Well-Child Visit Adherence:
HealthySteps Research Guidance

Well-child visits (WVCs) are critical for children's health and development. WCVs allow health care providers to regularly monitor child health and development, identify and address concerns with families, administer vaccines, and connect families to needed services.[1] Providers also share anticipatory guidance and preventive practices with caregivers during scheduled visits.[2] Attendance at WCVs is associated with lower rates of hospitalization and emergency department use.[3,4] By contrast, missed WCVs are associated with later diagnosis of autism spectrum disorder.[5]

HealthySteps sites can help increase WCV adherence. HealthySteps sites can provide families with information on the importance of WCV adherence, including on-time immunizations and the tracking of child development. For more information on HealthySteps activities that can help increase WCV adherence, see "Well-Child Visit Adherence: HealthySteps Theory of Change."

Previous Research on HealthySteps and Well-Child Visit Adherence

Previous HealthySteps research has shown a connection between the model and increased adherence to WCV schedules:

- Several studies, including the HealthySteps program national evaluation, a randomized controlled trial (RCT), reported that HealthySteps children were more likely to receive timely WCVs and vaccinations than children who did not receive HealthySteps.[6-9]
- A recent study using electronic health record (EHR) data found that interacting with a HealthySteps Specialist was related to increased WCV adherence during the first year of life and higher vaccine completion at 5 months old.[10]
- Emerging evidence from a continuous quality improvement project that analyzed administrative data found that average WCV adherence among children continuously seen at three HealthySteps sites from birth through age 15 months was higher than average state-level WCV adherence among children continuously insured by Medicaid in the Healthcare Effectiveness Data and Information Set (HEDIS).[11]

Additional research is warranted to better understand how HealthySteps increases WCV adherence. Although some research has demonstrated positive relationships between HealthySteps participation and WCV adherence, additional questions merit further exploration. The following section presents sample research questions and approaches sites can use to examine how HealthySteps activities can help increase WCV adherence.

How Your Site Can Build Evidence Related to Well-Child Visit Adherence

Your HealthySteps site can conduct its own research to help learn what strategies work best to increase WCV adherence and demonstrate the value of HealthySteps; there are a variety of factors to consider when determining which questions you would like to address. First, consider where your site is with respect to implementing HealthySteps with fidelity to the model. Greater fidelity to implementation is associated with achieving better outcomes.[12] Thus, you may want to ensure that your site is meeting at least basic fidelity requirements before evaluating questions that require more intensive methods (e.g., quasi-experimental studies).

Also consider the resources available to conduct your study. Some research approaches generally take more effort because they require a certain study design or level of data collection. Your site's resources (e.g., data already collected, access to an evaluator or statistician) can help offset or amplify the typical level of intensity.

Your site can decide which families you want to include in your research based on what you set out to study (e.g., the WCV adherence rate for all children at the practice). However, we expect that studying WCV adherence rates for Tier 3 families will provide the greatest opportunity to see HealthySteps' impact and recommend that more rigorous research focuses on that population.

Note that HealthySteps research may require review and approval from an Institutional Review Board (IRB). You may also want to identify a researcher and/or external evaluator to help you plan and conduct a research study. Also, consider how to involve families in the selection of research questions, measure development, and/or interpretation of findings. Family participation in shaping the research process is a key step in embedding equity into your research and helping to ensure the findings are accurate and useful for participants. Finally, you should reach out to the HealthySteps National Office at ZERO TO THREE to learn more about available support related to your evidence-building efforts.

Using HealthySteps Administrative Data for Program Improvement

HealthySteps sites are required to track the date of each attended WCV for Tier 3 families and—moving forward—will be asked to report on WCV attendance through the first 15 months of life. Sites are also required to report on team-based WCVs for Tier 3 families.

You may be interested in using administrative data for program fidelity monitoring and improvement even if your site is not ready to conduct a research study. For example, you may assess current WCV attendance rates for the first 15 months of life and assess this metric over time (e.g., once a year).

To see how WCV adherence at your site compares with national averages, you could compare WCV adherence rates for Tier 3 families with publicly available data (e.g., Well-Child Visits in the First 30 Months of Life metric from HEDIS). Although HEDIS is currently the best available comparison data set, the data do not provide an exact comparison:

- HEDIS includes all children who enrolled in a health plan (e.g., Medicaid, commercial plans) by 31 days of age and had continuous coverage through 15 months of age, even if they received care at multiple practices during this time. HealthySteps sites are unable to track children who leave the practice; thus, the proposed HealthySteps sample for this comparison is the subset of Tier 3 children continuously seen at the HealthySteps site through 15 months of life.
- HEDIS and HealthySteps populations differ. Using HEDIS rates specifically for children with Medicaid may help reduce differences between this group and Tier 3 children; however, the populations will not be identical.

Exhibit 1 provides an overview of potential research topics, recommended study designs, and level of intensity. Each research topic also links to a comprehensive profile with information on related:

- *Research questions* to answer
- *Methods*, including study designs,[a] data sources, and anticipated level of intensity
- *Potential measures* to better understand WCV adherence
- *Target population* on which to focus data collection
- *Potential actions* to help answer questions of interest

[a] We do not recommend that sites conduct a RCT to answer the research questions in this document. Please contact the National Office to discuss RCT design considerations for HealthySteps (e.g., a cluster RCT involving multiple sites).

Exhibit 1. Sample Research Approaches for HealthySteps Sites

Research topic	Study design	Intensity
• Average number of WCVs attended	Descriptive	
• Change in WCV attendance rate	Descriptive	
• WCV attendance rate by visit	Descriptive	
• Demographics associated with WCV attendance	Correlational	
• Barriers to WCV attendance and needed resources	Descriptive	
• Relationship between HealthySteps Specialist encounters and WCV attendance	Correlational	
• HealthySteps strategies associated with WCV attendance	Correlational	
• Impact of HealthySteps on WCV attendance and continuity of care	Quasi-experimental	

Average Number of WCVs Attended

Research questions

- What is the average number of WCVs attended?
- Does the average number of WCVs attended vary by Tier of service?

Methods

- Descriptive study using administrative data or payer claims data (e.g., Medicaid, private insurance)

Potential actions

- Extract WCV attendance data and Tier of service from EHRs, HealthySteps database (if applicable), and/or claims data

Intensity

Low intensity

Potential measures

Average number of WCVs attended ages 0-3

Target population

Children in Tiers 1, 2, and/or 3

Change in WCV Attendance Rate

Research questions

- Does WCV attendance during the first 15 months of life increase over time (e.g., is the WCV attendance rate during the first 15 months of life higher in Year 2 of the study than in Year 1?)?
- Does the change in WCV attendance rate over time vary by Tier of service?

Methods

- Descriptive study using administrative data or payer claims data (e.g., Medicaid, private insurance)

Potential actions

- Extract WCV attendance data and Tier of service from EHRs, HealthySteps database (if applicable), and/or claims data

Intensity

Low intensity

Potential measures

WCV attendance rate during first 15 months of life

Target population

Children in Tiers 1, 2, and/or 3

WCV Attendance Rate by Visit

Research questions

- What is the WCV attendance rate at specific visits (e.g., 6-month, 12-month, 18-month)?
- Are there specific WCVs that families are more or less likely to attend?
- How does attendance at each visit differ by Tier of service?

Methods

- Descriptive study using administrative data or payer claims data (e.g., Medicaid, private insurance)

Potential actions

- Extract WCV attendance data and Tier of service from EHRs, HealthySteps database (if applicable), and/or claims data

Intensity

Low intensity

Potential measures

Attendance rate at each WCV ages 0-3

Target population

Children in Tiers 1, 2, and/or 3

Demographics Associated With WCV Attendance

Research question

- Among HealthySteps families, which demographic characteristics (e.g., race, ethnicity, insurance type) are related to WCV adherence during the first 15 and/or 30 months of life?

Methods

- Correlational study using administrative data

Potential actions

- Determine if demographic data are captured for most children at your site
- Extract administrative data from EHRs or HealthySteps database (if applicable)
- Determine if you need an external evaluator and/or data analyst to examine the relationship between demographic characteristics and WCV attendance rates

Intensity

Medium intensity

Potential measures

Total number of WCVs attended ages 0-3

HEDIS measures

HEDIS WVC adherence measure: WCVs in the first 15 months of life[a]

HEDIS WCV adherence measure: WCVs in the first 30 months of life[b]

Demographic characteristics

Target population

Families in Tiers 1, 2, and/or 3

[a] Children who turned 15 months old during the measurement year and who had six or more WCVs with a primary care provider (PCP) during their first 15 months of life ÷ children who turned 15 months old during the measurement year

[b] Children who turned 30 months old during the measurement year and who had two or more WCVs with a PCP between their 15-month birthday plus 1 day and their 30-month birthday ÷ children who turned 30 months old during the measurement year

Barriers to WCV Attendance and Needed Resources

Research questions

- What structural barriers to WCV attendance do HealthySteps families experience?
- What resources or supports do HealthySteps families need to help increase WCV adherence?

Methods

- Descriptive study using qualitative methods (e.g., data collected via surveys, interviews, focus groups)

Potential actions

- Develop measures that are culturally appropriate and sensitive to literacy levels
- Pilot test questions with selected families to ensure questions are easy to understand
- Collect data in multiple languages
- Recruit an external evaluator to assist with survey development, data collection, and data analysis

Intensity

Medium intensity

Potential measures

Survey, interview, or focus group questions to better understand barriers to WCV attendance and supports/services that could help increase WCV attendance

Target population

Families in Tiers 1, 2, and/or 3

Site staff

Relationship Between HealthySteps Specialist Encounters and WCV Attendance

Research questions

- Is the number of encounters (e.g., WCVs, sick visits, consults) at which a HealthySteps Specialist is present—and, thus, building a relationship with families and/or discussing importance of WCVs—during the first 12 months of life associated with overall WCV adherence during the first 3 years of life?
- Is there variation across demographic groups in the number of encounters (e.g., WCVs, sick visits, consults) at which a HealthySteps Specialist is present during the first 3 years of life? If so, why?

Methods

- Correlational study using administrative data or payer claims data (e.g., Medicaid, private insurance)

Potential actions

- Track each encounter between a HealthySteps Specialist and family
- Extract administrative data from EHRs, HealthySteps database (if applicable), or claims data
- Determine if you need an external evaluator and/or data analyst to examine the relationship between contact with a HealthySteps Specialist and WCV attendance rate and/or to examine the relationship between demographic characteristics and contact with a HealthySteps Specialist
- Consider a root cause analysis to understand why there are differences (if applicable)

Intensity

Medium intensity

Potential measures

Demographic characteristics

WCV attendance rate ages 0-3[a]

Number of encounters (e.g., WCVs, sick visits, consults) at which a HealthySteps Specialist was present during the first 12 months of life[b]

Number of encounters (e.g., WCVs, sick visits, consults) at which a HealthySteps Specialist was present during the first 3 years of life

Target population

Children in Tier 3

[a] WCVs attended ÷ total possible WCVs

[b] Encounters at which a HealthySteps Specialist was present during the first 12 months ÷ all encounters during the first 12 months

HealthySteps Strategies Associated With WCV Attendance

Research question

- Are particular strategies used by HealthySteps Specialists associated with greater WCV adherence?

Methods

- Correlational study using administrative data

Potential actions

- Extract administrative data from EHRs or HealthySteps database (if applicable)
- Determine if you need an external evaluator and/or data analyst to examine the relationship between receipt of HealthySteps services (e.g., specific services received, dosage) and WCV attendance rates

Intensity

Medium intensity

Potential measures

WCV attendance rate ages 0-3[a]

Records of strategies used by the HealthySteps Specialist during or before WCVs (e.g., calling families before a WCV, making referrals, providing positive parenting information and guidance)

Target population

Families in Tier 3

[a] WCVs attended ÷ total possible WCVs

Impact of HealthySteps on WCV Attendance and Continuity of Care

Research questions

- Compared with receipt of pediatric primary care as usual, is HealthySteps participation associated with increased WCV adherence?
- Is HealthySteps participation associated with increased WCV adherence at the 15-, 18-, and 30-month visits?
- Does any observed difference in WCV adherence between HealthySteps participants and "pediatric primary care as usual" recipients vary by demographic group? If so, why?
- Is HealthySteps participation associated with increased continuity of care as demonstrated by attendance at the 4-year WCV?

Methods

- Quasi-experimental (e.g., matched comparison group) study using administrative data or payer claims data (e.g., Medicaid, private insurance)

Potential actions

- Consider data available for comparison families[a]
- Extract administrative data from EHRs, HealthySteps database (if applicable), or claims data
- Determine if you need an external evaluator and/or data analyst to examine the relationship between HealthySteps participation and WCV adherence and conduct subgroup analyses to explore potential differences across demographic groups
- Consider a root cause analysis to understand why there are differences (if applicable)

Intensity

High intensity

Potential measures

Total number of WCVs attended by each time point

HealthySteps participation (e.g., families received four or more HealthySteps-related services or discussed six or more anticipatory guidance topics)[b]

Demographic characteristics

Target population

Children in Tier 3

[a] For example, a matched comparison study is an option only if other non-HealthySteps sites in your health system collect the same measures as does your HealthySteps sites. A multiple baseline/staggered start design is an option if you are expanding to new sites.

[b] The measure has been used in previous HealthySteps research or innovation projects.

References

1 Turner, K. (2018). Well-child visits for infants and young children. *American Family Physician, 98*(6), 347–353.

2 Chung, P. J., Lee, T. C., Morrison, J. L., & Schuster, M.A. (2006). Preventive care for children in the United States: Quality and barriers. *Annual Review of Public Health, 27,* 491–515. https://doi.org/10.1146/annurev.publhealth.27.021405.102155

3 Pittard, W. B., III. (2011). Well-child care in infancy and emergency department use by South Carolina Medicaid children birth to 6 years old. *Southern Medical Journal, 104*(8), 604–608. https://doi.org/10.1097/SMJ.0b013e31822426c0

4 Tom, J. O., Tseng, C., Davis, J., Solomon, C., Zhou, C., & Mangione-Smith, R. (2010). Missed well-child care visits, low continuity of care, and risk of ambulatory care-sensitive hospitalizations in young children. *Archives of Pediatric & Adolescent Medicine, 164*(11), 1052–1058. https://doi.org/10.1001/archpediatrics.2010.201

5 DeGuzman, P. B., Lyons, G., Huang, G., Keim-Malpass, J., & Mazurek, M. O. (2022). Statewide analysis reveals period of well-child visit attendance for earlier diagnosis of autism spectrum disorder. *The Journal of Pediatrics, 241,* 181–188. https://doi.org/10.1016/j.jpeds.2021.09.028

6 Minkovitz, C., Hughart, N., Strobino, D., Scharfstein, D., Grason, H., Hou, W., Miller, T., Bishai, D., Augustyn, M., McLearn, K.T., & Guyer, B. (2003). A practice-based intervention to enhance quality of care in the first 3 years of life: The Healthy Steps for Young Children program. *Journal of the American Medical Association, 290*(23), 3081–3091. https://doi.org/10.1001/jama.290.23.3081

7 Guyer, B., Barth, M., Bishai, D., Caughy, M., Clark, B., Burkom, D., Genevro, J., Grason, H., Hou, W., Keng-Yen, H., Hughart, N., Snow Jones, A., McLearn, K. T., Miller, T., Minkovitz, C., Scharfstein, D., Stacy, H., Strobino, D., Szanton, E., & Tang, C. (2003). *Healthy Steps: The first three years. The Healthy Steps for Young Children program national evaluation.* https://ztt-healthysteps.s3.amazonaws.com/documents/139/attachments/2003_HS_National_Evaluation_Report.pdf?1539967.

8 Johnston, B. D., Huebner, C. E., Anderson, M. L., Tyll, L. T., & Thompson, R. S. (2006). Healthy Steps in an integrated delivery system: Child and parent outcomes at 30 months. *Archives of Pediatrics & Adolescent Medicine, 160*(8), 793–800. https://doi.org/10.1001/archpedi.160.8.793

9 Buchholz, M., & Talmi, A. (2012). What we talked about at the pediatrician's office: Exploring differences between Healthy Steps and traditional pediatric primary care visits. *Infant Mental Health Journal, 33*(4), 430–436. https://doi.org/10.1002/imhj.21319

10 Ammerman, R. T., Herbst, R., Mara, C. A., Taylor, S., McClure, J. M., Burkhardt, M. C., & Stark, L. J. (2022). Integrated behavioral health increases well-child visits and immunizations in the first year. *Journal of Pediatric Psychology, 47*(3), 1–10. https://doi.org/10.1093/jpepsy/jsab104

11 Leis, J., Till, L., Lee, H., McCombs-Thornton, K., Morrison, C., & Clark, M. (2021). *HealthySteps outcome pilot project key findings and recommendations.* ZERO TO THREE.

12 Durlak, J.A., & DuPre, E.P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41*, 327–350. https://doi.org/10.1007/s10464-008-9165-0

