# Identifying Continuous Quality Improvement Priorities in Maternal, Infant, and Early Childhood Home Visiting

Julie Preskitt, PhD, MSOT, MPH; Matthew Fifolt, PhD; Peter M. Ginter, PhD; Andrew Rucks, PhD; Martha S. Wingate, DrPH

● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

**Objective:** The purpose of this article was to describe a methodology to identify continuous quality improvement (CQI) priorities for one state's Maternal, Infant, and Early Childhood Home Visiting program from among the 40 required constructs associated with 6 program benchmarks. The authors discuss how the methodology provided consensus on system CQI quality measure priorities and describe variation among the 3 service delivery models used within the state. **Design:** Q-sort methodology was used by home visiting (HV) service delivery providers (home visitors) to prioritize HV quality measures for the overall state HV system as well as their service delivery model. **Results:** There was general consensus overall and among the service delivery models on CQI quality measure priorities, although some variation was observed. Measures associated with Maternal, Infant, and Early Childhood Home Visiting benchmark 1, Improved Maternal and Newborn Health, and benchmark 3, Improvement in School Readiness and Achievement, were the highest ranked. **Conclusions:** The Q-sort exercise allowed home visitors an opportunity to examine priorities within their service delivery model as well as for the overall First Teacher HV system. Participants engaged in meaningful discussions regarding how and why they selected specific quality measures and developed a greater awareness and understanding of a systems approach to HV within the state. The Q-sort methodology presented in this article can easily be replicated by other states to identify CQI priorities at the local and state levels and can be used effectively in states that use a single HV service delivery model or those that implement multiple evidence-based models for HV service delivery.

The 2010 Patient Protection and Affordable Care Act amended Title V of the Social Security Act to authorize funding for expansion of early childhood home visitation programs for at-risk families. As a provision of the Patient Protection and Affordable Care Act, 2 federal agencies, the Health Resources and Services Administration and the Administration for Children and Families, are charged with enabling states to deliver comprehensive, coordinated, evidence-based services for at-risk families through the newly created Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program.[1] As noted by the Children's Defense Fund, this $1.5 billion 5-year federal grant program is one of the largest allocations for maternal and child health and the first federally mandated funding specifically for home visiting (HV).[2]

Alabama's MIECHV-funded HV system, First Teacher, began in 2010 and operates in a largely rural and impoverished state, with most counties being considered "at-risk" based on a variety of outcomes for children and families (eg, poor maternal education and poor child school performance; high rates of

births to unmarried mothers; high poverty rates for children younger than 5 years). In Alabama, HV services are delivered in local communities by a variety of organizations applying 3 different models of health and school readiness—Home Instruction for Parents of Preschool Youngsters (HIPPY; training for parents of preschoolers), Nurse Family Partnership (NFP; nurse visiting for parents of prenatal to 2-year-olds), and Parents As Teachers (PAT; training for parents of prenatal to 5-year-olds). All 3 models are rated as effective by the US Department of Health and Human Services criteria as an evidence-based early childhood HV service delivery model.[3] However, the focus on efforts concerning pregnancy and early childhood varies among the HV service delivery models.

As part of the MIECHV program, all states are required to identify and operationalize quality measures within 6 benchmarks further defined by 40 constructs. The 6 MIECHV benchmarks represent broad categories for improvement in maternal, child, and family outcomes, and although the 40 constructs are set at the federal level, each state is allowed to customize the measurement of these constructs. Furthermore, states are required to create and implement a continuous quality improvement (CQI) plan to focus efforts and monitor progress toward program goals based on MIECHV benchmarks and constructs.[1,3] Continuous quality improvement is a systems approach for improving existing services or products or developing new ones.[4] As outlined in the Home Visiting Updated State Plan Supplemental Information Request (2010), CQI is defined as:

> A systematic approach to improving processes and outcomes through regular data collection, examination of performance relative to pre-determined targets, review of practices that promote or impede improvements, and application of changes in practice that may lead to improvements in performance.[1(p57)]

Despite a noticeable absence of CQI methods in the HV literature, Ammerman et al[5] identified compelling reasons for HV programs to adopt a CQI framework, including (a) processes to address site-specific challenges while adhering to model fidelity, and (b) capacity to benchmark processes and outcomes in the absence of control or comparison groups. Rooted in the legislatively mandated requirements for benchmark data and guided by the best practices in quality improvement, the MIECHV program uses CQI to ensure that HV programs are implemented and monitored effectively and to assist states in strategically using funds based on priorities determined through CQI activities.[6]

The purpose of this article was to describe the methodology used to identify CQI priorities for Alabama's MIECHV program, discuss how this methodology was used to develop consensus on statewide CQI priorities, and discern priority nuances among the 3 HV service delivery models used within the state. The Alabama First Teacher leadership team adopted the Q-sort methodology to rank order all quality measures and demographics for which the program is accountable. The Q-sort methodology was viewed as a systematic way to identify priorities as determined by HV personnel. The description of the process, its application, and brief overview of results may be useful for other state HV systems in implementing CQI and other stakeholder processes. Furthermore, this method is applicable more broadly to assist decision making in public health programs where multiple priorities and measures are required and viewed as important, yet a systematic focus on quality improvement is preferable to dilution of efforts across many priorities at once.

## ● Methods

The Alabama First Teacher leadership team chose to use the Q-sort methodology as part of the CQI process because it reflected key tenets of quality improvement processes—iterative in nature, transparent, outcomes-focused, and responsive to the current culture of the populations served.[7] The Q-sort procedure is part of Q-methodology, a set of philosophical, psychological, statistical, and psychometric ideas oriented to research with the individual.[8] Recognizing the challenge of assigning priorities to focal areas for a CQI initiative, Q-sort methodology provides a formal method of differentiating the priority of the quality measures by forcing choices along a continuum, although the difference between choices may be quite small.

When assessing the priority of quality measures, evaluators tend to rank all measures as "very important" or "essential." This tendency is particularly true when using a Likert-type format to evaluate measures.[9] The Q-sort procedure is particularly useful when experts differ on what makes one quality measure preferable to another. Ranking the quality measures using the Q-sort procedure allows participants to see where there is agreement on a priority, have an opportunity to discuss the measures for which there is disagreement and thereby reach consensus.[10] For the home visitors in the Alabama First Teacher system, achieving consensus on the priority of quality measures for the overall Alabama HV program would be challenging because of differences in the focus of programmatic curricula and participant ages (ie, ages of children served) among the 3 service delivery models, varying needs in the communities, and the home visitor experience and personal perspective. The Q-sort procedure provided a process for visually presenting as well as comparing program-wide and HV service delivery model priorities.

This project was deemed exempt by the university's institutional review board as it relates to state agency program and practice improvement versus academic research.

## Ranking HV quality measures

Using the Q-sort procedure, home visitors were asked to use their experiences in working with at-risk families to sort HV quality measures into groups according to their perceived priority in measuring quality in the HV program in general and their HV service delivery model specifically. Home visiting quality measures were derived from the MIECHV benchmarks and constructs; numbers were randomly assigned to each measure for purposes of the exercise (Table 1). Each quality measure and its associated number were written on an index card and complete decks of cards were prepared, one deck for each home visitor participant.

To force a priority ranking of the quality measures, home visitors were asked to arrange the index cards into groups, as shown in Figure 1, from "most important" to "next most important," and so on. In sorting the quality measures, the key questions for home visitors to consider were as follows: (1) How important are these measures for assessing and improving the quality of the Alabama First Teacher HV program? and (2) Although all measures are important, which are the most important for indicating quality in the Alabama First Teacher HV program and therefore should take priority in the CQI initiative? Once participants finished sorting their cards, they transferred the number assigned to each quality measure on the index card to their personal log form (see Figure 1).

The Q-sort methodology requires that the sorted items be arranged in a normal distribution (Figure 1), resulting in 9 columns, with 5% of the measures (2 measures) placed in the first column (left-most column), 7.5% (3 measures) in the second column, 12.5% in the third (5 measures), 15% in the fourth (6 measures), and 20% in the middle column (8 measures). The percentages on the right side of the distribution mirror the left side. Each measure in a column can then be assigned a score from 1 (left-most column) to 9 (right-most column). Measures are not ranked *within* columns; each measure sorted into a column is assigned the column score. Therefore, each column represents a grouping of measures perceived as most important, next most important, and so forth.

For the exercise, the quality measures in the left-most column were assigned a value of 1; the measures in the second left-most column were assigned a value of 2, continuing until the measures in the right-most column were assigned a value of 9. The score indicated an individual's perception of that quality measure's priority within the HV service delivery model. A composite parameter was developed by averaging individual participant scores for each quality measure. On the basis of this scoring rubric, measures with the lowest overall averages (average scores closest to 1) were assigned the highest priority and ordered from left to right in terms of most important (highest priority), next most important (next highest priority), and so on (see Figure 1).

## Participants

Q-methodology supports "rigorous analysis with rather small number of participants".[11(p405)] The number of individuals performing a Q-sort exercise is deemed small when the number of individuals is fewer than 30.[12] Forty-eight individuals completed the Q-sort exercise (n = 48), including 32 home visitors, 14 HV site managers, and 2 representatives from Alabama Department of Children's Affairs. The distribution among HV service delivery models was as follows: HIPPY, n = 23; NFP, n = 4; and PAT, n = 19. Home visitors and HV coordinators were drawn from the 13 counties in Alabama that had previously been identified as counties with the highest level of risk and were the initial focus of the Alabama First Teacher HV program.[13] Confidence in generalizations made from small samples decreases as the sample size (number of participants) declines because of the increasing opportunity for both type I errors (not identifying a relationship that is present) and type II errors (identifying a relationship that is not present)[14,15]; however, generalizations derived from small samples may prove useful in generating discussion and consensus.[12]

## ● Findings

Using the 1 to 9 scoring scheme, average scores for all quality measures were calculated and the results were recorded in an aggregated Q-sort log sheet as shown in Figure 2. As demonstrated in Figure 2, quality measure 1 (Women receive health care during pregnancy) and quality measure 18 (Delays in a child's overall development are identified) were the highest-ranked priorities overall. On the basis of the first 2 columns of the aggregated log sheet, the highest-ranked quality measures included 2 measures from benchmark 1 (Improved Maternal and Newborn Health) and 3 measures from benchmark 3 (Improvement in School Readiness and Achievement).

Scores for each HV service delivery model were also tabulated. Table 2 presents the highest-ranked benchmarks and quality measures by HV service

**TABLE 1** ● **Quality Measures for Alabama First Teacher Home Visiting Program, Based on Maternal and Infant Early Childhood Home Visiting Benchmarks and Constructs[a]**

Benchmark 1: Improved Maternal and Newborn Health
1. Women receive health care during pregnancy
4. Women are pregnant again within 6 mo of giving birth
5. Women are depressed/parenting stress
6. Increase awareness of need for breast-feeding
7. Children are going to the doctor regularly for checkups
9. Women/mothers have insurance
20. Children have insurance
39. Children are exposed to smoking in the home
40. Women receive well woman visits

Benchmark 2: Child Injuries, Child Abuse, Neglect or Maltreatment and Reduction of ED Visits
10. Children are going to the emergency department or urgent care for health care
12. Resources and information are given to families to prevent child maltreatment and injuries
26. Mothers are going to emergency department or urgent care for health care

Benchmark 3: Improvement in School Readiness and Achievement
5. Women are depressed/parenting stress
13. Families support their children's learning and development
14. Families are knowledgeable about their child's development and progress
15. Identifying problems with parenting and parent-child interactions/relationship
18. Delays in a child's overall development are identified
21. Delays in child's social emotional skills are identified
22. Issues with a child's physical health are identified

Benchmark 4: Domestic Violence
11. Women who experience domestic violence have safety plans developed
24. Women are screened for domestic violence
25. Women who experience domestic violence are referred for services to assist with this issue

Benchmark 5: Family Economic Self-sufficiency
28. Knowing the total household income
17. Knowing the employment status of enrolled family members
16. Knowing the educational level of enrolled family members
9. Women/mothers have insurance
20. Children have insurance

Benchmark 6: Coordination and Referrals for Other Community Resources and Supports
32. Families enrolled in First Teacher who had referrals for additional community services actually got them
33. Having formal written agreements with other resources in your community
34. Having clear point of contact with other resources in your community for referrals and sharing information
36. Families enrolled in First Teacher who receive referrals for additional community services

Demographics
2. Knowing primary caregiver's ethnicity
3. Knowing a child's primary language
8. Knowing primary caregiver's gender
19. Knowing a child's age
23. Knowing the primary caregiver's marital status
27. Knowing the number of people living in a home
29. Knowing a primary caregiver's age
30. Knowing whether a child has primary care provider
31. Knowing a child's race

35. Knowing if participant is pregnant at enrollment
37. Knowing primary caregiver's race
38. Knowing a child's ethnicity

[a]Measure numbers randomly assigned for purposes of Q-sort exercise.
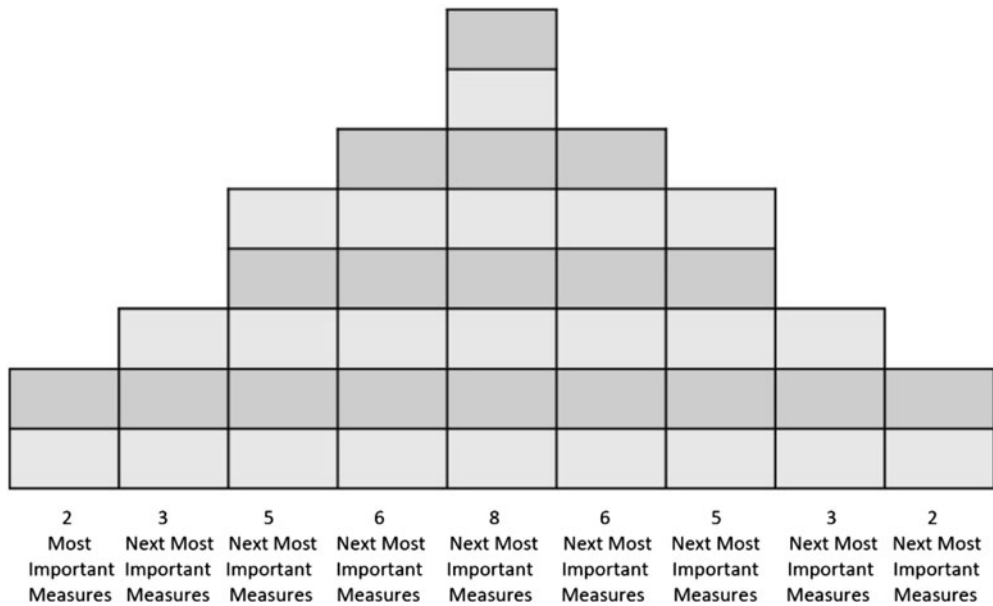
delivery model. All 3 HV service delivery models ranked quality measures from benchmark 1 and benchmark 3 as their top priorities. The NFP HV service delivery model (nurse visiting for parents of prenatal to 2-year-olds) also included a measure related to child's insurance coverage, which is a construct of both benchmark 1 and benchmark 5 (Family Economic Self-sufficiency), and a demographic item related to pregnancy status at enrollment.

For the NFP and PAT (training for parents of prenatal to 5-year-olds) HV service delivery models, a benchmark 1 measure for women receiving health care during pregnancy was 1 of the 2 highest-ranked quality measures. The NFP HV service delivery model also included another benchmark 1 measure for increase

awareness of the need for breast-feeding, whereas PAT ranked a measure for women are depressed/parenting stress (attached to both benchmarks 1 and 3) among their highest-ranked measures. For the HIPPY HV service delivery model (training for parents of preschoolers), the 2 highest-ranked measures were from benchmark 3, both related to child learning and development, either to family support or identification of developmental delays.

A visual representation of scoring (based on Q-sort scores) for each quality measure by HV service delivery model is presented in Figure 3. Although there was some variation, scores were fairly consistent across the 3 models, with 25 of the 40 quality measures being scored the same or within 1 level of priority. Scores

**FIGURE 1** ● **Sample Q-Sort Log[a]**



| 2 | 3 | 5 | 6 | 8 | 6 | 5 | 3 | 2 |
|---|---|---|---|---|---|---|---|---|
| Most Important Measures | Next Most Important Measures | Next Most Important Measures | Next Most Important Measures | Next Most Important Measures | Next Most Important Measures | Next Most Important Measures | Next Most Important Measures | Next Most Important Measures |

[a]Measures are not ranked within columns; all measures within each column are rated as equally important.

**FIGURE 2** ● **Results from overall Q-sort, Alabama First Teacher Home Visiting Program**
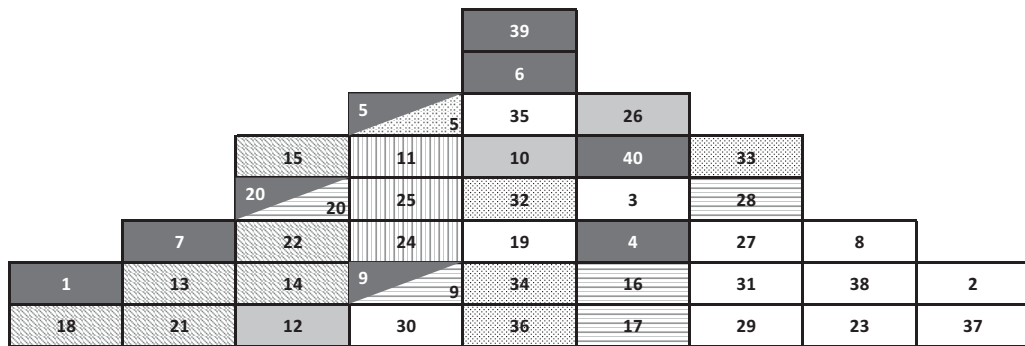


**Benchmark Key**

1. Improved maternal and newborn health

2. Child injuries, child abuse, neglect or maltreatment and reduction of ED visits.

3. Improvement in school readiness and achievement

4. Domestic violence

5. Family economic self-sufficiency

6. Coordination and referrals for other community resources and supports

Demographics

*Note*: Columns are ranked from left to right - most important measures, next most important measures . . . next most important measures. Measures are not ranked within columns; all measures within each column are rated as equally important.

**TABLE 2** ● **Highest-Rated Benchmarks and Quality Measures by Home Visiting Model, Alabama First Teacher**

| HIPPY | | NFP | | PAT | |
|---|---|---|---|---|---|
| Benchmark | Quality Measure | Benchmark | Quality Measure | Benchmark | Quality Measure |
| 3 | Measure 13: Families support their children's learning and development | 1 | Measure 1: Women receive health care during pregnancy | 1 | Measure 1: Women receive health care during pregnancy |
| 3 | Measure 18: Delays in a child's overall development are identified | 1 | Measure 6: Increase awareness of need for breastfeeding | 1, 3 | Measure 5: Women are depressed/parenting stress |
| 1 | Measure 7: Children are going to the doctor regularly for checkups | Demographics | Measure 35: Knowing if participant is pregnant at enrollment | 1 | Measure 18: Delays in a child's overall development are identified |
| 3 | Measure 21: Delays in child's social emotional skills are identified | 1, 5 | Measure 20: Children have insurance | 1 | Measure 7: Children are going to the doctor regularly for checkups |
| 1 | Measure 1: Women receive health care during pregnancy | 3 | Measure 22: Issues with a child's physical health are identified | 3 | Measure 15: Identifying problems with parenting and parent-child interactions/relationship |

Abbreviations: HIPPY, Home Instruction for Parents of Preschool Youngsters; NFP, Nurse Family Partnership; PAT, Parents As Teachers.

were similar for some measures, as evidenced by close groupings. For example, the benchmark 1 measure for women receive health care during pregnancy was scored as "1" for NFP and PAT and as a "2" for HIPPY. Similar patterns were observed for the benchmark 2 (Child Injuries, Child Abuse, Neglect or Maltreatment and Reduction of ED Visits) measure related to resource provision to prevent child maltreatment and injuries, as well as for the benchmark 3 measure for families being knowledgeable about their child's development and progress. In contrast, scoring for some quality measures varied, as indicated by a fairly dispersed representation. For example, the benchmark 1 and 3 measure related to knowing whether women are depressed/experience parenting stress was ranked in a range of 1 to 6 across the models. A similar pattern was noted for demographic measures related to knowing a child's age and knowing whether a participant is pregnant at enrollment.

## ● Discussion

The most important finding from this work is that there is reasonable consistency of priorities among the HV service delivery models implemented in the Alabama First Teacher HV program. This consistency suggests that even when using multiple service delivery models for HV, a state can still develop and implement a CQI program with common measures and consistent activities.

Furthermore, although CQI is effective in applying strategies for systemic improvements, targeted efforts related to the many quality measures under each of the 6 benchmarks and demographic items cannot occur simultaneously. Therefore, the Q-sort exercise allows each home visitor to contribute to the overall CQI agenda, and selecting measures from those viewed as highest priority by home visitors facilitates buy-in from important frontline service providers. These highest-ranked quality measures offer a good starting point to introduce the CQI concept and for early CQI efforts. Building a culture of quality improvement and experience in implementing small tests of change can generate early "wins" to allow home visitors to see improvement in measures that they consider most important and of highest priority in their daily work in delivering services to the at-risk population. This support will facilitate efforts to expand CQI efforts to other measures and across benchmarks, which is especially important, given the MIECHV requirement for states to make improvement in at least 4 of 6 benchmarks (by making improvements in at least half of the measures/constructs under the benchmark) in order to be considered eligible for continued funding.

Results from the Alabama experience suggest that focusing on benchmarks 1 and 3 may be an appropriate place to start CQI efforts. Despite some differences in the specific quality measures selected, measures from these benchmarks appeared as areas of highest priority in the composite, as well as in the specific HV service

**FIGURE 3** ● **Variation in Scoring of Benchmarks and Quality Measures by Home Visiting Model, Alabama First Teacher**

| Benchmark and Measure | | Score | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Benchmark 1: Improving Maternal and Newborn Health | 1. Women receive health care during pregnancy | ◊ • | | | | | | | | |
| | 4. Women are pregnant again within 6 mo of giving birth | | | ◊ | | • | | | | |
| | 5. Women are depressed/parenting stress | • | | ◊ | | | | | | |
| | 6. Increase awareness of need for breast-feeding | ◊ | | | • | | | | | |
| | 7. Children are going to the doctor regularly for checkups | | • | ◊ | | | | | | |
| | 9. Women/mothers have insurance | | | | | ◊ • | | | | |
| | 20. Children have insurance | | ◊ | • | | | | | | |
| | 39. Children are exposed to smoking in the home | | | ◊ | | • | | | | |
| | 40. Women receive well woman visits | | | | | • | ◊ | | | |
| Benchmark 2: Child Injuries, Abuse, Neglect or Maltreatment and Reduction of ED Visits | 10. Children are going to the emergency department or urgent care for health care | | | | ◊ | • | | | | |
| | 12. Resources and information are given to families to prevent child maltreatment and injuries | | | • | ◊ | | | | | |
| | 26. Mothers are going to emergency department or urgent care for health care | | | | | ◊ | • | | | |
| Benchmark 3: Improvement in School Readiness and Achievement | 5. Women are depressed/parenting stress | • | | ◊ | | | | | | |
| | 13. Families support their children's learning and development | | | | • | ◊ | | | | |
| | 14. Families are knowledgeable about their child's development and progress | | | | ◊ • | | | | | |
| | 15. Identifying problems with parenting and parent-child interactions/relationship | | • | | ◊ | | | | | |
| | 18. Delays in a child's overall development are identified | | • | | ◊ | | | | | |
| | 21. Delays in a child's social emotional skills are identified | | | • | ◊ | | | | | |
| | 22. Issues with a child's physical health are identified | | ◊ | • | | | | | | |
| Benchmark 4: Domestic Violence | 11. Women who experience domestic violence have safety plans developed | | | • | | ◊ | | | | |
| | 24. Women are screened for domestic violence | | | ◊ | • | | | | | |
| | 25. Women who experience domestic violence are referred for services to assist with this issue | | | | • | ◊ | | | | |
| Benchmark 5: Family Economic Self-sufficiency | 9. Women/mothers have insurance | | | | | ◊ • | | | | |
| | 16. Knowing the educational level of enrolled family members | | | | | | ◊ • | | | |
| | 17. Knowing the employment status of enrolled family members | | | | | ◊ | • | | | |
| | 20. Children have insurance | | ◊ | • | | | | | | |
| | 28. Knowing the total household income | | | | | | ◊ | • | | |
| Benchmark 6: Coordination and Referrals for Other Community Resources and Support | 32. Families enrolled in First Teacher who had referrals for additional community services actually got them | | | | • | | ◊ | | | |
| | 33. Having formal written agreements with other resources in your community | | | | | | | • | ◊ | |
| | 34. Having clear point of contact with other resources in your community for referrals and sharing information | | | | | | ◊ • | | | |
| | 36. Families enrolled in First Teacher who receive referrals for additional community services | | | | | ◊ • | | | | |
| Demographics | 2. Knowing primary caregiver's ethnicity | | | | | | | ◊ | • | |
| | 3. Knowing a child's primary language | | | | | | ◊ • | | | |
| | 8. Knowing primary caregiver's gender | | | | | | | ◊ | • | |
| | 19. Knowing a child's age | | | | | | • | ◊ | | |
| | 23. Knowing the primary caregiver's marital status | | | | | | | | ◊ • | |
| | 27. Knowing the number of people living in a home | | | | | | | ◊ • | | |
| | 29. Knowing a primary caregiver's age | | | | | | | ◊ • | | |
| | 30. Knowing whether a child has a primary care provider | | | | | • | ◊ | | | |
| | 31. Knowing a child's race | | | | | • | | | ◊ | |
| | 35. Knowing if participant is pregnant at enrollment | | ◊ | | | | | | | • |
| | 37. Knowing primary caregiver's race | | | | | | | | | ◊ • |
| | 38. Knowing a child's ethnicity | | | | | | | • | | ◊ |

**LEGEND**

| | |
|---|---|
| HIPPY | |
| NFP | ◊ |
| PAT | • |
| Most consistent scoring | |

Abbreviations: ED, emergency department; HIPPY, Home Instruction for Parents of Preschool Youngsters; NFP, Nurse Family Partnership; PAT, Parents As Teachers

delivery model configurations of the Q-sort. Given Alabama's First Teacher HV program selection of HV service delivery models that place importance on improving maternal and child health and enhancing school readiness and achievement, this finding is not surprising. We expected variation in the ranking of quality measures across the HV service delivery models, given the differences in programmatic goals, curricular focus, and target participant age ranges, and we observed this variation in predictable directions.

For example, HIPPY is strongly focused on school readiness, perhaps explaining the high ranking its home visitors gave for measures related to family support of a child's learning and development and in identifying delays in a child's development. The NFP model has a strong focus on maternal and newborn health, and its home visitors ranked measures for prenatal care and breast-feeding among the highest-priority indicators for program quality. Furthermore, the high-ranking NFP home visitors assigned for the demographic measure related to knowing whether a participant is pregnant at enrollment is not unexpected since NFP requires that a participant must be less than 28 weeks into pregnancy to be eligible for enrollment.

Other ranking variation among HV service delivery models may be based on home visitor perception of how each measure contributes to service delivery. For example, scoring for knowing whether a woman is depressed/experiencing parenting stress was widely dispersed among the service delivery models. During a postexercise discussion, some home visitors stated that, given what is known about the potential negative consequences of caregiver depression/stress on child development, this was a very important quality measure. Others said that it was a higher priority to identify delays in development first so that referrals could be made and then to determine potential causes such as caregiver depression or stress. A similar discussion followed related to the variation in ranking reported for knowing a child's age, with some home visitors suggesting that knowing the child's age was critical to deciding which educational models to present and in determining potential developmental delays. Others, however, felt they would deliver services regardless of age and calculating age was a part of screening for developmental delays.

Finally, the Q-sort exercise allowed home visitors an opportunity to examine priorities within their HV service delivery model and, perhaps more importantly, to set priorities for the Alabama First Teacher HV system as a whole. Participants engaged in meaningful discussions regarding how and why they selected specific measures, and they developed a greater awareness and understanding of the systems approach to HV within the state. In fact, home visitors articulated that this was

the first time they had realized that although they might have different approaches to HV service delivery, they shared overall goals and were all part of the system of services for Alabama children and families. This recognition is crucial not only for CQI efforts but also for systems-building and expansion at the state and local community levels.

## Limitations

Because of the small sample size associated with each HV service delivery model, the investigators recognize that these findings cannot be generalized beyond the individuals who participated in the Q-sort activity. Furthermore, there were too few raters within models (notably NFP) to perform statistical analyses of differences among models. At the same time, however, differences between service delivery models and across the HV system raise important questions about how priorities were previously identified and represent opportunities for individual home visitors and HV service delivery models to compare priorities across models and against the overall results. Should participants be unwilling to accept overall results, this could limit the usefulness of identified priorities for systemwide CQI efforts. Given the postactivity wrap-up discussion and now ongoing CQI efforts in local communities, this does not appear to be the case. Finally, participation in this CQI activity was mandatory for home visitors and HV site managers; therefore, their responses were only as reliable as their willingness to engage in an open and honest conversation about CQI. On the basis of the engagement level of participants and subsequent discussion, investigators suggest that this potential limitation was well mitigated.

## Next steps for Alabama's First Teacher HV program

Following the Q-sort exercise, a meeting of key stakeholders (state CQI team) was convened to further discuss the CQI process. Given that all local CQI team members were new to CQI (as were many of the state team members), the state CQI team decided that for the first round of projects, all local teams would work on the same quality measure, representing the same MIECHV construct. Focusing on quality measures that were ranked in the first 2 columns of the overall Q-sort findings (the "most important" and "next most important" measures), the state CQI team reviewed benchmark and construct data from the first- and second-year Discretionary Grant Information System report to identify areas of lower performance that might represent opportunities for initial efforts related to quality assurance and improvement (eg, service provision, outcomes, program performance).

On the basis of these data and the Q-sort findings, the state CQI team reached consensus on the first area of focus for local CQI efforts (Delays in a child's overall development are identified) and local CQI teams are now working on projects to improve performance in that area. The work of CQI will be iterative in nature such that areas of focus will be agreed upon, actions will be taken, and focus on new benchmarks, constructs, and quality measures will be determined following successful implementation of changes and once appropriate target outcomes are met. After teams are more comfortable with the CQI process, the overall and service delivery model–specific Q-sort findings may be used to allow local sites to select specific CQI focus areas. In addition, the Alabama First Teacher program will repeat the Q-sort exercise with a larger pool of home visitors and HV site managers who were identified in 2014 as the result of new MIECHV competitive expansion funding. Findings from this second administration of the Q-sort will be used to expand upon and clarify those established by the original group.

## Conclusions

The Q-sort methodology provided the Alabama First Teacher HV program a reliable and objective approach to identify CQI priorities based on firsthand knowledge and experiences of home visitors, HV site managers, and representatives from the Alabama Department of Children's Affairs. Furthermore, it accommodated 3 evidence-based early childhood HV service delivery models used within the system. The Q-sort procedure allowed participants to see where there were areas of wide consensus and to rank competing priorities. For areas of disagreement, participants had an opportunity to discuss the quality measures and thereby reach greater consensus. This supports the development and implementation of an overall CQI plan to achieve progress across the large number of benchmark and construct measures required as a part of MIECHV funding. The Q-sort methodology presented in this article can easily be replicated by other state grantees to identify CQI priorities at the local and state levels. It can be used effectively for states that use a single-model design for HV service delivery as well as those that implement multiple evidence-based models. Beyond MIECHV, the Q-sort methodology can be used for decision making in any federal or state public health program that must be responsive to multiple required measures and where prioritization of focus areas can

inform a systematic approach to quality improvement efforts.

## REFERENCES

1. Health Resources and Services Administration. *Home Visiting Updated State Plan, Supplemental Information Request for the Submission of the Updated State Plan for a State Home Visiting Program*. Rockville, MD: Health Resources and Services Administration; 2010. OMB Control No. 091-0336.
2. Children's Defense Fund. New Investments to help children and families: the Patient Protection and Affordable Care Act and the Maternal, Infant, and Early Childhood Home Visiting program. http://www.childrensdefense.org/child-research-data-publications/data/new-investments-to-help-children-early-childhood-home-visiting-program.pdf. Published February 2011. Accessed August 15, 2014.
3. Paulsell D, Avellar S, Sama Miller E, Del Grosso P. *Home Visiting Evidence of Effectiveness Review: Executive Summary*. Washington, DC: US Department of Health and Human Services; 2010.
4. Radowski D. Continuous quality improvement: origins, concepts, problems, and applications. *J Physician Assist Educ.* 1999;10(1):12-16.
5. Ammerman RT, Putnam FW, Kopke JE, et al. Development and implementation of a quality assurance infrastructure in a multisite home visitation program in Ohio and Kentucky. *J Prev Interv Community.* 2007;34(1/2):89-107.
6. US Department of Health and Human Services. CQI checklist: next steps for action. http://www.mdrc.org/dohve/dohve_resources.html. Published October 2011. Accessed June 3, 2014.
7. Till L. Developing and implementing CQI with state and local partners. Paper presented at: Region IV Home Visiting Training; 2012; Atlanta, GA.
8. Kerlinger FN. *Foundations of Behavioral Research*. New York, NY: Holt Rinehart & Winston; 1973.
9. Cross RM. Exploring attitudes: the case for Q methodology. *Health Educ Res.* 2005;20(2):206-2013.
10. Ginter PM, Duncan WJ, Swayne LE. *Strategic Management of Health Care Organizations*. San Francisco, CA: Jossey-Bass/Wiley Publishers; 2013.
11. Ellingsen IT, Størksen I, Stephens P. Q methodology in social work research. *Int J Soc Res Methodol.* 2010;13(5):395-409.
12. Thomas DM, Watson RT. Q-sorting and MIS research: a primer. *Commun Assoc Inf Syst.* 2002;8:141-156.
13. Wingate MS, Fifolt MF, Preskitt J, et al., Assessing statewide needs for home visiting in Alabama: a mixed methods approach. *Matern Child Health J.* 2014;18:1075-1084.
14. Kielhofner G. *Occupational Therapy: Methods of Inquiry for Enhancing Practice*. Philadelphia, PA: FA Davis Co; 2006.
15. Niemeyer S, Petts J, Hobson K. Rapid climate change and society: assessing responses and thresholds. *Risk Anal.* 2005;25(6):1443-1456.