional details</p>	2 - 21	

Measure	#	Measure Steward	Optional Asthma Outcome Measure Definitions	Ages	Target Goal
Spirometry Scores	18	NHLBI	<p>Percentage of children that completed a spirometry test and have a forced expiratory volume (FEV) in the first second (1) over 80% during the defined measurement period.</p> <p>Numerator: Number of patients between the ages of 8 to 21 years with a diagnosis of asthma with a FEV1 over 80% during the defined measurement period.</p> <p>Denominator: Number of patients between 8 - 21 years who had a visit to the participating practice during the defined measurement period and have completed a spirometry test.</p>	8 - 21	

Optional Asthma Surveys on Experience of Care and Quality of Life

Measure	#	Measure Steward	Optional Asthma Surveys on Experience of Care and Quality of Life	Ages	Target Goal
Care for Chronic Conditions	19	HEDIS	<p>Children with Chronic Conditions: Survey measures on</p> <ol style="list-style-type: none"> 1) Access to specialized services 2) Family centered care: Personal doctor who knows child 3) Coordination of care for children with chronic conditions (<i>Note: This measure is not specific to asthma</i>). <p>See HEDIS 2013, Volume 3: Specifications for Survey Measures for details on this measure or see the Agency for Healthcare Research and Quality CAHPS Item Set for Children with Chronic Conditions.</p>	2 - 21	
CAHPS	20	HEDIS	<p>Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey. See Appendix H for the CAHPS Child PCMH Survey.</p>	2 - 21	
Peds-QL Asthma	21	NA	<p>Pediatric Quality of Life (Peds-QL) Inventory – Asthma module (developed by Dr. James W. Varni). The Peds-QL Asthma Module can be downloaded from MAPI Research TRUST at www.mapi-trust.org.</p>	2 - 21	
Child Health Questionnaire	22	NA	<p>Child Health Questionnaire Parent Form 50 (developed by Jeanne M. Landgraf). The Child Health Questionnaire Parent Form 50 can be downloaded after registering, from healthactchq.com.</p>	2 - 21	