



STEP 5.1: Calculate the core PHDS quality measures specific to certain aspects of care

➔ What is the purpose of this step?

The purpose of this step is to construct child-level quality measures based on the PHDS responses. The scores can then be analyzed for specific groups.

In this step you will:

- Learn about the core PHDS quality measures.
- Recode item-level survey responses for each child.
- Calculate child-level, composite PHDS quality measures.
- Specify and assign "threshold level of quality" cut-points to each measure and calculate child-level versions of these quality measures.



Guidelines and Issues to Consider

- Learn about the core PHDS quality measures.

There are 12 core PHDS quality measures.

Each measure summarizes information from between one and 18 individual PHDS items and assesses individual components of recommended preventive and developmental care.¹ The PHDS quality measures are scored on a 0–100 scale, where 0 indicates that recommended care is not received and 100 indicates that all aspects of care were received.

It is important to remember that the ProPHDS is a reduced-item version of the PHDS, therefore not all of the quality measures are in this shortened tool.

¹ More information about the reliability and validity quality measures based on the PHDS items can be found in the *Pediatrics* articles and Commonwealth Fund report listed in Step 1.

The 13 core PHDS quality measures are:

1. Anticipatory guidance and parental education provided by doctors or other health care providers.
2. Assessment of parent concerns about their child's learning, development, and behavior.
3. Provision of specific information to address parental concerns.
4. Follow-up for children at risk for developmental, behavioral, or social delays.
5. Administration of a standardized, parent-completed developmental and behavioral screening tool.
6. Assessment of psychosocial issues in the family.
7. Assessment of smoking, substance abuse, and safety in the family.
8. Provision of family-centered care that respects, listens to, and partners with parents.
9. Coordination of care for children requiring multiple types of health care services or seeing more than one health care provider (items included in the PHDS only).
10. Helpfulness of care provided to parents (items included in the PHDS only).
11. Effect of care provided on parental confidence (items included in the PHDS only).
12. Provision of written or other types of health information to parents on caring for their child, preventing injuries, and ensuring optimal development (items included in the PHDS only).
13. Provision of information about resources in the community for parents.

Table 5.1 provides a detailed description of the individual items that go into each of the 12 quality measures.

Table 5.1: PHDS Items Included in Each Quality Measurement Topic

Quality Measure	Topics Included in Quality Measure	PHDS/ ProPHDS- Survey Items	Number of Individual Items
<p>1. Anticipatory Guidance and Parental Education from Doctor or Other Health Care Providers (AGPE)²</p>	<p>Assesses whether a core subset of recommended anticipatory guidance topics were discussed with child's health provider and if not, whether the parent wished topics had been discussed <u>or</u> if he/she already had information about the topics and did not need to discuss them.</p> <p><i>Age-Specific Topics:</i></p> <p><u>3–9 Months:</u> What parents can do to help their child grow and learn, behaviors to expect, breastfeeding, food and feeding, sleeping positions and sleep areas, night waking and fussing, how child communicates, what child understands, how child responds to others, burn avoidance, car seats, house safety, importance of picture books/reading, TV watching, and childcare.</p> <p><u>10–18 Months:</u> What parent can do to help child grow and learn, behaviors to expect, vitamins and food, bedtime routines, words and phrases child uses and understands, preventing bottle mouth, child's independence, guidance and discipline techniques, parental education about toilet training, car seats, house safety, what to do if child swallows certain kinds of poisons, reading to child, TV watching, childcare.</p> <p><u>19–48 Months:</u> What parent can do to help child grow and learn, behaviors to expect, nutrition and eating habits, bedtime routines, toilet training, words and phrases child uses and understands, how child gets along with others, guidance and discipline techniques, ways to teach child about dangerous situations, car seats, house safety, what to do if child swallows certain kinds of poisons, reading to child, TV watching, childcare.</p>	<p>Q7, Q8/ Q1, Q2</p> <p>Q9, Q10/ Q1, Q2</p> <p>Q11, Q12/ Q1, Q2</p>	<p>16</p> <p>17</p> <p>15</p>

² The items related to anticipatory guidance and parental education are different depending on the age of the child and as described in Step 2.4.

Table 5.1: PHDS Items Included in Each Quality Measurement Topic (Continued)

Quality Measure	Topics Included in Quality Measure	PHDS/ ProPHDS- Survey Items	Number of Individual Items
2. Ask About Concerns	Assesses whether providers ask parents whether he/she has concerns about child's learning, development, and behavior.	Q21/Q5	1
3. Address Parental Concerns	Assesses whether parents with concerns about their child's learning, development, and behavior received specific information addressing their concerns. (Note: Items derived from the PEDS© used to identify concerned parents [PHDS Q18-Q20, ProPHDS Q4])	Q22/Q6	1
4. Follow-Up for Children at Risk for Delays	Assesses whether children who are determined to be at significant risk for developmental, social, or behavioral delays (Note: Items derived from the PEDS© used to identify children at sig. risk [PHDS Q18–Q20, ProPHDS Q4])* had appropriate follow-up health care. Follow-up items include testing of child's learning development and behavior, referral to another doctor or speech/language testing, and/or whether a doctor or other health provider noted a concern that should be watched carefully.	Q23/Q7	4
5. Administration of a Standardized Developmental and Behavioral Screening (SDBS) Tool	Whether the child's health care provider administered a parent-completed standardized developmental and behavioral screening tool.	Q26, Q26a, Q26b/ Q9, Q9a, Q9b	1 stem, 2 follow-up
6. Assessment of Psychosocial Issues in the Family	Assesses whether health care providers asked the parent about their own psychosocial well-being, including depression, emotional support, changes or stressors in the home, and how parenting is working. (Note: This can be through the use of a parent-completed questionnaire)	Q27 c,d; Q28 c,d/ Q10 b-d	4/3
7. Assessment of Smoking, Substance Abuse, and Safety in the Family	Assesses whether health care providers asked the parent about smoking, substance abuse, safety, and firearms in the home. (Note: This can be through the use of a parent-completed questionnaire)	Q27 a,b; Q28 a,b/ Q10 a,e	4/2
8. Family-Centered	Parent reports that child's health care provider delivers care in a family-centered manner, e.g., understands		

Care	specific needs of child and concerns of parent, builds confidence in the parent, explains things in way the parent can understand, and shows respect for a family's values, customs, and how they prefer to raise their child.	Q13, Q14/ Q3	10/5
9. Care Coordination	Assesses whether children requiring more than one type of health care service received needed help coordinating care.	Q5a/NA	1
10. Helpfulness of Care Provided	Parent report of how helpful information from child's health care providers was in specific areas of parenting such as understanding child's behavior, protecting child from injuries, and helping the parent learn to meet their own needs.	Q15/NA	4
11. Effect of Care on Parental Confidence	Parent report on the effect of care on their confidence in: doing things for child to help him/her grow and learn, protecting child from injuries, addressing special concerns, and managing parenting responsibilities.	Q16/NA	4
12. Health Information	Assesses whether information was provided outside/inside the health care provider's office (mail, clinic pamphlets, videos, etc.) on the following: safety, health care utilization, developmental information.	Q17/NA	3
13. Provision of information about resources in the community for parents	Assesses whether information was provided by the child's doctor or other health providers about resources in the community for the parent.	Q8i/Q2i Q10i/Q2i Q12i/Q2i	1

*See Table 5.4 for information on determining if a child is at high or moderate risk for developmental, behavioral, or social delays.

For each child, recode item-level survey responses.

The quality measures are scored for each child whose parent completed the survey. The first step in creating the quality measure is to recode each item that goes into the quality measure into a 0–100 value indicating whether quality of care is received.

Tip from the Field

CAHMI recommends that you recode each individual item into a 0–100 value rather than transform the composite quality measure to a 0–100 value. We recommend this approach because many users will examine item-level findings in addition to the quality measure findings (e.g., the number of children whose parents were asked if they were experiencing symptoms of depression).

The following is the recommended process for recoding the individual survey items:

Recoding Step 1: Map Items to Quality Measures

Map the items to each of the corresponding quality measures, as shown in **Table 5.2** on the following page. Remember: If you added questions and re-numbered the survey, the question numbers in your survey may differ.

Recoding Step 2: Create New Items and Recode Response Options Used to Score Quality Measures

Assign a quantitative value to each survey item response options (e.g., "yes" vs. "no"). Recode the response options for each survey item used in a quality measure so that the values fall between 0 and 100, where zero indicates quality health care was not received and 100 indicates quality health care was received. Be sure not to recode the original items in the data set. Instead, you should create new items in case you make a mistake. Use Table 5.2 as a guide to rescore each of the items. Missing responses are NOT given a valid score and are NOT included in the calculation of the quality measure.

Important Note: There are two versions shown for how to score the anticipatory guidance and parental education (AGPE) quality measure presented in **Table 5.2**.

- Version A is the average proportion of recommended topics discussed by the child's health care provider. This measure answers the question of how many recommended AGPE topics on average are discussed and whether parent questions were answered.
- Version B is the average proportion of topics for which the parents had their informational needs met. This measure assesses the number of topics for which the parent reported "Yes, the topic was discussed," or "No, the topic was not discussed, but I wished it had been discussed." This measure answers the question of whether parents are having their informational needs met on recommended anticipatory guidance and parental education topics.

The version you decide to use should be based on your research questions and goals for the study.

CAHMI recommends that you create both versions, as each is valid and valuable and each one answers different questions about the level of care provided.

Table 5.2: Item-Level Recodes for Core PHDS Quality Measures

Quality Measure	PHDS/ ProPHDS	Original Response Options	Value Assigned to Response		
<p>1. Anticipatory Guidance and Parental Education from Doctor or Other Health Care Providers</p> <p><i>Version A: Average proportion of topics parents report were <u>discussed</u>.</i></p>	<p>Q7, Q8, Q9, Q10, Q11, Q12/</p> <p>Q1, Q2</p>	<p>1=Yes, the topic was discussed</p> <p>2=Yes, the topic was discussed but my questions were not answered completely</p>	<p>100</p>		
		<p>3=No, but I wish we had talked about that</p> <p>4=No, but I already had information about the topic and did not need to talk about it any more</p>	<p>0</p>		
		<p><i>Version B: Average proportion of topics parents had their <u>informational needs met</u>.</i></p>	<p>Same as above</p>	<p>1=Yes, the topic was discussed</p> <p>4=No, but I already had information about the topic and did not need to talk about it any more</p>	<p>100</p>
				<p>2= Yes, the topic was discussed but my questions were not answered completely</p> <p>3= No, but I wish we had talked about that</p>	<p>0</p>
<p>2. Ask About Parental Concerns About Their Child's Learning, Development, and Behavior</p>	<p>Q21/</p> <p>Q5</p>			<p>1 = Yes</p>	<p>100</p>
		<p>2 = No</p>	<p>0</p>		

Table 5.2: Item-Level Recodes for Core PHDS Quality Measures (Continued)

3. Address Parental Concerns	Q22/ Q6	Only recode the item for children whose parents responded "yes" or "a little" to one or more of the PEDS© items. See Table 5.1 for more detail.
		1 = Yes 100
		2 = No 0
4. Follow-Up for Children at Risk for Developmental Delays	Q23/ Q7	Only recode the items for children identified as at high or moderate risk for delays based on the PEDS© items. See text following Table 5.2 for additional specifications.
		1 = Yes 100
		2 = No 0
5. Administration of a Standardized Developmental and Behavioral Screening (SDBS) Tool	Q26, Q26a, Q26b/ Q9, Q9a, Q9b	1 = Yes 100
		2 = No 0
6. Assessment of Psychosocial Issues in the Family	Q27 c,d; Q28 c,d/ Q10 b-d	1 = Yes 100
		2 = No 0
7. Assessment of Smoking, Substance Abuse, and Safety in the Family	Q27 a,b; Q28 a,b/ Q10 a,e	1 = Yes 100
		2 = No 0
8. Family-Centered Care	Q13, Q14/ Q3	1 = Never 0
		2 = Sometimes 0
		3 = Usually 100
		4 = Always 100
9. Care Coordination	Q5a/ NA	1 = Yes 100
		2 = No 0
		3 = Child did not get care from different providers or use more than one service <i>Missing</i>
10. Helpfulness of Care Provided	Q15/ NA	1 = Very helpful 100
		2 = Helpful 100
		3 = Somewhat helpful 0
		4 = Not at all helpful 0

		5 = We did not discuss	<i>Missing</i>
11. Effect of Care Provided on Parental Confidence	Q16/	1= I feel a lot more confident	100
	<i>NA</i>	2= I feel a little more confident	100
		3= I do not feel more or less confident	0
		4= I feel less confident	0
12. Health Information	Q17/	1 = Yes	100
	<i>NA</i>	2 = No	0
13. Provision of information about resources in the community for parents <i>Version A: Resources Provided</i>	Q8i/Q2i	1=Yes, the topic was discussed	100
	Q10i/Q2i	2=Yes, the topic was discussed but my questions were not answered completely	
	Q12i/ Q2i	3=No, but I wish we had talked about that	
		4=No, but I already had information about the topic and did not need to talk about it any more	0
<i>Version B: Parents had their informational needs about resources in the community met.</i>	Same as above	1=Yes, the topic was discussed	
		4=No, but I already had information about the topic and did not need to talk about it any more	100
		2= Yes, the topic was discussed but my questions were not answered completely	0
		3= No, but I wish we had talked about that	

Additional Specifications for Item-Level Recodes for Measure #4:

Follow-Up for Children at Risk for Developmental, Behavioral or Social Delays

As noted in Table 5.2, this measure (and the individual item-level recodes) is scored only for children identified as at significant risk (high or moderate) for developmental, behavioral, or social delays. Children are identified as "at risk" based on parents' responses to the Parents' Evaluation of Developmental Status© items included in the PHDS/ProPHDS. The PHDS

includes nine items from the PEDS tool; the ProPHDS includes six items from the PEDS tool.

The scoring algorithm presented below is adapted from the Parents' Evaluation of Developmental Status© specifications and approved by Frances Glascoe, Ph.D., for identifying a denominator of children for whom follow-up care should have been received.

Overview of the scoring algorithm for the adapted PEDS© items in the PHDS:

- ⇒ Specific concerns parents have about their children at specific ages can be an indication of a child's risk for developmental, behavior or social delays.
- ⇒ Children whose parents have one or more "indicator" concerns (parent said "yes" or "a little") are identified as being at significant risk. Children whose parents have noted concerns for only one indicator item are at moderate risk for delays. Children whose parents note two or more concerns about indicator items are at high risk for delays.

Table 5.3 below describes the age-specific "indicator" concerns for the PEDS© items in the PHDS and ProPHDS:

Table 5.3: Risk Category based on the PEDS© Items in the PHDS/ProPHDS

Age of Child*	High Risk	Moderate Risk	Low Risk	No Risk
3–17.99 mos.	Parent responded "yes" or "a little" to two or more of the following: <ul style="list-style-type: none"> ➤ 18a, 18b (PHDS) ➤ 4a, 4b (ProPHDS) 	Parent responded "yes" or "a little" to one of the following: <ul style="list-style-type: none"> ➤ 18a-b, 20a with any other concerns for any other PEDS item (PHDS) ➤ 4a, 4b, and 4f with any other concern for any other PEDS item (ProPHDS) 	Parent responded "yes" or "a little" to one of the following: <ul style="list-style-type: none"> ➤ 18c, 19a-c, 20b-c, 20a only (PHDS) ➤ Q4c, 4d, 4f only (ProPHDS) 	Parent responded "not at all" to all PEDS© items
18–35.99 mos.	Parent responded "yes" or "a little" to two or more of the following: <ul style="list-style-type: none"> ➤ 18a-c (PHDS) ➤ 4a, 4b, 4c (ProPHDS) 	Parent responded "yes" or "a little" to one of the following: <ul style="list-style-type: none"> ➤ 18a-c (PHDS) ➤ 4a, 4b, 4c (ProPHDS) 	Parent responded "yes" or "a little" concern to one of the following: <ul style="list-style-type: none"> ➤ 19 a-c, 20 a-c ➤ 4d, 4e, 4f (ProPHDS) 	Parent responded "not at all" to all PEDS© items
36–48 mos.	Parent responded "yes" or "a little" to two or more of the following: <ul style="list-style-type: none"> ➤ 18a-c, 19b (PHDS) ➤ 4a, 4b, 4c, 4d (ProPHDS) 	Parent responded "yes" or "a little" to one of the following: <ul style="list-style-type: none"> ➤ 18a-c, 19b (PHDS) ➤ 4a, 4b, 4c, 4d (ProPHDS) 	Parent responded "yes" or "a little" to one of the following: <ul style="list-style-type: none"> ➤ 19a, 19c, 20a-c (PHDS) ➤ 4e, 4f (ProPHDS) 	Parent responded "not at all" to all PEDS© items

Important Note

This four category age breakout is different than the age breakout for the age-specific versions of the survey (3–9.99 months, 10–18.99 months, 19–45.99 months). Therefore, you need to be sure to use the child's age, in months, that was collected at the time of sampling and described in Step 2.3.

- Calculate child-level, composite PHDS quality measures.

Once you have finished recoding the individual items, you are ready to use these variables to calculate a composite score for each quality measure summarizing the item-level scores for each child included in the study.

The scoring methods used for each of the quality measures are described in Table 5.3 and followed by examples so you can see exactly how the measure is calculated.

CAHMI recommends that you only score a quality measure for those children whose parents answered at least **half** of the items that are included in the quality measure.

If a child's parent answered less than half of the items in that measure, their score is considered missing.

If a measure has an odd number of items, round up.

Table 5.4: Scoring Algorithm for Core PHDS Quality Measures

Quality Measure	Type of Measure	What the Measure Tells You	How Quality Measure Is Calculated <i>(Note: For all measures, the denominator only includes those who answered at least half of the items in the scale)</i>
<p>1. Anticipatory Guidance and Parental Education (AGPE)</p> <p><i>Version A: Average proportion of topics parents report were <u>discussed</u>.</i></p>	<p>Mean</p>	<p>Avg. proportion of rec. topics discussed.</p>	<p>Numerator: Number of "yes, item was discussed" responses.</p> <p>Denominator: Number of items parent answered.</p>
<p><i>Version B: Average proportion of topics on which parents had their <u>informational needs met</u>.</i></p>	<p>Mean</p>	<p>Avg. proportion of rec. topics on which parents had their informational needs met.</p>	<p>Numerator: Number of "yes, item discussed" or "no, but had info and did not want to discuss it" responses.</p> <p>Denominator: Number of items parent answered.</p>
<p>2. Ask About Parental Concerns About Their Child's Learning, Development, and Behavior</p>	<p>Proportion</p>	<p>Proportion of children whose parents were asked about their concerns.</p>	<p>Numerator: A "yes" response.</p> <p>Denominator: Number of items parent answered.</p>
<p>3. Address Parental Concerns</p>	<p>Proportion</p>	<p>Proportion of children whose concerned parent received info.</p>	<p>Numerator: A "yes" response.</p> <p>Denominator: Number of items parent answered.</p>

Table 5.4: Scoring Algorithm for Core PHDS Quality Measures (Continued)

<p>4. Follow-Up for Children at Risk for Developmental, Behavioral or Social Delays</p>	<p>Proportion</p>	<p>Proportion of children at risk who received follow-up care.</p>	<p>Numerator: Risk-specific scoring. Moderate Risk: Parent said "yes" at least once to any of follow-up questions (a-d). High Risk: Parent said "yes" to a, b, or d. Denominator: Parent who responded to 2/4 of the items and whose child is at high/moderate risk.</p>
<p>5. Administration of a Standardized Developmental and Behavioral Screening (SDBS) Tool</p>	<p>Mean</p>	<p>Proportion of children whose parents completed an SDBS.</p>	<p>Numerator: Whether parent said yes to all three items. Denominator: Parent responded to all three items.</p>
<p>6. Assessment of Psychosocial Well-Being of Parent(s) in the Family</p>	<p>Mean</p>	<p>Avg. proportion of rec. topics assessed.</p>	<p>Numerator: Number of "yes, item was discussed" responses. Denominator: Number of items parent answered.</p>
<p>7. Assessment of Smoking and Substance Use in the Family</p>	<p>Mean</p>	<p>Avg. proportion of rec. topics assessed.</p>	<p>Numerator: Number of "yes, item was discussed" responses. Denominator: Number of items parent answered.</p>
<p>8. Family-Centered Care (FCC)</p>	<p>Mean</p>	<p>Avg. proportion of rec. aspects of FCC regularly received.</p>	<p>Numerator: Number of "usually or always" responses. Denominator: Number of items parent answered.</p>
<p>9. Care Coordination (CC)</p>	<p>Proportion</p>	<p>Proportion of children whose parents received CC.</p>	<p>Numerator: A "yes" response. Denominator: Number of items parent answered.</p>

Table 5.4: Scoring Algorithm for Core PHDS Quality Measures (Continued)

<p>10. Helpfulness of Care Provided</p>	<p>Mean</p>	<p>Avg. proportion of topics for which parent reported care was helpful or very helpful.</p>	<p>Numerator: Number of "very helpful–helpful" responses. Denominator: Number of items parent answered.</p>
<p>11. Effect of Care Provided on Parental Confidence</p>	<p>Mean</p>	<p>Avg. proportion of topics parent reported positive influence on confidence.</p>	<p>Numerator: Number of "I feel a lot more confident–I feel a little more confident" responses. Denominator: Number of items parent answered.</p>
<p>12. Health information</p>	<p>Mean</p>	<p>Avg. proportion of topics health info. received.</p>	<p>Numerator: Number of "yes, item was discussed" responses. Denominator: Number of items parent answered.</p>
<p>13. Provision of information about resources in the community for parents</p>	<p>Proportion</p>	<p>Proportion of children whose provide discussed resources in the community (version A) OR Proportion of children whose parents had their information needs met on resources in the community (version B).</p>	<p>Version A: Numerator: Number of "yes, item was discussed" responses. Denominator: Number of items parent answered Version B: Numerator: Number of "yes, item discussed" or "no, but had info and did not want to discuss it" responses. Denominator: Number of items parent answered.</p>

Example 5.1: Health Information Quality Measure

Here is the scoring for Joel, Anne, and Steve for "Health Information." This quality measure includes items 17 a–c.

Their responses were as follows:

Joel:	17a. Yes	17b. No	17c. Yes
Anne:	17a. Yes	17b. Yes	17c. Yes
Steve:	17a. Yes	17b. Missing	17c. Missing

Their responses are given the following values:

Joel:	17a. 100	17b. 0	17c. 100
Anne:	17a. 100	17b. 100	17c. 100
Steve:	17a. 100	17b. No value	17c. No value

Therefore, their scores on the Quality Measure are:

$$\text{Joel: } \frac{\text{Numerator}}{\text{Denominator}} = \frac{100 + 0 + 100}{3} = \frac{200}{3} = \underline{\underline{66.7}}$$

$$\text{Anne: } \frac{\text{Numerator}}{\text{Denominator}} = \frac{100 + 100 + 100}{3} = \frac{300}{3} = \underline{\underline{100}}$$

Steve: No score since he did not answer at least two of the three items included in the quality measure.

Example 5.2: Helpfulness of Care Provided

Here is the scoring for Ted's answers to the items for "Helpfulness of Care Provided." This measure includes items 15a-d.

Responses and corresponding values:

15a. Somewhat helpful	100
15b. Very helpful	100
15c. Not at all helpful	0
15d. Helpful	100

Ted's score for the quality measure is:

$$\frac{\text{Numerator}}{\text{Denominator}} = \frac{(100 + 100 + 0 + 100)}{4} = 75$$

Example 5.3: For Follow-Up Children at Risk of Developmental, Behavioral, or Social Delays

Here is the scoring for Jack, Janet, and Chris for "Follow-Up for Children at Risk of Developmental Delay." This measure is comprised of items 24a–d in the PHDS (7 a–d in the ProPHDS) and is scored only for those children who have been identified as being at risk for a developmental delay.

Jack and Janet are both at high risk for developmental delay. Chris and Larry are both at moderate risk for developmental delay.

Their responses were as follows:

Jack (high risk):	24a. Yes	24b. No	24c. Yes	24d. No
Janet (high risk):	24a. No	24b. No	24c. Yes	24d. No
Chris (mod. risk):	24a. No	24b. No	24c. No	24d. No
Larry (mod. risk):	24a. Yes	24b. No	24c. Yes	24d. Missing

Therefore, their scores on the quality measure are:

Jack: **100** (answered "yes" to at least one of the necessary items)

Janet: **100** (answered "yes" to both 24c and 24e)

Chris: **0** (did not answer "yes" to any of the items)

Larry: **100** (answered "yes" to at least one item, even though one item was missing)

- Specify and assign 'threshold level of quality' cut-points to each measure and calculate child-level versions of these quality measures.

Once you have calculated the core PHDS quality measures, it is helpful to identify those children who received a threshold level of care.

The threshold scoring method creates a discrete, binomial measure for each aspect of care and assesses how **many children** received a certain level of an aspect of care.

The quality measures that are proportions are already scored in a way that indicates children who did or did not receive the aspect of care (Measures 2, 3, 4, 5, and 9). The threshold scoring method **recodes the mean quality measures** into a binomial variable, where 100 equals children who received a sufficient level of quality of care and 0 is children who received less than the threshold level of care specified.

Table 5.4 provides a description of threshold measures that can be created for each of the mean, core PHDS quality measures. These thresholds are based on the following: 1) validity analyses of the cut points for these measures as related to other indicators of health care quality in the PHDS, 2) consensus obtained in interviews with frontline health care providers, system leaders, and advisors to CAHMI. Additional information about

these interviews and the threshold can be found at www.cahmi.org. Lastly, a thorough description of threshold measures based on PHDS items can be found in the Bethell et al. article, "Measuring the quality of preventive and developmental services for young children: national estimates and patterns of clinicians' performance" (*Pediatrics*. 2004 Jun;113(6 Suppl):1973–83).

Tip from the Field

CAHMI recommends that you determine the "threshold" level of care based on your own project goals. We recommend that you conduct key stakeholder interviews about the scoring approach you plan to use for each quality measure.

Table 5.5: Scoring Algorithm for "Threshold Version" of Measures

Quality Measure	Threshold Score for Quality Measure	Level of Quality Care Threshold Scoring Represents
<p>1. Anticipatory Guidance and Parental Education (AGPE)</p> <p><i>Version A: Average proportion of topics parents report were <u>discussed</u>.</i></p>	<p>Mean \geq 80</p>	<p>Children whose parents responded that the topic was discussed 80% or more of the AGPE items.</p>
<p><i>Version B: Average proportion of topics on which parents had their <u>informational needs met</u>.</i></p>	<p>Mean=100</p>	<p>Children whose parents had their informational needs met on all AGPE items.</p>
<p>2. Ask About Parental Concerns About Their Child's Learning, Development, & Behavior</p>	<p>Already a proportion measure</p>	<p>Children whose parents were asked about their concerns.</p>
<p>3. Address Parental Concerns</p>	<p>Already a proportion measure</p>	<p>Children with concerned parents who got information.</p>
<p>4. Follow-Up for Children at Risk for Developmental, Behavioral, or Social Delays</p>	<p>Already a proportion measure</p>	<p>Children at risk for developmental, behavioral, or social delays who received follow-up care.</p>
<p>5. Administration of a Standardized Developmental and Behavioral Screening (SDBS) Tool</p>	<p>Already a proportion measure</p>	<p>Children whose parents completed an SDBS.</p>
<p>6. Assessment of Psychosocial Well-Being of Parent(s) in the Family</p>	<p>Mean $>$ 0</p>	<p>Children whose parents were assessed for 1 or more topics related to psychosocial well-being.</p>
<p>7. Assessment of Smoking and Substance Use in the Family</p>	<p>Mean $>$ 0</p>	<p>Children whose parents were assessed for one or more topics related to smoking, substance abuse or safety.</p>
<p>8. Family-Centered Care (FCC)</p>	<p>Mean = 100.</p>	<p>Children whose parents routinely receive all aspects of family-centered care.</p>

Table 5.5: Scoring Algorithm for "Threshold Version" of Measure (Continued)

9. Care Coordination (CC)	Already a proportion measure	Children whose parents received CC.
10. Helpfulness of Care Provided	Mean = 100	Children whose parents reported care provided as helpful or very helpful.
11. Effect of Care Provided on Parental Confidence	Mean = 100	Children whose parents reported care had a positive influence on their confidence.
12. Health information	Mean = 100	Children whose parents got all health information.
13. Provision of information about resources in the community for parents	Proportion=100	Children whose health care providers discussed resources in the community (version A) OR whose parents had their informational needs met on resources in the community (version B).



STEP 5.2: Calculate PHDS "Got all care" composite measure

➔ What is the purpose of this step?

The purpose of this step to specify and construct a composite "got all care measure" that summarizes how many children received all of the individual components of care measured in the PHDS. This measure represents what Thomas Nolan, Ph.D., and Donald Berwick, M.D., M.P.P., refer to as an "All or None" measure.¹

In this step you will:

- Learn about the value of a composite "got all care" measure.
- Learn about options for creating a composite "got all care" measure.
- Consider key methodological issues in calculating a "got all care" measure.
- Specify and calculate the "got all care" measure to be used for your project.

¹ Thomas Nolan, Donald Berwick. All or None Measurement Raises the Bar on Performance .*JAMA*. March 8, 2006- Vol 295, No (10).



Guidelines and Issues to Consider

- ☑ Learn about the options for creating a composite "got all care" measure.

As explained in "All or Nothing," the *Journal of the American Medical Association* article by Nolan and Berwick, composite measures describing how many children got all aspects of recommended care are powerful because they:

1. Reflect the interests and likely the desires of patients.
2. For the PHDS, reflect the comprehensive care recommended.
3. Foster a system perspective.
4. Are sensitive to assessing improvements.

However, for the "got all care" composite measure to be meaningful and useful, your project team needs to think critically about a scoring approach that maps to the standard and level of care believed to be optimal and achievable in your system.

Specifically, your project team needs to consider the following before constructing a "got all care" composite measure:

⇒ **Your project goals**

For example: Will you use the "got all care" composite measure as part of a pay-for-performance effort? If so, you will want to ensure that each individual PHDS measure included in your "got all care" measure meets your standards for pay for performance and is achievable.

⇒ **Outcomes you hope to achieve**

For example: The PHDS focuses on many aspects of care. Perhaps your goal is to have providers initially focus their quality improvement efforts on specific aspects of the PHDS. Therefore, you may want to include only those aspects of care in the "got all care" measure.

⇒ **The perspective of the providers being assessed**

For example: You want providers to have buy-in on the "got all care measure" so that it is informative and is used to improve care. What version of the anticipatory guidance and parental education measure is most valued by providers in your health system?

Tip from the Field

CAHMI recommends you conduct key stakeholder interviews about the "got all care" composite measure and the individual measures and scoring approach you plan to use. In past projects, this has been an important component of the project to ensure that there is buy-in from various stakeholders about the level of care that is expected.

- Learn about options for creating a composite "got all care" measure.

Table 5.4 describes the individual, "threshold" versions of the core PHDS quality measures. Because the composite "got all care" variable is a discrete variable that indicated those who "got all aspects of care" versus those who did not, it is valuable to use the threshold versions of the specific aspect of care measures.

The first step in creating your "got all care" measure is determining which of the individual, topic-specific measures you will use.

Below are some options to consider:

- ⇒ **Option 1:** Include all of the measures listed in Table 5.4.
- ⇒ **Option 2:** Include only those measures that are anchored to specific aspects of care recommended. (This option does NOT include the measures focused on the experience of care such as *Family-Centered Care* and *Helpfulness of Care* quality measures.)
- ⇒ **Option 3:** Include only those measures that are anchored to specific aspects of care recommended and that are dependent on the health care provider. (This option does NOT include the *Family Centered Care*, *Helpfulness of Care*, and *Health Information* measures.)
- ⇒ **Option 4:** Include only those measures that are anchored to specific aspects of care recommended and are applicable to every child in the survey. (This option does NOT include the *Family Centered Care*, *Helpfulness of Care*, *Health Information*, *Give Concerned Parents Information*, *Follow-Up for Children at Risk* measures.)
- ⇒ **Option 5:** Include only those measures that you plan to address with targeted quality improvement efforts and/or that you will use for pay-for-performance efforts.

Once you have identified what measures you will include in your "got all care" measure, you then need to specify the version of the individual, topic-specific measures you intend to use. Specifically, you need to clarify the following:

- ⇒ Anticipatory Guidance and Parental Education (AGPE) quality measure: Will you use Version A or Version B? Version A should be used if the goal is for the provider to discuss all recommended AGPE topics. Version B should be used if the goal is to ensure that parents informational needs are met on all topics.

The last step is to then calculate, for each child, how many received all components of care (i.e., scored 100 on every measure). The "got all care" quality measure should be scored ONLY for children who have a score for each of the individual measures. (Important Note: If you decide to include measures that are only applicable to certain children (e.g., *Follow-up for Children at Risk*), be sure that you only score the variable for those quality measures the child should have received.)

Therefore, the "got all care" variable is a discrete, binomial variable:

100 = Child received all aspects of care

0 = Child did not receive one or more aspects of care

In the past, we have calculated the "got all care" variable through one of two methods:

- 1) Create a **count variable** across the individual threshold measures specified in Table 5.4. Recode the count variable so that those children who have the highest count possible get a 100 and those children with less than the highest score get a 0.

Important Note: This count variable is a valuable measure on its own, providing information about the range of individual components of care received.

- 2) Create a **mean variable** across the individual threshold measures. Then recode the mean variable so that those children with a mean score of 100 get a 100 and those with a mean score of less than 100 get a 0.

Important Note: This mean variable is a valuable measure on its own, providing information about the mean number of individual components of care received.

Example 5.4: "Got All Care" Measure

The **Healthy Development Collaborative** used the ProPHDS to evaluate their quality improvement efforts. Their trainings focused on four aspects of developmental care:

- 1) Anticipatory guidance and parental education (AGPE).
- 2) Asking about parental concerns.
- 3) Assessing the parent for depression.
- 4) Assessing the parent for other issues.

Participating practices were asked to focus on at least three out of four components of care for their improvement efforts.

A "got all care" quality measure was created to identify how many children received at least three out of four components of care.

They used the following "threshold" versions of the measures:

- 1) Child had parents with their information needs met on AGPE.
- 2) Child's parent was asked about his/her concerns.
- 3) Child's parent was asked about whether he/she felt depressed.
- 4) Child's parent was asked about one or more of the items in measures 6 and 7.

A count variable was created across these four "threshold" versions of care. Children who received at least three-fourths of the components of care were identified as having "got all" components of care focused on in the Healthy Development Collaborative.

- Consider other key issues in calculating "got all care" composite measure.

There are many options for the "got all care" measure, and the previous section focused on some of the methodologies recommended by CAHMI. Again, the value of the "got all care" is its ability to provide meaningful and relevant summary information. Therefore, we know that it is important to explore various versions of the measure to be sure that it matches with your project goals.

Below are two additional issues you may consider in creating a "got all care" quality measure that are often encountered by users of the PHDS:

- **Mean-based "got all care" measure:** The methodology described earlier used the discrete, threshold versions of the core PHDS quality measures (Table 5.4). Another option is to take the mean of the threshold versions and identify a specific number of individual components of care that should have been received for a child to have received a sufficient level of care. For example, you may feel that if the child received 10 of 12 individual components of care, this would meet a sufficient level of quality. A third methodology is to calculate the sum of the mean versions of the quality measures (Table 5.3), and to determine a "cut off point" for the sum value that equals a sufficient level of quality.
- **Weighting:** The methodology described by CAHMI assigned an equal weight to each of the measures. You may feel that certain measures should have a higher weight than others.

- Specify and calculate the "got all care" measure.

Once your team has reviewed the options for the "got all care" variable and decided upon your goal and the appropriate, related scoring, you will then calculate the "got all care" measure for each child.

Because the "got all care" measure is meant to describe the proportion of children that received all aspects of care, **CAHMI recommends** that you only score the "got all care" measure for those children with scores to all of the individual quality measures. For example, a child who only has valid scores for two out of the eleven individual, aspect of care specific quality measures should not be included in the "got all care" measure scoring.



STEP 5.3: Calculate alternate versions of the PHDS quality measures

➔ What is the purpose of this step?

The purpose of this step is to construct additional versions of the core PHDS quality measures.

In this step you will:

- Consider other options for scoring PHDS quality measures.
- Calculate negative indicator measures.
- Calculate topic-specific Anticipatory Guidance and Parental Education (AGPE) versions of the measures.



Guidelines and Issues to Consider

- Consider other options for scoring PHDS quality measures.

It is often helpful to look at information from different angles and perspectives to gain a more complete, multidimensional picture. Think about your research questions and which of the scoring methods outlined here best answers those questions and makes a compelling story. Be creative when approaching your scoring. While we have provided recommendations here, there is no "one-size-fits-all" method.

Additional and useful ways to consider scoring one or more of the PHDS measures include:

⇒ Negative indicator measures: Proportion of children who did NOT receive recommended care.

The measures described in Step 5.1 tell you whether children receive recommended care. You can also create measures that highlight care that children did not consistently receive. This approach provides information for doctors and health care providers on missed opportunities to provide aspects of recommended care.

For example, instead of reporting that 39.2 percent of parents indicated that their child's doctor or health care provider discussed all topics included in the Anticipatory Guidance and Parental Education quality measure, you could report that 60.8 percent of parents indicated that their child's doctor or health care provider did not discuss one or more of the anticipatory guidance topics with them. You use the same score, but report it in a different way.

Example 5.5: Positive and Negative Indicators Using the PHDS Quality Measures

<u>Measure</u>	<u>Positive Indicator</u>	<u>Negative Indicator</u>
Anticipatory Guidance and Parental Education	% of parents responding "yes," items were discussed" to <u>all</u> items.	% of parents responding "no, item was not discussed" to <u>one or more</u> of the items.
Follow-Up for Children at Risk for Developmental Delays	% of parents responding "yes" to <u>at least one</u> of the items	% of parents responding "no" to <u>all</u> of the items.
Family-Centered Care	% of parents responding "usually or always" to <u>all</u> items.	% of parents responding "never" or "sometimes" to <u>at least one</u> item.

⇒ Topic-specific versions of the Anticipatory Guidance and Parental Education (AGPE) measure.

The quality measure focused on AGPE is comprised of approximately 15 to 17 age-specific items and represents a number of recommendations for topics to discuss during a well-child visit.

One valuable way to assess this important aspect of care is to examine whether AGPE focused on specific topics, such as:

- The physical care of the child
- Development and behavior issues
- Injury prevention

Past studies using the PHDS have shown that providers are significantly less likely to talk about (and parents have more unmet informational needs about) development, behavior, and injury prevention, compared with the physical care of the child. Second, providers who systematically provide AGPE on one set of topics are not necessarily more likely to provide AGPE on another set of topics. Therefore, this additional scoring approach to the AGPE measure will allow you to assess variations in the provision of specific kinds of AGPE.

Using the same recodes that you created in **Step 5.1**, you can create three topic-specific versions of the AGPE quality measures. We recommend that you create the two versions for each measure: Version 1 should address whether health care providers talk about recommended topics, and Version 2 should address whether parents have their informational needs met on the topic.

Table 5.6 provides a detailed summary of each topic-specific version of the AGPE measure.

Tip from the Field

Consider using topic-specific versions of the AGPE measure in your "got all care" variable. By doing so, you will further highlight the importance of these topics by having three measures related to this aspect of care, and you will be able to assess variations in the kinds of AGPE provided.

Table 5.6 Overview of the Topic-Specific Version of the Anticipatory Guidance and Parental Education (AGPE) Measure

Topic-Specific Version of the AGPE Quality Measure	Overview of Topics Included¹	PHDS Items	ProPHDS Item
Physical Care	What parent can do to help child grow and learn, breastfeeding, vitamins and food, feeding, sleeping positions and sleep area, bedtime routines, preventing bottle mouth, whether child watches TV, and childcare.	7a,7c,7d, 7e,7f, 8g, 8h, 9a,9c,9d,9g, 9h,10g, 10h, 11a,11c,11d, 12f,12g	3-9 mo. Version: 1a,1c,1d, 1e,1f, 2g, 2h 10-18 mo. Version: 1a,1c,1d,1g, 1h,2g, 2h 19-48 mo. Version: 1a,1c,1d,2f,2g
Development and Behavior	Behaviors to expect, night waking and fussing, how child communicates needs (words and phrases child uses and understand), what child is able to understand, how child responds to and gets along with others, child's independence, toilet training, guidance and discipline techniques, importance of showing a picture book/reading to child.	7b,7g,7h,8a,8b, 8f, 9b,9e,9f,9i, 10a,10b,10f, 11b,11e,11f,11g, 11h, 12e	3-9 mo. Version: 1b,1g,1h,2a,2b, 2f 10-18 mo. Version: 1b,1e,1f,1i, 2a,2b,2f 19-48 mo. Version: 1b,1e,1f,1g,1h, 2e
Injury Prevention	Car seats, house safety, how to avoid burns, what to do if child swallows poisons.	8c,8d,8e 10c,10d,10e 12a,12b,12c,12d	3-9 mo. Version: 2c,2d,2e 10-18 mo. Version: 2c,2d,2e 19-48 mo. Version: 2a,2b,2c,2d

¹ The AGPE section is specific to the age of child. The wording presented in the table summarizes key topics in the survey and does not reflect the exact wording used the survey. See the PHDS and ProPHDS surveys provided in the Appendices for the exact wording of each survey item. Second, not all topics listed are included in each age-specific version of the survey (e.g., some items are only asked for children of a specific age).



STEP 5.4: Construct additional analytic variables

➔ What is the purpose of this step?

The purpose of this step is to construct additional analytic variables that you will use to examine the PHDS quality measures by child and/or family characteristics, health system characteristics, and other units of analysis specified in Step 2 and Step 3.

In this step you will:

- Calculate the analytic variables you decided to use in the analysis of your PHDS findings based on **Steps 2.4, 2.5, and 3.2.**



Guidelines and Issues to Consider

- Calculate the analytic variables you decided to use in the analysis of your PHDS findings based on **Steps 2.4, 2.5, and 3.2.**

Your analytic variables are constructed using three sources of data:

- 1) Survey responses from items included in PHDS or ProPHDS that were not used to calculate the quality measures. These items are included to provide additional descriptive information about children and families included in the PHDS and cover:
 - Utilization of the health care system (e.g., emergency room, doctor's office, hospital visits, and access to care issues).
 - Whether the child has had one person whom parents consider to be a personal doctor or nurse, and if applicable, the name of the provider(s) the parent identified.
 - Socio-demographic characteristics of child and parent.
 - Parenting behaviors and family activities.
 - Children with Special Health Care Needs (CSHCN) Screener (PHDS Q32-35. See www.cahmi.org for detailed information about how to score the CSHCN screener.)

- Screener for maternal depression (PHDS Q41-Q43) using the scoring algorithm recommended by Kathi Kemper, M.D.¹ (Positive response for two or more items indicates the parent is currently experiencing symptoms of depression.)
- Impact of care on parental confidence.
- Financial barriers to care.

These data can be used to provide descriptive information about the sample on their own, and to stratify the results of quality measures using cross-tabulations. Cross-tabulations often present the results in a way that is easier to understand and can be more actionable for quality improvement because they highlight the quality of care findings for specific groups.

- 2) Administrative and Utilization Data: These are the data collected when pulling the sampling frame for the entire sample.

For example:

- Number of Health Plan Employer Data and Information Set (HEDIS)–defined well-child visits.
- Provider with whom the child had the most well-child visits.
- Provider with whom the child is currently enrolled.

- 3) Supplemental Items: These are additional survey items you may have decided to include in the PHDS during Step 2.4.

These data can be used to provide descriptive information about the sample on their own, to stratify the results of quality measures using cross-tabulations. Cross-tabulations often can present the results in a way that is easier to understand and can be more actionable for quality improvement because they highlight the quality of care findings for specific groups.

- 4) Descriptive information about the health system: These are additional descriptive data collected in Step 4 collected from the Office System Inventory, assessments of poster or handouts in the office, and the provider's standard templates for well-child visits.

¹ Kemper KJ, Babonis TR. Screening for maternal depression in pediatric clinics. *Am J Dis Child*. 1992 Jul;146(7):876-8.



STEP 5.5: Evaluate quality measurement results for specific units of analysis

➔ What is the purpose of this step?

In Step 2, you identified specific units of analysis for which you would assess the quality of care. The purpose of this step is to calculate the quality measure findings for these specific units of analysis.

In this step you will:

- Calculate the PHDS quality measures for each unit of analysis being measured.
- Consider issues related to provider-level scoring.
- Consider an additional PHDS quality measure.



Guidelines and Issues to Consider

- Calculate the PHDS quality measures for each unit of analysis being measured.

Once scores are calculated for each individual child on each quality measure, these individual-level scores need to be combined into a score for the entire unit you are measuring, such as a health plan, office, provider, or total population sampled. This is done by averaging all of the individual scores on a quality measure.

$$\text{Group-level score} = \frac{\sum \text{each individual respondents' quality measure scores}}{\text{\# of individuals with a quality measure score}}$$

In other words, the group-level score is an average score for all respondents for whom a score could be calculated on that measure. Therefore, the denominator for the group-level score for the quality measure is NOT the total number of respondents; rather, it is the number of children whose parent answered at least half of the items for that quality measure.

Example 5.6: Group-Level Score

Let's say that you are scoring the *Health Information* quality measure for the Happy Health Plan, and Charlie, Lynn, Polly, and Sam are the children in the health plan whose parents have responded to the survey. (Forget about small numbers for the moment.)

The individual quality measure scores for each of the respondents are as follows:

Charlie = 75

Lynn = 100

Polly = 0

Sam = no score (only answered 1 of the 4 items included in the quality measure)

The group-level score for Quality Measure #2 is:

$$\text{Score} = \frac{75 + 100 + 0}{3} = \frac{175}{3} = \mathbf{58.33}$$

Notice that Sam was not included in the calculation (numerator and denominator) since he did not have an individual score for the quality measure.

All of the group-level scores for each quality measure are calculated in this manner. Note that most statistical packages can calculate these scores for you automatically.

- Consider issues related to provider-level scoring.

There are two primary issues you need to consider when using the PHDS for provider-level analysis:

- 1) Provider to whom you should assign the completed PHDS or ProPHDS survey. This step determines what data source(s) will be used to identify the provider who most likely provided a majority of the care the parent responded about in the survey and therefore the survey scores should be assigned to that specific provider.
- 2) Minimum number of completed surveys required to conduct provider-level analysis.

Below are specifications for addressing these two issues:

Issue #1: Provider to whom you should assign the completed PHDS or ProPHDS survey.

The PHDS items are not anchored to one provider, but instead ask the parent whether the child's "doctor or other health providers" did specific things. This wording allows for a team to provide well-child care (e.g., medical assistant, nurse, and physician), and allows for a child to have received well-child care from multiple people.

As highlighted in Step 2.4, CAHMI recommends that you include an item asking the parent to identify their child's personal doctor or other health provider(s) if you intend to use the results for provider-level analysis.

Therefore, most users will have three data sources that can be used to identify a provider to assign the completed PHDS survey.

Data Source #1: Parent report of their child's personal doctor or nurse.

- This is the person(s) the parent identified in the PHDS. Only those parents who report their child has a personal doctor or nurse are asked the follow-up question to indicate the specific person(s).

Data Source #2: Utilization data.

- For the most part, the care asked about in the PHDS should be provided during well-child visits. Therefore, it is valuable to identify the provider who was responsible for a majority of the well-child visits the child received in the last 12 months or since the child was born. If two providers were responsible for an equal number of visits, then you should identify the person(s) responsible for the most recent well-child visits.

Data Source #3: Enrollment data (applicable to managed care systems).

- In most managed care systems, the child is enrolled or assigned to a specific provider. Therefore, it is valuable to identify the provider with whom the child has been enrolled for the longest time in the last 12 months or since the child was born. If the child was enrolled with two providers for an equal amount of time, then you should identify the person(s) responsible for the most recent well-child visits.

A single source or combination of these three data source(s) can then be used to identify the provider to whom you should assign the PHDS. **CAHMI recommends** that you explore the following before deciding which data source(s) to use:

- Examine the level of agreement between parent report and the utilization and enrollment data. If there is a low level of agreement, CAHMI recommends that you use parent-report as the gold standard.
- Examine the level of agreement between the enrollment and utilization data. If there is a low level agreement, then the utilization data should be used.
- Consider using multiple data sources. For example, a managed care plan used the PHDS to create a provider-level report. A high degree of agreement was observed between parent report and the utilization and enrollment data, and a high level of agreement was observed between the utilization and enrollment data. Therefore, the managed care plan assigned the completed PHDS survey to the provider the child was enrolled with as his/her primary care provider, AND required that the child saw the provider for at least one well-child visit.

Issue #2: Minimum number of completed surveys required to conduct provider-level analysis.

As described in **Step 2.2** (Table 2.2), **CAHMI recommends** that you have **30 completed surveys** per provider if you are creating un-blinded provider-level reports.

If a provider-level report is being disseminated to inform quality improvement activities and is only shared with the specific provider, you can create a report for a provider for whom you have **15 completed** surveys.

Other issues you should be sure to examine are:

- ⇒ Sample sizes for the age-specific groups (3–9 months old, 10–18 months old, and 19–48 months old) to address any sample size issues.
- ⇒ Sample size for the PHDS quality measures that only apply to specific groups of children (e.g., *Address Parental Concerns*, *Follow-Up for Children at Risk for Developmental, Behavioral, or Social Delays*).

- ⇒ Individual provider variation in the care he/she provides to various children and families: Providers who are very consistent in the care they provide across patients will need fewer surveys, as compared with providers who target certain discussions to certain patients.
- ⇒ Care Team: If the provider and nurse each provide components of the well-child visit, then more surveys may be needed as the provision of care by two individuals increases the level of variation in this communication-dependent measure.

- Consider an additional PHDS quality measure.

Another valuable way to assess the quality of comprehensive care provided at the office or provider level is to calculate the maximum number of individual care components routinely provided by a specific office or by a specific provider. This value can then be assigned to each child (using the provider or office to which the survey was assigned), and descriptive analyses can be conducted for children by the maximum number of individual care components their provider/office gave to children assessed in the PHDS.

This measure, called the "maximum number" quality measure, assesses the degree to which individual providers or groups of providers focus on specific aspects of preventive and developmental care.

Example 5.7 provides an example of the "maximum number" quality measure.

Example 5.7: Maximum Number Measure

The Healthy Happy Plan implemented the PHDS and is using the survey to assess for care in two offices (East and West). The Happy Health Plan created a count variable (**See Step 5.2**) of the number of components of care each child received (Maximum number=12). They then assessed, in each office, the maximum number of care components a child in that office received.

The individual "Maximum Number" measure scores for each of the office were as follows:

East Office:

Olivia = Received 4/12 individual care components

Christian = Received 5/12 individual care components

Henry = Received 6/12 individual care components

Range: 4–6 Maximum Number of Care Components = 6

West Office:

Mary= Received 10/12 individual care components

Billy= Received 11/12 individual care components

James = Received 10/12 individual care components

Range: 10–11 Maximum Number of Care Components = 11

The East Office providers seem to provide only certain aspects of care, while the providers in the West Office focus more globally on the various aspects of care measured in the PHDS.



STEP 5.6 Evaluate quality measurement results for subgroups of children

➔ What is the purpose of this step?

Past studies of the PHDS have shown significant variations in quality of care by child, family, health care provider, and health system characteristics. Therefore, it is valuable to assess your PHDS quality measure findings by the descriptive variables in the PHDS survey and by the analytic variables collected in **Step 2, Step 3, Step 4, and Step 5.4.**

The purpose of this step is to analyze the PHDS findings for subgroups of children based on these descriptive variables.

In this step you will:

- Analyze the PHDS findings by child and family characteristics.
- Analyze the PHDS findings by administrative and utilization data.
- Analyze the PHDS findings by health system characteristics.



Guidelines and Issues to Consider

- Analyze the PHDS findings by child and family descriptive characteristics.

The PHDS quality measures should be stratified by basic demographic information. Demographic information can be important in quality improvement reports. Providers can use the information to evaluate their own behavior and detect differences in care between various demographic groups. However, the level of detail may be overwhelming in consumer reports, so you might choose to highlight only striking results in a consumer report.

Specifically, be sure to examine the PHDS quality measures by the following:

Demographic information about parent and child

- Information about children's:
 - Gender
 - Race, ethnicity
 - Birth order
 - Age
- Information about parent/family's:
 - Age
 - Number of children in household
 - Education

Health information about the child and parent

- Child health characteristics:
 - Children at risk for developmental, behavioral, or social delays (See **Step 5.1** for more detail)
 - Children with special health care needs
- Parent health characteristics:
 - Risk for depression
 - Overall health status

Child health care characteristics

- Whether the child has a personal doctor or nurse
- Analyze the PHDS findings by administrative and utilization data.

The PHDS quality measures can be stratified by the administrative and utilization data variables you created in **Step 5.4**.

Specifically, it might be valuable to stratify your findings by the following:

- Number of well-child visits
- Number of providers the child has been enrolled with in the last 12 months
- Number of providers the child has received well-child care from in the last 12 months

- ☑ Analyze the PHDS findings by health system characteristics.

Step 4.4 specified three data sources that can be used to assess the PHDS findings by specific health system characteristics:

- 1) Office system inventory
- 2) Posters and handouts in the office
- 3) Provider well-child templates in the electronic medical record

That step also described how to construct a variable representing the number of relevant systems or materials the office or provider had in place for each data source.

Before stratifying the results by these count variables we recommend the following:

- Run a frequency on the count variable and examine the distribution in order to identify groups of offices and/or providers with similar characteristics.
- Create a categorical variable based on these groups. You can then stratify the PHDS quality measure findings by the count variable AND the categorical variable and identify system/provider trends.
- Consider creating topic-specific versions of the count variables that map to the PHDS quality measures.

For example:

- Create a count variable of the section of the Office System Inventory (OSI) that specifically related to Anticipatory Guidance and Parental Education (APGE). Stratify the AGPE quality measure by this topic-specific count variable.
- Create a count variable of the posters and handouts related to psychosocial issues in the family. Stratify the *Assessment of Psychosocial Issues in the Family* quality measure by this topic-specific count variable.



STEP 5.7: Review additional analytic tips

➔ Statistical Analyses

When comparing performance or scoring among different groups, statistical analyses are required to test and see if the differences are meaningful and real. However, the statistical test that is used will depend on the type of data you are testing. It is beyond the scope of this manual to be a statistical primer. Therefore we suggest that when you compile your team you identify someone to be the lead person for these analyses. As an introduction to those analyses, the following table lists three of the most common statistical tests used in the analyses described in this section. Your vendor may also be able to provide these services.

Table 5.7: Typical Statistical Tests Run in Quality Health Care Reporting

Type of Comparison	Statistical Test	Example Research Question
1. Differences in mean scores between two groups	T-test	Do parents who are at risk for depression have a lower mean score on the <i>Helpfulness of Care</i> quality measure than parents who are not at risk for depression?
2. Differences in mean scores between three or more groups	Analysis of Variance (ANOVA)	Are there differences in the mean scores for the Assessment of Smoking, Substance Abuse and Safety Within the Family by racial, ethnic groups (e.g., white, African American, Hispanic, other)
3. Differences in binomial scores for two or more groups (e.g., cross-tabulations of threshold scores)	Chi-square (χ^2)	Are parents of children with special health care needs more likely to meet the threshold for having discussed the anticipatory guidance topics than parents of children without special health care needs?